Himley Village
Outline Application

Environmental Statement – Volume 1
Main Text

December 2014

P3Eco | Waterman

Himley Village, Bicester

Environmental Statement, Volume 1 - Main Text

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This document has been prepared and checked in accordance with
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Issue	Date	Prepared by	Checked by	Approved by
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1. Introduction

1.1. This Environmental Statement (ES) has been prepared by Waterman Energy, Environment & Design Limited (Waterman EED), on behalf of Property Portfolio Partners Ltd ('the Applicant'), also known as P3Eco, to support an outline planning application for a residential led development known hereafter as Himley Village. Himley Village is located on land bound by Middleton Stoney Road to the south, and agricultural land to the north, east and west (hereafter referred to as the Site). Plans showing the location and existing layout of the Himley Village Site are presented as **Figure 1.1** and **Figure 1.2**.

1.2. Himley Village will form part of the North West (NW) Bicester Eco-Town; one of the four eco-town locations included in the 2009 Supplement to Planning Policy Statement 1 (PPS1): eco-towns[1]. Eco-towns are designed to achieve zero carbon development and more sustainable living using the best new design and construction.

1.3. Following designation of the NW Bicester Eco-Town, a planning application was submitted in 2012 by A2 Dominion Group and P3Eco (Bicester) Ltd for an Exemplar Phase, located withn the north eastern part of the Eco-Town area, to secure full planning permission for 394 residential units and associated uses and outline planning permission for community and commercial uses (Planning application reference: 10/01760/HYBRID).

1.4. A draft Masterplan for the North West Bicester Eco-Town area was submitted to Cherwell District Council (CDC) on 21st March 2014 on behalf of A2 Dominion. The Masterplan responds to the criteria set out in the Supplement to PPS1: eco-towns and a Masterplan brief (November 2013) agreed with CDC, which sought to set the framework to guide future planning applications. A subsequent amendment to the NW Bicester Masterplan was submitted in May 2014. It is intended that CDC will prepare non-statutory planning policy incorporating the Masterplan.

1.5. Following submission of the draft NW Bicester Masterplan several planning applications have been submitted for the development of parcels of land within the NW Bicester Masterplan Area. A summary of those applications is set out below and the location of the applications are shown on **Figure 1.3**:

- NW Bicester Business Park "*Erection of up to 53,000 sqm of floor space to be for B8 and B2 with ancillary B1 (use classes) employment provision within two employment zones covering an area of 9.45ha; parking and service areas to serve the employment zones; a new access off the Middleton Stoney Road (B4030); temporary access of Howes Lane pending the delivery of the realigned Howes Lane; 4.5ha of residential land; internal roads, paths and cycleways; landscaping including strategic green infrastructure (GI); provision of sustainable urban systems (suds) incorporating landscaped areas with balancing ponds and swales. Associated utilities and infrastructure.*" (Planning application reference: 14/01675/OUT).
- A4095 NW Strategic Link Road "*Construction of new road from Middleton Stoney Road roundabout to join Lord's Lane, east of Purslane Drive, to include the construction of a new crossing under the existing railway line north of the existing Avonbury Business Park, a bus only link east of the railway line, a new road around Hawkwell Farm to join Bucknell Road, retention of part of Old Howes Lane and Lord's Lane to provide access to and from existing residential areas and Bucknell Road to the south and a one way route northbound from Shakespeare Drive where it joins with the existing Howes Lane with priority junction and associated infrastructure*." (Planning application reference: 14/01968/F).
- NW Bicester - Application 1 (North of Railway) "*Outline application comprising some 155 ha of land, to provide for circa 600 residential dwellings, land for new primary schools, associated*

open space, recreation and play space, social and community facilities and employment land, access and infrastructure works." (Planning application reference: 14/013841/OUT).

- NW Bicester - Application 2 (South of Railway) "*51ha to south of Application 1, within the NW Bicester Masterplan Site, for proposed mixed use eco development of 900 homes, new primary and secondary school, a local centre, site access arrangements, commercial buildings and open space."* (Planning application reference: 14/01641/OUT).

1.6. The application for Himley Village comprises: *"Development to provide up to 1,700 residential dwellings (Class C3), a retirement village (Class C2), flexible commercial floorspace (Classes A1, A2, A3, A4, A5, B1 and C1), social and community facilities (Class D1), land to accommodate one energy centre and land to accommodate one new primary school (up to 2FE) (Class D1). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure and other operations (including demolition of farm buildings on Middleton Stoney Road)*".

1.7. The Applicant is seeking outline planning permission for Himley Village with all matters reserved for future determination.

Legal Framework for the Environmental Statement

1.8. In line with the previous Strategic Environmental Assessment (SEA) undertaken for the NW Bicester Masterplan and Environmental Impact Assessments (EIA) undertaken to accompany the applications submitted for other development parcels within the NW Bicester Masterplan area, it is recognised by the Applicant that the Himley Village Development requires an (EIA), since it falls within Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (hereafter referred to as the 'EIA Regulations')[2]. Owing to its scale, nature and location, the Himley Village Development has the potential to significantly alter or impact on the environment.

1.9. The EIA was therefore undertaken to determine the likely significance of potential environmental effects and the nature of any mitigation measures that may be required to reduce, off-set and ameliorate any likely significant adverse environmental effects predicted to result from the development of Himley Village. The findings of the entire EIA process undertaken on the Himley Village Development are presented in this Environmental Statement (ES). The EIA was undertaken in the context of the SEA of the NW Bicester Masterplan.

1.10. In accordance with the EIA Regulations, this ES considers the likely significant environmental effects of the Himley Village Development during the Site preparation works, demolition and construction required to facilitate the Himley Village Development, upon completion and during the operation of the Himley Village Development. The likely significant cumulative effects of the Himley Village Development and other reasonably foreseeable developments in the surrounding area have also been considered. Where significant adverse effects on the environment are identified as being likely, the ES sets out measures that should be implemented to prevent, reduce and, where possible, offset these effects. These are known as mitigation measures. The ES also identifies the likely residual effects of the Himley Village Development which will occur following implementation of the mitigation measures.

Structure of the Environmental Statement

1.11. The ES comprises four separate parts namely:

- ES Volume 1: Main Text (this document);
- ES Volume 2: Figures;

- ES Volume 3: Technical Appendices; and
- ES Non-Technical Summary.

EIA and Project Design Team

1.12. This EIA has been co-ordinated by Waterman EED with contributions from a number of specialist designers and consultants appointed by the Applicant. These designers and consultants are listed in Table 1.1 below, along with their respective disciplines and contribution to the EIA where appropriate.

Table 1.1: EIA and Design Team

Organisation	Expertise/EIA Input
Alan Baxter & Associates	Transport, Flood Risk, Drainage and Heritage Consultants Preparation of Transport Assessment, Transport ES Chapter, Flood Risk Assessment, Drainage Strategy, Built Heritage Statement and Built Heritage Chapter.
Farrer Huxley Associates	Landscape Consultants Preparation of Design and Access Statement in conjunction with the architects. Preparation of Landscape and Visual Amenity Chapter.
Gary Grant	Ecologist. Preparation of Ecology ES Chapter.
Penoyre and Presad	Architect / Masterplanner.
Turleys	Planning Consultants.
Waterman	Environmental Consultancy. Co-ordination of EIA and preparation of the ES, including the introductory and concluding Chapters. Preparation of Air Quality, Noise and Vibration, Water Management, Ground Conditions and Contamination, Agriculture and Soils, Archaeology (Buried Heritage), Socio Economics and Community, Human Health and Waste Technical ES Chapters.

ES Availability and Comments

1.13. Additional copies of the NTS are available free of charge. Copies of the full ES are available for purchase. For copies of these documents please contact:

Waterman Energy, Environment & Design Limited
South Central
Peter Street
Manchester
M2 5QR

Email: eed@watermangroup.com

1.14. Additional copies are also available for viewing by the public during normal office hours in the planning department of CDC. Comments on the application, including the ES, should be forwarded to CDC at the address below:

Development Department
Cherwell District Council
Bodicote House
Bodicote
Banbury
OX15 4AA

References

[1] Department of Communities and Local Government. (2009) *Suppliment to Planning Policy Statement 1: eco-towns.*
[2] Town and Country Planning. (2011) *Enviornmental Impact Assessment: EIA Regulations SI 2011 139.*

2. EIA Methodology

Introduction

2.1. This Chapter describes the scoping process used to identify the environmental issues to be included in the Environmental Impact Assessment (EIA), outlines the general methodology for the EIA and sets out the relevant exclusions and limitations. Detailed assessment methodologies for each of the technical assessments are provided in the relevant Technical Environmental Statement (ES) Chapters (Chapters 6-19).

Scoping of the EIA

2.2. In line with the Environmental Assessment of Plans and Programmes Regulations (also known as the Strategic Environmental Assessment (SEA) Regulations[1]), EIA Regulations[2] and best practice guidance[3,4], several phases of scoping have been undertaken by Hyder Consulting (UK) Ltd (Hyder) for the NW Bicester Masterplan as SEA Scoping and for Application 1 and 2 of the NW Bicester Masterplan as EIA Scoping. These scoping studies identified the environmental issues of potential significance to the NW Bicester Masterplan site, and as such, are considered to set out an appropriate scope for the Himley Village EIA, and thus reported within the ES.

2.3. The Scoping Studies previously undertaken concluded that the following environmental issues associated with the NW Bicester Masterplan developments should be addressed in detail in the EIAs for individual applications:

- Landscape and Visual Amenity;
- Ecology;
- Water Management;
- Air Quality;
- Noise and Vibration;
- Built Heritage and Archaeology (Buried Heritage);
- Ground Conditions and Contamination;
- Agriculture and Soils;
- Human Health;
- Socio Economics and Community;
- Waste; and
- Transport.

2.4. The topics scoped out were sustainability and microclimate. Sustainability was not included as issues relating to sustainability will be assessed within the Sustainability Assessment and Microclimate was scoped out as it is considered there will not be significant effects on environmental receptors.

2.5. The Scoping Report for the NW Bicester Application 1 (North of Railway), as presented in **Technical Appendix 2.1** was submitted to Cherwell District Council (CDC) on the 29th May 2014 and a Scoping Opinion as presented in **Technical Appendix 2.2** was received on the 14th July 2014. Statutory and non-statutory organisations were consulted about the proposed scheme as part of the scoping process, including:

- Cherwell District Council (CDC);

- Oxford County Council (OCC);
- Environment Agency (EA);
- English Heritage;
- Natural England (NE);
- Thames Water Utilities Limited (TWUL)
- Berks, Bucks & Oxon Wildlife Trust (BBOWT);
- Sport England; and
- Highways Agency (HA).

2.6. Consultation responses are provided within the CDC Scoping Opinion in **Technical Appendix 2.2** a summary of which is provided in Table 2.1 below.

Table 2.1: Issues raised during previous EIA Scoping Consultation Process

Consultee	Comments
CDC Anti-Social Behaviour manager	Road traffic noise should be assessed cumulatively.
CDC Landscape Architect	Both landscape visual impact assessments are to be undertaken in accordance with the current Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013, published by the Landscape Institute and Institute of Environmental Management and Assessment. The quality of the landscape character to be evaluated and tested against the restoration and repair description of Cherwell District Council Landscape Assessment 1995.
CDC Arboricultural Officer	An arboricultural survey and impact assessment should be undertaken in accordance with BS5837:2012.
English Heritage	This development could potentially have an impact upon designated heritage assets and their settings in the area around the site. We would expect the Environmental Statement to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets. The ES should also consider the potential impacts which the proposals might have on those heritage assets which are not designated.
OCC Archaeologist	The site is located in an area of archaeological interest identified through a desk based assessment, geophysical survey and a trenched evaluation. The archaeological evaluation recorded a range of features across the site dating to the Neolithic through to the Roman period. A programme of mitigation will be required ahead of any development. The Environmental Impact Assessment will need to contain this desk based assessment as well as the reports for the geophysical survey and trenched evaluation.
Sport England	The site is not considered to form part of, or constitute a playing field as defined by The Town and Country Planning (Development Management Procedure) (England) Order 2010 (Statutory Instrument 2010 No.2184). Sport England considers that new developments should be required to contribute towards meeting the demand they generate through the provision of on-site facilities and/or providing additional capacity off-site. The level and nature of any provision should be informed by a robust evidence base such as an up to date Sports Facility Strategy, Playing Pitch Strategy or other relevant needs assessment.

Consultee	Comments
CDC	In relation to the loss of agricultural land, you will need to ensure that it is clear why this land has been chosen and what the implications are of the loss of best and most versatile agricultural land.
Ecology (CDC, BBOWT, Natural England, OCC Ecology, Environment Agency)	The EIA scoping report proposes no new ecological data collection. Bat roosting and badger surveys should be carried out no more than a year before the expected development starts, and the results of these and any subsequent mitigation that is necessary, need to be submitted for approval.
	The EIA should assess the impact on Priority Habitats and Species, protected species, local wildlife sites and statutory sites. Impacts at Local and Site level should be assessed in addition to those at District level and above. The Applicant would need to demonstrate that a net gain in biodiversity would be delivered. Indirect hydrogeological and air pollution impacts should be considered. A mechanism for management and monitoring of the site should be provided.
	The EIA should consider the effects of climate change and how ecological networks will be maintained.
	Mitigation principles will need to be demonstrated to show that they are achievable within the context of the infrastructure and uses of the site. The development should achieve a net gain in biodiversity.
	The cumulative effects of other schemes including, reasonably foreseeable schemes should be assessed.
Natural England (Landscape)	Natural England advises that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance.
	Details of local landscape character areas should be mapped at a scale appropriate to the development site. The assessment should refer to the relevant National Character Areas. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development. The cumulative effects of other schemes, including those at the scoping stage should be considered.
	Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. The EIA should consider potential impacts on publicly accessible areas.
Environment Agency	The impacts of the development on water resources and foul water infrastructure should be considered. Given the scale and potential impacts of the development on water bodies on site and downstream, WFD compliance should be scoped into the EIA assessment.
	The development could require some larger oil tanks for refuelling etc. Oil storage on site may therefore need to be considered and should be in line with best practice and if appropriate oil storage regulations.
TWUL	The provision of water and waste water infrastructure is essential to any development. It is unclear at this stage what the net increase in demand on our infrastructure will be as a result of the proposed development. Thames Water is concerned that the network in this area may be unable to support the demand anticipated from this development. The developer needs to consider the net increase in water and waste water demand to serve the development and also any impact the development may have off site further down the network, if no/low water pressure and internal/external sewage flooding of property is to be avoided.
OCC Drainage Team	A drainage strategy should be submitted which needs to include a Flood Risk Assessment and an indicative surface water drainage proposal at the very least. The development needs to adhere to the requirements of the Flood and water Management Act 2010.

Consultee	Comments
OCC Highways	The transport assessment should consider how to maximise use of public transport. Effects on pedestrians, cyclists and equestrians should be considered.
Highways Agency	The HA will be concerned with proposals that have the potential to impact the safe and efficient operation of the Strategic Route Network (SRN). From the information provided, we would recommend that the cumulative effects of any proposed development at this location should be considered at M40 Junction 9 and Junction 10, this would likely be in the context of Cherwell District Council's Local Plan and its supporting evidence, together with the North West Bicester Masterplan (and subsequent Supplementary Planning Document (SPD)). The HA expects the promoters of development to put forward initiatives that manage down the demand of traffic proposals to support the promotion of sustainable transport and the development of accessible sites.
Network Rail	Comments are not applicable to the Himley Village Site as they relate to provisions of roads under the railway which are part of the Applications to the north of Himley Village.
OCC (general)	The cumulative impacts of the development need to take into consideration other development in Bicester and the surrounding area.

2.7. This EIA, to assess the likely significant environmental effects of Himley Village, has been undertaken in line with the CDC Scoping Opinion of July 2014, due to time constraints which would have not enabled a Scoping Report to be submitted and a Scoping Opinion to be returned. It is considered that the scope identified above is appropriate to the Himley Village Site. Whilst it is acknowledged that requesting a Scoping Opinion is recommended, it is not required under the EIA Regulations. In addition, consultation has been undertaken by the individual technical chapter authors in relation to the scope of their assessment.

Public and Stakeholder Consultation

2.8. Public and stakeholder consultation has been ongoing since 2008 in relation to the NW Bicester Eco Town Masterplan through workshops, public engagements and roadshows. Feedback from this was fed back into the NW Bicester Masterplan.

2.9. An exhibition was held in Bicester on the 9th October 2014, Councillors and Stakeholders were invited to attend a presentation, which was followed by a public exhibition. Consultation responses were recorded, however, there were no comments that were pertinent to the scope of the EIA. Full details of the Consultation and the responses can be found in the Planning Statement which is submitted in support of the Application.

Reporting the EIA

Introduction

2.10. The ES has been prepared to comply with the EIA Regulations. Reference has also been made to currently available good practice guidance in EIA[3].

2.11. The EIA considered the likely significant environmental effects of the Himley Village Development (as described in Chapter 5 The Proposed Development of the ES), based upon a combination of the following:

- Consideration of relevant planning policies (national and local);
- Review of the current baseline through existing information, data and reports, desk top studies and site surveys;

- Consideration of potentially sensitive receptors;
- Modelling of future conditions;
- Identification of likely environmental effects and an evaluation of their likely duration, magnitude and significance;
- Expert opinion;
- Use of technical guidance and best practice; and
- Specific consultations with appropriate bodies listed in the Scoping section above.

2.12. Following completion of the impact assessment, ways of avoiding, reducing or off-setting potentially significant adverse effects (collectively known as 'mitigation measures') were identified together with ways to enhance the beneficial effects. These measures are set out in each Technical Chapter. Residual impacts were then identified, which are described in each Technical Chapter and summarised in Chapter 20.

Technical Chapter Structure and Content

2.13. Each key environmental issue assessed was assigned a separate Chapter in Volume 1 of the ES (Chapters 6 to 18). Within each Technical Chapter the assessment is structured as set out as follows.

Introduction

2.14. The introduction provides a brief summary of the topic and means of assessment in the Chapter. It also states the consultant(s) responsible for undertaking the assessment and preparing the Chapter.

Legislation, Planning Policy and Guidance

2.15. This section includes a short summary of national and local policies that are directly relevant to the environmental issue and assessment. Key relevant legislation and guidance is also identified where applicable.

Assessment Methodology and Significance Criteria

2.16. The methods used in undertaking the technical study and in assessing the significance of potential effects are outlined in this section with references to published standards, guidelines and best practice.

Baseline Conditions

2.17. An important component of the EIA process is the baseline condition, that is, the prevailing environmental conditions against which the potential environmental effects of the proposals are assessed. For most of the technical studies, this was taken to be the conditions at the time of the assessment. For the majority of assessments these conditions are also considered to be representative of future baseline conditions up to commencement of the proposed Development. However, for transport, air quality and noise, future conditions in the absence of development in 2031 were also considered. This is to take account of traffic changes as a result of committed and reasonably foreseeable developments (with the exception of those developments forming part of the NW Bicester Masterplan). Consideration was also given to the potential for new sensitive receptors to be introduced as a result of the Himley Village Development or within the surrounding areas as a result of other committed developments.

Assessment of Potential Effects

2.18. In accordance with the EIA Regulations this section identifies, describes and assesses the likely significant effects of Himley Village in relation to both the construction works and on completion. Environmental effects were predicted with reference to definitive standards and legislation where available. Where uncertainty exists, this was noted and an explanation given.

2.19. To ensure accordance with the EIA Regulations, throughout the EIA process a 'reasonable worst case' scenario has been considered based on the Himley Village Development Principles and Parameter Plans as set out in Chapter 5: The Proposed Development.

Mitigation Measures

2.20. One of the aims of the EIA is to develop specific mitigation measures to offset or reduce the likely significant adverse effects of a proposed development. These measures can relate to any of the three key phases of the project: design, construction or once the development is complete. Examples include:

- Design – Design solutions, such as the optimum configurations of the various built elements. For Himley Village, this has evolved as the design process has progressed and is described in Chapter 4: Alternatives and Design Evolution and Chapter 5: The Proposed Development;
- Construction - commitment to undertake the construction works in a specific way, for example the use of particular plant, phasing of the works, regular monitoring and good environmental management;
- Completed Development - inclusion of specific features such as provision of bat and bird boxes.

2.21. Where significant adverse environmental effects are identified, planning conditions could be included to require the Applicant to implement mitigation measures where possible, either before or during the construction works or once the scheme is complete.

Residual Impact Assessment and Conclusions

2.22. This section identifies the remaining effects of Himley Village, known as residual effects, assuming implementation of available mitigation measures, and includes an assessment of the significance of those effects in accordance with the criteria set out below.

Evaluation of Significance

2.23. In accordance with the EIA Regulations, the significance of both positive and negative effects has been determined by reference to criteria for each assessment topic. Each Technical Chapter provides the criteria, including sources and justifications, for quantifying the different levels of effect, giving due regard to the following:

- Extent and magnitude of the effect;
- Effect duration (whether short, medium or long term);
- Effect nature (whether direct or indirect, primary or secondary, reversible or irreversible);
- Whether the effect occurs in isolation, is cumulative or interactive;
- Performance against environmental quality standards or other relevant pollution control thresholds;
- Sensitivity of the receptor;
- Number of receptors affected; and

- Compatibility with environmental policies.

2.24. Where possible, the significance criteria have been based on definitive standards and legislation, together with the use of value judgements and expert interpretation to establish to what extent an effect is environmentally significant. For issues where definitive quality standards do not exist, significance was based on available knowledge and professional judgement.

2.25. Where specific terminology is not provided within each Technical Chapter, the following terminology was used to express effect:

- Adverse - detrimental or negative effect to an environmental resource or receptor;
- Negligible - no significant effect to an environmental resource or receptor; and
- Beneficial - advantageous or positive effect to an environmental resource or receptor.

2.26. Where adverse or beneficial effects have been identified, these were assessed against the following scale:

- Minor - slight, very short or highly localised effect of no significant consequence;
- Moderate - limited effect (by extent, duration or magnitude) which may be considered significant; and
- Substantial - considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised legislation, policy or standards.

2.27. For issues where definitive quality standards do not exist, significance was based on the:

- Local, district, regional or national scale of value of the resource affected;
- Number of receptors affected;
- Sensitivity of the receptor; and
- Duration of effect.

2.28. Himley Village is anticipated to commence in 2016 and be completed by 2031, a fifteen year build out programme carried out over eight construction phases. For the purposes of this assessment the construction phase timescales are assumed as follows:

- Short term: zero to seven years (construction phase);
- Medium term: seven to fifteen years (construction phase);
- Long term: fifteen years plus (completion onwards); and
- Permanent: more than twenty-five years.

2.29. Local effects would be those that affect on-site and neighbouring receptors, while effects upon receptors in the town of Bicester are considered to be at a District level. Effects on North Oxfordshire would be considered to be at a Regional level, whilst effects on different parts of the country, or England as a whole, would be considered to be at a National level. There are considered to be no transboundary effects on different countries and therefore no international effects.

Cumulative Effects

2.30. Effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together with Himley Village are known as cumulative effects. Cumulative Effects have been assessed within Chapter 19. Where there are no significant cumulative effects predicted, this is also stated.

EIA Assumptions and Limitations

2.31. The principal assumptions that were made and any limitations that were identified in undertaking the EIA are set out below. Assumptions specifically relevant to each topic are set out in the appropriate chapter:

- The scope of the EIA, which is based on that for the NW Bicester Application 1, is appropriate for Himley Village;
- All of the principal existing land uses immediately adjoining Himley Village remain, except in the cumulative scenario where it is assumed that the permissions in the vicinity of Himley Village will be implemented;
- It is assumed that the NW Bicester Link Road would come forward prior to completion of Himley Village in order to enable east west connections within Himley Village into the new link road;
- The baseline generally comprises the Himley Village Site as existing in 2014 excepting for Ecology where some of the baseline surveys were undertaken between 2010 and 2011, and Transport and therefore Noise and Air Quality where the baseline traffic data is for 2012;
- Baseline conditions have been established from a variety of sources, including third parties and historical data. Information received from third parties is assumed to be accurate, complete and up to date;
- Works are assumed to commence on-Site in 2016. Should demolition and construction works commence after Autumn 2016, it is considered that the studies presented in this ES should be reviewed to determine whether update surveys or studies were required to ensure that the assessment of effects remain valid;
- Necessary off-site services infrastructure upgrades, where required to service the wider NW Bicester Masterplan, would be provided by statutory undertakers or utility companies and, if required an assessment of environmental effects of such work and any necessary mitigation would be undertaken by them;
- A number of off-site highways works are proposed, in order to deliver the transport strategy identified within the Transport Assessment. With the exception of the right turn ghost lanes on Middleton Stoney Road, these works would form part of a wider NW Bicester Transport strategy. It is assumed that a contribution towards these works would be required from all the applicants of parcels of land within the NW Bicester Masterplan Area;
- The right turn ghost lanes on Middleton Stoney Road would be constructed in the first phase of construction to facilitate construction access;
- Sustainable Drainage Systems (SuDS) would be set up in the early part of each phase of construction to enable discharge of run off from construction;
- The phasing of construction for Himley Village is currently indicative. However, it is assumed that the primary school would be in place on completion of 500 dwellings and the healthcare centre would be in place on completion of 200 dwellings. The HFLT would be set up in the first phase of construction;
- The existing occupier of Himley Farm would remain living on site during construction;
- Only maximum land use parameters have been determined for the Himley Village Development. Whilst for the majority of technical assessments, use of the maximum parameters represents a worst case scenario, for employment generation as represented in the Socio Economics and Community Chapter, this represents the upper level of employment that would be created by

the Himley Village Development. The assessment of effects has therefore been undertaken conservatively to reflect this and ensure that provision of employment is not over stated;

- The proposed health care centre would provide a minimum of 4 GPs.

References

[1] Environmental Assessment of Plans and Programmes Regulations (2004) *Strategic Environmental Assessment Regulations: SI 2004 No 1633.*

[2] Town and Country Planning. (2011) *Environmental Impact Assessment Regulations 2011: SI 2011/1824.*

[3] Institute of Environmental Management and Assessment (IEMA). (2004) *Impact Assessment Guidelines and ES Review Criteria from the Institute of Environmental Management and Assessment (IEMA)*.

[4] Institute of Environmental Management and Assessment (IEMA). (2003) *Guidelines for Environmental Impact Assessment*. EIS Review Criteria. IEMA, Lincoln.

3. Existing Land Uses

Site Description

3.1. The Site is approximately 90 hectares (ha), centred on National Grid Reference 455885, 223513. It is bound to the north by agricultural fields, to the east by agricultural fields with the A4095 Howes Lane and Bicester Town beyond, to the south by Middleton Stoney Road, with Bignall Park beyond and to the west by agricultural fields with the M40 beyond. An aerial photo of the existing Site is presented as **Figure 3.1.**

3.2. The Site is typically rural in character. The majority comprises agricultural land bound by hedgerows, with Himley Farm and agricultural buildings located centrally within the Site and Himley Farm Bungalow located within the south of the Site. An access lane is present within the Site from Himley Farm to Middleton Stoney Road via Himley Farm Bungalow and several other farm tracks are located within the Site.

3.3. Two buildings at Himley Farm have been designated as Grade II Listed, these comprise 19th century limestone barns. No other listed structures are present within the Site boundary and no designated areas of archaeological potential are located on Site.

3.4. The open areas on Site largely comprise agricultural fields which were mainly bare ground at the time of the walkover (November 2014) divided by hedgerows. There are approximately 2km of hedgerows on the Site. Several linear sections of recently planted broad leaved woodland are present at the eastern edge of the Site, occupying an area of approximately 3.5ha and two ponds are located on Site; a small pond to the east of Himley Farm and a larger pond to the south east of Himley Farm. None of the habitats on Site have been designated as statutory or non-statutory nature reserves. However, bat roosts have been confirmed at Himley Farm and a medium population of great crested newts have been recorded in the pond to the south east of Himley Farm.

3.5. Levels across the Site generally fall from northwest to southeast through gently undulating slopes, resulting in an overall fall of 11.5m. The northwestern corner of the Site lies at an elevation of approximately 96.50m Above Ordnance Datum (AOD) with the southeastern corner at approximately 85m AOD. The topography continues to rise to the northwest of the Site beyond the boundary.

3.6. Existing drainage features are formed from land drainage ditches. To the east of the Site, a field drain south of Gowell's Farm flows into a culvert under the A4095. This discharges a proportion of the existing surface water run-off from the Site. The majority of the Site naturally drains towards the south and south east through a number of drainage ditches into a 840m long swale running parallel with the B4030 (Middleton Stoney Road). Two outlets have been identified from this swale beyond the south west and south east corners of the Site that are likely to discharge to Gagle Brook.

Surrounding Land Use

3.7. The Site is located in an area of predominantly agricultural land use, with some residential properties also located in close proximity, see **Figure 3.2**.

3.8. The closest residential property comprises Lovelynch House located immediately to the south, encompassed by the site to the north, east and west. Gowell Farm and Aldershot Farm are located 95m east and 140m north respectively. Further residential areas are located 1.4km to the north at Bucknell, 240m east beyond the A4095 at Bicester and 1.2km south at Chesterton.

3.9. Bicester Town centre is located is located 2km east of the Site providing two large supermarkets, numerous retail units, restaurants and commercial properties. Bicester Village Designer Outlet is

located just south of the town centre, 1.9m southeast of the Site. Oxford lies 24km south west of Bicester and Banbury lies 28km north west. The M40 runs approximately 0.5km to the west, with Junction 9 providing access to Bicester Town via the A41.

3.10. Bicester is served by two railway stations: Bicester North and Bicester Town. The Site is situated approximately 3.2km west of Bicester Town Station and approximately 4km south west of Bicester North Station. Chiltern Railways operate services from Bicester North between Birmingham Snow Hill and London Marylebone. Branch line services to Oxford operate from Bicester Town.

3.11. Several Conservation Areas are are located within the surrounding area, the closest of which is located at Chesterton 1.2km south of the Site. Several listed buildings are also located within 2km of the Site including at Caversfield and Bucknell, 1.9km northeast and 1.4km north respectively.

3.12. There are no designated areas of high archaeological potential, registered parks or gardens, or registered battlefields in the vicinity of the Site (refer to Chapter 15 Archaeology (Buried Heritage)). The nearest designated ecological site is Bure Park, a Local Nature Reserve located approximately 1km to the northeast of the Site.

Sensitive Receptors and Site Constraints

3.13. Sensitive receptors and constraints to the Himley Village Development were identified through site visits conducted by technical specialists, and consultations with statutory and non-statutory bodies. Key receptors and constraints are identified in Table 3.1 below, and where appropriate their locations are shown on **Figure 3.2**. Where specific receptors or constraints are considered in a Technical Chapter, their location is described within that Chapter.

3.14. Potential effects to the sensitive receptors and details of how the Himley Village Development has responded to the Site Constraints are detailed in the Technical Chapters (6 to 18) and Chapter 4: Alternatives and Design Evolution.

Table 3.1: Sensitive Receptors

Catagory	Sensitive Receptor	Distance and Direction from the Nearest Site Boundary	Ref for Figure 3.2
Residential	Himley Farm	Within Site	1
	Gowell Farm	95m E	2
	Lovelynch House	Immediately adjacent to the South	3
	Himley Farm Bungalow	Within Site	4
	Aldershot Farm	140m N	5
	Linkslade	200m W	6
	Upper Farm	1km N	7
	Lords Farm	760m E	8
	Bignell House	820m S	9
	Bignell Park Barns	890m SW	10
	Crowmarsh Farm	650m N	11
	Hawkwell Farm	650m NE	12

Catagory	Sensitive Receptor	Distance and Direction from the Nearest Site Boundary	Ref for Figure 3.2
	Bucknell Home Farm	1.6km N	13
	Caversfield House	2km NE	14
	Caversfield Home Farm	1.6km NE	15
	Residents in Bicester to east of A4095	240m E	16
	Residents in Bucknell	1.4km N	17
	Residents in Caversfield	1.9km NE	18
	Residents in Chesterton	1.2km S	19
	Future Residents – Himley Village	Within Site	20
	Future Residents – NW Bicester Exemplar Development	1.3km E	21
	Future Residents – NW of Bicester Application 1 (North of Railway)	350m NE	22
	Future Residents – NW of Bicester Application 2 (South of Railway)	Immediately adjacent to the N and E	23
	Bucknell Manor Farm	1.8km NE	24
	Whitelands Farm	1.2km SE	25
Schools	Kings Meadow School	560m E	26
	Brookside Primary School	1.6km E	27
	Bicester Community College	1.3km E	28
Hospitals	Biscester Community Hospital	1.8km SE	29
Commercial / Hotels	Local businesses, industry, existing facilities and services (general)	-	-
	Future Occupiers - NW Bicester Business Park	Immediately E	30
	Avonbury Business Park	450m E	31
	Bignell Park Hotel	850m S	32
Listed Buildings / Conservation Areas	Chesterton Conservation Area	1.2km S	33
	Bicester Conservation Area	1.7km E	34
	RAF Bicester Conservation Area	2.4km NE	35
	Caversfield Home Farm (Grade II listed)	1.6km NE	15
	Church of St Lawrence (Grade II* listed)	1.8km NE	36
	Bucknell Manor House (Grade II listed)	1.4km N	37
	St Peter's Bucknell Church yard Cross (Grade II listed)	1.5km N	38
	Barns at Himley farm (Grade II listed building)	Within Site	1
	Aldershot Farm (Not listed but has some value as historical buildings)	160m E	5

Catagory	Sensitive Receptor	Distance and Direction from the Nearest Site Boundary	Ref for Figure 3.2
	Gowell Farm (Not listed but has some value as historic buildings- will be demolished as part of the adjacent development)	95m E	2
Wider Community	Pedestrians, cyclists and road users (general)	-	-
	The local townscape and views from areas around the Site.	-	-
Ecology	Existing hedgerows on the Site suitable habitat for invertebrates, birds, reptiles and hedgehogs and commuting and foraging corridors for bats.	Within Site	-
	Bat roosts have been identified within the barns at Himley Farm	Within Site	
	Number of bager setts. Location of bager setts is confidential.	Beyond the Site boundary	-
	Existing ponds are suitable for invertebrates, amphibians and reptiles. A medium population of great crested newts has been identified in the pond to the south east of Himley Farm.	Ponds are located within the Site	- (refer to **Figure 7.1** for location of ponds)
	Ardley Cutting and Quarry SSSI	750m NW	39
	Ardley Trackway SSSI	1.7km from Site boundary	40
	Bure Park Local Nature Reserve	1km SE	41
Below Ground	Groundwater underlying the Site (general)	-	-
	Potential naturally occurring radon gas	Within Site	-

4. Alternatives and Design Evolution

Introduction

4.1. This Chapter considers the evolution of the Himley Village Development from the time when the NW Bicester eco-town was first shortlisted for allocation within the Supplement to Planning Policy Statement 1: eco-towns[1], to the proposed layout of the Himley Village Development.

4.2. This Chapter describes the considerations and constraints influencing the layout, massing and siting of the proposals.

Objectives and Need

4.3. As set out in Chapter 1: Introduction of this Environmental Statement the principle for the development of the Site has been set within the Supplement to PPS1: eco-towns through the designation of the area of land, within which the Site is located, as the NW Bicester Eco-town.

4.4. In January 2014, a written statement was prepared by the Communities and Local Government announcing their intention to cancel the Supplement to PPS1: eco-towns and are undertaking a Strategic Environmental Assessment on the cancellation of it[1]. However, they are minded to save, for the time being, the policies relating to NW Bicester until Cherwell District Council's Local Plan is adopted.

4.5. Accordingly the emerging Cherwell Local Plan[2] has included an allocation for NW Bicester Eco-Town. The emerging Local Plan Policy Bicester 1 – North West Bicester Eco-Town, as set out in the Cherwell Local Plan Submission (October 2014), seeks to:

- Provide a development of 6,000 homes;
- Provide at least 3,000 jobs;
- Create a development that will be a zero carbon development as defined in the PPS Supplement and the Eco Bicester One Shared Vision[3];
- Deliver a high quality local environment taking into account climate change adaptation;
- Create homes that achieve Level 5 of the Code for Sustainable Homes;
- At least 50% of trips originating from the development should be made by means other than the car; and
- Provide 40% of the total gross site area as green space of which half will be public open space. These open spaces would be publicly accessible and consist of a network of well-managed, high quality green/open spaces which are linked to the countryside.

4.6. It is anticipated that the emerging Cherwell Local Plan will be adopted in 2015, subject to Examination.

4.7. The allocation of the NW Bicester Eco-Town has been developed further through the NW Bicester Masterplan which was submitted to Cherwell District Council (CDC) in March 2014[4] and was subsequently amended in May 2014. The Masterplan documentation, including a Strategic Environmental Report[5], is currently being reviewed by CDC with a view to incorporating it, as appropriate into a NW Bicester Supplementary Planning Document (SPD).

4.8. A number of fundamental principles have been established for the Masterplan as set out in the NW Bicester Masterplan Vision and Objectives document[6]. The principles include:

- Providing up to 6,000 homes;

- Ensuring a mix of affordable housing is included in line with CDC's requirements;
- Ensuring 40% of the overall area comprises open spaces and green landscape infrastructure;
- Creating one job per home within a sustainable travel distance;
- Ensuring homes are built to Code for Sustainable Homes Level 5 and non-residential uses to BREEAM excellent standards;
- Delivering zero carbon energy across all buildings;
- Allow for future climate change adaptation by incorporating forward thinking technologies and design within homes;
- Providing real time energy and travel monitoring in every home;
- Ensuring high levels of energy efficiency in the fabric of the buildings and their design;
- Providing primary schools located within 800m of all homes;
- Enabling and encouraging local food production;
- Attaining a net gain in local biodiversity;
- Striving towards water neutrality;
- Creating a management program to ensure zero waste goes into landfill during construction; and
- Making a commitment towards a Local Management Organisation.

4.9. The Himley Village Masterplan has been developed in accordance with the above principles to ensure that it is consistent with the wider NW Bicester Masterplan.

Alternatives

4.10. Under the EIA Regulations, an Environmental Statement (ES) is required to provide "*an outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects*".

4.11. This section describes the alternatives considered in the development of the NW Bicester Masterplan and then goes on to describe how the design of the Himley Village Masterplan has evolved to take into account environmental considerations and constraints.

NW Bicester Alternatives

No Development Option

4.12. The Government has committed to ensuring that everyone has access to a decent home at a price they can afford in a place where they want to live and work. In order to achieve this, the Government has set a target to build 240,000 new homes per annum by 2016 whilst minimising CO_2 emissions. The Government therefore adopted PPS1 Supplement: eco-towns in 2009 which set out how eco-towns could make a significant contribution to these targets.

4.13. During the development of the PPS 1 Supplement, local planning authorities, developers and other stakeholders across the UK were invited to submit applications for eco-town locations. Eleven locations were shortlisted, one of which was NW Bicester. A Strategic Environmental Assessment was undertaken on the shortlist of sites to identify those considered suitable to be taken forward[7]. NW Bicester was considered to be a suitable site for an eco-town[8]. Given the fact that NW Bicester has been identified at national level as suitable for future housing development, it is considered

that the no development option was not a viable option for consideration as part of the Himley Village Development or the NW Bicester Masterplan as a whole.

Alternative Sites

4.14. As described above, during the development of the PPS1 Supplement, eleven potential eco-town locations were shortlisted and considered. It is not proposed within this ES to describe in detail the appraisal undertaken of these sites as this is publicly available on the gov.uk website[7]. However, one site, Weston Otmoor was located in Cherwell District and this site has been described in more detail below.

Weston Otmoor NW Bicester Development Site

4.15. This potential eco-town location was near the village of Weston-on-the-Green and was known as Weston Otmoor. It comprised 15,000 dwellings, 15,000 jobs and a range of retail space, leisure facilities, primary and secondary schools, healthcare provision and community facilities. Cherwell District Council (CDC) objected to the Government's proposal at Weston Otmoor, raising the suggestion of an alternative eco-town at NW Bicester. This concept was based upon Local Development Framework (LDF) work undertaken by CDC.

4.16. The Eco-towns Location Decision Statement[8] stated '*the [Weston Otmoor] site was considered not to demonstrate the potential to meet the sustainability and deliverability requirements for successful development as an eco-town at this time'*. Some of the key sustainability issues of the site included being partially on the Oxford Green Belt, being located on high grade and versatile agricultural land (Grade 2), on a site incorporating Ancient Woodland, Sites of Special Scientific Interest (SSSI) and a Nature Reserve, being in an area of 'serious' water stress, and being close to a congested road junction on the M40 and A34 which could encourage commuting and exacerbate congestion.

Development of the NW Bicester Masterplan

4.17. During the development of the NW Bicester Masterplan, A2Dominion Group, one of the development partners for the NW Bicester Masterplan area, considered a number of alternative boundaries and layouts. These are briefly described below. The NW Bicester Masterplan has been designed with landscape as the key driver to the layout of the site.

Size of the NW Bicester Masterplan Area

4.18. The NW Bicester allocation within the draft Cherwell District Local Plan envisaged a development of 5,000 homes. A 5,000 home option was therefore proposed as part of the 2010 NW Bicester Masterplan. At the assumed average density, this would have required 330ha (800 Acres) of land. However, following an assessment of opportunities and constraints the overall net developable area was approximately 400 ha and a reduction in net land, which the 5,000 home option would represent, was considered artificial. Likewise, a reduction in the assumed average density would not result in an efficient use of land and would compromise place making ambitions. It was therefore proposed, as part of the 2014 NW Bicester Masterplan, to make provision for up to 6,000 homes.

Development of a Villages Concept

4.19. The NW Bicester Masterplan produced for the 2010 consultation suggested a concept of four villages separated by green spaces. This concept required the green infrastructure to be subdivided to provide at least three areas separating villages. The resultant fragmentation of green areas did not relate well to the existing hedgerows and streams and the green space between

housing areas were not of sufficient size to create a distinctive visual and environmental quality or to be suitable for green infrastructure uses.

4.20. The residential catchment for four villages of 1,000-1,500 homes would have been below the optimum size of 2,000-3,000 needed to create viable convenience retail and a cohesive local centre with amenities.

4.21. Taking into account the increased NW Bicester Masterplan area, the spatial layout was revised to create two clusters of development, instead of four villages. This enabled green infrastructure to be grouped in larger quantities in strategic locations. Two local centres would also provide a larger catchment/ footfall.

Employment Land

4.22. Options were considered for the location and size of employment land within the NW Bicester Masterplan. This included spreading employment use across the site in four equal portions, but businesses could have considered these locations too close to housing, with the risk of disturbance and general complaints which could affect their business practices. There would also be increased movement of goods traffic through existing and new residential areas. A business hub in the south east of the NW Bicester Masterplan Area close to the strategic road network is therefore proposed with other business locations spread primarily along the new Boulevard (NW Strategic Link Road) but also dispersed throughout the NW Bicester Masterplan Area, where appropriate.

Access

4.23. The NW Bicester Masterplan process studied how to create good connections and minimise traffic going through existing communities. Options that were explored included minor improvements to Howes Lane and existing junctions, providing road loops on the north and south sides of the railway line, providing either 'bus/cycle/pedestrian only' or 'all traffic' links across the railway in the centre of the Masterplan Area, and a walking and cycling route parallel with the railway going towards the town centre. The masterplan process also explored Oxford County Council's option for a perimeter road, including one around the NW Bicester Masterplan Area. However, this new route was seen as separating rather than joining existing Bicester with the proposed new development.

4.24. The current Masterplan incorporates a realigned Howes Lane and a new crossing under the railway line, as part of the new A4095 NW Strategic Link Road, and would create an Urban Boulevard and front new residential on high quality urban streets along with new amenities linking new and existing neighbourhoods.

Himley Village Design Evolution

4.25. The evolution of the Himley Village Development has been influenced by the objectives of the wider NW Bicester Masterplan together with a number of constraints which have shaped the final design. This section provides a summary of the main environmental considerations and constraints along with how the scheme has responded to them. An iterative design process has resulted in a design solution that incorporates mitigation for potential adverse environmental effects where practicable.

NW Bicester Masterplan

4.26. The Himley Village Development forms a component part of the wider NW Bicester Masterplan and significant consideration has been given to the proposed adjacent developments in order that Himley Village forms a complementary component of the wider NW Bicester Masterplan.

Heritage

4.27. Whilst there are few buildings within the Himley Village Site itself, two barns at Himley Farm are Grade II listed buildings. These two listed barns will therefore be retained at the heart of the Himley Village Development and will either continue to be used as a farm or become the centre for the Himley Farm Land Trust (HFLT).

Ecology and Nature Conservation

4.28. The majority of the Site currently comprises of agricultural land. The most important habitats present are the hedges and ponds, which are of district/borough and local value respectively. Having undertaken ecological surveys at an early stage, it has been possible to incorporate the existing ponds and the majority of the hedgerows into the Himley Village Development. In addition the parameter plans allow for enhancement and improvement of the retained hedgerows providing managed buffers, suitable management and replanting / reinforcement as necessary.

4.29. The Himley Village Development incorporates sufficient space to enable the existing ponds on the Site to be retained, and in addition allow for the incorporation of new wetland areas as a component part of the drainage system, providing a net gain in pond and wetland habitat.

Consultation

4.30. As set out within Chapter 2: EIA Methodology, public and stakeholder consultation has been ongoing since 2008 in relation to the NW Bicester Masterplan through workshops, public engagements and roadshows. Feedback gained at these events has provided valuable input to the development of the wider NW Bicester Masterplan. Subsequent consultation was undertaken specifically in relation to the Himley Village Development in October 2014 and the responses from this consultation have helped to refine the proposals.

Conclusions

4.31. The Himley Village Development has been designed in an iterative manner, to respond to a range of development objectives, design, town planning, housing, technical and environmental issues, as well as responding to issues raised in the extensive consultation process undertaken as part of the NW Bicester Masterplan and more recently, the Himley Village Development in isolation. The Himley Village Development now applied for incorporates a range of inherent mitigation measures to remove, reduce or minimise potential environmental effects as far as possible as part of the design process.

References

[1] Communities and Local Government. (24/1/14) *Written Statements – Redundant Planning Policy* http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140124/wmstext/140124m0001.htm

[2] Cherwell District Council. (2014) *Cherwell local plan*.

[3] Eco Bicester Strategic Delivery Board. (2010) *Eco Bicester: One Shared Vision.*

[4] *North West Bicester Eco Town- Draft Masterplan* (2014).

[5] Hyder Consulting (UK) Ltd (2014) *NW Bicester Development Masterplan: Strategic Environmental Report.*

[6] A2Dominion (2014) *North West Bicester Eco Town- Draft Masterplan Vision and Objectives March 2014.*

[7] Department of Communities and Local Government. (2009) *Eco-towns: Sustainability Appraisal and Habitats Regulations Assessment of the draft Planning Policy Statement - eco-towns Statement.* http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/publications/planningandbuilding/ecotownsaddendum

[8] Department of Communities and Local Government. (2009) *EcoTown Location Decision Statement.* http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/planningandbuilding/pdf/ecotownslocationdecision.pdf

5. The Proposed Development

Introduction

5.1. This Chapter describes the proposed Himley Village Development, with reference to the Parameter Plans and Development Principles, which are to be approved. The Chapter has also drawn upon the general landscape requirements, as presented in Technical Appendix 4 of the Design and Access Statement. It is intended that future reserved matters planning applications would be required to have reference to the landscape requirements as a condition on the outline planning consent.

5.2. This Chapter also describes the key activities that would be undertaken during demolition and construction. Where significant environmental issues are predicted in relation to demolition and construction works these are discussed, along with mitigation measures within relevant technical chapters of the Environmental Statement (ES) (Chapters 6 to 18).

Development Overview

5.3. Planning permission is sought for *'Development to provide up to 1,700 residential dwellings (Class C3), a retirement village (Class C2), flexible commercial floorspace (Classes A1, A2, A3, A4, A5, B1 and C1), social and community facilities (Class D1), land to accommodate one energy centre and land to accommodate one new primary school (up to 2 form entry) (Class D1). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure and other operations (including demolition of farm buildings on Middleton Stoney Road)*.'

5.4. The Applicant is seeking outline planning permission for the Himley Village Development with all matters reserved for future determination. All such development shall be in accordance with the approved Parameter Plans and Development Principles.

Outline Applications and Parameter Plans

5.5. Where an Environmental Impact Assessment (EIA) is required, the description of the Development contained within the ES must be sufficient to enable the likely significant effects of the proposed development to be identified.

5.6. The outline planning application seeks to establish the principles for Himley Village Development via defined Development Principles supported by a set of Parameter Plans. The Development Principles include overarching principles in terms of the general layout, landscaping, site access and movement, parking and surface water drainage. More detailed design guidance has been provided within the DAS but this will not be stamped approved and has not, therefore, been used as the basis for the EIA.

5.7. The Development Principles and Parameters Plans document is submitted for approval by Cherwell District Council (CDC) and forms the basis of the development (Himley Village) assessed in the EIA. It is proposed that a condition would be imposed on the outline planning consent requiring all reserved matters applications to be brought forward within the framework of this document. This ensures that any planning permission granted is consistent with the development that has been assessed and that the development does not (and cannot) take place in a form that would lead to significantly different environmental impacts from those considered in this ES.

5.8. The Parameter Plans are illustrated in the EIA, as described in Table 5.1 below. Further description of the Himley Village Development as set out by the Design Principles is set out in the following sections.

Table 5.1 Parameter Plans

Drawing Reference	Title	ES Figure Reference
592-PL-101	1 - Site Boundary	1.2
592-PL-102	2 - Demolition	5.1
FHA 621L01 P	3 –Landscape	5.2
592-PL-104	4 – Land Use	5.3
592-PL-105	5 - Building Heights	5.4
592-PL-102	6 - Density	5.5
1665/75-SK101-Rev C	7 - Movement and Access	5.6
1665/76-SK101-Rev B	8 – Outline SuDS	5.7

Overarching Principles

5.9. The Himley Village Development would provide residential, commercial, social and community uses and seeks to deliver a high quality, mixed landscape which will encourage play, interaction and movement. At least 40% of the Himley Village Site has been designated as Green Infrastructure (GI); at least 50% of which (20% of the total Site area) will be publicly accessible. Identifiable neighbourhoods of distinctive character will be developed, which reflect their setting and respond to the physical characteristics of the Himley Village Site.

5.10. In order to ensure Himley Village grows and meets the Applicant's aspirations, the Himley Farm Land Trust (HFLT) will be established at an early stage to manage the development and long-term management of the landscape and encourage community involvement and interaction.

Residential Uses

5.11. The Himley Village Development would provide a mix of housing types, designed to meet the needs of the existing wider area, based on the NW Bicester Residential Strategy[1]. A maximum of 1,700 residential dwellings is applied for, providing up to 156,395 m^2 Gross Internal Area (GIA). A range of tenures would be available, with 30% assumed to be affordable housing (subject to viability). It is proposed that the mix and type of affordable units would be agreed prior to the reserved matters applications, to ensure that the community requirements for housing are met.

Other Uses

5.12. The Himley Village Development would provide a mix of other uses including a retirement village, primary school, nursery, healthcare facility, veterinary surgery, pub or community space, hotel, offices, buildings for the HFLT, retail premises, energy centre and a water treatment plant. Parameter Plan 4 – Land Use (**Figure 5.3**) sets out where within the Himley Village Development each of the uses could be located, with the school and community uses in the centre of Himley Village adjacent to Himley Farm, and other uses along the southern edge. The floor space areas for the other uses are set out in Table 5.2.

Table 5.2 Maximum Floor Space Areas

Use	GIA ($m^{2)}$	Notes
Hotel	2,600	Based on 40 room hotel / 65m^2 per resident
Veterinary Surgery	2,000	Based on discussion with possible occupant
School	2,750	Based on a typical 2 form entry primary school + nursery
Retirement Village	9,000	Based on 100 unit facility
Pub / Community Space	400	Assumed
Retail	700	Assumed
Health Facility	1,500	Based on typical GP surgery + ancillary facilities
Office	1,000	Assumed
Nursery	100	Assumed
Energy Centre	375	Assumed
Water Treatment Plant	450	Assumed

Access and Parking

Access

5.13. Himley Village will provide a clear hierarchy of streets: primary; secondary; tertiary; and home zone/mews streets. Parameter Plan 7 – Movement and Accessibility sets out how the primary and secondary streets will be provided. The principal route, known as the spine road, would be accessed from Middleton Stoney Road. This would ultimately connect into a new road to the north of the Site (within the Application 2 Area) in the later phases of the Himley Village Development. The existing access to Himley Farm, from Middleton Stoney Road would also be upgraded and two link roads would be provided east to west to the NW Bicester Link Road (Boulevard). The accesses from Middleton Stoney Road are proposed as priority junctions with protected right turns. These junctions would be created during Phase 1 of the Development.

5.14. The internal Site layout would be designed to facilitate the safe and convenient movement of pedestrian, cycle and vehicular traffic with priority given to non-car routes. In relation to vehicular traffic, the road system would be designed to control vehicle speeds for the benefit of road safety while the pedestrian and cycle routes would aim to provide a safe and permeable network for these travel modes.

Walking and Cycling

5.15. A network of walking and cycling routes will be created including segregated and un-segregated routes on the street network and traffic-free routes through green corridors, to encourage sustainable modes of travel; a healthy, active lifestyle; and interaction with the landscape. Pedestrian pathways will be separated from cycle paths on primary and secondary streets whilst shared cycle and pedestrian routes will be located within the green corridors to function as the main circulation routes away from traffic.

5.16. A cycle lane will be created to the north of Middleton Stoney Road behind the existing hedgerow as shown on **Figure 5.6**.

Public Transport

5.17. In accordance with the overall strategy for the wider NW Bicester Masterplan, Himley Village would be served by a bus service. In the early phases of the Himley Village Development (from the end of Phase 2 onwards), the bus service would access and egress Himley Village via Middleton Stoney Road. Once the NW Bicester Link Road and the new link roads east to west within Himley Village are constructed, the bus would access Himley Village from the NW Bicester Link Road via the southern east west link road within Himley Village, and then pass through Himley Village along the principal spine road and out into the Application 2 area. The bus route would link the village to Bicester town centre. The majority of dwellings would be located within a 400m walking distance of a bus stop.

Car Parking

5.18. Himley Village will provide car parking for residential properties in line with Oxfordshire County Council's (OCC) Parking Standards for New Residential Developments[2]. The guidance sets out the maximum parking standards for allocated and unallocated spaces within new residential areas throughout Oxfordshire.

5.19. Parking provision will meet the needs of residents and business but not encourage over use of private transport. The parking provision for all the dwelling types and the overall Himley Village Development would remain lower than the maximum standards. Although eco-town guidance recommends a much reduced provision, Himley Village is located within a rural County where car ownership can be relatively high.

Landscape, Open Space and Public Realm

5.20. The vision for Himley Village is to provide a rich landscape setting for the new homes with the street network playing a secondary role. In accordance with the eco-town principles, the quantum of green infrastructure would be a minimum of 36.1ha (40% of site area), of which at least half would be publicly accessible.

5.21. A village green will be created at the heart of Himley Village providing a central focal point for the community. Playing fields and numerous public open spaces will be created within Himley Village, these and the village green are identified on Parameter Plan 3 –Landscape (**Figure 5.2**). The existing hedgerows within Himley Village are to be retained or, where removal is required, replacement hedgerow to a similar or enhanced standard will be provided. The hedgerow locations are set out on Parameter Plan 3 –Landscape.

5.22. The existing broad leaved woodland in the east of Himley Village is to be retained, with the exception of the area required to be removed for the northern most east west link road. The south west a new woodland is proposed. The landscaping proposals all incorporate a landscaped buffer in order to protect and facilitate the movement of Great Crested Newts, with a newt corridor shown on Parameter Plan 3 –Landscape.

5.23. The management and maintenance of the hedgerows, woodlands and open spaces would be undertaken by the HFLT, which will be established in the early phases of the Himley Village Development.

Utilities

5.24. There are several utilities crossing the NW Bicester Masterplan area, as shown in **Figure 5.8**, which is taken from Technical Appendix 3C of the Hyder Consulting (UK) Ltd ES for Application 1. Within

the Himley Village Site, the services include telecoms (BT), 33 kV and 11kV overhead power cables (SSE). A potable water main and BT services run along Middleton Stoney Road adjacent to the southern boundary of the Site. TWUL also supply potable water to Himley Farm and Himley Farm Bungalow. The nearest gas main runs along Howes Lane to the east of the Site.

5.25. Owing to the proposed change from agricultural uses to residential and commercial uses, reinforcement and interconnection with the existing utility infrastructure would be required. Given the early stages of design, the nature of these reinforcements and connections is not currently known. For the purposes of this EIA, a number of assumptions have therefore been made as described below.

5.26. The proposed utilities would require coordination between all parties and service providers to ensure appropriate location of combined service trench (including electricity, district heating, water and all Telecoms/data) with access and maintenance points that minimise future impact on the landscape and planting of all areas. Proposals for service trench routes and future access methodologies for maintenance, repair or replacement must be submitted for approval as part of future detailed planning applications and must make provision to ensure minimal damage to trees and shrubs.

Energy

5.27. An Energy Centre will be located within Himley Village and will provide on-site generation of heat and power. It is envisaged that there would be a district heating network to supply hot water services to buildings throughout Himley Village. The Energy Centre will be located in the south eastern corner of Himley Village, and it is currently envisaged that the stack height will be a maximum of 20m.

5.28. A modular approach is currently proposed to the Energy Centre, to match the proposed phased delivery of Himley Village and enable connections to other developments within the NW Bicester Masterplan, or the nearby Ardley Energy Recovery Facility, where appropriate and feasible.

5.29. It is anticipated that the district heating solution would provide the majority of savings in carbon emissions (beyond the inherent building efficiencies such as high standards of air tightness, insulation and low energy lighting and appliances) with the remainder of the carbon savings required to achieve a zero carbon development, as required by the Supplement to Planning Policy Statement (PPS) 1: eco-towns[3], being provided by other low or zero carbon technologies.

Potable Water

5.30. It is currently anticipated that the potable water supply for Himley Village will be via a connection to the existing TWUL network. However, an option to use surface water infiltration, storm water storage and groundwater abstraction is also being considered. In this case, rain, storm and groundwater, as appropriate would be treated at a central plant on Site. However, assessment of water yields and quality are required before this option can be taken further. In any event, it is likely that even if an onsite source of supply were installed, connections to the wider TWUL infrastructure network would still be required to provide sufficient resilience for customers.

5.31. Therefore, given the uncertainties associated with provision of an on Site water supply, for the purposes of this EIA, it has been assumed that a traditional connection would be made. TWUL advised Hyder as part of the Water Cycle Study (refer to **Technical Appendix 11.2**) that recent upgrades and provision of the Bicester ring main in 2012 have been designed to cater for the next 40 years of development as assessed by TWUL. Therefore, no significant potable water upgrades are understood to be required to serve Himley Village.

5.32. Water efficiency measures would be incorporated to meet the minimum requirements of Code 5 for Sustainable Homes level and BREEAM (2014) Excellent. Such measures will include the use of water efficient fittings within all properties within Himley Village and potentially rain water and grey water recycling to further reduce water requirements.

Foul and Surface Water Drainage

5.33. It is currently anticipated that traditional foul water drainage connections would be made to the TWUL network. TWUL advised Hyder as part of the NW Bicester Masterplan Water Cycle Study (refer to **Technical Appendix 11.2**) that improvement works to the Bicester waste water treatment works are proposed to accommodate the planned growth within Bicester. However, upgrades would still be required to the foul water sewer network to accommodate the planned growth.

5.34. As an alternative option, the potential to treat foul water within Himley Village, to current industry standards, before being discharged back into the local water cycle via infiltration or discharge into local watercourses will be investigated further at the detailed stage. Provision has therefore been made within the Parameter Plans for a waste water treatment works (WWTW) and should further assessment demonstrate that the option for an on Site waste water treatment is feasible, this would be discussed and agreed with relevant stakeholders including CDC, the Environment Agency and TWUL.

5.35. Given the uncertainties associated with on-site waste water treatment, for the purposes of this EIA, it has been assumed that a traditional connection would be made. It is further assumed that upgrades would be undertaken by TWUL to accommodate future planned growth within Bicester, including that proposed within Himley Village.

5.36. Surface water drainage would be managed using a Sustainable Drainage System (SuDS) ensuring Greenfield run off rates from Himley Village. Key pathways for surface water flow through the site would be via primary, secondary and tertiary swales. The primary swales are shown on Parameter Plan 8 – Outline SuDS. The swales, as well as conveying surface water runoff would also act to attenuate water by using a series of check dams and detention basins integrated in to the landscape where the natural topography can provide additional storage. Where swales intercept highway infrastructure, culverts are currently proposed to convey water under the highway. To avoid flooding at the culvert locations due to blockages etc. secondary channels or emergency overspill mechanisms may be provided as part of the surface water strategy detailed design.

5.37. Source control measures will be used to prevent discharge of pollutants to receiving watercourses for the first 5mm depth of any rainfall event, by using infiltration and other SuDS techniques, in line with the requirements of BREEAM and Code for Sustainable Homes. These could include rainwater harvesting, rain gardens, permeable paving and where possible infiltration. In addition, at the confluence of swales and the heads of selected swales, gravel infiltration beds are to be included within the SuDS network to provide water treatment. The above techniques will assist in protecting the water quality and ecology in the receiving watercourse.

Telecommunications

5.38. Telecommunications will be installed across the Site within all properties. It is assumed that connection could be made into the existing telecommunication supply along Middleton Stoney Road.

Programme of Works

5.39. The delivery of Himley Village will be phased and it is currently proposed that construction would take place over eight phases to ensure the sustainable delivery of homes, infrastructure, educational facilities and open spaces. It is likely that construction would commence in the southern part of the Site, adjacent to Middleton Stoney Road and work towards the northern end of the Site. The exception is the recreational pitches in the northern part of the Site which would be constructed in the early phases of the Himley Village Development, and Himley Village Primary School which is assumed to be constructed prior to completion of 500 homes.

5.40. Each phase when delivered will include the appropriate landscape, play and amenity infra-structure in addition to the structural tree and shrub planting already undertaken in the early stages of construction.

5.41. The exact timing of Himley Village is dependent on a number of factors still to be determined, such as the delivery of the NW Bicester Strategic Link Road (also known as the Boulevard), and the timing of other elements within the wider NW Bicester Masterplan. However, for the purposes of this EIA, it is assumed that Himley Village would commence in 2016 and be fully complete by 2031.

Description of Works

Enabling Works

5.42. Prior to commencement of demolition and construction activities, hoarding would be erected around the construction zone. Existing utilities crossing the Site would be stopped up as necessary or, if they are being retained, clearly marked to ensure that they are protected during the works. Retained hedgerows and trees would be fenced off to protect them from damage during the works in accordance with best practice standards.

Demolition and Site Formation

5.43. Himley Farm Bungalow within the south of the Site, the grain store and sheds to the south and west of Himley Farm would be demolished as part of the works. Materials from demolition would be segregated for reuse or would be taken off-site for recycling, where suitable.

5.44. Appropriate measures would be implemented to safeguard site workers and other nearby receptors from asbestos and other hazardous materials that may be present within the buildings scheduled for demolition. This would include intrusive testing, and if necessary the removal of asbestos containing materials, if present, by a licensed asbestos removal contractor, following all appropriate control measures and legislation.

5.45. The proposed ground levels would generally follow the existing topography, but may in instances by levelled where localised depression or rises would be filled or cut accordingly. This may be necessary to regularise the ground levels and assist drainage. Other localised minor earthworks that would be undertaken include the creation of water features or ponds. It is not expected that soils encountered would be geotechnically or chemically unsuitable. Should contamination be encountered during the earthworks, this would be treated for re-use within the Himley Village Development, or removed for off-site disposal to a suitably licensed waste disposal facility.

Infrastructure Works

5.46. The enabling service works would comprise the installation of services within the Site. New infrastructure will be installed in line with relevant standards. As described above, the exact nature

of services connections would be determined during the next phases of design. Connections would be made to follow the phases of construction.

5.47. Internal highways would be constructed during each phase of development to facilitate access. The right hand turning lanes on Middleton Stoney Road would be constructed in Phase 1 to facilitate construction traffic access to the Site and allow residential access following construction of Phase 1.

Construction Works

Below Ground

5.48. Geotechnical investigations have been undertaken by Hyder Consulting (UK) Ltd (Hyder) as part of the NW Bicester Masterplan[4]. These indicate that strip or pad foundations are likely to be acceptable for the NW Bicester Masterplan area, including Himley Village. Strip foundations were not recommended for long rows of terraced houses without the inclusion of flexible movement joints and/or frequent gaps due to the presence of variability in the founding strata. Due to the potential for shrinkage of the clay beneath the Site, it was recommended by Hyder that the foundations should be set at a minimum depth of 0.9m below ground level. Should plant roots be encountered at this level, the foundation depth should be extended below the level of plant roots unless limestone is encountered at shallower depth.

5.49. Limited basement construction, if any, is envisaged for any of the building types proposed within Himley Village.

Above Ground Works and Materials

5.50. It is currently anticipated that the residential properties would be of largely traditional building construction, requiring a range of construction tradesmen. However, modular and prefabricated building components would be incorporated where practicable. Off-site construction techniques result in significantly reduced levels of waste owing to the controlled construction environment, as well as increasing the speed of construction. Other benefits of off-site construction and modern construction techniques and materials are that build quality and air tightness can be enhanced, improving the efficiency of the building and potentially reducing carbon dioxide emissions.

Plant and Equipment

5.51. Due to the scale and programme of construction works at Himley Village it is not possible to accurately identify a fully comprehensive list of construction equipment to be used at this stage. However, for a project of this type it is expected that the following equipment provides a suitably representative guide for the basis of the assessment:

- Excavators;
- Dumper Trucks;
- Mobile Cranes;
- Mobile Platforms;
- Hoists;
- Air compressors;
- Power tools;
- Hand Tools;

- Wheel washing plant;
- Scaffold;
- Delivery vehicles;
- Skips and skip lorries; and
- Liftloaders.

Water

5.52. Water would be required during the demolition and construction works, for washing down vehicles as they leave the Site. Wherever possible, use would be made of settlement tanks and filters to allow for water recycling. The SuDS will be installed in the early phases of construction to allow for onsite discharge of uncontaminated construction drainage. Licences would be obtained from the Environment Agency for discharges to surface water.

Materials

5.53. At this stage of the design, the exact volumes of materials to be used in the construction of Himley Village are not known. However, environmental and sustainability issues would be considered as part of the materials procurement. Where possible, materials would be locally sourced, supporting the local economy and minimising transportation costs and associated emissions. The design team would consider using materials with a high BRE Green Guide to Specification rating where possible.

Construction Environmental Management Plan

5.54. Demolition and construction works can cause significant environmental effects and disruption to neighbours if they are not properly managed. Whilst extensive legislation is in place that imposes legal controls on construction, for example through the Environmental Protection Act 1990[5] and the Environment Act 1995[6], together with statutory nuisance and other legislation dealing with waste, water and wildlife conservation, the Applicant is committed to minimising the effects of the works as far as practically possible. The appointed contractor(s) would therefore be required to implement a Construction Environmental Management Plan (CEMP). The CEMP would set out procedures that the contractors would be required to adopt to manage the environmental effects of the works. The requirement to comply with the CEMP would be included as part of the contract conditions for each element of the work. All contractors tendering for work would be required to demonstrate that their proposals would comply with the contents of the CEMP. Trade Contractors would also be vetted to establish their history of compliance with the required environmental standards for their relevant disciplines.

5.55. A summary of the key issues considered by the CEMP, and details of where further information in relation to mitigation can be found within the ES, is identified in Table 5.5 below.

Table 5.5: Key Issues Considered by the CEMP

Topic	Issues Covered	Location of further Information
Site Management	Working hours. Site security.	Chapter 5: The Proposed Development
Noise	Methods of minimising noise e.g. selection of quieter plant, plant maintenance and screening.	Chapter 10: Noise and Vibration
Vibration	Methods of minimising vibration from general construction works	Chapter 10: Noise and Vibration

Topic	Issues Covered	Location of further Information
Dust / Air Quality	Methods of minimising windblown dust from ground surfaces, stockpiles, earth moving vehicles, work faces etc, e.g. damping down during dry weather, wheel washing, street sweeping. Methods of minimising the effect of exhaust emissions from construction vehicles e.g. switching off engines when not in use.	Chapter 9: Air Quality
Waste / Materials	Methods to minimise waste e.g. minimising packaging waste, protecting materials from damage by weather or vandalism, and the correct disposal of waste.	Chapter 5: The Proposed Development, Chapter 18: Waste
Traffic Management	Construction traffic routing to minimise congestion, conflicts between HGV traffic and pedestrians and disturbance to local residents. Wheel washing and street sweeping requirements to minimise the transfer of mud and material from vehicles onto the public highway.	Chapter 8: Transport
Site drainage and spill control	Methods of handling accidental spills and leaks. Correct disposal of Site drainage. Pollution Prevention Guidelines.	Chapter 12: Ground Conditions and Contamination Chapter 11: Water Management
Ecology	Protection of important species from harm and/or disturbance.	Chapter 7: Ecology
Liaison with neighbours and CDC	Procedures for liaising with neighbours, including production of a regular newsletter. Procedures for liaison with CDC e.g. for planned departures from the EMP. Procedures for handling complaints.	Chapter 5: The Proposed Development

5.56. The CEMP would also detail responsibilities for the Applicant, the Construction Manager, the Contractors and Sub-Contractors; housekeeping procedures; requirements for monitoring and record keeping; and prohibited or restricted operations.

5.57. The following sections provide further details on working hours, site security, waste management and materials storage, and neighbourhood liaison. For further details regarding the additional issues outlined in Table 5.5 above, please refer to the relevant technical chapter of the ES.

Hours of Work

5.58. It is anticipated that the working hours for construction would be agreed with CDC prior to the onset of any works. On the infrequent occasions when it is necessary to carry out specific activities outside of the agreed working hours, approval would be sought in advance with CDC and neighbours would be notified of such works occurring. In particular, these may involve highway works, service diversions, delivery and offloading of abnormal loads.

Site Security

5.59. Hoarding will be maintained around the construction zone at all times. The positioning of this hoarding must be agreed in writing with CDC and all relevant licenses acquired prior to its installation. The hoarding will be provided in accordance with Health and Safety Executive (HSE) standards and will be maintained during the works.

Waste Management and Materials Storage

5.60. A Site Waste Management Plan (SWMP) would be developed by the appointed Principal Contractor in accordance with best practice guidance including from WRAP[7]. The SWMP would contain details of the procedure for assessment, separation and storage of waste materials for re-use, recycling or disposal.

5.61. Waste materials would be generated during all stages of the construction works, with major sources including:

- Packaging, for example, plastics, pallets, expanded foams; and
- Waste materials generated from inaccurate ordering, poor usage, badly stored materials, poor handling, and spillage.

5.62. All relevant contractors would be required to investigate opportunities to minimise waste arisings at source and, where such waste generation is unavoidable, to maximise the recycling and reuse potential of demolition and construction materials. Wherever feasible, such arisings would be dealt with in a manner that reduces environmental impact and maximises potential re-use of materials.

5.63. All waste will be stored securely in clearly labelled stockpiles, skips or drums in designated areas. Where possible, materials to be reused or recycled will be sorted on-site and stockpiled ready for collection. However, it may be necessary for some wastes to be taken off-site for segregation by a specialist contractor. The amount of construction waste reused, recycled or sent to landfill will be recorded by the Contractor.

5.64. All waste removed from Himley Village (including recyclable waste) will be taken to a licensed or exempt waste disposal facility by a registered waste carrier. The Principal Contractor will ensure that all waste carriers and waste disposal facilities are appropriately licensed.

5.65. All potentially hazardous materials, such as waste oil and batteries require additional handling, storage and disposal precautions. They will be clearly labelled and removed by a specialist, licensed Waste Contractor and appropriate measures made for their disposal in accordance with all applicable environmental and health and safety legislation.

5.66. Where suspected contaminated or hazardous material or ground is encountered, that has not previously been identified by site investigations, the Contractor is responsible for commissioning testing of samples to classify the extent and nature of these substances. This shall be undertaken by a UKAS accredited testing facility. If contamination is confirmed present, a suitably qualified specialist would be consulted to determine an appropriate remediation strategy for the Site.

5.67. Stockpiling of potentially contaminated material shall be avoided. Where stockpiling is unavoidable, the material must be located on hard standing and covered with sheeting. Samples of excavated material will also be tested by the Contractor, or appointed agent, to enable classification of the waste for disposal purposes.

5.68. When leaving the construction area, appropriate measures will be taken to prevent waste escaping onto the public highways, for example containers must be secured and open skips must be covered by sheeting.

5.69. All roads, pavements, construction equipment, temporary structures, materials and machines will be kept clean and tidy at all times with litter and rubbish removed promptly. Food waste will be collected regularly to avoid attracting vermin to the site.

5.70. On completion of the works, each contractor will clear away, and remove from the site, all plant, surplus materials, rubbish and temporary works.

Management of Sub-Contractors

5.71. All sub-contractors would be required to follow a good working practice as outlined in the CEMP and comply with Statutory Requirements.

5.72. Through the tender process the sub-contractors would be required to demonstrate how they would achieve the provisions of the CEMP, how targets would be met, and how potential environmental and public nuisance effects would be minimised.

5.73. Contractors at Himley Village would be required to:

- Run induction courses for all personnel on-site to ensure that the construction site rules are obeyed and to achieve the least amount of disruption to neighbouring properties; and
- Inform the Principal Contractor or Construction Manager of any complaints or abnormal works.

Liaison with Neighbours and Cherwell District Council

5.74. The Principal Contractor or the Construction Manager would be required to undertake the following:

- Establish a dedicated point of contact and responsibility to deal with issues as they arise. This would be a named representative;
- Undertake regular dialogue with CDC and the local community;
- Log complaints and respond to them in a timely manner. The required actions would be different in each specific case, depending on the operation, equipment and location, and may involve applying additional controls; and
- Notify CDC and neighbours, where appropriate, in advance of unusual activities or events that can be anticipated. The relevant activities would be determined by agreement wherever possible with CDC, once the detailed programme of construction is defined and would include:
  - Commencement of demolition/construction in certain areas;
  - Necessary night time, weekend or evening working (outside core areas) of a type which may affect properties;
  - Road or footpath closures/diversions and movements of wide loads;
  - Actions requiring monitoring by CDC; and
  - Work on roads affecting land used by others.

References

1 A2Dominion. (2014) *NW Bicester Masterplan Residential Strategy.*

2 Oxfordshire County Council. (2011) *Parking Standards for New Residential Developments.* https://www.oxfordshire.gov.uk/cms/content/transport-new-developments

3 Department of Communities and Local Government. (2009) *Supplement to Planning Policy Statement 1: eco-towns.*

4 Hyder Consulting (UK) Ltd (2014) *Geotechnical Interpretive Report: Masterplan Site.*

5 *Part IIA of the Environmental Protection Act 1990.* http://www.legislation.gov.uk/ukpga/1990/43/part/IIA

6 *Environment Act 1995*. TSO: London.

7 WRAP (2014) *WRAP guidance documents*. http://nwtool.wrap.org.uk/ToolHome.aspx

6. Landscape and Visual Amenity

Introduction

6.1. This Chapter, prepared by Farrer Huxley Associates (FHA) assessed the effect of the Himley Village Development on landscape and visual amenity. The objectives of the assessment are to:

- Describe and evaluate the landscape of the Site, surrounding landscape context and visual amenity of the surrounding area, which might be affected by the Himley Village Development;
- Identify and describe the extent of the visual envelope of the Site and proposed Development;
- Examine the Himley Village Development proposals and analyse the potential effects on the landscape and visual amenity associated with the scheme's design;
- Set out mitigation measures which could be implemented in order to avoid reduce or offset adverse effects;
- Describe any enhancements of the landscape or visual amenity incorporated in the Development proposals; and
- Provide an assessment of the significance of the landscape and visual effects of the Himley Village Development with integral mitigation measures in place.

6.2. It is supported by **Technical Appendix 6.1** which provides further detail in relation to the Landscape and Visual Assessment methodology and **Technical Appendix 6.2** which provides the Accurate Visual Representations (AVRs) of the Himley Village Development.

Legislation, Planning Policy & Guidance

National Planning Policy

National Planning Policy Framework (March 2012) (NPPF)

6.3. The NPPF published in March 2012[1] superseded previous policy documents and a range of policy guidance 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 development. The following paragraphs are considered most relevant to the landscape and visual amenity aspects of the proposed development:

6.4. NPPF Section 7: Requiring Good Design paragraph 58 states that *"planning polices and decisions should aim to ensure that development:*

- *Will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development*
- *Respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation*
- *Are visually attractive as a result of good architecture and appropriate landscaping"*

6.5. NPPF Section 11: Conserving and Enhancing the Natural Environment paragraph 109 states that "*the planning system should contribute to and enhance the natural and local environment by:*

- *Protecting and enhancing valued landscapes, geological conservation interests and soils*

- *Recognising the wider benefits of ecosystem services*
- *Minimising impact on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures"*

6.6. NPPF Section 12: Conserving and Enhancing the Historic Environment paragraph 126 recognises landscape character in the role of development and that local planning authorities should take account of "*the desirability of new development making a positive contribution to local character and distinctiveness*."

Planning Policy Statement Eco-Towns: A Supplement to Planning Policy Statement 1 (2009)

6.7. Planning Policy Statement Eco-Towns: A Supplement to Planning Policy Statement 1[1] includes standards and objectives for the development of eco towns. The following paragraphs are considered most relevant to the landscape and visual amenity aspects of the proposed development.

6.8. Eco-towns should promote sustainable development by following a range of standards set out in paragraph 7 including "*providing a good quantity of green space of the highest quality in close proximity to the natural environment*."

6.9. Paragraph ET14.1 Green Infrastructure states "*forty per cent of the eco-town's total area should be allocated to green space of which at least half should be public and consist of a network of well managed high quality green/open spaces which are linked to the wider countryside*."

6.10. Paragraph 15.1 Landscape and Historic Environment states that "*eco-towns should demonstrate that they have adequately considered the implications for the local landscape and historic environment. This evidence, in particular that gained from landscape character assessments…should be used to ensure that development complements and enhances the existing landscape character*."

Local Planning Policy

Cherwell District Council Local Plan (adopted 1996)

6.11. The Cherwell District Council Local Plan (1996)[2] includes the following policies relevant for the purposes of this assessment:

6.12. Policy C7 paragraph 9.11 encourages retaining and enhancing the character of the countryside and development should not cause "*demonstrable harm to the topography and character of the landscape*."

6.13. Policy C17 paragraph 9.32 states that the council will "*seek opportunities to secure the enhancement of the urban fringe through tree and woodland planting*."

6.14. Policy C30 paragraph 9.69 states that design control will be exercised to ensure "*environmental enhancement through new development…Proposals that would change the established character of an area...will normally be unacceptable*."

6.15. Policy C32 paragraph 9.74 describes trees as "*a valuable feature of both the rural and the urban landscape. Their amenity value and screening effect can enhance the appearance of new development*."

Cherwell District Council Submission Local Plan, 2006-2031, submitted in January 2014

6.16. Cherwell District Council Submission Local Plan (2006-2031)[3] was submitted to the Secretary of State for formal Examination in January 2014. Proposed Modifications to the Plan were submitted in October 2014 and Hearing Sessions will resume in December 2014. The following core policies are relevant for the purposes of this assessment:

6.17. Policy ESD 10 Protection and Enhancement of Biodiversity and the Natural Environment states that "*Development will be expected to retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained…to ensure habitat connectivity*."

6.18. Policy ESD 13 Local Landscape Protection and Enhancement states that: "*Opportunities will be sought to secure the enhancement of the character and appearance of the landscape, particularly in urban fringe locations through the restoration, management or enhancement of existing landscapes, features or habitats and where appropriate the creation of new ones including planting of woodlands, trees and hedgerows.*

Development will be expected to respect and enhance local landscape character, securing appropriate mitigation where damage to local landscape character cannot be avoided."

6.19. Policy ESD 16 The Character of the Built and Historic Environment states that: "*New development will be expected to complement and enhance the character of its context through sensitive siting, layout and high quality design. New developments 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.*"

6.20. Policy Bicester 1 – North West Bicester Eco-Town: Proposals should provide the following:

- "*A well designed approach to the urban edge, which relates development…to its rural setting…minimising the impact of development when viewed from the surrounding countryside;*
- *Respects the landscape setting and demonstrates enhancement, restoration or creation of wildlife corridors to achieve a net gain in biodiversity;*
- *Consideration should be given to maintaining visual separation with outlying settlements. Connections with the wider landscape should be reinforced;*
- *Careful consideration of open space and structural planting around the site to achieve an overall improvement in the landscape and visual impact of the site*".

Guidance

Cherwell District Council Eco-Bicester – One Shared Vision (2010)

6.21. The Environmental Sustainability and Infrastructure section of the Cherwell Eco Bicester – One Shared Vision[4] document encourages new development to "*be assimilated within the landscape without altering the character of the surrounding countryside*," and that it "*should complement and enhance the existing landscape character*."

Cherwell District Council Countryside Design Summary (1998)

6.22. The Cherwell Countryside Design Summary[5] guidance document characterises the site as part of the Ploughley Limestone Plateau. Implications for new development within this area include:

- "*Trees, hedgerows and other features, which are important for their wildlife or landscape value, should be retained. In most cases new planting would assist the integration of new buildings in their landscape setting*"

Summary of Planning Considerations

6.23. Following a review of the landscape planning context of the Site at national and local level, it is considered that the key landscape policy objectives of relevance to the Site are that the proposed development should:

- Provide a network of quality green infrastructure and open spaces;
- Contribute positively to local character and distinctiveness;
- Respect landscape setting particularly in urban fringe locations including use of planting trees, hedgerows and woodland; and
- Retaining existing vegetation wherever possible use planting to integrate buildings into new landscape setting.

Assessment Methodology

6.24. The assessment has been carried out by a Chartered Landscape Architect in accordance with the 'Guidelines for Landscape and Visual Impact Assessment', Third Edition (2013), published by the Landscape Institute and Institute of Environmental Management and Assessment[6]. A resume of the methodology used is set out in **Technical Appendix 6.1.**

6.25. The assessment process comprised a combination of desk studies and field surveys, with subsequent analysis, and involved:

- A review of landscape designations and planning policies, and of other landscape studies relevant to the area, including national and local landscape character and capacity assessments;
- Identification of the extent of visibility of the Himley Village Development and potentially sensitive viewers or view locations, based on a viewpoint analysis;
- A survey of the Site, landscape context study area and inspection of views of the Site from publicly accessible viewpoints, including a photographic survey. The Site visit was undertaken on 9th October 2014;
- Consultation with Cherwell District Council, in conjunction with Turley Planning Consultants, to discuss and agree viewpoints requiring assessment. The consultation was undertaken via phone and email on the 28th October 2014;
- Evaluation of the features and elements of the landscape and their contribution to the landscape character, context setting, based on these studies;
- Generation of AVRs of the Himley Village Development;
- Assessment of the sensitivity of the landscape and views to the changes likely to arise from the Himley Village Development;
- Consideration of potential landscape and visual effects of the Himley Village Development;
- Consideration of mitigation measures to avoid, reduce or remedy/offset significant adverse effects; and
- Assessment of magnitude of change and significance of effects on the landscape and on visual amenity, with the mitigation proposals in place.

6.26. For the purposes of assessing the landscape and visual effects of this proposal, study areas have been defined:

- The 'Site' which extends to the redline boundary shown on **Figure 1.2**;
- The 'Landscape context' which extends to a radius of about 1.5km from the Site shown on **Figure 6.1**; and
- The visual study area which extends between 1 and 2km from the Site boundary reflecting the comparative availability of views from the rising topography to the north and northeast and screening in the lower land nearer the Site. For this assessment, viewpoints within 1.5km of the Site boundary have been considered based upon analysis of the likely visibility of the proposal. Refer to **Figure 6.2**.

6.27. The assessment is based on the following key assumptions and limitations:

- The assessment is based on information as set out in the outline planning application documents and drawings. There is no information available at this stage to inform the assessment about the type of architectural style to proposed building or material palette;
- The assessment was carried out in late-autumn: there was noticeable leaf loss to existing trees and vegetation evident. The reduced screening effect during winter and the maximum screening potential during summer, when vegetation is in full leaf, has been taken into consideration using professional judgement;
- There has been no computer generated Zone of Theoretical Visibility (ZTV) created for this project; the visual study area has been defined manually which is considered a proportionate approach for the project at outline planning stage.

Assessment Methodology: Effects on the Landscape

6.28. This section deals with the effects on the landscape of the Site and its context, as a result of the Himley Village Development.

6.29. As agreed with Cherwell Council, the criteria for assessing landscape sensitivity and magnitude of impact is consistent with the Hyder reports submitted as part of the NW Bicester Environmental Statements for Application Sites 1 and 2.

Sensitivity, or Ability to Accommodate Change

6.30. The sensitivity of landscape receptors is dependent on their value and susceptibility to, or ability to accommodate the changes that would be brought about by the Himley Village Development.

6.31. The criteria for landscape sensitivity are set out in Table 6.1.

Table 6.1: Criteria for Landscape Sensitivity

Sensitivity/Value of Receptor	Criteria
Very High	Value: Typically of very high importance and rarity, international scale, and very limited potential for substitution (eg. World Heritage Site) Susceptibility to change: Landscape very unlikely to tolerate the change proposed, even with mitigation
High	Value: Typically of high importance and rarity, national scale, and limited potential for substitution (eg. National Park) Susceptibility to change: Landscape very unlikely to tolerate the change proposed, even with mitigation

Sensitivity/Value of Receptor	Criteria
Medium	Value: Typically of high or medium importance and rarity, regional scale, and limited potential for substitution (eg. Conservation Area) Susceptibility to change: Landscape has the potential to tolerate the change proposed, with appropriate mitigation
Low	Value: Typically of low or medium importance and rarity, local scale, such as undesignated landscape Susceptibility to change: Landscape likely to tolerate the change proposed, with appropriate mitigation
Negligible	Value: Typically of very low importance and rarity, local scale, such as degraded landscape identified for enhancement in planning policies Susceptibility to change: Landscape likely to readily absorb the change proposed

Magnitude of Landscape Change

6.32. The magnitude of the changes is related to the size or scale of the change, the geographical extent of the area influenced, and its duration and reversibility.

6.33. The criteria for Magnitude of Landscape Change in Table 6.2

Table 6.2: Criteria for Magnitude of Landscape Change

Magnitude of Change	Criteria
Major Adverse	Loss of landscape character and or quality and integrity of landscape designation; severe damage to key landscape characteristics, features and elements
Major Beneficial	Large scale or major improvement of landscape quality; extensive restoration or enhancement; major improvement of landscape attribute quality
Moderate Adverse	Loss of landscape character, but not adversely affecting the integrity of landscape designation; partial loss of/damage to key landscape characteristics, features or elements
Moderate Beneficial	Benefit to, or addition of, key landscape characteristics, features or elements; improvement of landscape attribute quality
Minor Adverse	Some measurable change in landscape attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key landscape characteristics, features or elements
Minor Beneficial	Minor benefit to, or addition of, one (maybe more) key landscape characteristics, features or elements; some beneficial impact on landscape attribute or a reduced risk of negative impact occurring
Negligible Adverse	Very minor loss or detrimental alteration to one or more landscape characteristics, features or elements
Negligible Beneficial	Very minor benefit to or positive addition of one or more landscape characteristics, features or elements
No Change	No loss or alteration of landscape characteristics, features or elements; no observable adverse or beneficial impact

Assessment Methodology: Effects on Visual Amenity

6.34. This section deals with the effects on the visual amenity of the Site and its context, as a result of the Himley Village Development.

6.35. As agreed with Cherwell Council, the criteria for assessing visual sensitivity and magnitude of impact is consistent with the Hyder reports submitted as part of the NW Bicester Environmental Statements for Application Sites 1 and 2.

Visual Sensitivity

6.36. The sensitivity of views, view locations, and views, is affected by the susceptibility of the viewer to changes in views and visual amenity and the value attached to particular views. The context of the location contributes to susceptibility, for example people viewing from residential properties or from a valued landscape are likely to be more susceptible to change than people viewing from an industrial context. Particular views may have importance and be valued, for example 'classic' views depicted in art or literature, or as part of the experience of a landscape of importance or promoted recreation facility or route. The following criteria for visual sensitivity are used:

Table 6.3 Criteria for Visual Sensitivity

Sensitivity/Value of Receptor	Criteria
Very High	Recreational routes within nationally valued landscapes (such as National Parks of Areas of Outstanding Natural Beauty), where appreciation of affected views may be the principal activity. Well-used public rights of way whose attention or interest would be focused on a landscape of acknowledged importance or value.
High	Recreational routes outside of nationally valued landscape, where attention may be focused on affected views. Users of public rights of way whose attention or interest may be focused on the landscape and occupiers of residential properties with ground floor views directly affected by the development.
Medium	Open areas / recreation areas outside of nationally valued landscapes, where attention may be focused on affected views. Occupiers of residential properties with views from upper floors, people travelling through or past the affected landscape along permissive footpaths, in cars along main transport routes or on trains\other transport modes.
Low	Places of work or commercial properties, where attention is unlikely to be focused on affected views. Intermittent views for people travelling through or past the affected landscape in cars along minor transport routes.
Negligible	Roads and railways, where views are transient due to travelling through the landscape.

Magnitude of Visual Change

6.37. The magnitude or scale of change is evaluated with reference to:

- The scale of change in the view with respect to the loss or addition of features in the view and changed in its composition including the proportion of the view occupied by the proposed development;
- The degree of contrast or integration of new features within the existing landscape in terms of form, scale and mass, line, height, colours and texture;
- The duration of the effect, and whether permanent or temporary;
- The distance and angle of the view, carrying from direct to oblique; and
- The extent of the area over which the changes would be visible.

6.38. The following criteria for magnitude of visual change are used:

Table 6.4 Criteria for Magnitude of Visual Change

Magnitude of Change	Criteria
Major Adverse	a
Major Beneficial	Where the Development would cause a substantial improvement in existing views. Typically the proposals would form a visible and recognisable new element within the view that provides a major improvement to landscape character and attribute quality.
Moderate Adverse	Where the Development would cause a noticeable deterioration in existing views. Typically the proposals constitute a distinct feature that would not change overall landscape character; some partial loss of/damage to key landscape characteristics, features or elements.
Moderate Beneficial	Where the Development would cause a noticeable improvement in existing views. Typically the proposals constitute a distinct feature that would not change overall landscape character; some benefit to, or addition of, key landscape characteristics, features or elements.
Minor Adverse	Where the Development would cause a minor deterioration in existing views. Typically the proposals constitute only a minor component of the wider view, which might be missed by the casual observer or receptor. Awareness of the proposals would have a minor marked effect on the overall quality of views.
Minor Beneficial	Where the Development would cause a minor improvement in existing views. Typically the proposals constitute only a minor component of the wider view, which might be missed by the casual observer or receptor. Awareness of the proposals would have a minor benefit on the overall quality of views.
Negligible Adverse	Where the Development would cause a very inconspicuous deterioration in existing views. Typically only a very small part of the proposals is discernable and/or they are at such a distance that they are scarcely appreciated. The proposals would have very little marked effect on views that would be typically long range and/or oblique in nature.
Negligible Beneficial	Where the Development would cause a very inconspicuous deterioration in existing views. Typically only a very small part of the proposals is discernible and/or they are at such a distance that they are scarcely appreciated. The proposals would have a very small beneficial effect on views that would be typically long range and/or oblique in nature.
No Change	No loss or alteration of landscape characteristics, features or elements; no observable adverse or beneficial impact.

Significance Criteria

6.39. The significance of effect is evaluated through the combination of sensitivity of the receptors and the magnitude of change, a process assisted by the use of Tables 6.1 and 6.2 for Landscape effects and Tables 6.3 and 6.4 for visual effects. This is summarised in Table 6.5 below:

Table 6.5 Landscape and Visual Effect Significance Criteria

Magnitude of Impact	Landscape/Visual Sensitivity			
	Neutral	**Low**	**Medium**	**High**
Substantial	Minor	Minor / Moderate	Moderate / Substantial	Substantial
Moderate	Negligible / Minor	Minor	Moderate	Moderate / Substantial
Minor	Negligible / Minor	Negligible / Minor	Minor	Minor / Moderate
Negligible	Negligible	Negligible / Minor	Negligible / Minor	Minor
Neutral	Negligible	Negligible	Negligible	Negligible

6.40. In those instances where typically proposed changes would cause no discernible deterioration or improvement in the existing landscape or view, the level of effect will be assessed as 'Neutral'.

Baseline Conditions

Designations

6.41. The Site and immediate surroundings are not covered by any landscape designations.

National Landscape Character Assessment

6.42. Natural England have carried out an assessment of landscape character for the whole of England at a national scale and produced the Landscape Character Assessment Guidance for England and Scotland[7]

6.43. The land to the north west of Bicester, within which the Site is located, is defined by the transition of National Character Areas (NCA) 107 Cotswolds and 108 Upper Thames Clay Vales. The landscape character of these areas is outlined below.

NCA 107 Cotswolds

6.44. The Cotswold landscape forms the best-known part of the oolitic limestone outcrop stretching from Dorset to Lincolnshire. The Site is located within the north east of this NCA close to the transition boundary with NCA 108 Upper Thames Clay Vales. The key characteristics are listed below:

- Very strong pattern of nucleated settlement;
- Medium-low density of farmsteads in the landscape;
- Farmsteads with associated regular and large-scale enclosures of similar date, either of former open fields or long term pasture;
- Dry stone walls to higher areas, hedgerows more common on scarps and in valleys where assarted fields are concentrated;
- High ground: occasional woodland blocks and shelterbelts with dry stone walls but also with hedges. Valley bottoms: water meadows and tree-lined scarp slopes: scrub, beech woodland, hedges and tree clumps, and some species-rich grassland; and
- Broad range of farmstead scales.

NCA 108 Upper Thames Clay Vales

6.45. The Upper Thames Clay Vales landscape is a broad belt of open, gently undulating lowland farmland on predominately Jurassic and Cretaceous clays. The Site is located to the north of this NCA close to the transition boundary with NCA 107 Cotswolds. The key characteristics are listed below:

- Gently undulating topography; the Upper Jurassic and Cretaceous clays and the wet valley bottoms give rise to enclosed pasture, contrasting with the more settled open, arable lands;
- Woodland cover is low, but hedges, hedgerow trees and field trees are frequent;
- Fields are regular and hedged; and
- Wetland habitat attracts regionally important birds and supports typical farmland wildlife.

Local Landscape Character Assessment

Oxford County Council Wildlife and Landscape Study

6.46. The Oxfordshire Wildlife and Landscape Study[8] places the Site within the Wooded Estate-land landscape character type. This is a wooded estate landscape characterised by arable farming and small villages with a strong vernacular character. The key characteristics are listed below:

- Rolling topography with localised steep slopes;
- Large blocks of ancient woodland and mixed plantations of variable size;
- Large parklands and mansion houses;
- A regularly shaped field pattern dominated by arable fields; and
- Small villages with strong vernacular character.

6.47. Within this character type there are a number of Local Character Areas including the land near Bicester classified as 'Middleton Stoney'. The key characteristics that define the landscape character of this area include:

- Field pattern dominated by large-scale arable fields;
- Woodland cover is prominent throughout the landscape, with large blocks of ancient woodland and mixed plantations;
- Mature hedgerow trees are thinly scattered throughout and they are mainly oak, ash, beech and some sycamore;
- Fields are enclosed by woodland and thorn hedges; and
- Roadside hedges are often species-rich and gappy, and internal field hedges are fragmented and lost in places.

6.48. The landscape strategy for the Wooded Estate-lands, within which the Middleton Stoney Character Area lies, is to safeguard and enhance the characteristic landscape of parklands, estates, woodlands, hedgerows and unspoilt villages.

Cherwell District Council Landscape Assessment

6.49. The Site forms part of the Oxfordshire Estate Farmlands character area identified in Cherwell District Landscape Assessment[9]. The key characteristics are listed below:

- South east of the Upper Heyford Plateau, the limestone dips into a series of gentle undulations. This area is characterised primarily by the extensive remains of eighteenth century parklands and estate farmland;
- Much of the land is in arable cultivation where the wooded character persists, with woodlands which divide and enclose the landscape on a large scale. There are also long views across rolling open fields where there are substantial breaks in tree cover;
- The landscape type is defined as '*rolling arable landscape with strong field pattern copses and trees*.' The patchwork of arable and pasture is given definition by well-maintained hedges; and
- Many of the hedges contain regularly spaced mature hedgerow oaks. Road verges are generous width being open with a ditch and hedge on either side.

The Landscape of the Site

6.50. The Site forms part of the overall Masterplan for NW Bicester. In 2010 this area was surveyed to assess the existing landscape character and context and is summarised in the NW Bicester Masterplan Vision and Objectives[10] report and NW Bicester Masterplan Strategic Environmental Report[11].

6.51. The local landscape character areas of the NW Bicester Masterplan Area, as defined by Hyder, are illustrated on **Figure 6.3**. This provides key aesthetic and perceptual characteristics of the Site and surrounding area, which contribute to the local landscape character.

6.52. The Site itself is characterised as Himley Farm Slopes; farmland between Bignell Park and the bridleway. It is characterised by a grid of existing hedgerows and is described as:

- Gently sloping farmland, predominately in arable use, interspersed with woodland shelterbelts;
- Medium to large scale fields bounded by established hedgerows with hedgerow trees;
- Settlement limited to isolated farmsteads, including the historic Himley Farm buildings (the barns are Listed Buildings), connected by hedgerow lined tracks; and
- A number of overhead power lines which traverse the area and form urbanising elements.

6.53. The Site consists mainly of medium to large regular arable fields with a strong network of existing hedgerows that are trimmed and often contain lines of hedgerow trees. There are a number of small blocks of trees and some newly planted woodland belts.

6.54. The topography of the Site gently slopes up to the northeast. Existing vegetation largely encloses the landscape offering limited views across the Site. Planting along Howes Lane mainly screens views from Bicester and successive hedgerows break the view from other directions.

6.55. There are long views from Graven Hill and Poundon Hill but there is no public access to the former and the latter is so distant that features cannot be easily distinguished.

Public Access

6.56. There is no right of public access to the Site. There is one public footpath (bridleway), which passes through the area to the north of the Site on a southeast to northwest orientation, almost parallel with the existing railway line.

Landscape Receptors and Sensitivity to Change

6.57. The landscape receptors, that is, the components or aspects of the landscape likely to be affected by the Himley Village Development, such as, overall character or key characteristics, individual

elements or features, or specific aesthetic or perceptual aspects are identified below together with their sensitivity to change:

- The landscape character of the area: the character areas of Bucknell Valley Corridor and Himley Farmland Slopes are considered to be of ***low sensitivity*** to change. The landscape is undesignated and the character areas are typically of low importance on a local scale;
- Aesthetic and perceptual aspects of the landscape including scale, complexity, patterns and openness: the aesthetic and perceptual aspects of the landscape are considered to have ***low sensitivity*** to change. The sloping, enclosed landscape, offers limited views across the area;
- The network of existing established hedgerows and hedgerow trees: the existing hedgerows are considered to have ***medium sensitivity*** to change. They are a key characteristic forming the landscape character of the Site on both a national and local level;
- Existing woodland shelterbelts: the existing woodland shelterbelts are considered to have ***medium sensitivity*** to change. They are valued for their contribution to local landscape character;
- The setting of residential areas east of Howes Lane: The setting of the nearby residential area is considered to be of ***low sensitivity*** to change. Existing woodland planting and arable land intervenes between the Site and this residential settlement.
- The setting of the bridleway between the north of the site and existing railway line: The setting of the bridleway considered to be of ***negligible sensitivity*** to change. There is sufficient proximity between the bridleway and the Himley Village Development that the landscape is likely to readily absorb the changes;
- The setting of Middleton Stoney Road: This is considered to be of ***low sensitivity*** to change. The linear landscape of Middleton Stoney Road is of low value on a local scale, likely to tolerate change with appropriate mitigation; and
- The setting of historic farmstead, Himley Farm: this is considered to be of ***medium sensitivity*** to change. Farmsteads are a key characteristic forming the landscape character of the site on both a national and local level.

Landscape Value

6.58. The aspects of the landscape that might be affected by the proposed development are not afforded protected through designation. However, areas of the landscape are valued and identified through the local development plans landscape character assessments as described in the Baseline Conditions Section.

Visual Amenity

6.59. The Site is formed of very gently sloping farmland and is largely enclosed by established and mature vegetation comprising of field hedgerows interspersed with belts of woodland planting. The existing planting structure, which extends to the wider landscape, limits open aspect views of the Site.

6.60. In the wider context of the Site, there is a natural rise in topography towards Bucknell, where there are long views towards the Site broken by the rolling topography, established field boundary hedgerows, hedgerow trees and dense woodland planting belts.

Viewpoint Study

6.61. The agreed seven viewpoints that inform the visual assessment, range up to approximately 1.5km from the Site, as illustrated on **Figure 6.2**. The following table provides details of the viewpoints studied, their relationship to the Site and descriptions of the location and context of the viewpoint and of the view available towards the Site. This table should be read in conjunction with **Technical Appendix 6.2.**

Table 6.6 Existing View Descriptions

Ref	Viewpoint Location	Distance to Site and direction of view	Landscape Context	View towards Study Area
1	Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road	114m NE	The viewpoint is set at a similar elevation to the Site located on the Middleton Stoney Road and overlooking arable farmland of the Site. The existing boundary hedgerows and trees frame views along the road and confine views out over the Site. There is moderate to high intrusion on tranquillity from the sound of traffic on the road and nearby M40.	The view is towards the southeast corner of the Site that is partially screened from the site boundary vegetation. There are intermittent breaks in the hedges allowing more open, glimpsed views into the Site.
2	Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road	23m NNE	The viewpoint is set at a similar elevation to the Site located on the Middleton Stoney Road with a direct view of the existing boundary hedgerow that frames views along the road and screens the Site. There is moderate intrusion on tranquillity from the sound of traffic on the road.	The view is north eastward towards the Site in approximately the location of a proposed access junction into the Site. The existing view is screened by the boundary hedgerow and trees.
3	Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road	23 N	The viewpoint is set at a similar elevation to the Site located on the Middleton Stoney Road with a view along the road and of the farm track entrance to Himley Farm. The existing boundary hedgerow frames views along the road. There is moderate intrusion on tranquillity from the sound of traffic on the road.	The view is north towards the Site. The farm track entrance is the approximate location of a proposed access junction into the Site. The entrance to the farm track is visible however the boundary hedgerow and trees largely screen the view.
4	Middleton Road on roadside verge to gated entrance of the field	1,336 SE	The viewpoint is located towards Bucknell where there is a natural rise in topography. The gateway is adjacent to arable fields with views of existing woodland planting belt and boundary hedgerows. The land starts to fall towards the Middleton Road that interrupts view to the Site.	The view is south eastwards across existing arable land. There is dense, established hedgerow and woodland that screens views. Established boundary hedgerows within the foreground also provide some screening element to the view.
5	Middleton Road on roadside verge to gated entrance to bridle path	1,118 SE	The viewpoint is located towards Bucknell where there is a natural rise in topography. The gateway to the bridleway is adjacent to arable fields with open views of a pleasant pastoral landscape with some intrusion from the sound of traffic on the nearby motorway.	The view is south eastwards across existing arable land. The backdrop is formed of established hedgerows and trees with a distant view of Graven Hill. In the foreground is a copse of established woodland, which filters the view, and bridleway track.
6	From bridleway south of	425 S	The viewpoint is located along the bridleway where there is a gentle rise in	The view is southerly. The established boundary hedgerows of

Ref	Viewpoint Location	Distance to Site and direction of view	Landscape Context	View towards Study Area
	Crowmarsh Farm		topography to the northwest of the site. The fields are arable, part of nearby Crowmarsh Farm.	the Site form the backdrop and the foreground is largely open arable. There is an established hedgerow dividing two fields within the foreground and partially filters the view.
7	From bridleway/ Aldershot Farm track to gated entrance of the field	447 SW	The viewpoint is located along part of the bridleway that forms the access track to Aldershot Farm. Existing hedgerows largely enclose this part of the track. Views are afforded at field gate entrances.	The view is south westerly towards the north east of the Site overlooking fields. The backdrop is formed of extensive, established vegetation to the Site boundary and disused Gowell Farm buildings.

Visual Receptors and Sensitivity

6.62. The following is a summary of the viewers and locations from where views may be available, with references to the representative viewpoints described above.

People Travelling within the Area

6.63. **Users of Middleton Road:** Middleton Road connects the residential areas of Middleton Stoney and Bucknell. The natural rise in topography towards the northwest of the Site affords more open views. However, they are partially screened by existing boundary vegetation along the road and arable fields. *Viewpoints 4 and 5 are representative of the users of Middleton Road.*

6.64. Road users are generally considered to be less susceptible to change. This is a long distance view (ie greater than 1km away) and the duration is typically a passing view of the northwest corner of the Development. This receptor is therefore judged to be of **low sensitivity.**

6.65. **Users of Middleton Stoney Road:** Middleton Stoney Road connects Middleton Stoney with Bicester. The road is largely on a similar elevation to the Site, enclosed by established hedgerows and trees that frame views along the road. There are some glimpsed views of the Site and wider pastoral landscape where there are intermittent breaks in the boundary vegetation. *Viewpoints 1, 2 and 3 are representative of the users of Middleton Stoney Road.*

6.66. Road users are generally considered to be less susceptible to change. This is a close distance view (ie less than 200m away). Intermittent, passing views along the southern boundary of the Site are largely screened by existing vegetation. This receptor is judged to be of **low sensitivity.**

Users of Public Rights of Way

6.67. Users of the bridleway: The bridle path situated between Middleton Road and Howes Lane, crosses arable land to the north of the Site. The network of established field hedgerows and woodland copse planting, within the wider landscape, partially screens views along sections of the route. The natural rise in topography towards the northwest of the Site affords more open views in parts. *Viewpoints 5, 6 and 7 are representative of views from this recreational route*.

6.68. People engaged in outdoor recreation, including public rights of way, whose interest is likely to be focused on the landscape are susceptible to change. This is a medium to long distance view (ie greater than 200m from the Site). There are open views to the northern Site boundaries along the

bridleway however successive hedgerows and vegetation partially filter and screen views to the Site. This receptor is judged to be of **high sensitivity.**

Potential Effects

Demolition and Construction

6.69. There are no special landscape and visual effects that would be generated by the Himley Village Development as a result of the construction process beyond of those that are inherent in constructing buildings of the type proposed. The following aspects of demolition and construction may affect landscape and visual amenity:

- Visual intrusion from construction traffic and working machinery, movement and activity of HGVs including cranes (mobile or self erecting cranes), mobile platforms, excavators, dumpers;
- Site storage units, stored materials and material stockpiles e.g. of construction materials;
- Visual intrusion from construction traffic and working machinery;
- Noise and visual intrusion from demolition of existing buildings and breaking up and excavation of existing ground;
- Loss of existing trees and vegetation;
- Temporary lighting to illuminate the contractor's compound and working area, particularly in winter when artificial lighting is required during working hours;
- Noise and visual intrusion from excavation for utilities, road, drainage, strip or pad foundations; and
- Construction of new buildings and associated hard standing areas.

6.70. The significance of the effect on the landscape and visual amenity during demolition and construction is described in Tables 6.7 and 6.8 below.

Table 6.7 Significance of landscape effects during demolition and construction

Receptors and Changes	Magnitude of Change	Significance of Effect
Receptor: The landscape character of the area **Sensitivity:** Low **Anticipated Changes:** Cranes, hoardings, site traffic and machinery would impinge on the character and quality of the local landscape. There will be some short-term removal of hedgerows within the site required to facilitate construction. Permanent loss of hedgerows along Middleton Stoney Road to accommodate access junctions. The presence of construction activity on Site and the temporary loss of hedgerows will temporarily reduce the ability to adequately perceive the aspects of the landscape, such as hedgerow pattern, which contribute to the overall character.	**Construction phases 1-4** *Moderate adverse* Size or scale of change: removal of sections of hedgerow along Middleton Stoney Road results in permanent but localised loss of key landscape features. Temporary reduction in overall quality of local character. Duration: short term. Geographical influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Minor adverse* Size or scale of change: Construction largely concentrated to the centre of the Site. Tranquillity will increase as later construction phases are completed. In the latter stages the new, and establishing planting of previous phases, contributes to	*Negligible to minor adverse* *Temporary at local level* Some measurable change in landscape attributes however the effects are temporary in nature and would be minimised by construction best practice.

Receptors and Changes	Magnitude of Change	Significance of Effect
	landscape character integrating the Development into the overall setting of the site. Duration: medium term. Geographical Influence: at the scale of character areas within which the proposal lies.	
Receptor: Aesthetic and perceptual aspects of the landscape **Sensitivity:** Low **Anticipated Changes:** The presence of site storage units, stored materials and material stockpiles would interrupt landscape pattern and perceived openness. There would be some temporary short-term loss of the linear, geometric field pattern within the Site. Permanent loss of hedgerows along the Middleton Stoney Road to accommodate access junctions. Within the site, the sense of scale would be reduced in varying degrees as phased construction of a complex layout of new built development progresses within the landscape.	**Construction phases 1-4** *Moderate adverse* Size or scale of change: Temporary reduction in hedgerow pattern with some permanent loss along Middleton Stoney Road. Aesthetic of landscape features reduced through fragmented phased approach. Duration: short term. Geographical Influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Minor adverse* Size or scale of change: Minor reduction in ability to perceive the scale and complexity of the landscape. The new and established planting of previous phases provides a benefit upon completion as a unified landscape aesthetic is reinstated. Duration: medium term. Geographical Influence: at the scale of character areas within which the proposal lies.	*Negligible to minor adverse* *Temporary at local level* Some measurable change in landscape attributes however the effects are temporary in nature and would be minimised by construction best practice.
Receptor: The network of existing hedgerows / hedgerow trees **Sensitivity:** Medium **Anticipated Changes:** The construction of two access junctions would result some long-term loss of hedgerows and trees along Middleton Stoney Road. There will be some short-term removal of hedgerows to facilitate phased construction works. The network of hedgerows in the wider character area would be maintained.	**Construction phases 1-4** *Moderate adverse* Size or scale of change: Temporary reduction in hedgerow pattern within the site. Some permanent loss along Middleton Stoney Road. In later phases the change is partly offset by establishing hedgerows and enhancement provided in previous phases. Duration: short term. Geographical Influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Minor adverse* Size or scale of change: Temporary reduction in hedgerow pattern within the site although on a lesser scale than the previous phases. Changes are partly offset by establishing hedgerows and enhancement	*Minor to moderate adverse* *Temporary at local level* Some measurable change in landscape attributes due to localised hedgerow loss however the effects are temporary, in later phases the new and enhanced planting to hedgerows would partially offset the effect.

Receptors and Changes	Magnitude of Change	Significance of Effect
	provided in previous phases, becoming a positive change upon completion as a unified network of hedgerows is reinstated. Duration: medium term. Geographical Influence: at the scale of character areas within which the proposal lies.	
Receptor: Existing woodland shelter belts **Sensitivity:** Medium **Anticipated Changes:** The woodland shelterbelts would largely be retained and protected through the construction phases. Some localised removal to enable road construction that would ultimately connect with the strategic link road.	**Construction phases 1-4** *No change* Size of scale of change: Existing woodland belts are retained and enhanced, gradually establishing over latter phases. Duration: Short term. Geographical Influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Negligible adverse* Size of scale of change: Minor loss due to localised woodland removal for access road to the eastern boundary. Partly offset by subsequent replacement and enhancement planting within this area. The cumulative benefit of new and enhancement planting upon completion provides a beneficial impact on this key landscape attribute. Duration: medium term. Geographical Influence: at the scale of character areas within which the proposal lies.	*Negligible to minor adverse* *Temporary at local level* Localised removal of woodland to facilitate construction of the access road to eastern boundary. However the enhancement planting provided to these woodland belts would become evident in the latter stages of construction.
Receptor: The setting of residential areas **Sensitivity:** Low **Anticipated Changes:** Noise and visual intrusion from construction traffic, working machinery and temporary lighting would temporarily reduce the tranquillity of residential areas. Construction access is off Middleton Stoney Road. In latter phases, access is from the link road (realigned Howes Lane).	**Construction phases 1-4** *Minor adverse* Size of scale of change: Temporary reduction on tranquillity of nearby residential areas, predominantly affecting residents along Middleton Stoney Road in early phases. Minor adverse change on setting of residential properties to the edge of Bicester due to the proximity from the construction site entrance. Duration: Short term. Geographical Influence: at site level and immediate setting of the site. **Construction phases 5-8** *Minor adverse* Size of scale of change: Limited, temporary reduction in tranquillity to properties along Middleton Stoney	*Negligible to minor adverse* *Temporary at local level* Limited change in landscape attributes however the tranquillity of residential areas is temporarily reduced. This would be minimised by construction best practice for example, suitable working hours.

Receptors and Changes	Magnitude of Change	Significance of Effect
	Road as phases within close proximity are completed. Temporary reduction in tranquillity on the setting of residential properties to the edge of Bicester due construction access off Howes Lane for latter phases. Overall construction work is reduced in latter stages having less effect on tranquillity and ceasing upon completion. Duration: medium term. Geographical Influence: at site level and immediate setting of the site.	
Receptor: The setting of the bridleway **Sensitivity:** Negligible **Anticipated Changes:** Noise and visual intrusion from construction traffic, working machinery and temporary lighting would temporarily reduce the tranquillity and pastoral setting of the bridleway.	**Construction phases 1-4** *No change* Size of scale of change: Construction activities and proposed temporary residential access to the north of the site will create a temporary reduction in tranquillity along the bridleway. No direct change along the bridleway itself. Duration: short term. Geographical Influence: at site level and immediate setting of the site. **Construction phases 5-8** *No change* Size of scale of change: Some noise and visual intrusion, no direct reduction in the setting of the bridleway due to proximity from phases. Overall construction work is reduced in latter stages having less effect on tranquillity and ceasing upon completion. Duration: medium term. Geographical Influence: at site level and immediate setting of the site.	*Neutral* *Temporary at local level* No change in landscape attributes however there would be some reduction in the tranquillity of the bridleway. This would be minimised by construction best practice for example, suitable working hours.
Receptor: The setting of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes:** Noise and visual intrusion from construction traffic, working machinery and temporary lighting would temporarily reduce the current pastoral setting of Middleton Stoney Road. Some permanent reduction in the quality of the existing setting as a result of two access junctions which require removal of existing hedgerows.	**Construction phases 1-4** *Minor adverse* Size of scale of change: Construction traffic access is off Middleton Stoney Road causing temporary loss of tranquillity. The construction of access junctions will enable close proximity views of construction activities. In later phases construction traffic access off Middleton Stoney Road would cause temporary loss of tranquillity however the close proximity views into the site would now be of completed development from earlier phases. Duration: short term.	*Negligible to minor adverse* *Temporary at local level* Some measurable change in landscape attributes however the effects are temporary in nature and would be minimised by construction best practice and in later phases the new and enhanced planting to hedgerows would

Receptors and Changes	Magnitude of Change	Significance of Effect
	Geographical Influence: at site level and immediate setting of the site. **Construction phases 5-8** *Negligible adverse* Size of scale of change: Phases within close proximity to Middleton Stoney Road would be completed with establishing planting to enhance views. Permanent reduction in setting along the road due to removal of existing hedgerows to facilitate the construction of access junctions. Duration: medium term. Geographical Influence: at Site level and immediate setting of the Site.	partially offset the effect.
Receptor: The setting of Himley Farm **Sensitivity:** Medium **Anticipated Changes:** Noise and visual intrusion on from construction traffic, working machinery and temporary lighting would affect the tranquillity and wider setting of Himley Farm in varying degrees throughout the phasing of works. The immediate setting to the farm buildings is retained.	**Construction phases 1-4** *Moderate adverse* Size of scale of change: The immediate setting is retained although there will be some temporary, close range intrusion from construction traffic along the new spine road to facilitate development of the Himley Farm Land Trust and recreational pitches. The construction of Village Green and associated residential units, approximately 300 dwellings, would create a change in the character of the wider setting of the Farm. Duration: short term. Geographical Influence: at Site level within the red line boundary. **Construction phases 5-8** *Moderate adverse* Size of scale of change: The immediate setting is retained although there will be some temporary, close range intrusion from construction works. There would be a progressive change in the wider landscape setting of the Farm from agricultural to suburban development. Duration: medium term. Geographical Influence: at Site level within the red line boundary.	*Moderate adverse* *Temporary at local level* Limited change in landscape attributes to the immediate landscape setting of Himley Farm. There will be an overall, temporary change in tranquillity intensified by the location of the Farm within the heart of the Development. The disruption will vary in degree throughout construction phases elevated in part by the use of construction best practices. The wider setting of the Farm will gradually change in character from arable land to planned suburban development.

Table 6.8 Significance of visual effects during demolition and construction

Ref	Viewpoint Location	View with Construction Works	Magnitude of change	Significance of Effect
1	Middleton Stoney Road to SW corner of the Site on roadside verge opposite side of road	**Receptor:** Users of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes to View:** Large construction machinery such as cranes, arising from site preparation and construction activities, could be visible to the backdrop of this view. The view will constantly change as the development activities progress and buildings are constructed. Maximum building parameters will be the most apparent elements within the composition of the view however; existing vegetation will partially filter the view as road users pass by.	**Construction phases 1-4** *Minor adverse* Size or scale of change: Temporary changes to the background view. Changes would not be a visual focus in the view for road users passing by due to the road orientation and screening element of existing vegetation. Duration: short term. Geographical influence: at Site level and immediate setting of the Site. **Construction phases 5-8** *Negligible adverse* Size or scale of change: Possible changes to the east of this view to the background view associated with later construction phases, other work would be completed/ Changes would not be a visual focus in the view for road users passing by due to the road orientation and screening element of existing vegetation. Duration: medium term. Geographical influence: at Site level and immediate setting of the Site.	*Negligible to minor adverse* *Temporary at local level* Minor reduction in quality of the existing views for road users with low sensitivity. Partly obscured by existing vegetation and minimised by construction best practice, for example use of appropriate temporary lighting.

Ref	Viewpoint Location	View with Construction Works	Magnitude of change	Significance of Effect
2	Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road	**Receptor:** Users of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes to View:** Large construction machinery and traffic arising from site preparation and construction activities could be visible to the middle ground of this view. The view will constantly change as the development activities progress and buildings are constructed. Maximum building parameters will be the most apparent elements within the composition of the view however; existing vegetation will partially filter the view as road users pass by. To the east of this view, would be a close proximity view of hedge removal and construction activities associated with the new ghost island junction.	**Construction phases 1-4** *Moderate adverse* Size or scale of change: Temporary changes to the middle ground. Close range view of construction works associated with the entrance junctions and localised hedgerow removal. This view however is not the dominant visual focus for road users due to the road orientation, partial screening element of existing vegetation and time over which the user would experience the passing view. Duration: short term. Geographical influence: at Site level and immediate setting of the Site. **Construction phases 5-8** *Minor adverse* Size or scale of change: Limited close range view construction work and traffic at the entrance junction. Change associated with construction work is reduced as the buildings in this view have been completed. Enhancement hedgerow planting would further screen the view. This view is not the dominant visual focus for road users due to the road orientation, partial screening element of existing vegetation and time over which the user would experience the passing view. Duration: medium term. Geographical influence: at Site level and immediate setting of the Site.	*Negligible to minor adverse* *Temporary at local level* Minor reduction in quality of the existing views for road users with low sensitivity. Partly obscured by existing vegetation. Users have a passing view but it does not form the overall visual focus. Use of construction best practice, such as hoarding, at the site entrance will contribute to minimising views into the Site.

Ref	Viewpoint Location	View with Construction Works	Magnitude of change	Significance of Effect
3	Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road	**Receptor:** Users of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes to View:** Large construction machinery and traffic arising from site preparation and construction activities could be visible to the middle ground of this view. The view will constantly change as the development activities progress and buildings are constructed. Maximum building parameters will be the most apparent elements within the composition of the view. There will be partial screening from existing hedgerows. Close proximity view of hedge removal and construction activities associated with new ghost island junction.	**Construction phases 1-4** *Moderate adverse* Size or scale of change: Temporary changes to the middle ground. Close range view of construction works associated with the entrance junctions and localised hedgerow removal. This view however is not the dominant visual focus for road users in the wider view along Middleton Stoney Road. Duration: short term. Geographical influence: at Site level and immediate setting of the Site. **Construction phases 5-8** *Minor adverse* Size or scale of change: Close range view of construction traffic at the Site entrance. The buildings in this view would be completed so change associated with construction work is reduced. Loss of existing hedgerows means there is some change to the landscape characteristic of the view. However this view does not form the dominant visual focus for road users in the wider view along Middleton Stoney Road. Duration: medium term. Geographical influence: at Site level and immediate setting of the Site.	*Negligible to minor adverse* *Temporary at local level* Minor reduction in quality of the existing views for road users with low sensitivity. Users have a passing view but it does not form the overall visual focus. Use of construction best practice, such as hoarding, at the site entrance will contribute to minimising views into the Site.

Ref	Viewpoint Location	View with Construction Works	Magnitude of change	Significance of Effect
4	Middleton Road on roadside verge to gated entrance of the field	**Receptor:** Users of Middleton Road **Sensitivity:** Low **Anticipated Changes to View:** Some construction machinery such as cranes arising from site preparation and construction activities could be visible to the background view. The view will constantly change as the development activities progress and buildings are constructed. Distant glimpses of construction activities would be apparent, the foreground and middle ground would remain unchanged. Vegetation in the foreground and woodland copse along the horizon line screens the view in large parts.	**Construction phases 1-4** *Negligible adverse* Size or scale of change: temporary changes to the background view. Changes would not be a dominant visual focus in the view for road users due to the road orientation and time over which the user would experience the passing view. Duration: short term. Geographical influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Negligible adverse* As above.	*Negligible adverse* *Temporary at local level* Proposed changes would be slightly discernible but not significant due existing vegetation screening a large proportion of the view.
5	Middleton Road on roadside verge to gated entrance to bridle path	**Receptor:** Users of the Bridleway **Sensitivity:** High **Anticipated Changes to View:** Some construction machinery such as cranes arising from site preparation and construction activities could be visible to the background view. The view will constantly change as the development activities progress and buildings are constructed. Distant glimpses of construction activities would be apparent, the foreground and middle ground would remain unchanged. Based on the maximum building parameter heights, the view to Graven Hill in the far distance would be lost. Vegetation along the horizon line screens a large part of the view to the east.	**Construction phases 1-4** *Minor adverse* Size or scale of change: temporary changes to the background view. The maximum building parameters would not be visible in these construction phases. The lower building heights, including the energy centre chimney stacks, would be largely screened by existing vegetation. Users of the bridle path will have long distance view, short in duration, as the Development becomes largely screened from view as the path passes behind the woodland copse and existing field boundary hedgerows. Duration: short term. Geographical influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Moderate adverse* Size or scale of change: temporary changes to the background view associated with the maximum building parameters. The buildings that are most visible do not form a dominant part of the composition in this view although the receptor is of high sensitivity and the existing views across open pastoral	*Minor to moderate adverse* *Temporary at local level* Changes would be most noticeable to bridleway users in latter phases. Some screening of the view is afforded by existing vegetation and construction best practice methods.

Ref	Viewpoint Location	View with Construction Works	Magnitude of change	Significance of Effect
			field as far as Graven Hills will be lost. Users of the bridle path will have long distance view, short in duration, as the Development becomes largely screened from view as the path passes behind the woodland copse and existing field boundary hedgerows. Duration: medium term. Geographical influence: at the scale of character areas within which the proposal lies.	
6	From bridleway south of Crowmarsh Farm	**Receptor:** Users of Middleton Road and users of the Bridleway **Sensitivity:** High **Anticipated Changes to View:** Some construction machinery such as cranes arising from site preparation and construction activities could be visible to the background view. The view will constantly change as the development activities progress and buildings are constructed. Medium distance views of construction activities associated with the maximum building heights. Minimum building heights are just above the horizon line and largely screened by boundary vegetation to the Site. The foreground and middle ground would remain unchanged. The dividing hedgerow in the middle ground partially filters the overall view. Based on the maximum building parameter heights, the view to Graven Hill in the far distance, to the west of the view, would be lost.	**Construction phases 1-4** *Negligible adverse* Size or scale of change: temporary changes to the background view. Maximum building parameters would not be visible in these phases. The energy centre chimney stacks would be partially discernible with some screening from existing vegetation. Users of the bridle path would have a passing view due to the orientation of the path (away from the direct view of the Site) and that the path is frequently buffered by adjacent mature field hedgerows that screen sequential views Duration: short term. Geographical influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Moderate adverse* Size or scale of change: temporary changes to the background view. The maximum building parameters are most visible and change the composition of the view. Users of the bridle path would have a passing view due to the orientation of the path (away from the direct view of the Site) and that the path is frequently buffered by adjacent mature field hedgerows that screen sequential views Duration: medium term. Geographical influence: at the scale of character areas within which the proposal lies.	*Minor to moderate adverse* *Temporary at local level* Changes would be most noticeable to bridleway users in latter phases associated with maximum building parameter heights. Some screening of the view is afforded by existing vegetation and construction best practice methods.

Ref	Viewpoint Location	View with Construction Works	Magnitude of change	Significance of Effect
7	From bridleway/ Aldershot Farm track to gated entrance of the field	**Receptor:** Users of Middleton Road and users of the Bridleway **Sensitivity:** High **Anticipated Changes to View:** Some construction machinery such as cranes arising from site preparation and construction activities could be visible to the background view. The view will constantly change as the development activities progress and buildings are constructed, largely associated with the maximum building heights as the minimum parameter heights are screened by existing vegetation. The foreground and middle ground would remain unchanged. The Based on the maximum building parameter heights, the view to Graven Hill in the far distance, to the west of the view, would be lost.	**Construction phases 1-4** *No change* Size or scale of change: Maximum building parameter heights not constructed during these phases of work. Lower building heights, and energy centre chimney stacks would be screened by the existing dense hedgerow and woodland vegetation. Duration: short term. Geographical influence: at the scale of character areas within which the proposal lies. **Construction phases 5-8** *Negligible adverse* Size or scale of change: temporary changes to the background view. Only part of the maximum building parameters are visible and do not create a major addition to the composition of the view as a result of the retained existing vegetation. Users of the bridle path would have a passing view due to the orientation of the path (away from the direct view of the Site) and afforded only by the break in hedgerow to accommodate the field gate Duration: medium term. Geographical influence: at the scale of character areas within which the proposal lies.	*Minor adverse* *Temporary at local level* Changes would be most noticeable to bridleway users in latter phases associated with maximum building parameter heights. The existing vegetation screens a large proportion of this view.

Completed Development

6.71. The design development of Himley Village has been an iterative process. The potential for adverse effects on landscape and visual amenity was recognised at an early stage and measures were considered and incorporated during the design development. The potential effects considered included:

- Changes to landscape features and characteristics important to the landscape character of this area. This included the established field boundary hedgerows and hedgerow trees valued as part of a network of hedgerows characteristic of this area and susceptible to damage or removal, for example, through the creation of new roads;
- Visual intrusion of the Himley Village Development on nearby residents, users of public rights of way and key vehicular routes;
- Intrusion of change in land use, density and landform on the overall local landscape character and setting;

- Introduction of built form and dwellings within the Site at completion stage (up to five storeys high in areas);
- Introduction of new infrastructure within the Site including primary roads and two ghost island junctions along the Middleton Stoney Road boundary;
- Activity and change at, or near the Site perimeters as proposed planting in these areas establish;
- Increased pedestrian, cycle and vehicular movement through the Site and along associated routes;
- Small scale farming operations and farm traffic associated with the Himley Farm Land Trust;
- Small scale operations associated with landscape maintenance and management plan; and
- Gradual changes as the planting and aftercare management establish the new and enhanced hedgerows, reflecting the landscape character of the Site.

6.72. An assessment of the effect of the Himley Village Development on the landscape and visual receptors has been undertaken considering the mitigation inherent in the scheme. This is described in Chapter 5: The Proposed Development and is also summarised in the Mitigation section below for clarity.

Landscape Character

6.73. An assessment of the effects of the Himley Village Development on the landscape character of the key landscape receptors identified within the baseline assessment is set out below.

Table 6.9 Significance of landscape effect after completion

Receptors and Changes	Magnitude of Change	Significance of Effect
Receptor: The landscape character of the area **Sensitivity:** Low **Anticipated Changes:** The proposals retain and enhance the key existing landscape features for local landscape and character type including gently sloping topography, woodland planting and field pattern. The Development would alter the landscape through the introduction of built form and a network of green infrastructure that would integrate the Development with the wider landscape character.	*Minor beneficial* Size of scale of change: the proposals will enhance valued landscape elements, including hedgerows and woodland belts, which reflect the local landscape character and improve the landscape condition. Duration: long term. Geographical Influence: at the scale of character areas within which the proposal lies.	*Negligible to minor beneficial* *Permanent at local level* The proposals would alter the existing landscape through the introduction of high quality build form and green infrastructure. There are no adverse losses to the baseline condition. Taking into account the low landscape sensitivity and low magnitude of change, the effect is considered to be neutral.
Receptor: Aesthetic and perceptual aspects of the landscape **Sensitivity:** Low **Anticipated Changes:** The proposals retain and enhance key landscape elements including the Parliamentary geometric field pattern and large areas of open landscape, and network of hedgerows. The Development would be accommodated without substantial alteration to the overall fabric of the landscape pattern.	*Minor beneficial* Size of scale of change: the proposals will enhance valued landscape elements. This includes the pattern of hedgerows and woodland belts that reflect the local landscape character. Enhancement planting will improve the landscape condition. Duration: long term. Geographical Influence: at the scale of character areas within which the proposal lies.	*Negligible to minor beneficial* *Permanent at local level* The proposals would alter the existing landscape through the introduction of high quality build form and green infrastructure. There are no adverse losses to the baseline condition. Taking into account the low landscape sensitivity and low magnitude of change, the effect is considered to be neutral.
Receptor: The network of existing hedgerows / hedgerow trees **Sensitivity:** Medium **Anticipated Changes:** Locally, there will be some loss of hedgerow along the Middleton Stoney Road. Overall, the proposal retains and enhances a strong network of hedgerows, tree planting and linear landscape features. Hedgerows removed during construction will be replanted reinstating the landscape pattern. All hedgerows would be ecologically enhanced via a ten-meter landscape treatment buffer to both sides.	*Moderate beneficial* Size of scale of change: the proposals will enhance hedgerows that are key features of the landscape character of the Site. The ecological enhancement planting is a measurable addition and improves the quality of this landscape attribute. Duration: long term. Geographical Influence: at the scale of character areas within which the proposal lies.	*Moderate beneficial* *Permanent at local level* Taking into account the medium landscape sensitivity and moderate magnitude of change, the effect is considered to be minor beneficial. The proposals provide measurable improvement to the baseline condition, reflecting local landscape character.
Receptor: Existing woodland shelterbelts **Sensitivity:** Medium	*Moderate beneficial*	*Moderate beneficial*

Receptors and Changes	Magnitude of Change	Significance of Effect
Anticipated Changes: The proposals retain and enhance woodland shelterbelts through appropriate structural tree planting. There would be localised disruption to accommodate a new road to the east of the Site. New woodland planting belts are introduced to the west of the Site to soften the edge of the Site boundary and in integrate the Development with the wider landscape character.	Size of scale of change: the proposals will enhance and provide new woodland shelterbelts that form a key feature of the landscape character of the Site. The enhancement and new planting is a measurable addition that improves the quality of this landscape attribute. Duration: long term. Geographical Influence*:* at the scale of character areas within which the proposal lies.	*Permanent at local level* Taking into account the medium landscape sensitivity and moderate magnitude of change, the effect is considered to be minor beneficial. The proposals provide measurable improvement to the baseline condition, reflecting local landscape character.
Receptor: The setting of residential areas **Sensitivity:** Low **Anticipated Changes:** The intrusion on the tranquillity and setting of residential areas would cease once construction is complete. An area of disturbance would be removed and an appropriate landscape character established. The careful layout of dwellings and character areas within the Site means that the landscape is likely to absorb the proposed Development and would therefore not affect the setting of these residential areas.	*Negligible beneficial* Size of scale of change: the proposals provide a minor benefit to the setting of the residential settlement to the western edge of Bicester through sensitive use of planting and appropriate building scale and massing, which would soften the edge of the Site boundary. Duration: long term. Geographical Influence: at Site level and immediate setting of the Site.	*Negligible to minor beneficial* *Permanent at local level* The proposals would not result in losses or adverse alterations to the setting of residential areas. Taking into account the low landscape sensitivity and low magnitude of change, the effect is considered to be neutral.
Receptor: The setting of the bridleway **Sensitivity:** Negligible **Anticipated Changes:** The intrusion on the tranquillity and setting of the bridleway would cease once construction is complete. There is not direct change to the setting and landscape of the bridleway.	*No change* Size of scale of change: The proposals do not result in any observable alterations of landscape characterises, features or elements. Duration: long term. Geographical Influence: at Site level and immediate setting of the Site.	*Negligible* *Permanent at local level* The proposals would not result in losses or adverse alterations to the setting of residential areas. Taking into account medium landscape sensitivity and no change in magnitude, the effect is considered to be neutral.
Receptor: The setting of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes:** The intrusion on the tranquillity and setting of Middleton Stoney Road would cease once construction is complete. There will be some localised loss of hedgerow to accommodate the entrance junctions.	*Minor adverse* Size of scale of change: Some measurable change in the landscape characteristic of Middleton Stoney Road as a result of hedgerow removal to accommodate the entrance junctions. Duration: long term.	*Negligible to minor adverse* *Permanent at local level* The proposals would result in minor, localised hedgerow loss along Middleton Stoney Road centred on the entrance junctions. Taking into account the low

Receptors and Changes	Magnitude of Change	Significance of Effect
	Geographical Influence: at Site level and immediate setting of the Site.	landscape sensitivity and low magnitude of change, the effect is considered to be negligible adverse.
Receptor: The setting of Himley Farm **Sensitivity:** Medium **Anticipated Changes:** The intrusion on the tranquillity and setting of Middleton Stoney Road would cease once construction is complete. Himley Farm would no longer operate as a working farm but as a smallholding. The Farm buildings (including the listed barns) would be retained and left untouched. There would be a productive planting zone to the immediate setting of the Farm and adjacent to this there would be orchards, allotments and the school playing fields. These proposals respect the setting of the Farm and integrate it within the wider masterplan through careful layout of surrounding landscape. The design of surrounding buildings will reflect the local vernacular, including the barns.	*Moderate adverse* Size of scale of change: No direct change to the immediate setting of the Farm. The completed Development will result in substantial change to the baseline condition of the wider setting of the Farm as arable land changes to planned suburban development. Duration: long term. Geographical Influence: at Site level.	*Minor to moderate adverse* *Permanent at local level* The proposals would result in change to the landscape character of the wider Farm setting. However the proposals retain the immediate Farm setting and the Development integrates the Farm into the heart of the masterplan. The gradual establishment of green infrastructure will provide a new setting that integrates the Farm with the overall masterplan. Taking into account the medium landscape sensitivity and medium magnitude of change, the effect is considered to be minor to moderate adverse.

6.74. The visual effects on each viewpoint location after completion are outlined below:

Table 6.10 Significance of visual effect after completion

Ref	Viewpoint Location	View following Completion	Magnitude of change	Significance of effect
1	Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road	**Receptor:** Users of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes to View:** Close distance view of the Site. Predominately, maximum building heights are only visible. The proposals are screened in part by the existing vegetation along the road verge and by the established boundary vegetation to the Site.	*Minor adverse* Size or scale of change: permanent change to the background view. The proposed Development would be partly visible in the background view obscured by existing vegetation. Minor change in the wider view for road users who typically have a reduced awareness when travelling past. Duration: long term. Geographical influence: at Site level and immediate setting of the Site.	*Negligible to minor adverse* *Permanent at local level* Minor reduction in quality of the existing view that forms part of a wider view along Middleton Stoney Road. Users would typically be of low sensitivity with reduced awareness when passing.

Ref	Viewpoint Location	View following Completion	Magnitude of change	Significance of effect
2	Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road	**Receptor:** Users of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes to View:** Close distance view of the Site. Maximum building heights are only visible screened in part by the existing vegetation along the Site boundary. To the east of this view would be a close proximity view of the Site associated with new ghost island junction.	*Minor adverse* Size or scale of change: The proposed Development would be partly visible in the background view obscured by existing vegetation. Minor change in the wider view for road users who typically have a reduced awareness when travelling past. Duration: long term. Geographical influence: at Site level and immediate setting of the Site.	*Negligible to minor adverse* *Permanent at local level* Minor reduction in quality of the existing view that forms part of a wider view along Middleton Stoney Road. Users would typically be of low sensitivity with reduced awareness when passing.
3	Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road	**Receptor:** Users of Middleton Stoney Road **Sensitivity:** Low **Anticipated Changes to View:** Close distance view of the Site associated with new ghost island junction and partial hedgerow removal. Maximum building heights predominantly visible in the middle ground of the view.	*Minor adverse* Size or scale of change: permanent change to the middle ground view, increased visibility due to removal of existing hedgerow to facilitate construction of the entrance junction. However, due to the nature of the receptor, the proposed changes would not be a dominant visual focus in the overall composition of the view for passing road users due to the road orientation and time over which the user would experience the view Duration: long term. Geographical influence: at Site level and immediate setting of the Site.	*Negligible to minor adverse* *Permanent at local level* Some reduction in quality of the existing view due localised loss of hedgerow that forms landscape character along Middleton Stoney Road, however, part of a wider view along Middleton Stoney Road. Users would typically be of low sensitivity with reduced awareness when passing.
4	Middleton Road on roadside verge to gated entrance of the field	**Receptor:** Users of Middleton Road **Sensitivity:** Low **Anticipated Changes to View:** Long distance view. Small glimpses of buildings at maximum parameter heights however the existing woodland copse and field hedgerows largely screen the overall view. The capacity for this vegetation to screen the development would	*Negligible adverse* Size or scale of change: Small glimpses of the Development will be visible amongst trees within the background view. Partially obscured by vegetation it does not substantially break the skyline. Duration: long term Geographical influence: at the scale of character areas within which the proposal lies.	*Negligible to minor adverse* *Permanent at local level* Minor reduction in quality of the existing backdrop view, some glimpses of the Development would be discernible but not significant due to the screening element of the existing vegetation. Users would typically be of low sensitivity with

Ref	Viewpoint Location	View following Completion	Magnitude of change	Significance of effect
		be more prevalent in summer months. The overall composition of the view remains unchanged.		reduced awareness when passing.
5	Middleton Road on roadside verge to gated entrance to bridle path	**Receptor:** Users of the Bridleway **Sensitivity:** High **Anticipated Changes to View:** Long distance view. The minimum building parameter heights are largely screened by existing vegetation. The upper extents of the energy centre chimney stacks would be partly visible above existing boundary vegetation. Partial view of buildings at maximum parameter heights. The changing topography and established hedgerows along the horizon line provide some screening. The capacity for this vegetation to screen the development would be more prevalent in summer months. The proposals do not dominate the composition of the view, the fore and middle ground remains unchanged.	*Negligible adverse* Size or scale of change: permanent partial change to the background view. The maximum building parameters are most visible yet do not form a dominant part of the composition in this view. Users of the bridle path will have long distance view, short in duration, as the Development becomes largely screened from view as the path passes behind the woodland copse and existing field boundary hedgerows. Duration: long term Geographical influence: at the scale of character areas within which the proposal lies.	*Minor adverse* *Permanent at local level* Some reduction in quality of the existing backdrop view with views to Graven Hill obscured by new buildings. Users of the bridleway will have a long distance view of short duration moving along the path where existing vegetation breaks sequential views. However given the high sensitivity of the receptor, the effect is considered minor adverse.
6	From bridleway south of Crowmarsh Farm	**Receptor:** Users of Middleton Road and users of the Bridleway **Sensitivity:** High **Anticipated Changes to View:** Medium distance view. The existing Site boundary vegetation partially screens buildings at minimum parameter height. There would be view of the buildings and energy centre chimney	*Moderate adverse* Size or scale of change: permanent change to the background view. The maximum building parameters are most visible and change the composition of the view. Users of the bridle path would have a passing view due to the orientation of the path (away from the direct view of the Site) and that the path is frequently buffered by adjacent mature field hedgerows that screen sequential views	*Moderate to substantial adverse* *Permanent at local level* Noticeable change in the existing background view that alters the skyline with little screening afforded from the existing vegetation. Taking into account the high sensitivity of the receptor, the effect is moderate

Ref	Viewpoint Location	View following Completion	Magnitude of change	Significance of effect
		stacks behind existing vegetation, to the centre of the view The capacity for this vegetation to screen the development would be more prevalent in summer months. The maximum building parameter heights would change the composition of the background view and alter the skyline. The foreground and middle ground would remain unchanged. The dividing hedgerow in the middle ground partially filters the overall view.	Duration: long term Geographical influence: at the scale of character areas within which the proposal lies.	to substantially adverse.
7	From bridleway/ Aldershot Farm track to gated entrance of the field	**Receptor:** Users of Middleton Road and users of the Bridleway **Sensitivity:** High **Anticipated Changes to View:** Medium distance view. Existing Site boundary vegetation screens buildings at minimum parameter height. The upper extents of the energy centre chimney stacks may be partly visible through existing vegetation in winter months. However in summer months, with the benefit of leaf cover, the view would be completed screened. The maximum building parameter heights would change the composition of the background view and alter the skyline. Views would be partially filtered; substantial existing vegetation screens much of the view. The foreground and middle ground would remain unchanged.	*Minor adverse* Size or scale of change: permanent change to the background view. Only part of the maximum building parameters are visible and do not create a major addition to the composition of the view as a result of the retained existing vegetation. Users of the bridle path would have a passing view due to the orientation of the path (away from the direct view of the Site) and afforded only by the break in hedgerow to accommodate the field gate Duration: long term Geographical influence: at the scale of character areas within which the proposal lies.	*Minor to moderate adverse* *Permanent at local level* Some reduction in quality of the existing background view. There is considerable screening afforded by the existing, retained vegetation however due to the high sensitivity of the receptor, the effect is considered minor to moderately adverse.

Mitigation

Demolition and Construction

The Network of Existing Hedgerows and Trees

6.75. There would be a temporary, minor to moderate adverse effect on the network of existing hedgerows associated with the construction process. This would include removal of hedgerows to create entrances and localised, temporary removal within the Site. This is unavoidable in order to facilitate construction works and allow the Himley Village Development to proceed. Vegetation will be retained and protected, where possible, and re-planted where subject to temporary removal.

The Setting of Himley Farm

6.76. There would be a temporary, moderate adverse effect on the setting of Himley Farm. The close proximity of the construction works would create a temporary loss of character and tranquillity to the setting. This is unavoidable in order to facilitate construction works, however, the immediate setting of the Farm would be retained.

Viewpoints 5, 6 and 7 from the Bridleway

6.77. There would be temporary, minor to moderate adverse visual effects. This is associated with the medium and long-range views of the construction process including the presence of mobile cranes and construction works to maximum building parameter heights. The presence of cranes is inevitable in connection with construction of the type and scale envisaged.

6.78. Overall these potential temporary effects are common as a consequence of building activity and there is no practical way of avoiding it. Best practice construction techniques would be implemented in order to reduce effects where possible. This would comprise part of a Construction Environmental Management Plan (CEMP) and would typically include:

- Use of hoarding to the Site boundary to screen noise, sensitive views and provide a suitable external appearance to the Site;
- Retention of existing vegetation including at the periphery of the Site to provide visual screening;
- Appropriate protection of retained vegetation to prevent damage during construction;
- Locating site compounds and storage areas away from sensitive views;
- Ensuring a tidy site management to reduce clutter associated with building works;
- Traffic control at entrances to the Site to minimise the intrusion on the public highway;
- Minimising the impact of vibration, and air, light and noise pollution;
- Limited lighting of mobile cranes and outside of working hours;
- Use of self erecting mobile crane which can be dismantled outside of working hours; and
- Working hours considerate to the local community and residents.

Completed Development

The Setting of Himley Farm

6.79. There would be a permanent, minor to moderate adverse effect on the setting of Himley Farm. The proposals would result in a change to the landscape character of the wider Farm Setting from arable to planned suburban development. The gradual establishment of green infrastructure would establish a new setting for the Farm that is integrated within the heart of the Development.

6.80. There are no further potential significant adverse effects identified on the landscape as a resource. The masterplan for Himley Village has been developed as an iterative process taking into account potential landscape effects.

Viewpoint 5 Middleton Road

6.81. There would be a permanent, minor adverse long-range visual effect associated with the built form, at maximum building parameter heights, interrupting the skyline. This results in the existing view of Graven Hill being lost. This effect is inevitable as part of the overall Himley Village Development. However, the design of buildings to reflect the local vernacular and the gradual establishment of green infrastructure along the Site boundary would help to minimise the degree of effect.

Viewpoint 6 Bridleway South of Crowmarsh Farm

6.82. There would be a permanent, moderate to substantial adverse long-range visual effect. There would be partial, filtered views of the minimum building parameter heights and the energy centre chimney stacks. The maximum building parameter heights noticeably change the composition of the view interrupting the skyline and altering a large proportion of the view for users of the bridleway. This effect is inevitable as part of the overall Himley Village Development. However, the design of buildings to reflect the local vernacular and the gradual establishment of green infrastructure along the Site boundary would help to minimise the degree of effect.

Viewpoint 7 Bridleway Aldershot Farm Track

6.83. There would be a permanent, minor to moderate adverse long-range visual effect associated with the built form, of maximum building parameter heights, visible to users of the bridleway. This effect is inevitable as part of the overall Himley Village Development. The gradual establishment of green infrastructure along the Site boundary would help to minimise the degree of effect.

6.84. The potential significant adverse effects identified are a consequence of the building activity of a large-scale development. The mitigation measures that would need to be implemented in order to reduce the effects include as described below.

Scale and Massing of Built Form

6.85. The proposals consider a natural correlation between building height and density. To the north and east of the Site, density is focused around the Boulevard, key destinations and green corridors close to paths and cycle ways. To the south and west edges of the Development lower density is more appropriate creating a suitable transition from settlement to open rolling landscape.

6.86. This considered approach to the scale and massing of dwelling typologies responds directly to the site context and surrounding landscape character. Suitable building densities and location contributes to minimising sensitive views and reducing the overall degree of visual impact.

Establishment of Green Infrastructure

6.87. In line with the principles set out in PPS1 Supplement (eco-towns), at least forty per cent of the land at Himley Village is designated as green infrastructure. The masterplan for Himley Village has been developed as an iterative process taking into account potential adverse effects. Inherent mitigation compromises the following:

- Developing the masterplan to respond to, and work with, the natural topography of the Site which minimises the overall visual impact of built form;
- Arranging the layout of the proposed dwellings around a network of green infrastructure and gives priority to public realm and landscape features;

- Retention and enhancement of existing hedgerows to create a strong visual connection with the existing agricultural landscape character of the area and provide a network for biodiversity, amenity and water management; and
- Inclusion of a sustainable water strategy, provision of open landscape and landscape buffers within the Site to contribute positively to the overall landscape pattern of the area.

6.88. The gradual establishment and maintenance of the green infrastructure will be fundamental to mitigating sensitive views and improving the quality of key landscape attributes that are central to each local character area. Due to the time lapse between construction phases, a consistent and thorough approach to landscape maintenance will be critical in order to integrate all phases and provide a uniform appearance across the Development.

6.89. It is assumed that there will be a standard two-year maintenance period typical of conventional construction contracts. However, a standard maintenance scheme is deemed inadequate for the nature and scale of the Development given the extent and importance of the landscape features on the Site. There will therefore be a need to ensure that maintenance of the landscape is undertaken over the long term.

6.90. In response to this, it is proposed to implement a landscape stewardship scheme called the Himley Farm Land Trust (HFLT). The HFLT would be based on Site and collectively managed by members of the local community, to deliver all services required to maintain the new public realm and green infrastructure.

6.91. The HFLT would build and strengthen the community through place making and engaging the local community to ensure the maintenance and management of the landscape as a valuable asset. The developer, P3Eco, would provide the capital cost for setting up the HFLT which would deliver all local authority obligations for maintenance. It is expected that the HFLT would therefore be funded initially through endowment from Section 106 planning obligation with all subsequent, ongoing maintenance funded through an affordable services charge to residents.

6.92. It is anticipated that landscape maintenance and management measures will include:

- Establishment and maintenance of hedgerows including twice annual mowing regime to allow development of long grasses;
- Establishment and maintenance of wetland features including mowing regime and leaf litter clearance;
- Establishment and maintenance of grassing and planting including mowing regime, replacement planting when needed;
- Growing plant and tree nursery stock for new and replacement planting;
- Management of productive landscapes for food growing; and
- Collection of organic waste for composting.

Residual Effects

Demolition and Construction

The Network of Existing Hedgerows and Trees

6.93. The significance of this effect will remain **temporary** and **minor adverse** following mitigation. There will be some permanent, removal of hedgerows to accommodate construction of the two new entrance junctions. The removal of approximately twenty meters of hedgerow to each junction is

not offset through mitigation and alters the existing landscape fabric along Middleton Stoney Road over the short to medium term.

The Setting of Himley Farm

6.94. The significance of this effect is anticipated to be **temporary** and **minor to moderate adverse** following mitigation. Appropriate, and best practice construction methods will assist in reducing the intrusion from close range construction works.

Viewpoints 5 Middleton Road Bridleway Entrance

6.95. The significance of this effect is anticipated to be **temporary** and **minor adverse** following mitigation. Appropriate, and best practice construction methods will assist in reducing the intrusion from close range construction works.

Viewpoints 6 Bridleway south of Crowmarsh Farm

6.96. The significance of this effect is anticipated to be **temporary** and **minor adverse** following mitigation. Construction works associated with the maximum building heights of later phases will be most noticeable to bridleway users. Due to the topography of the Site, the view would remain largely visible following mitigation over the short to medium term.

Completed Development

The Setting of Himley Farm

6.97. The significance of this effect is anticipated to be **permanent** and **minor adverse.** The Development integrates the Farm sensitively at the heart of the Development. However the change in landscape character from arable to planned suburban development remains an adverse change from the baseline condition.

Viewpoint 6 Bridleway south of Crowmarsh Farm

6.98. The significance of this effect is anticipated to be **permanent** and **minor to moderate adverse** following mitigation. There would be a noticeable change in the existing background view that alters a large proportion of the skyline. Mitigation would include suitable scale and massing of built form which responds to the wider landscape and would reduce the degree of visual impact. Taking into the account the extent of change in the overall view and the high sensitivity of the receptor; the effect is minor to moderately adverse.

Landscape Benefits

6.99. The establishment and maintenance of the proposed green infrastructure post completion would bring significant permanent benefits to the overall landscape character of the Site. The role of the Himley Farm Land Trust (HFLT) would be central in securing the long-term landscape improvements that will help to realise the anticipated positive changes in effect described below.

6.100. For the purposes of describing landscape benefits, ‘long-term’ is anticipated to be the period following the first fifteen years post completion. It is anticipated that this timescale would allow vegetation to reach sufficient maturity to give a noticeable, permanent effect on the identified receptors.

The Landscape Character of the Area

6.101. Following mitigation the significance of this effect is **permanent** and **minor beneficial.** The Development retains and enhances landscape features and elements, which build on the wider established character and contribute to local distinctiveness. The proposals include the addition

and enhancement of key elements and features, such as hedgerows and woodland shelterbelts. Through gradual establishment and maintenance, there will be a noticeable improvement on the quality of these valued landscape elements overall landscape character.

Aesthetic and Perceptual Aspects of the Landscape

6.102. Following mitigation the significance of this effect is **permanent** and **minor beneficial.** The Development retains and enhances key landscape elements including the geometric field pattern, network of hedgerows and areas of open space. As new and enhancement planting of the Himley Village Development gradually matures and becomes established, there will be a noticeable improvement on the fabric of the landscape and, in turn, the perceived sense of tranquillity.

The Network of Existing Hedgerows and Hedgerow Trees

6.103. Following mitigation the significance of this effect is **permanent** and **moderate beneficial.** The Himley Village Development largely retains the network of existing field hedgerows and includes proposals for substantial hedgerow enhancement planting with ten meter planted buffer zones provided to either side. Through gradual establishment and maintenance, there would be a noticeable improvement in the baseline condition of the hedgerows, which are valued through national and local character assessments identified in local development plans.

Existing Woodland Shelterbelts

6.104. Following mitigation the significance of this effect is **permanent** and **moderate to substantial beneficial.** The Development largely retains existing woodland belts and introduces new ones. Proposals include substantial new and enhancement woodland planting. Through gradual establishment and maintenance, there would be a noticeable improvement in the baseline condition of the woodland shelterbelts, which are valued through national and local character assessments identified in local development plans.

Summary and Conclusion

6.105. Table 6.11 and 6.12 below summarise the landscape and visual assessments of sensitivity of receptors and the magnitude of the changes arising from the development, and provides an assessment of the significance of the effects of those changes, for the demolition and construction phases and completion.

Table 6.11 Summary Landscape Assessment

Receptors	Sensitivity	Magnitude of change: Demolition & Construction	Significance of Effects: Demolition & Construction	Mitigation	Residual Effects: Demolition & Construction (Following mitigation)	Magnitude of change: After Completion	Significance of Effects: After Completion	Mitigation	Residual Effects: After Completion (Following mitigation)
The landscape character of the area	Low	**Construction phase 1-4** Moderate adverse; at the scale of character areas within which the proposal lies; short term **Construction phase 5-8** Minor adverse; at the scale of character areas within which the proposal lies; medium term	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable retention and protection of existing vegetation	Negligible to minor adverse; temporary; short to medium term at local level	Minor beneficial; at the scale of character areas within which the proposal lies; long term	Negligible to minor beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Minor beneficial; permanent at local level
Aesthetic and perceptual aspects of the landscape (Inc scale, complexity, patterns and openness)	Low	**Construction phase 1-4** Moderate adverse; at the scale of character areas within which the proposal lies; short term **Construction phase 5-8** Minor adverse; at the scale of character areas within which the proposal lies; medium term	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable retention and protection of existing vegetation	Negligible to minor adverse; temporary; short to medium term at local level	Minor beneficial; at the scale of character areas within which the proposal lies; long term	Negligible to minor beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Minor beneficial; permanent at local level
The network of existing	Medium	**Construction phase 1-4**	Minor to moderate adverse; temporary; short	Best practice construction methods including appropriate use of	Minor adverse; temporary; short	Moderate beneficial; at the scale of character areas within which	Moderate beneficial;	Scale and massing of built form. Long term establishment of	Moderate to substantial beneficial;

Receptors	Sensitivity	Magnitude of change: Demolition & Construction	Significance of Effects: Demolition & Construction	Mitigation	Residual Effects: Demolition & Construction (Following mitigation)	Magnitude of change: After Completion	Significance of Effects: After Completion	Mitigation	Residual Effects: After Completion (Following mitigation)
hedgerows and hedgerow trees		Moderate adverse; at the scale of character areas within which the proposal lies; short term **Construction phase 5-8** Minor adverse; at the scale of character areas within which the proposal lies; medium term	to medium term at local level	site hoarding, suitable retention and protection of existing vegetation	to medium term at local level	the proposal lies; long term	permanent at local level	green infrastructure	permanent at local level
Existing woodland shelterbelts	Medium	**Construction phase 1-4** No change; at the scale of character areas within which the proposal lies; short term **Construction phase 5-8** Negligible adverse; at the scale of character areas within which the proposal lies; medium term	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable retention and protection of existing vegetation	Negligible to minor adverse; temporary; short to medium term at local level	Moderate beneficial; at the scale of character areas within which the proposal lies; long term	Moderate beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Moderate beneficial; permanent at local level
The setting of residential areas	Low	**Construction phase 1-4** Minor adverse; at Site and immediate setting of the Site; short term **Construction phase 5-8**	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable working hours and traffic control to minimise intrusion on noise	Negligible to minor adverse; temporary; short to medium term at local level	Negligible beneficial; at Site and immediate setting of the Site; long term	Negligible to minor beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible beneficial; permanent at local level

Receptors	Sensitivity	Magnitude of change: Demolition & Construction	Significance of Effects: Demolition & Construction	Mitigation	Residual Effects: Demolition & Construction (Following mitigation)	Magnitude of change: After Completion	Significance of Effects: After Completion	Mitigation	Residual Effects: After Completion (Following mitigation)
		Minor adverse; at Site and immediate setting of the Site; medium term		and public highways					
The setting of the bridleway	Negligible	**Construction phase 1-4** No change; at Site and immediate setting of the Site; short term **Construction phase 5-8** No change; at Site and immediate setting of the Site; medium term	Neutral; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable working hours to minimise intrusion on noise	Negligible; temporary; short to medium term at local level	No change	Negligible; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Neutral; permanent at local level
The setting of Middleton Stoney Road	Low	**Construction phase 1-4** Minor adverse; at Site and immediate setting of the Site; short term **Construction phase 5-8** Negligible adverse; at Site and immediate setting of the Site; medium term	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable working hours and traffic control to minimise intrusion on noise and public highways	Negligible to minor adverse; temporary; short to medium term at local level	Minor adverse; at Site and immediate setting of the Site; long term	Negligible to minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible to minor beneficial; permanent at local level
The setting of Himley Farm	Medium	**Construction phase 1-4** Moderate adverse; at Site level within the redline	Moderate adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable working hours and traffic	Minor to moderate adverse; temporary; short to medium term at local level	Moderate adverse; at Site level within the red boundary; long term	Minor to moderate adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Minor adverse; permanent at local level

Receptors	Sensitivity	Magnitude of change: Demolition & Construction	Significance of Effects: Demolition & Construction	Mitigation	Residual Effects: Demolition & Construction (Following mitigation)	Magnitude of change: After Completion	Significance of Effects: After Completion	Mitigation	Residual Effects: After Completion (Following mitigation)
		boundary; short term **Construction phase 5-8** Moderate adverse; at Site level within the redline boundary; medium term		control to minimise intrusion on noise					

Table 6.12 Summary Viewpoint Assessment

Ref	Viewpoint Location	Receptors	Sensitivity	Magnitude of change: Demolition & Construction	Significance of Effects: Demolition & Construction	Mitigation	Residual Effects: Demolition & Construction (Following mitigation)	Magnitude of change: After Completion	Significance of Effects: After Completion	Mitigation	Residual Effects: After Completion (Following mitigation)
1	**Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road**	Users of Middleton Stoney Road, people living in nearby areas	Low	**Construction phase 1-4** Minor adverse; at Site and immediate setting of the Site; short term changes to background view **Construction phase 5-8** Negligible adverse; at Site and immediate setting of the Site; medium term changes to background view	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding	Negligible adverse; temporary; short to medium term at local level	Minor adverse change; at Site and immediate setting of the Site; long term change to the background view	Negligible to minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible adverse; permanent at local level
2	**Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road**	Users of Middleton Stoney Road, people living in nearby areas	Low	**Construction phase 1-4** Moderate adverse; at Site and immediate setting of the Site; short term changes to middle ground view **Construction phase 5-8** Minor adverse; at Site and immediate setting of the Site; medium term	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding	Negligible adverse; temporary; short to medium term at local level	Minor adverse change; at Site and immediate setting of the Site; long term change to the background view	Negligible to minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible adverse; permanent at local level

				changes to middle ground view							
3	**Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road**	Users of Middleton Stoney Road, people living in nearby areas	Low	**Construction phase 1-4** Moderate adverse; at Site and immediate setting of the Site; short term changes to middle ground view **Construction phase 5-8** Minor adverse; at Site and immediate setting of the Site; medium term changes to middle ground view	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding	Negligible adverse; temporary; short to medium term at local level	Minor adverse change; at Site and immediate setting of the Site; long term change to the middle ground view	Negligible to minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible adverse; permanent at local level
4	**Middleton Road on roadside verge to gated entrance of the field**	Users of Middleton Road, people living in nearby areas	Low	**Construction phase 1-4** Negligible adverse; at the scale of character areas within which the proposal lies; short term changes to the background view **Construction phase 5-8** Negligible adverse; at the scale of character areas within which the proposal lies; medium term changes to the background view	Negligible adverse; temporary; short to medium term at local level	Best practice construction methods including use of self erecting cranes	Negligible adverse; temporary; short to medium term at local level	Negligible adverse change; at Site and immediate setting of the Site; long term change to the background view	Negligible to minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible adverse; permanent at local level

5	**Middleton Road on roadside verge to gated entrance to bridle path**	Users of bridleway	High	**Construction phase 1-4** Minor adverse; at the scale of character areas within which the proposal lies; short term changes to the background view **Construction phase 5-8** Moderate adverse; at the scale of character areas within which the proposal lies; medium term changes to the background view	Minor to moderate adverse; temporary; short to medium term at local level	Best practice construction methods including use of self erecting cranes	Minor adverse; temporary; short to medium term at local level	Negligible adverse change; at Site and immediate setting of the Site; long term change to the background view	Minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible to minor adverse; permanent at local level
6	**From bridleway south of Crowmarsh Farm**	Recreational users of bridleway	High	**Construction phase 1-4** Negligible adverse; at the scale of character areas within which the proposal lies; short term changes to the background view **Construction phase 5-8** Moderate adverse; at the scale of character areas within which the proposal lies; medium term changes to the background view	Minor to moderate adverse; temporary; short to medium term at local level	Best practice construction methods including use of self erecting cranes	Minor adverse; temporary; short to medium term at local level	Moderate adverse change; at Site and immediate setting of the Site; long term change to the background view	Moderate to substantial adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Minor to moderate adverse; permanent at local level

7	**From bridleway/ Aldershot Farm track to gated entrance of the field**	Recreational users of bridleway	High	**Construction phase 1-4** No change; at the scale of character areas within which the proposal lies; short term changes to the background view **Construction phase 5-8** Negligible adverse; at the scale of character areas within which the proposal lies; medium term changes to the background view	Minor adverse; temporary; short to medium term at local level	Best practice construction methods including use of self erecting cranes	Negligible to minor adverse; temporary; short to medium term at local level	Minor adverse change; at Site and immediate setting of the Site; long term change to the background view	Minor to moderate adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible to minor adverse; permanent at local level

References

1 Department of Communities and Local Government (2009) *Eco Towns Supplement to PPS1*.
2 Cherwell District Council. (1996) *Cherwell District Local Plan.*
3 Cherwell District Council. (2006-2031) *Cherwell District Submission Local Plan.*
4 Cherwell District Council. (2010) *Eco Bicester: One Shared Vision.*
5 Cherwell District Council. (1998) *Cherwell District Council Countryside Design Summary.*
6 Landscape Institute and Institute of Environmental Management and Assessment. (2013) Guidelines for Landscape and Visual Impact Assessment', Third Edition
7 Countryside Agency and Scottish Natural Heritage. (2002) *Landscape Character Assessment Guidance for England and Scotland.*
8 Oxfordshire County Council. (2004) *Oxfordshire Wildlife and Landscape Study.*
9 Cherwell District Council. (2005) *Cherwell District Landscape Assessment.*
10 A2dominion. (2014) *NW Bicester Masterplan Vision and Objectives.*
11 Hyder Consulting. (2014) *Masterplan Strategic Environmental Report – Vol 1.*

7. Ecology

Introduction

7.1. This chapter assesses the likely significant ecological effects of the Himley Village Development on flora, fauna and habitats and identifies any sensitive ecological receptors within those categories. It describes the assessment methodology, the baseline conditions of the Himley Village Site and its surrounds, likely significant ecological effects, mitigation measures to prevent, reduce or offset any significant adverse ecological effects and the likely residual ecological effects after such measures have been employed.

7.2. The following ecological survey reports were referred to in the preparation of this chapter:

- Phase 1 habitat survey of the Himley Village Site undertaken in October 2014 by the author and presented in **Technical Appendix 7.1**. A habitat map is presented as **Figure 7.1**;
- *Ecology Surveys: Technical Appendix 6A to 6I;* report produced by Hyder Consulting (UK) in February 2014, for A2dominion relating to the North West Bicester Masterplan (of which the Site forms a part) and included as **Technical Appendix 7.2**. A habitat map for the NW Bicester Masterplan area is presented as **Technical Appendix 7.3**;
- *Biodiversity Strategy Appendix 6J*, report produced by Hyder Consulting (UK) August 2014, for A2dominion North West Bicester Eco development;
- *Environmental Statement: Volume 1 Main Text* Outline Application NW Bicester Planning Application 1, report produced by Hyder Consulting (UK) in August 2014, for A2dominion.

7.3. The various surveys of the Site and wider NW Bicester Masterplan area are sufficiently detailed to allow an accurate characterisation of the baseline condition ecology of the Site. The recent Site visit ensures that recent changes have been accounted for.

7.4. The author of this chapter is Gary Grant CEnv, FCIEEM, assisted by Sabrina Bremner MCIEEM. Both are suitably qualified and experienced ecologists.

Legislation, Planning Policy & Guidance

Legislation

7.5. Legislation that may be relevant is summarised in the paragraphs that follow:

7.6. The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations)[1] implements the Bern Convention, the Birds Directive and Natural Habitats and Wild Fauna and Flora (92/43/EEC Habitat Directive) in England and Wales. The Regulations specify the designation and protection of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

7.7. The Habitats Regulations also provide protection for a number of species that are considered important at a European level referred to as European Protected Species (EPS). The EPS that occur on the Site are species of bat and the great crested newt.

7.8. The Wildlife and Countryside Act, 1981 (as amended)[2] provides legal protection for Sites of Special Scientific Interest (SSSI). It also provides protection for a selected plants and animals including birds, reptiles and amphibians.

7.9. The following species and groups could potentially be present at the Site and are variously protected by the following legislation:

- Bats: All species of bat are fully protected under The Habitats Regulations through their inclusion on Schedule 2 of the Wildlife and Countryside Act. The Habitats Regulations prohibit the deliberate killing, injuring or capturing of all bats and the deliberate disturbance of bats or the damage or destruction of breeding sites or resting places. Bats are also currently protected under Schedule 5 of the Wildlife and Countryside Act: this provides additional protection from intentional or reckless disturbance, or obstruction of access to any place of shelter or protection;
- Badger: This species is protected by the Protection of Badgers Act 1992[3]. It is an offence to wilfully kill, injure, take, or attempt to kill, injure or take a badger, to intentionally or recklessly damage, destroy or obstruct access to a badger sett or any part thereof or intentionally or recklessly disturb a badger when it is occupying a badger sett;
- Dormouse: The dormouse is fully protected under Schedule 5 of the Wildlife and Countryside Act. It is an offence to wilfully kill, injure, or take a dormouse or to damage, destroy or obstruct access to any structure or place that the animal uses for shelter and to disturb the animal whilst it is in occupation. The Habitat Regulations make it an offence to deliberately capture, kill or disturb a dormouse. It is also an offence to damage or destroy a breeding site or resting place;
- Water vole: The water vole has legal protection under the Wild Mammals Act 1996 and Schedule 5 of the Wildlife and Countryside Act 1981. This makes it an offence to damage, destroy, or obstruct access to any structure or place that water voles use for shelter or protection and disturb water voles while they are using such a place;
- Otter: The otter is fully protected under Schedule 5 of the Wildlife and Countryside Act and listed in Schedule 2 of the Habitats Regulations. It is an offence to capture, wilfully kill, injure, or take an otter or to damage, destroy or obstruct access to any structure or place that the animal uses for shelter and to disturb the animal whilst it is in occupation;
- Birds: With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act. Among other things, this makes it an offence to intentionally kill, injure or take any wild bird and/ or destroy the nest of any wild bird while it is in use or being built. Certain species of bird, for example the barn owl, receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC).[4] This affords these species protection against intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young or intentional or reckless disturbance of dependent young of such a bird;
- Great crested newt: This species is listed on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. It is fully protected under The Habitats Regulations through its inclusion on Schedule 2. The great crested newt is also protected under Schedule 5 of the Wildlife and Countryside Act. The legislation prohibits the deliberate killing, injuring or capturing of great crested newts, disturbance or damaging or destroying breeding sites or resting places and the deliberate taking or destruction of eggs;
- Herpetofauna (Reptiles and amphibians): These species are protected under Schedule 5 of the Wildlife & Countryside Act. It is prohibited to intentionally kill or injure these species.

7.10. The Natural Environment and Rural Communities (NERC) Act 2006[5] is the foundation on which Biodiversity Action Plans (BAPs) are based. This Act places a duty on all local authorities to promote the conservation of all Habitats and Species of Principal Importance listed in the UK BAP and habitats and species listed in local BAPs.

National Planning Policy

7.11. The planning policies of relevance to the Development are summarised below:

National Planning Policy Framework, 2012

7.12. The National Planning Policy Framework 2012 (NPPF)[6] emphasises that impacts to biodiversity should be minimised and net gains to biodiversity should be achieved wherever possible. It states that planning policies should plan for biodiversity at a landscape scale and that they should identify components of local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation. It also advises that planning policies should promote the preservation, restoration and recreation of priority habitats, ecological networks and the protection and recovery of populations of priority species, linked to national and local targets (within the NERC and targeted by the UK and Local BAPs) and identify suitable indicators for monitoring biodiversity in the plan. The NPPF supersedes Planning Policy Statement 9: Biodiversity and Geological Conservation (2005) amongst other documents.

Supplement to Planning Policy Statement 1: Eco-towns, 2009

7.13. The Supplement to Planning Policy Statement 1 (PPS1): eco-towns, 2009[7] identifies the minimum standards that any eco-town must adhere to. It states that the design of eco-towns should take account of the impact on local ecosystems, mitigating negative impacts as far as possible, and maximising opportunities to enhance the local environment. Eco-town proposals should produce a strategy that demonstrates a net gain in local biodiversity, detailing priority actions in line with relevant BAPs.

Local Planning Policy

Cherwell Local Plan, 1996[8]

7.14. Relevant policies which are saved in the Local Plan include: Policy C1 Protection of sites of nature conservation value, Policy C2 Development affecting protected species, Policy C4 Creation of new habitats, Policy C5 Protection of ecological value and rural character of specified features of value in the district.

Cherwell Submission Local Plan, 2006-2031, (2014)

7.15. Relevant Policies within the Local Plan 2006 to 2031 are as follows: Policy ESD 9 Protection of the Oxford Meadows SAC and Policy ESD 10 Protection and Enhancement of Biodiversity and the Natural Environment.

Non-Statutory Cherwell Local Plan 2011

7.16. Policies within this document[9] of relevance to the Development include Policy EN22, which states that proposals should incorporate features of nature conservation value within sites and that proposals should retain and enhance features of value where possible; Policy EN23, which states that an ecological survey must be conducted to establish the likely impact upon the nature conservation resource; Policy EN24 which relates to the protection of sites and species and the control of development to avoid damage or loss to a site of ecological value; Policy EN25 which relates to protected species and those identified within the Oxfordshire Biodiversity Action Plan and the avoidance of impacts to them as a result of proposed development; Policy EN27 which states

that the creation of new habitats particularly those concerning habitats or species of principal importance; and Policy EN28 which highlights the opportunity to enhance the ecological value and biodiversity of the floodplain of the River Bure and Langford Stream, Bicester (amongst other sites).

Biodiversity Action Plans

The UK Biodiversity Action Plan (1994)

7.17. The UK Biodiversity Action Plan (UK BAP)[10] was published in 1994 in response to the Convention on Biological Diversity. The Plan describes the biological resources of the UK and provides detailed plans for their conservation. Action plans for the most threatened habitats and species (now referred to as Habitats and Species of Principal Importance) were laid out. Relevant Habitats and Species of Principal Importance are described in Tables 7.3 and 7.4.

The Post 2010 Biodiversity Framework

7.18. The Post 2010 Biodiversity Framework[11] is a framework of priorities for the UK's response to the Convention on Biological Diversity, covering the period from 2011 to 2020. Within it are five strategic goals which, in summary are: to address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; to reduce the direct pressures on biodiversity and promote sustainable use; to improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; to enhance the benefits to all from biodiversity and ecosystems: and to enhance implementation through participatory planning, knowledge management and capacity building.

Local BAPs

Oxfordshire Local BAP 2001[12]

7.19. The Oxfordshire Local BAP focuses on those Habitats and Species of Principal Importance identified in the UK BAP that are found within the county. The Oxfordshire Wildlife & Landscape Study (OWLS)[13] provides advice on landscape and biodiversity conservation for every part of the County. The Local BAP provides details of Oxfordshire BAP habitat targets and Conservation Target Area maps and statements. Relevant habitats are detailed in Table 7.4.

Cherwell BAP 2014-15[14]

7.20. Cherwell BAP 2014-15 sets out the methods by which the council will meet the requirements of the NERC Act (2006) and other biodiversity legislation and planning policy requirements to conserve biodiversity, via the Cherwell Local Plan. Important sites and species are also listed. [15]Those of relevance can be found in Tables 7.3 and 7.4.

Guidance

Eco-Bicester – One Shared Vision, December, 2010

7.21. Within this document are details of the aspirations to maximise biodiversity gains, including the creation of a network of open spaces, multi-functional green infrastructure; new wetland areas and local priority habitats whilst protecting existing habitats and enhancing biodiversity, including features such as green walls and green roofs.

Assessment Methodology and Significance Criteria

Assessment Methodology

7.22. The method for this Ecological Impact Assessment (EcIA) follows that described by the IEEM in 2006[16] (now a Chartered Institute, CIEEM). This chapter provides a summary of the baseline conditions at the Site, the identification of the zone of influence for the Himley Village Development and the identification and evaluation of the ecological receptors likely to be impacted by the Development. It follows with an assessment of the likely significant effects during the Demolition/Site Formation/Construction and Operational Phases. Proposed avoidance, mitigation and compensatory measures are then detailed, and the residual and cumulative effects are predicted.

Consultation

7.23. It has been established through consultation by Hyder Consulting (UK) Ltd (Hyder) as part of the wider NW Bicester Masterplan that the development is not within an 'ecologically sensitive area'. The ecologically sensitive receptors identified within this chapter conform to those previously identified as part of the assessment of the NW Bicester Masterplan area, of which the Himley Village Site forms a part.

Baseline Surveys

7.24. Baseline ecological conditions of the NW Bicester Eco-town area, which includes the Site, are described in *Ecology Surveys: Technical Appendix 6A to 6I;* report produced by Hyder Consulting (UK) in February 2014, for a2dominion. These are presented as **Technical Appendix 7.2**. The surveys included:

- Phase 1 Habitat surveys (Arup 2010, Hyder September 2010);
- Hedgerow assessments (Arup July 2010, Hyder September 2010);
- Aquatic and terrestrial invertebrate surveys (Arup August and September 2010, Arup July and October 2010) including targeted surveys for barberry carpet moth (Hyder July and September 2011) and brown hairstreak butterfly;
- Great crested newt (Arup May and June 2010 and Hyder April and May 2011);
- Reptiles (Arup July-October 2010);
- Breeding birds (Arup May-July 2010, Hyder April-June 2011);
- Overwintering birds (Hyder January-March 2011);
- Bat activity (Arup May-July 2010 and Hyder July and September 2011);
- Bat roosts (Arup May-September 2010 and Hyder July-September 2011);
- Dormouse in the edge of the plantation west of Himley Farm (Arup June-October 2010);
- Water vole (Arup June-August 2010);
- Otter (Arup June-August 2010); and
- Badger (Hyder September 2010).

7.25. In addition, in order to ascertain current Site conditions, a Phase 1 Habitat survey of the Site was undertaken in October 2014 by the author, a suitably qualified and experienced ecologist (Gary Grant FCIEEM) (see **Technical Appendix 7.1** and **Figure 7.1**).

Significance Criteria

Confidence Levels

7.26. The following scale is used to assess the likelihood that an effect will occur as predicted. The assignment of each rating is expert opinion based on the available information for the Site and the proposed Development:

- **Certain/near-certain**: probability estimated at **95%** chance **or higher;**
- **Probable**: probability estimated to be **above 50%** but **below 95%;**
- **Unlikely**: probability estimated to be **above 5%** but **less than 50%;**
- **Extremely unlikely**: probability estimated at **less than 5%**.

Significance

7.27. The following significance criteria have been used in this assessment. They follow the earlier EIA Scoping Report and are consistent with criteria used in other chapters of this document:

- **Substantial adverse -** likely to cause a permanent adverse effect on the integrity of an international, national and/or metropolitan value ecological receptor;
- **Moderate adverse –** likely to have a permanent adverse effect on the integrity of a borough and/or ecological receptor of local value;
- **Minor adverse -** likely to have a temporary adverse effect on the integrity of a borough and/or ecological receptor of local value;
- **Negligible -** There are no significant effects to any receptor, or significant effects to receptors within the zone of influence;
- **Minor beneficial -** Likely to temporarily improve a receptor of borough and/or local value;
- **Moderate beneficial -** Likely to have a permanently benefit to a borough and/or local value ecological receptor;
- **Substantial beneficial -** Likely to have a permanent beneficial effect on the integrity of an international, national and/or metropolitan value ecological receptor.

Baseline Conditions

Desk Study

7.28. Statutory and non-statutory sites designated for their nature conservation value within a 10km radius of the Site are described in Tables 7.1 and 7.2.

Table 7.1: Baseline Conditions: Statutory Sites designated for Nature Conservation Value

Site	Description	Location	Remarks
Weston Fen SSSI	A calcareous fen including reed bed, marshy grassland, carr, calcareous grassland, stream, semi-natural broad-leaved woodland. Rare beetles, a rare marsh snail and breeding reed warblers.	4.6km to the south west	Beyond the M40 motorway.
Wendlebury Meads and Mansmoor Closes SSSI	Unimproved diverse neutral meadows supporting birds and butterflies	5.1km to the south	Beyond the M40 motorway and the A41.

Site	Description	Location	Remarks
Arncott Bridge Meadows SSSI	Hay meadows in the River Ray floodplain comprising unimproved neutral grassland including rare and uncommon plant species.	6.3 km to the south east	Beyond the A41.
Otmoor SSSI	Herb-rich damp grassland on the floodplain of the River Ray, with woodland pools and ditches. Of importance to invertebrates, breeding and overwintering wildfowl and waders. Also of value to raptors and passerines.	8.4km to the south east	Beyond the M40 motorway and the A41.
Bestmoor SSSI	Semi-improved floodplain meadow that supports rare and uncommon plants. Value to wintering wildfowl, hoverflies and damselflies.	8.3 km to the north-west	Beyond the M40 motorway the Oxford Canal.
Whitecross Green & Oriel Woods SSSI	Ancient woodland that supports a diverse flora also of value to invertebrates and rare butterflies.	9.12 km to the south east	Beyond the M40 motorway and the A41.
Long Herdon Meadow SSSI	Flood meadow that supports a diverse grassland flora. Winter flooding of value to wading birds, of potential value to breeding snipe and curlew. Rare damselflies also recorded.	9.3km to the south east	Beyond the town of Bicester.
Murcott Meadows SSSI	Unimproved grassland, a small block of woodland of value to a rare species of butterfly and a pond of value to invertebrates.	10.3km to the south east	Beyond the town of Bicester
Tingewick Meadows SSSI	A diverse range of habitats, including calcareous and neutral grassland, fen vegetation and ditches rich in bryophytes. Also of value to invertebrates.	11.8km to the north east	Close to the A4421.
Ardley Cutting and Quarry SSSI	Supports one of the largest limestone grassland sites in the Oxfordshire Cotswolds. Populations of calcareous grassland butterflies uncommon in Oxfordshire, as well as the nationally rare and uncommon invertebrates. Seasonal pools support a large population of great crested newt.	1 km to the north	Beyond the railway line. Therefore the great crested newt population within the Site probably does not mix with this population
Stratton Ardley Quarries SSSI	Limestone grassland and wetland	3.8km to the north east	Beyond roads and railway
Middle Barton Fen SSSI	The most extensive example of calcareous fen meadow in Oxfordshire. Supports notable plant species such as southern marsh-orchid *Dactylorhiza praetermissa*, brown sedge *Carex disticha*, bottle sedge *C. rostrata*, marsh valerian *Valeriana dioica*, and fen bedstraw *Galium uliginosum*. The calcareous fen meadow supports the nationally uncommon marsh flies *Tetanocera punctifrons* and *Pasacadina verbekei*, the uncommon soldier fly *Beris clavipes* and rare hoverfly *Cheilosia cyanocephala*.	10km to the north west	Beyond the M40 motorway and the A41.

Site	Description	Location	Remarks
Sheep's Bank SSSI	Species-rich grassland; Locally abundant species include quaking grass *Briza media,* wild thyme *Thymus praecox*, centaury *Centaurium erythraea*, yellow-wort *Blackstonia perfoliata*, purging flax *Linum catharticum*, small scabious *Scabiosa columbaria*, salad burnet *Sanguisorba minor* and mouse-ear hawkweed *Hieracium pilosella*,	10km to the south west	Beyond the M40 motorway and the A41.
Bure Park LNR	This site is includes meadow, young broad-leaved woodland, hedges and scrub. The River Bure runs through, feeding a small pond with great crested newts. A balancing pond at one end of the reserve is fed by run-off from the area.	930m to the east	Within the existing town

Table 7.2: Baseline Conditions: Non-statutory Sites designated for Nature Conservation

Site	Detail	Location	Remarks
Bicester Airfield Local Wildlife Site (LWS)	Species-rich rough grassland	1km to the east	Linked to the Site via A4095 and minor roads
Twelve Acre Copse LWS	Ancient semi-natural woodland	1.2km to the north west	Linked to the Site by a minor road
Trow Pool LWS	Lake with otter signs	1.2km to the west	Beyond the M40 motorway. Linked to site by public footpaths and minor roads.
Stratton Ardley Quarries LWS	Limestone grassland and wetland	3.8km to the north east	
Ardley Fields Quarry LWS	Proposed LWS	1.8km to the north east of the Site	
Stoke Little Wood LWS	Ancient semi-natural woodland and ancient replanted woodland	2km to the north west.	Linked to Site by minor road.
Jarvis Lane LWS	Proposed LWS	2.2km to the east	Linked to the Site by the A4421 and minor roads and tracks.
Bicester Wetland Reserve	Grazing marsh.	2.2km to the south-east	Separated from the Site by the A41 main road.
Stoke Wood	Ancient semi-natural and replanted ancient woodland. Woodland Trust reserve.	2.5km to the north-west	Linked to the Site by the minor road the B4100 and public footpaths.
Skimmingdish Lane Fields	Proposed LWS.	2.5km to the south-east	Linked to the Site by minor roads and the A4095.
Gavray Drive Meadows	Lowland meadows of value to hairstreak butterflies.	2.6km to the south-east	Beyond Bicester. Linked to Site by mainline railway, minor roads and paths.
Graven Hill	Ancient semi-natural woodland.	3.2km to the south-east	Separated from Site by the A41 main road.
Upper Heyford Airfield (and proposed extension)	Calcareous grassland.	3.4km to the north-west	Separated from Site by the M40 motorway,

Site	Detail	Location	Remarks
Stoke Bushes	Ancient semi-natural and ancient replanted woodland.	3.5km to the north	Linked to Site via minor roads and the local footpath network.
Meadows NW of Blackthorn Hill	A group of ridge and furrow meadows enclosed by hedgerows.	4.5km to the south east	Linked to Site via A4095 and minor roads.
Kirklington Park LWS	Proposed LWS	4.6km to the south west	Linked to the Site by the A4095.
Warmough Copse LWS	Small fragment of ancient coppice woodland	4.6km to the south	-
Cutter's Brook Meadows LWS	Two hay meadows on the River Ray floodplain	4.6km to the south-east	Linked to the Site via A4095 and minor roads.
Hopyard Spinney LWS	Ancient semi-natural woodland and wetland.	4.9km to the north east	Linked to the Site by the A4095 and the A4421.
Meadow east of Fringford LWS	Wet meadow that has been planted with poplars.	4.9km to the north east	Linked to Site by the A4095 and the A4421.
Kirklington Park Lake (North) LWS	A small lake supporting a rich variety of aquatic plants	4.9km to the south west	Linked to Site by the A4095.
Field by Beacon Hill Ditch LWS	Proposed Local Wildlife Site	4.9km to the south-west	-
Pool Spinney LWS	Wet woodland	5km to the north east	Linked by the A4095 and A4421

Site Description

7.29. The habitats within the Site are as follows: improved grassland (until recently arable fields), an arable field, species-rich intact hedgerows, standing water (ponds) and broadleaved plantation woodland strips. (see **Technical Appendix 7.1** for description, species list and photographs and **Figure 7.1** for habitat map).

7.30. The Site is an approximately 90 ha farm on the western edge of Bicester in a gently rolling landscape dominated by arable farmland. The M40 motorway is approximately 500m to the west. The northern part of the eastern boundary is marked by two strips of recently planted native broadleaved woodland, approximately 5 ha in extent. The southern section is comprised of a hedgerow boundary. The western part of the southern boundary of the Site is marked by a hedgerow alongside the B4030 (Middleton Stoney Road) whilst the eastern part of the southern boundary and the northern boundary of the Site are marked by field boundaries comprised of hedgerows. Across the B4030, to the south, is a strip of woodland – part of the Bignell Park Estate. To the north, west and east of the Site are arable fields.

7.31. With the exception of a single arable field, the Site is dominated by improved grassland, in fields that were until recently arable, which have been recently re-seeded. The fields (of all types) cover approximately 72.8 ha (or 88% of the Site). The sward is dominated by perennial rye grass *Lolium perenne* with frequent cocksfoot *Dactylis glomerata* and white clover *Trifolium repens*. Red fescue *Festuca rubra*, common bent *Agrostis capillaris* and smooth meadow grass *Poa pratensis* were also noted. Other species in the sward include greater plantain *Plantago major*, creeping buttercup *Ranunuculus repens*, curled dock *Rumex crispus* and broad leaved dock *R. obtusifolius*. In many places the sward is disturbed and there are patches of ruderal species including nettle *Urtica dioicia*,

smooth sow thistle *Sonchus oleraceus* and scented mayweed *Tripleurospermum odoratum*, amongst others.

7.32. Fields are delineated by 39 hedgerows (approximately 6.3 kilometres in length and 6.2 ha in area in total). The hedges within the Site are part of a wider network that is of District/Borough importance for nature conservation. Most of these hedges are unmanaged, with the exception of those marking the northern boundary. Most hedges are intact and species-rich although a few sections are species-poor. Hedges are vegetated with shrubs dominated by blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna*, however other species of tree and shrub occur, including elm *Ulmus* sp., crab apple *Malus sylvestris*, dogwood *Cornus sanguinea*, wayfaring tree *Viburnum lantana*, elder *Sambucus nigra* and buckthorn *Rhamnus cathartica*. Occasional native trees include ash *Fraxinus excelsior* and pedunculate oak *Quercus robur*. A number of hedges have associated shallow, dry ditches.

7.33. There are two ponds on Site, one in the north known at Himley Farm as Spring Pond and a second larger pond by a hedge to the south known at Himley Farm as Big Pond. Spring Pond (T1 on the habitat map, **Figure 7.1**) has marginal vegetation including water mint *Mentha aquatica* and branched bur-reed *Sparganium erectum*. The upper slopes of the pond is dominated by great willowherb *Epilobium hirsutum* and rough grassland dominated by cock's foot and false oat grass. The southern, Big Pond (T3 on the habitat map, **Figure 7.1**) has marginal aquatic vegetation including reedmace *Typha latifolia*, water mint and yellow flag *Iris pseudocorus*. The upper banks are dominated by common nettle, great willowherb, bramble, goat willow *Salix caprea*; other species include soft rush *Juncus effusus* and a single crack-willow tree *Salix fragilis*.

7.34. Tables 7.3 and 7.4 below summarise the protected species and habitats of note that have been recorded at or nearby the Himley Village Site. An assessment of their ecological importance has also been made based upon the survey information available from previous assessments. No evidence of dormice was found during the targeted surveys undertaken by Hyder and they therefore concluded that dormice are absent from the NW Bicester Masterplan Area. This species is therefore not considered further within this chapter. With regard to water vole and otter, although some suitable habitat was found within the wider NW Bicester Masterplan Area, given the distance from the Himley Village Site to this habitat and the absence of watercourses other than field drains on the Himley Village Site, these species are not considered further within this chapter.

Table 7.3: Baseline Conditions: Protected Species

Protected Species	Description	Location	Protection	Importance
Brown long-eared bat *Plecotus auritus*	Roost was reported within the barn at Himley Farm in 2010, supporting small numbers of bats (possibly 2 individuals). However surveys carried out by bat ecologists in 2011 did not record this species emerging from the buildings within the Site	Barn by farmhouse within the Site	European Protected Species UK BAP Species of Principal Importance	Local value.
Common pipistrelle bat *Pipistrellus pipistrellus*	Roost confirmed in farmhouse and barn in 2011. This species has also been recorded roosting in trees within the local area to the north of the Site, in 2011	Buildings and trees within the Site	European Protected Species UK BAP Species of Principal Importance	Local value

Protected Species	Description	Location	Protection	Importance
Bat species	Bat species recorded in the NW Bicester area, usually associated with hedgerows and stream corridors include brown long eared bat, serotine bat *Eptesicus serotinus,* common pipistrelle bat, soprano pipistrelle bat *P. pygmaeus*, noctule, *Nyctalus noctula* Leisler's bat, *Nyctalus leisleri,* Unidentified myotis bats *Myotis* spp A number of hedges within the Site feature commuting and foraging bats.	Hedges, trees, ponds and buildings within and adjacent to the Site	European Protected Species UK BAP Species of Principal Importance Important species (Cherwell BAP)	Local value.
Great crested newt *Triturus cristatus*	A 'medium population' was recorded within the two ponds on Site in 2011. Ponds beyond the Site were also found to support great crested newt in 2011, however it was reported to be unlikely that these animals would use terrestrial habitat within the Site as it was unsuitable due to its intensive management.	Within Site and environs	European Protected Species Protected under the Schedule 5 of the Wildlife and Countryside Act UK BAP Species of Principal Importance Important species (Cherwell BAP)	Local value.
Badger *Meles meles*	No badger setts were found on Site in 2010 or in October 2014. However one sett has been recorded to the west of the Site; a second sett is located to the north of the Site. Four further setts were found during ecological scoping surveys in 2010, however, these are beyond the Site across a railway line and roads. The site has some suitable foraging and commuting habitat for badgers.	Setts located off Site	Protected under the Protection of Badgers Act (1992)	Local value
Reptiles	There are historical records for grass snake *Natrix natrix* at Himley Farm; although this species was not recorded on Site during reptile surveys in 2011. There is some suitable habitat – therefore it is possible that a small number of grass snakes, and common lizards *Lacerta vivipara* may occur on the field margins, within the hedgerows and near ponds within the Site.	Within the Site.	Protected species under the Schedule 5 of the Wildlife and Countryside Act UK BAP Species of Principal Importance Important species (Cherwell BAP)	Local value
Amphibians	Smooth newt *Lissotriton vulgaris* and common frog *Rana temporaria* were recorded from the two ponds on the Site in 2011.	Within the Site.	Protected species under the Schedule 5 of the Wildlife and Countryside Act	Local value

Protected Species	Description	Location	Protection	Importance
			UK BAP Species of Principal Importance Important species (Cherwell BAP)	
Breeding Birds	Surveys in 2011 recorded breeding birds within the NW Bicester area, including song thrush *Turdus philomelos*, dunnock *Prunella modularis*, house sparrow *Passer domesticus*, linnet *Carduelis cannabina* subsp. *autochthonal cannabina,* starling *Sturnus vulgaris,* common bullfinch *Pyrrhula pyrrhula,* whitethroat *Sylvia communis* and marsh tit *Poecile palustris*. Barn owl *Tyto alba* has been recorded within the area	Within the Site and environs	UK BAP Species of Principal Importance Species of conservation concern Important species (Cherwell BAP)	Local value
Over-wintering Birds	Wintering birds recorded in 2011 within the (former) stubble fields and hedgerows include flocks of yellowhammer *Emberiza citrinella*, redwing *Turdus iliacus* and fieldfare *Turdus pilaris*.	Within the Site and environs	UK BAP Species of Principal Importance Species of conservation concern Important species (Cherwell BAP)	Local/Borough value
Hedgehog *Erinaceus europaeus*	Records were provided for the area. The Site could support this species in low numbers as it contains some suitable habitats in the hedgerows and woodland edges.	From the area	Wildlife and Countryside Act (Schedule 6) UK BAP Species of Principal Importance Important species (Cherwell BAP)	Local value
Brown hare *Lepus europaeus*	Recorded in the area. Likely to utilise better quality habitat nearby, not recorded from the Site.	From the area	UK BAP Species of Principal Importance	Local value
Polecat *Mustela putorius*	Records were provided for the area. Habitats on Site are sub-optimal - therefore it is unlikely to be present.	From the area	UK BAP Species of Principal Importance	Local value
Brown hairstreak butterfly *Thecla betulae*	Targeted surveys in 2011 found eggs for this species within hedgerows. This butterfly is associated with habitat found on Site including blackthorn hedgerows, woodland edge, overgrown and weedy habitats. Records provided from Gowell Farm. This species is therefore likely to be present on Site.	From the area	Wildlife and Countryside Act (Schedule 5) UK BAP Species of Principal Importance Important species (Cherwell BAP)	Local/Borough value.

Protected Species	Description	Location	Protection	Importance
White-letter hairstreak butterfly *Satyrium album*	Found in the hedgerows to the south of the Site at Whitelands Farm in 2011. It is possible this species occurs on Site due to the presence of hedgerows containing elm *Ulmus* sp.	From the area	Wildlife and Countryside Act (Schedule 5) UK BAP Species of Principal Importance Important species (Cherwell BAP)	Local/Borough value.

Table 7.4: Baseline Conditions: Habitats

Habitat	Description	Location	Importance
Improved Grassland/ Arable Fields	Fields dominate the Site.	Across the Site	Low Local value
Woodland	Two native broadleaved plantation woodland strips exist along the eastern Site boundary	Eastern boundary.	UK BAP Habitat of Principal Importance Ecological receptor value: High Local value
Ponds	Two ponds are present on Site adjacent to Himley Farm.	East of farmstead.	UK BAP Habitat of Principal Importance Ecological receptor value: High Local value
Hedgerows	The Site contains a network of hedgerows which delineate the fields	Across the Site.	UK BAP Habitat of Principal Importance Ecological receptor value: District/Borough value

Defining the Zone of Influence and Identification of Ecological Receptors for Assessment

7.35. The 'zone of influence' as defined in the EcIA Guidelines is the geographical scale over which any potential effects arising from the Himley Village Development could affect sensitive ecological receptors. Ecological receptors have been identified by the various reviews and surveys described above.

7.36. Off-site ecological receptors within the zone of influence are Ardley Cutting and Quarry SSSI and Bure Park LNR. These receptors have been identified on the basis of their proximity to the Site and the sensitivity of rare/notable plant and invertebrate species that they support with respect to changes in environmental pollution.

7.37. Sensitive ecological receptors habitats within the Site, of High Local or District/Borough Value, are the broadleaved plantation woodland, hedgerows and ponds. Species identified within the Site as ecological receptors are brown hairstreak and white-letter hairstreak butterflies, bats, great crested newt, birds, reptiles, amphibians, badger and hedgehog.

Potential Significant Effects

7.38. Activities that will be conducted at the Site during the Demolition/Site Preparation/Construction and Operational phases have the potential to generate ecological effects upon the receptors previously

identified. An effect is defined to be significant where it affects the ecological value of the receptor, i.e. the conservation status of a habitat or species, or the function of an ecosystem or a protected site.

7.39. Potential indirect significant effects upon the ecological receptors beyond and within the Site could include airborne pollution (dust and vehicle pollution), noise and light pollution.

7.40. Potential direct effects to ecological receptors within the Site could include disturbance to a protected species/restricted access to the resting place of a protected species, loss of/ disturbance to habitat; killing of or injury to a protected species. Potential direct effects to ecological receptors beyond the Site are not anticipated due to the distances of the receptors from the Site.

Mitigation Measures Incorporated into the Design of the Development

7.41. The Himley Village Development has been designed retain and enhance the existing valued habitats present on the Site, where possible. Habitat losses and gains will occur during the Demolition /Site Formation/ Construction phase. These are summarised in Table 7.5 below based upon the Landscape Parameter Plan (**Figure 5.2**).

Table 7.5: Changes to Habitats

Habitat	Existing Area	Proposed Area	Change
Hedgerow	6.2 ha	Breaches for roads and other new access routes. New hedges to be planted. Buffers to be created on retained and new hedges.	Increase
Improved Grassland/ Arable	72.8 ha	The majority would be lost but small areas of improved grassland would be provided within the green infrastructure network and gardens	Loss
Scattered Trees	n/a	Significant trees to be retained. New trees to be planted	Increase
Woodland	5 ha	Breach to woodland belt for access road.	Loss
Pond/ standing water	n/a	Existing ponds to be retained. New ponds to be created	Increase
Green infrastructure (GI) network (including gardens, swales and species-rich grassland)	Nil	Approximately 40% (36.1 ha) of the site to be GI	Increase in species-rich habitats

7.42. The potentially significant effects of the Demolition/Site Formation/ Construction Phase and Operational Phase have been evaluated on the basis of the above changes in habitats.

Demolition / Site Formation / Construction Phase

Airborne Pollutants

7.43. Airborne pollutants include dust associated with demolition/site formation and construction works including dried soil carried onto roads by tyres and NO_2 and PM_{10} emissions generated by vehicle traffic.

7.44. Potential effects could occur to the nearby Ardley Cutting and Quarry SSSI, and Bure Park LNR (within the Zone of Influence), and the Site itself – specifically to sensitive invertebrates and plant species within the nearby SSSI and the LNR, and to sensitive invertebrates potentially present within the Site, as a result of increased dust deposition and increased NO_2 and PM_{10} levels. The significance of the effect is as follows:

- Invertebrates beyond the Site - Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **Local/borough,** Confidence level: **probable**;
- Vegetation beyond the Site – Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **Local/borough,** Confidence level: **probable**;
- Invertebrates within the Site - Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **local,** Confidence level: **probable.**

Contamination of ground water/watercourses and ponds

7.45. Pollution could enter ponds on Site as a result of site formation and demolition works, and as a result of flooded ground works, cleaning of vehicles, wheel washing etc. The nearest watercourse (the Gagle Brook) is located 260m from the Site, with sufficient soil and vegetation to act as a buffer, therefore making contamination of streams unlikely. Construction activities, involving soil disturbance and the operation of vehicles, are likely to be similar in nature to the arable farming that has taken place on Site. The assessment of these effects on ecological receptors is as follows:

- Great crested newt - Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **local,** Confidence level: **unlikely**;
- Other amphibians- Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **local,** Confidence level: **unlikely**;
- Aquatic plant species (ponds) – Level of significance: **negligible,** Temporal Scale: **short-term,** Spatial Scale: **local,** Confidence level: **unlikely**;
- Water quality (ponds) - Level of significance: **minor adverse** Temporal Scale: **short-term,** Spatial Scale: **local,** Confidence level: **unlikely.**

Introduction of invasive plants

7.46. Fragments of invasive plant species such as Japanese knotweed or seeds from giant hogweed or Himalayan balsam could be brought onto Site by vehicles or during construction works, although this is unlikely. Additionally invasive plants could be spread throughout the Site during works.

7.47. Potential effects to local flora/fauna and habitats would be associated with excessive competition for nutrients and light with existing vegetation. The effect is as follows:

- Level of significance: **moderate adverse,** Temporal Scale: **long-term,** Spatial Scale: **local,** Confidence level: **unlikely**.

Changes to drainage

7.48. During demolition/site formation/construction works the local hydrology will be modified. Effects to local watercourses are unlikely to be significant because of the considerable distance of the nearest watercourse to the Site and a Sustainable Drainage System will be implemented in the early phases of construction to restrict run off to existing rates or lower and minimise the potential for pollution:

- Level of significance: **negligible,** Temporal Scale: **short-term**, Spatial Scale: **local/borough,** Confidence level: **unlikely**.

Light pollution

7.49. Where demolition/site formation and construction works take place at night and artificial lighting is required, light pollution could occur. There are potential effects on roosting, commuting and foraging bats.

- Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **site and surrounds,** Confidence level: **probable**.

Restricted access

7.50. When physical barriers, such as hoarding and security fencing is erected during construction works, and works result in deep excavations within the Site, this can result in effects on wildlife (notably badger and hedgehog) due to loss of access to foraging sites and potential for injury/death as a result of falling into excavations:

- Badger/hedgehog - Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **site and surrounds,** Confidence level: **unlikely**.

Demolition of buildings/removal of vegetation/fragmentation of hedgerows

7.51. During demolition/site formation works, there may be potential effects on roosting bats, breeding birds, great crested newt, reptiles, amphibians, badger, and invertebrates via disturbance to and/loss of commuting/breeding/foraging/hibernating habitat and potential injury/death. Loss of ecologically valuable habitats, where these species may occur, is also predicted, however because only a small proportion of the high value habitat is affected, effects are predicted to be minor or moderate adverse. Highly mobile species, including birds and badgers would be less affected than less mobile species, including reptiles and amphibians. Flightlines of bats can be affected by breaches in linear features.

- Bats – Level of significance: **moderate adverse,** Temporal Scale: **short-term**, Spatial Scale: **local**, Confidence level: **probable**;
- Birds- Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **local**, Confidence level: **certain/near-certain**;
- Great crested newt - Level of significance: **moderate adverse,** Temporal Scale: **short-term**, Spatial Scale: **local**, Confidence level: **probable**;
- Reptiles and amphibians - Level of significance: **moderate adverse,** Temporal Scale: **short-term**, Spatial Scale: **local**, Confidence level: **probable**;
- Badger - Level of significance: **minor adverse,** Temporal Scale: **short-term**, Spatial Scale: **local**, Confidence level: **unlikely**;
- Invertebrates - Level of significance: minor **adverse,** Temporal Scale: **short-term,** Spatial Scale: **local,** Confidence level: **probable**;
- Hedgerow - Level of significance: **minor beneficial,** Temporal Scale: long**-term,** Spatial Scale: **local,** Confidence level: **probable**.

7.52. Table 7.6 below summarises the assessments made above.

Table 7.6: Summary of Predicted Demolition/Site Formation and Construction Phases Ecological Effects

Effect	Receptor	Significance	Temporal Scale	Spatial scale	Confidence Level
Airborne pollutants	Invertebrates	minor adverse	short-term	local/ borough	probable
	Plants	minor adverse	short-term	local/ borough	probable
	Great crested newt	minor adverse	short-term	local	unlikely
	Other amphibians	minor adverse	short-term	local	unlikely
	Aquatic plant species (ponds)	negligible	short-term	local	unlikely
	Water quality (ponds)	minor adverse	short-term	local	unlikely
Introduction of invasive plants	Local flora/ fauna and habitats	moderate adverse	long-term	local	unlikely
Changes to drainage	Watercourses	negligible	short-term	local/borough	unlikely
Light pollution	Bats	minor adverse	short term	site and surrounds	probable
Restricted access	Badger/ hedgehog	minor adverse	short term	site and surrounds	unlikely
Demolition of buildings/ removal of vegetation/ fragmentation of hedgerows	Bats	moderate adverse	short-term	local	probable
	Birds	minor adverse	short-term	local	certain/near-certain
	Great crested newt	moderate adverse	short-term	local	Probable
	Reptiles and amphibians	moderate adverse	short-term	local	probable
	Badger	minor adverse	short-term	local	unlikely
	Invertebrates	minor adverse	short-term	local	probable
	Hedgerows	minor beneficial	long-term	local	certain

Completed Development (Operational Phase)

Airborne pollutants

7.53. Airborne pollutants may be created as a result of increased vehicle use within the Site during the operational phase and emissions from the Energy Centre both on Site and within the wider NW Bicester Masterplan area. The conclusion of the air quality assessment is that there are no permanent effects associated with vehicular traffic and the energy centre within the Himley Village Development, as the overall prediction for the effects of traffic emissions is negligible. Exceedances of the relevant Air Quality Limit Values were not predicted for any location on Site.

Potential impacts to the invertebrates and plant species within the nearby SSSI and LNR and on Site are as follows:

- Invertebrates - Level of significance: **negligible,** Temporal Scale: **long-term,** Spatial Scale: **local/borough,** Confidence level: **unlikely**;
- Plants– Level of significance: **negligible,** Temporal Scale: **long-term**, Spatial Scale: **local/borough,** Confidence level: **unlikely**.

Contamination of watercourses/ground water/ponds

7.54. Pollution could enter ponds on Site as a result of littering or leaked petrol/oils/detergents from vehicles. A comprehensive Sustainable Drainage System will be integrated into the Himley Village Development and the nearest watercourse is 260m from the Site, therefore negative effects on watercourses and associated flora and fauna, in comparison with the baseline condition, are unlikely. There are potential impacts to the following ecological receptors:

- Great crested newt - Level of significance: **negligible,** Temporal Scale: **long-term,** Spatial Scale: **local,** Confidence level: **probable**;
- Other amphibians- Level of significance: **negligible,** Temporal Scale: **long-term,** Spatial Scale: **local,** Confidence level: **probable**;
- Aquatic plant species – Level of significance: **negligible,** Temporal Scale: **long-term,** Spatial Scale: **local/borough,** Confidence level: **probable**;
- Pond water quality - Level of significance: **negligible,** Temporal Scale: **long-term,** Spatial Scale: **local/borough,** Confidence level: **probable**.

Introduction of invasive plants

7.55. Fragments of invasive plant species such as Japanese knotweed or seeds from giant hogweed or Himalayan balsam could be brought onto site with garden plants brought in by residents, or where garden waste is disposed of incorrectly on-site. There are potential effects on local flora (aquatic and terrestrial plants species) due to excessive competition for nutrients and light as follows:

- Level of significance: **moderate adverse,** Temporal Scale: **long-term,** Spatial Scale: **local,** Confidence level: **probable**.

Light disturbance

7.56. Outdoor lighting of gardens and communal facilities has the potential for effects on roosting, commuting and foraging bats:

- Bats - Level of significance: **minor adverse,** Temporal Scale: **long-term, permanent,** Spatial Scale: **Site,** Confidence level: **probable**.

Restricted access

7.57. When physical barriers are created including fences, modifications to property boundaries, etc, there are potential impacts to wildlife (notably hedgehog, badger) due to loss of access to foraging sites. The effect is as follows:

- Level of significance: **minor adverse**, Temporal Scale: **long-term**, Spatial Scale: **Site and surrounds**, Confidence level: **probable.**

Disturbance

7.58. Disturbance would be generated by residents and visitors using the Site and exploring/walking into on and off-site wildlife habitat. Disturbance is difficult to measure and behaviour of residents or visitors in any given situation or location difficult to predict, however the predicted effects are as follows:

- Bats - Level of significance: **minor adverse,** Temporal Scale: **long-term,** Spatial Scale: **Site and surrounds,** Confidence level: **probable**;

- Birds - Level of significance: **minor adverse,** Temporal Scale: **long-term,** Spatial Scale: **Site and surrounds,** Confidence level: **probable**;
- Great crested newt - Level of significance: **minor adverse,** Temporal Scale: **long-term,** Spatial Scale: **Site and surrounds,** Confidence level: **probable**;
- Reptiles and amphibians - Level of significance: **minor adverse,** Temporal Scale: **short-term,** Spatial Scale: **Site,** Confidence level: **probable**;
- Badger - Level of significance: **minor adverse,** Temporal Scale: **long-term,** Spatial Scale: **Site and surrounds,** Confidence level: **unlikely**.

Pets (notably free ranging cats)

7.59. The effects on introducing pets, and notably cats, onto the Site, include killing and disturbing local birds, reptiles, amphibians, bats, hedgehogs and other small mammals. There may also be disturbances caused by dogs running off lead:

- All fauna - Level of significance: **moderate adverse**, Temporal Scale: **long-term**, Spatial Scale: **Site and surrounds**, Confidence level: **certain/near-certain**.

Littering

7.60. Potential effects of littering by local residents and visitors includes entanglement/smothering/killing of local birds, reptiles, amphibians, bats, hedgehogs and other small mammals and pollution/eutrophication resulting in effects on local flora. Littering is ubiquitous, however the magnitude of the problem is highly variable. The effects are predicted as follows:

- Local flora/fauna and habitats **-** Level of significance: **minor adverse,** Temporal Scale: **long-term**, Spatial Scale: **Site and surrounds,** Confidence level: **certain/near-certain**.

7.61. Table 7.7 summarises predicted operational phase effects.

Table 7.7: Summary of Predicted Operational Phase Ecological Effects

Effect	Receptor	Significance	Temporal Scale	Spatial scale	Confidence Level
Airborne pollutants	Invertebrates	negligible	long-term	local/ borough	unlikely
	Plant species	negligible	long-term	local	unlikely
	Great crested newt	negligible	long-term	local	probable
	Other amphibians	negligible	long-term	local	probable
	Aquatic plant species (ponds)	negligible	long-term	local/ borough	probable
	Water quality	negligible	long-term	local/ borough	probable
Introduction of invasive plants	Local flora	moderate adverse	long-term	local	probable
Light pollution	Bats	minor adverse	long term, permanent	Site	probable
Restricted access	Badger, hedgehog	minor adverse	short term	Site and surrounds	probable
Disturbance	Bats	minor adverse	long-term	Site and surrounds	probable
	Birds	minor adverse	long-term	Site and surrounds	probable
	Great crested newt	minor adverse	long-term	Site and surrounds	probable
	Reptiles and amphibians	minor adverse	long-term	Site	probable
	Badger	minor adverse	long-term	Site and surrounds	unlikely
Pets	All fauna	moderate adverse	long-term	Site and surrounds	certain/near -certain
Littering	Local flora/ fauna and habitats	minor adverse	long-term	Site and surrounds	certain/near -certain

Mitigation

Demolition/Site-Formation/Construction Phase

7.62. A Construction Environmental Management Plan (CEMP) will be implemented to ensure that best practice measures are followed with respect to Site ecology during Demolition/Site Formation and Construction works. Proposed mitigation measures are described below:

Airborne pollutants

7.63. To minimise the potential for airborne pollution and the associated effects on ecological receptors, all demolition, site formation and construction works will be carried out in accordance with the Environment Agency's 'PPG6 Working at construction and demolition sites'[17]. The CEMP will require best practice techniques that would be implemented to minimise the potential for generation of airborne pollutants.

Contamination of watercourses/ponds/ground water

7.64. To minimise the potential for contamination of ponds and groundwater and the associated effects on ecological receptors, demolition, site formation and construction works will be carried out in accordance with the Environment Agency's 'PPG5 Works in, near or liable to affect watercourses'[18]. The CEMP will require best practice techniques to minimise the potential for contamination of ground water and water bodies and the steps to be taken in the event of a pollution incident.

Introduction of invasive plants

7.65. Avoidance measures as recommended by the Environment Agency[19] and DEFRA[20] will be followed. Should invasive species be found on Site, a specialist should survey all affected areas and prescribe and implement an eradication strategy.

Changes to drainage and groundwater

7.66. The project will include a Sustainable Drainage System (SuDS), which will limit run-off rates to existing levels or lower. The SuDS will also include features designed to improve the quality of run-off compared with unrestricted surface water run-off. The SuDS will be phased with swales and basins created in the early phases of the works to enable them to intercept run-off during site formation works and subsequent phases of construction.

Light pollution

7.67. Site lighting should be avoided where possible and confirmed bat roosts and known commuting and foraging routes should not be lit. A section on lighting and how the effect of lighting on bats can be minimised will be included in the CEMP.

Bats

7.68. To minimise effects to bats, all buildings scheduled for demolition or refurbishment and trees scheduled for removal must be re-assessed prior to any works commencing for their bat roosting potential including undertaking a bat roost assessment and if required bat emergence/re-entry surveys. Demolition/refurbishment/tree removal may proceed where the assessment(s) have determined that bats are absent. If bats are found to be present, a European Protected Species licence should be sought from Natural England and works must follow the methodology described in a Bat Mitigation Strategy that will accompany the licence application. The work must be supervised by a licensed bat ecologist. Bat boxes or other measures recommended by the bat ecologist must be installed prior to removal of potential roosting habitat.

Birds

7.69. Demolition and vegetation clearance - including removal of hedgerows – should be undertaken outside of the breeding bird season, which runs typically between March and August inclusive. Where this is not possible, a suitably qualified and experienced ecologist must first inspect the buildings and vegetation prior to clearance to check no birds are breeding, and then supervise

vegetation clearance as appropriate. The ecologist will work with site staff to agree a working method. If breeding birds are found it will be necessary to postpone clearance works and to create a buffer to protect the nest(s) until such time as the ecologist can confirm the birds have left the nest. Works could continue up to but not within this buffer area. The ecologist would return to Site to re-check the nest. Once the absence of breeding birds is confirmed, clearance may proceed under supervision as described above.

7.70. Losses of over-wintering habitat for birds – arable fields and improved grassland for birds - cannot be avoided. New habitats, including species-rich wildflower meadows will provide some alternative habitat for wintering birds. Tree planting and enhancements and planting to hedges will provide some alternative habitat for breeding birds.

Great crested newt

7.71. Further presence/absence surveys must be undertaken in advance of any works commencing at the Site, in order to establish the likely population numbers. These surveys will indicate the likely population levels and locations of this species within the Site.

7.72. The potential for loss of great crested newt can be minimised by avoiding the removal of suitable aquatic and terrestrial habitat (including hedges) within 250m of the breeding ponds and within any other areas with potential to support great crested newts within the Site.

7.73. Where this is not possible, disturbance to/removal of habitat must be carried out in accordance with a Great Crested Newt Mitigation Strategy that would be provided to support a Natural England licence application. Works to begin clearing vegetation within the area may begin following the trapping and translocation of all animals found within the affected area into a secure area protected by newt fencing. Once works are completed, the great crested newts would be allowed to return.

7.74. Existing ponds will be enhanced prior to completion of the Himley Village Development. To provide alternative aquatic (breeding) habitat whilst the existing ponds are being renovated, and in order to minimise disturbance or injury to great crested newts this work must be undertaken out with the breeding season (March to June inclusive, typically). In addition two new ponds should be created within 250m of the existing ponds to provide new breeding habitat. Once the new ponds are established and of suitable quality, the great crested newts would be returned to these areas, according to details to be included in the Great Crested Newt Mitigation Strategy.

Reptiles and widespread amphibian species

7.75. Prior to vegetation clearance works, further presence/absence reptile surveys must be undertaken in suitable areas of habitat within the Site that would be affected by works throughout the active season (from March to October) to establish the species of reptiles present at the Site and their population numbers.

7.76. Following this survey work, reptiles and widespread amphibian species found within the affected area would be trapped and translocated to safeguarded area secured using reptile/amphibian fencing. Once the capture rate has decreased significantly, vegetation can be cut down in stages to encourage remaining animals to move into increasingly smaller areas, under the supervision of ecologists. Finally a fingertip search of remaining vegetation and spoil would be made to remove the remaining animals to the receptor site. Following completion of the reptile and amphibian capture programme, works may commence in the affected area.

Badgers and other mammals

7.77. The effect of Demolition/Site Preparation and Construction Phase activities on badgers and other mammals can be reduced by erecting secure fencing to prevent animals entering works areas and by covering deep excavations to prevent injury. Loss of foraging habitat will be temporary as following the Construction Phase new foraging habitat will be created. For works that take place when dependent young hares could be present (March to September), the CEMP would ensure that pre-construction checks would be undertaken by a suitably experienced ecologist to ensure that measures are put in place to protect young hares if they are present on Site.

Hedgerows

7.78. New sections of native species-rich hedgerow will be planted with suitable native species. In some areas, the existing hedgerows will be widened by new planting or natural colonisation in order to create new habitat. Additionally buffers of species-rich grassland will be planted along the length of the hedges. Such buffers will provide additional habitat for foraging bats, invertebrates, birds, small mammals, reptiles and amphibians. The area of new hedgerow created will exceed the area of existing hedgerow cleared.

7.79. In order to minimise potential effects, new hedges and buffers should be established prior to the removal of existing hedges, where possible.

Completed Development (Operational Phase)

Airborne pollutants

7.80. No mitigation is required as the predicted effects are **negligible**.

Contamination of watercourses/ground water/ponds

7.81. The Sustainable Drainage System will minimise the potential for pollution of ponds and ground water. Watercourses are a minimum of 260m from the Site and are considered to be protected by a sufficient buffer of soil and vegetation.

Invasive plants

7.82. Information will be provided to residents regarding the proper disposal of garden waste and advice provided on how to avoid introducing invasive species into communal areas. The management company for the Himley Village Development (the Himley Farm Land Trust (HFLT)) will be responsible for regular inspection and maintenance of communal areas, including the Sustainable Drainage System. It will ensure that no invasive species occur within communal areas of the Site or should they be identified, they are appropriately treated to prevent the spread of such species.

Light pollution

7.83. Outdoor lighting in the Himley Village Development should be kept to a minimum necessary for safety and security, with designs approved by an experienced bat ecologist. The use of bat-friendly low-UV lighting with zero upward or lateral light spillage will be required in public and communal areas. Information boards should be provided near confirmed bats roosts and within communal areas where bats are known to forage/commute to advise residents and visitors of the importance of minimising the effect of lighting on bats and ways of providing bat-friendly lighting for their own properties.

Restricted access for wildlife

7.84. Residents will be provided with advice on how to allow wildlife, including hedgehogs and badgers, to move into gardens from adjacent open space and where feasible, between gardens.

Disturbance

7.85. Residents will be provided with information on how to minimise disturbance to wildlife. The network of green infrastructure which crosses the Site, should be planted with dense thorny vegetation to discourage people and pets from encroaching into them and managed in a way that creates refuges for wildlife in suitable locations.

Pets

7.86. Residents will be provided with information on how free ranging cats and unleashed dogs can kill and disturb wildlife and how this activity and the associated effect can be reduced (for example by using ultrasonic scarers).

Littering

7.87. Residents will be informed of the effect litter can have on wildlife and the Sustainable Drainage System and the importance of placing litter in bins or taking it home for recycling. The HFLT, which will be responsible for maintaining public and communal areas, will ensure that litter is collected regularly and that habitats and Sustainable Drainage System remain litter-free.

Residual Effects

Demolition, Site Formation and Construction

Airborne pollutants

7.88. Despite mitigation it is likely that airborne pollutants including dust will be produced during demolition and construction works, however the effect is likely to be localised and off-site sensitive sites will not be affected. On Site receptors include sensitive invertebrates and plant species which would be affected as a result of increased deposition. The effects to on Site invertebrates and plants are predicted to be **minor adverse, short-term** and **localised.** Confidence level: **probable.**

Contamination of watercourses, ground water and ponds

7.89. Mitigation will minimise the potential for pollution to enter local watercourses or on-site ponds. Residual effects will be **negligible**, **short-term** and **localised**. Confidence level: **probable**.

Introduction of invasive plants

7.90. Avoidance measures as recommended by the Environment Agency[21] and DEFRA[22] and implemented by the construction contractor will minimise the potential for invasive plants to be introduced and/or ensure that they are eradicated in the event that they are discovered. Therefore residual effects are predicted to be **negligible, short-term and localised**. Confidence level: **probable**.

Changes to drainage and groundwater

7.91. The first phases of the Sustainable Drainage System would be constructed in the early stages of construction to ensure that run-off is restricted to current rates or lower. This means that residual effects on drainage and groundwater will be **negligible, short-term and localised**. Confidence level: **probable**.

Light pollution

7.92. Safeguards regarding the use of lighting during the demolition and construction phase will ensure that residual effects will be **negligible, short-term and localised**. Confidence level: **probable**.

Bats

7.93. Licensing procedures will ensure that residual effects on bats will be **negligible**, **short term and localised**. Confidence level: **probable**.

Breeding birds

7.94. The effects on breeding birds can be mitigated by removing vegetation outside of the breeding season. Losses of breeding habitat will be reversed by the planting of new hedgerows and gardens. Residual effects will therefore be **negligible, short term and localised**. Confidence level: **probable.**

Great crested newt

7.95. The effects on this species will be mitigated by implementing a Great Crested Newt Mitigation Strategy. Residual effects to this species are likely to **negligible, short-term and localised**. Confidence level: **probable.**

Reptiles and widespread amphibian species

7.96. The potential for injury or death to reptiles and widespread amphibian species can be reduced to negligible levels by capture and translocation. Effects are predicted to be **negligible, short term and localised**. Confidence level: **probable**.

Badgers and other mammals

7.97. Measures such as the provision of access to alternative food resources (for example in retained hedgerows) will ensure that the residual effects of reduced access will be **negligible, short-term** and **localised**. Confidence level: **probable**.

Invertebrates

7.98. With mitigation the effects on invertebrates are predicted to be **negligible, short term and localised**. Confidence level: **probable**.

Hedgerows

7.99. Replacement planting and enhancement of hedgerows will begin during the construction phase. Residual effects are predicted to be **minor beneficial, long term and localised**. Confidence level: **probable**.

Completed Development

Airborne pollutants

7.100. The potential effects of completed development airborne pollution are predicted to be negligible and therefore no mitigation is required. The residual effects therefore remain **negligible, long-term and localised**. Confidence level: **probable**.

Contamination of watercourses/ground water

7.101. A comprehensive Sustainable Drainage System will be integrated into the Himley Village Development and the nearest stream is 260m from the Site, therefore negative effects on watercourses and associated flora and fauna, in comparison with the baseline condition, are unlikely. The residual effects are predicted to be **negligible, long-term and localised**. Confidence level: **probable**.

Introduction of invasive plants

7.102. The presence of the HFLT, a long term management company, means that control of invasive plants within communal areas will continue during the operational phase. There will be limited control over other areas of the Site, although invasive plants, if they do occur, should not be able to spread because transfer of soil between private gardens is unlikely. Residual effects are predicted to be **negligible, long-term and localised**. Confidence level: **probable**.

Light pollution

7.103. The presence of the HFLT means that control of lighting in communal areas will continue during the operational phase. Within other areas of the site, residents will be advised to ensure that lighting is used in a way that minimises light pollution. Residual effects are predicted to be **negligible, long-term and localised**. Confidence level: **probable**.

Restricted access for wildlife

7.104. As the green infrastructure network of the site matures, access for wildlife is predicted to improve within the Site. Residual effects are predicted to be **negligible, long-term, localised**. Confidence level: **probable**.

Disturbance to wildlife

7.105. As the newly planted areas mature and the efforts of the HFLT take effect, residual effects of disturbance on wildlife are predicted to be **negligible, long-term and localised**. Confidence level: **probable**.

Pets (notably free ranging cats)

7.106. Pets will continue to have an effect on wildlife during the operational phase. This is predicted to be **moderate adverse, long term** and may spread beyond the Site to the **local** area. Confidence level: **probable.**

Littering

7.107 The presence of the HLFT, a management company, means that litter collection within communal areas will take place during the operational phase. Litter collection is unlikely within other areas – such as designated wildlife areas that would not be accessible to residents/ visitors, but litter here

is unlikely to be significant. Residual effects are predicted to be **negligible, long-term and localised**. Confidence level: **probable**.

Summary and Conclusion

Table 7.8 summarises the potential and residual ecological effects of the Development.

Table 7.8: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition, Site Formation and Construction			
Effect of airborne pollutants on invertebrates and plants	Minor adverse short-term local/borough effect	Construction Environmental Management Plan according to EA PPG06	Minor adverse short-term local effect
Contamination of watercourses, ground water and ponds – effects on wildlife and water quality	Negligible to minor adverse, short term. Local effects	Construction Environmental Management Plan according to EA PPG05	Negligible, short term localised
Introduction of invasive plants	Moderate adverse long term local effect	Avoidance measures as recommended by EA and DEFRA	Negligible, short term localised
Changes to drainage and groundwater	Negligible , short term and local effects	Sustainable Drainage System (early phase)	Negligible, short term localised
Light pollution (on bats)	Minor adverse short-term and local effects	Lighting chapter in Construction Environmental Management Plan	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Bats)	Moderate adverse short-term localised effects	Planting of more species-rich native hedgerows, trees.	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Birds)	Moderate adverse short-term localised effects	Timing of vegetation clearance outside of nesting season. Planting of more hedgerows, trees	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Great crested newt)	Minor adverse short-term within Site	Great Crested Newt Mitigation Strategy, includes new ponds, rough vegetation/swales	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Reptiles & amphibians)	Minor adverse short-term	Capture and translocation. New ponds, rough vegetation/swales	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Badgers)	Minor adverse short term local	Fencing and covering excavations. Green infrastructure network	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Invertebrates)	Moderate adverse short term and localised	Planting of more species-rich native hedgerows, trees, species-rich grassland/swales	Minor beneficial, long term localised

Description of Effect	Potential Effect	Mitigation	Residual Effect
Restricted access for badgers/hedgehogs	Minor adverse, short term and local effects	Fencing and covering excavations	Negligible, short term localised
Completed Development			
Effect of airborne pollutants on invertebrates and plants	Negligible, long-term localised effects	None required	Negligible, short term localised
Contamination of watercourses, ground water and ponds – effects on wildlife and water quality	Negligible adverse, long term and local/borough effects	Sustainable Drainage System	Negligible long term, localised/borough effects
Introduction of invasive plants	Moderate adverse long term localised effects	Management company control programme	Negligible, long term localised
Light pollution (Bats)	Minor adverse long term localised	Management company lighting control	Negligible, long term localised
Restricted access (Badger/hedgehog)	Minor adverse, short term, Site and surrounds	Advice to residents on wildlife-friendly fencing	Negligible, long term localised
Disturbance to wildlife	Minor long term, Site and surrounds	Maturing site-wide biodiverse green infrastructure network including dense vegetation	Negligible long term and localised
Pets (inc. free-ranging cats)	Moderate adverse long-term Site and surrounds	Advice to residents on reducing effects	Moderate adverse long term
Littering	Minor adverse long term Site and surrounds	Management company collects litter	Negligible long term localised

Conclusion

7.107. In conclusion, most of the residual effects will be negligible and localised. However, some residual minor and moderate adverse effects would remain due to the effect of airborne pollutants on invertebrates and plants during the construction phase and the introduction of pets into the Site on completion which could disturb, injure or kill wildlife. The expansion and maturation of the network of gardens, hedgerows, creation of species-rich grasslands and the creation of swales, part of a site-wide Sustainable Drainage System would result in a minor beneficial effect.

References

1 HMSO. (2010) *The Conservation of Habitats and Species Regulations (Habitats Regulations)*
2 HMSO. (1981) *The Wildlife and Countryside Act, 1981 (as amended).*
3 HMSO. (1991) *Protection of Badgers Act 1992.*
4 Joint Nature Conservation Committee. (2009) *Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC)*. http://jncc.defra.gov.uk/page-1373
5 HMSO. (2006) *Natural Environment and Rural Communities (NERC) Act.*
6 Department for Communities and Local Government (2012) *National Planning Policy Framework.* https://www.gov.uk/government/publications/national-planning-policy-framework--2
7 Department for Communities and Local Government. (2009) *Eco-towns A supplement to Planning Policy Statement 1*
8 Cherwell District Council. (1996) *Local Planning Policy.*
9 Cherwell District Council (2011) Non Statutory Cherwell Local Plan
10 DEFRA. (1994) *The UK Biodiversity Action Plan (UK BAP).* http://jncc.defra.gov.uk/ukbap
11 JNCC and, Defra. (2012) *UK Post-2010 Biodiversity Framework.*
12 Wild Oxfordshire. (2001) *Oxfordshire Local BAP 2001.* http://www.wildoxfordshire.org.uk/
13 Oxfordshire County Council. (2014) *The Oxfordshire Wildlife & Landscape Study (OWLS).* http://owls.oxfordshire.gov.uk/wps/wcm/connect/occ/OWLS/Home/
14 Cherwell District Council. (2014) *Protecting and Enhancing Cherwell's Natural Environment: Corporate Biodiversity Action Plan 2014-2015*. http://www.cherwell.gov.uk/index.cfm?articleid=792
15 Cherwell District Council. (2009) *Important sites, habitats and species*. Biodiversity and Planning in Oxfordshire. http://www.cherwell.gov.uk/naturalenvironment
16 Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*.
17 Environmental Agency. (2012) *PPG6 Working at construction and demolition sites.* https://www.gov.uk/government/publications/construction-and-demolition-sites-ppg6-prevent-pollution
18 Environmental Agency. (2007) *PPG5 Works in, near or liable to affect watercourses.* https://www.gov.uk/government/publications/works-in-near-or-over-watercourses-ppg5-prevent-pollution
19 Environmental Agency. (2013) *The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites.*
20 DEFRA. (2013) *Environmental Management Guidance: Japanese knotweed, giant hogweed and other invasive plants.* https://www.gov.uk/japanese-knotweed-giant-hogweed-and-other-invasive-plants
21 Environmental Agency. (2013) *The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites.*
22 DEFRA. (2013) *Environmental Management Guidance: Japanese knotweed, giant hogweed and other invasive plants.* https://www.gov.uk/japanese-knotweed-giant-hogweed-and-other-invasive-plants

8. Transport

Introduction

8.1. This chapter has been prepared by Alan Baxter and Associates. The aim of this chapter is to consider the potential traffic and transportation effects that are likely to arise in association with the Himley Village Development.

8.2. This assessment has been undertaken in accordance with the document entitled 'Guidelines for the Environmental Assessment of Road Traffic'[1] published by the Institute of Environmental Assessment (IEA) in 1994. The IEA is now known as the Institute of Environmental Management and Assessment (IEMA), so throughout the remainder of this chapter this document will be referred to as the 'IEMA Guidelines'.

8.3. This chapter should be read in conjunction with the Transport Assessment and Travel Plan for the Himley Village Development submitted separately with the application, together with the overarching Access and Travel Strategy which formed part of the NW Bicester Masterplan submission. Where appropriate cross-references are made to these documents.

Planning Policy & Guidance

8.4. This assessment has been undertaken in accordance with current legislation, national and local plans and policies. Outlined below are those elements of current policy relevant to transport in the context of the Himley Village Development.

National Planning Policy

Government White Paper (2011)

8.5. A Government White Paper[2] Creating Growth, Cutting Carbon (DfT) was released in 2011 and outlines a vision for a transport system which enables economic growth, is greener, safer and improves quality of life in communities.

National Planning Policy Framework (2012)

8.6. The National Planning Policy Framework[3] (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF sets out 12 core planning principles which underpin decision making. The most relevant policy for transport planning is the following;

> *"Actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable."*

8.7. **Chapter 4** 'Promoting sustainable transport' specifically relates to transport and movement stating that the "*transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel*" (Paragraph 29).

8.8. **Paragraph 31** highlights that local authorities, neighbouring authorities and transport providers need to work collaboratively "*to develop strategies for the provision of viable infrastructure necessary to support sustainable development*".

8.9. **Paragraph 32** states "*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 limits 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*."

8.10. **Paragraph 34** states that "*decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised."*

8.11. **Paragraph 35** highlights that development proposals should maximise opportunities for alternative 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*."

8.12. **Paragraph 36** identifies that a key tool for achieving the above principles is through provision of a Travel Plan.

8.13. Furthermore, **Paragraph 38** highlights that for larger scale developments in particular "*key facilities such as primary schools and local shops should be located within walking distance of most properties*".

Planning Policy Statement 1- Eco-towns Annex (2009)

8.14. Planning Policy Statement 1 on Eco Towns[4] sets out minimum standards to reduce the carbon footprint of developments to a low level and to create a more sustainable way of living. Eco-towns should be exemplar projects that encourage residents to live within managed environmental limits and in communities that are resilient to climate change.

8.15. **Section E11- Transport** sets out the standards to be achieved for transport as follows:

ET 11.1 Travel in eco-towns should support people's desire for mobility whilst achieving the goal of low carbon living. The town should be designed so that access to it and through it gives priority to options such as walking, cycling, public transport and other sustainable options, thereby reducing residents' reliance on private cars, including techniques such as filtered permeability. To achieve this, homes should be within ten minutes' walk of:

- Frequent public transport; and
- Neighbourhood services. The provision of services within the eco-town may be co- located to reduce the need for individuals to travel by private car and encourage the efficient use of the sustainable transport options available.

8.16. **ET 11.2** Planning applications should include travel plans which demonstrate:

- How the town's design will enable at least 50 per cent of trips originating in eco-towns to be made by non-car means, with the potential for this to increase over time to at least 60 per cent;
- Good design principles, drawing from Manual for Streets, Building for Life, and community travel planning principles;

- How transport choice messages, infrastructure and services will be provided from 'day one' of residential occupation; and
- How the carbon impact of transport in the eco-town will be monitored, as part of embedding a long term low-carbon approach to travel within plans for community governance.

8.17. **ET 11.3** Where an eco-town is close to an existing higher order settlement, planning applications should also demonstrate:

(a) Options for ensuring that key connections around the eco-town do not become congested as a result of the development, for example by extending some aspects of the travel plan beyond the immediate boundaries of the town; and

(b) Significantly more ambitious targets for modal share than the 50 per cent (increasing to 60 per cent over time) mentioned above and for the use of sustainable transport.

8.18. **ET 11.4** Where eco-town plans intend to incorporate ultra-low carbon vehicle options, including electric car schemes to help achieve a sustainable transport system, planning applications should demonstrate that:

(a) There will be sufficient energy headroom to meet the higher demand for electricity; and

(b) The scheme will not add so many additional private vehicles to the local road network that these will cause congestion.

8.19. **ET 11.5** Eco-towns should be designed in a way that supports children walking or cycling to school safely and easily. There should be a maximum walking distance of 800m from homes to the nearest school for children aged under 11, except where this is not a viable option due to natural water features or other physical landscape restrictions."

DfT Circular 02/13 the Strategic Road Network and the Delivery of Sustainable Development (February 2013)

8.20. The DfT Circular[5] explains how the Highways Agency engages with communities and development industries to deliver sustainable development whilst protecting the primary function of the strategic road network. The overall aim is to provide a safe and reliable strategic road network which allows efficient movement of people. It identifies that development that seeks achieve this through use sustainable modes of transport, minimise journey lengths and promoting accessibility to all to create robust travel plans is an effective means of managing the impact of development on the strategic road network. This document seeks to address matters arising from the planning process that have the potential to impact the road network. It states that development should only be refused on transport grounds where the residual cumulative impacts of development are severe.

Local Planning Policy

Oxfordshire Local Transport Plan 3 2011-2013. (Revised April 2012 and Chapter 16 Bicester, May 2014)

8.21. The recent revision of the chapter relating to Bicester sets out the County's approach to transport in the town. The priority for Bicester is to provide the transport infrastructure which supports the aspirations set out in the Local Plan and the initiatives for their implementation in the Bicester and North West Bicester Masterplans. This includes tacking the challenges identified in the Bicester Movement Study and those specific to Central Government standards for transport in Eco Towns. This will enable the town to thrive and realise its full growth potential, and its essential role in Oxfordshire's economy.

8.22. This strategy identifies a series of improvements to increase the overall capacity of transport networks and systems within the locality, enabling them to accommodate the additional trips generated by development; to adapt to their cumulative impact and to mitigate the local environmental impact of increased travel.

8.23. It is highlighted that where schemes are needed to mitigate one particular development, the developer will be expected to either construct or provide funding for the scheme; where a scheme is required due to the impact of more than one development, each developer will be expected to make a contribution proportional to the scale of their impact. Additional funding may also be sought via the Local Transport Board to the Local Growth Fund and other sources. It is noted that Oxfordshire County Council are working towards a strategic transport contribution rate for developer funding, which will be adopted in a future update of this strategy.

Cherwell Draft Local Plan (January 2014)

8.24. The proposed new Cherwell Local Plan[6] (2006-2031) 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 the Cherwell district and, once adopted will replace the Cherwell Local Plan 1996. During the Examination in Public on the emerging Local Plan, the Inspector requested that Cherwell District Council (CDC) 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 housing delivery within the plan period. Subsequently, the emerging Local Plan (proposed modifications) was updated on 21 October 2014.

Other guidance documents

8.25. In addition to the national and local policy documents previously outlined, two additional documents are relevant to the development;

- Building Sustainable Transport into New Developments: A Menu of Options for Growth Points and Eco-towns, Department for Transport (DfT), 2008;
- Design to Delivery: Eco-Towns Transport Worksheet, Town and Country Planning Association, March 2008.

Assessment Methodology and Significance Criteria

The Study Area

8.26. The study area is illustrated in **Figure 8.1** and encompasses the road network of Bicester within the twelve cordon locations (which are the points of entry/exit to Bicester).

8.27. Oxfordshire County Council (OCC) was consulted as part of the NW Bicester Masterplan on the extent of the study area to be considered using the information from traffic studies and forecasts. It was agreed that the study area should include the entirety of Bicester for the purposes of initial assessment in order to be able to identify links where traffic levels are forecast to increase. Following the Transport Assessment scoping response from OCC, the study area includes Boundary Way on the east side of Bicester as requested.

Methodology for Establishing Baseline Conditions

Traffic Flows

8.28. Baseline conditions for the surrounding highway network were established using the Bicester SATURN model run by White Young Green (WYG) on behalf of OCC. The model currently has a base year of 2012 and the outputs from the model were made available in February 2014 to provide a baseline for the NW Bicester Masterplan.

8.29. The Bicester SATURN model was built using 2007 traffic data, and hence the model has a 2007 base year. In order to validate the use of the model with a 2012 Base Year, a series of vehicle counts were carried out by OCC in 2012/2013 and supplied to Halcrow who undertook a validation exercise. In total 35 automatic traffic counts were undertaken. The validation report is included as part of the evidence base for the Cherwell Local Plan.

8.30. The baseline traffic analysis undertaken for the Himley Village Development uses the Saturn Model Flows to provide the evidence of current traffic levels. Baseline AM and PM peak hour flows for links and junctions across the study area have been obtained from the Bicester Saturn Model 2012 Base Year. Key road links in relation to the Himley Village Development and the link flow locations included in the Base Year analysis is shown in **Figure 8.1 and Figure 8.2.**

Personal Injury Accident Data

8.31. Personal Injury Accident data has been obtained from OCC for the key routes on the west side of Bicester, as shown in **Figure 8.6**. This takes into account all accidents reported to the police between 1st January 2009 and 31st January 2014.

Public Transport

8.32. Existing bus services and routes in Bicester have been identified to allow a review of the need to provide additional bus services/increase bus frequency.

Forecasting the Future Baseline Case 2031 ("Without Development" Scenario)

8.33. A future year / Reference Case has been developed by WYG for 2031 using the Saturn model. This includes all committed and planned developments except the 5,607 homes at NW Bicester, which represents maximum growth of the town without NW Bicester. For the purposes of environmental assessment, this scenario is to be used as the Future Baseline Year against which the impacts of NW Bicester Masterplan will be assessed.

8.34. Table 8.1 sets out committed and planned development that has been considered as part of the 2031 Reference Case in the Saturn Model. This table is extracted from the Bicester Peripheral Routes Study (WYG on behalf of OCC) as developments included within the model in 2031. It should be noted that this is a comprehensive list of planned developments as agreed for testing with OCC to provide a full assessment of development planned for the town. There have been changes to some of these Developments since the modelling was carried out early in 2014 and these are described in **Technical Appendix 19.2**. However, these changes are considered unlikely to significantly affect the findings and the Reference Case is still considered to represent a worst case of 2031 traffic levels.

Table 8.1: Committed and Planned Development. (Source: contains information from White Young Green, February 2014)

Input
Bicester Eco Town Exemplar Site 393 house/ 2,900sqm employment development at NW Bicester exemplar
1,900 house/ 104,000 sqm employment development at Graven Hill
Kingsmere Phase 1 1,631 house development at SW Bicester
Kingsmere Phase 2 720 house development at SW Bicester
Additional 100 houses within Kingsmere Phase 1 Site
46,200 sqm employment development at Bicester Business Park, including relocation of Tesco store
Town centre redevelopment phase 1
Town centre redevelopment phase 2
RAF Bicester
19,800 sqm employment at Bicester Gateway
26,400 sqm employment development at NE Bicester Business Park
800 houses/ 64,812 sqm employment development at SE Bicester
Bicester Village phase 4
Caversfield Fringford Lane
RAF Bicester (new houses in Caversfield) 197 dwellings from new build and conversion.

8.35. In addition there are various proposals for transport included in the Reference Case of the traffic model:

- Town centre access improvements (these have already been implemented but were not in the base year model 2012);
- Changes implemented as part of the town centre redevelopment (as above);
- Traffic calming and 30mph speed limit on Middleton Stoney Road east of Vendee Drive;
- Changes at the Pingle Drive junction, A41 / Oxford Road (Esso) junction and along the A41 corridor as part of the mitigation measures from Tesco's move and Bicester Village phase 4;
- Park & ride entrance/exit at the junction of Vendee Drive and the A41;
- A4095/B4100 junction alterations as part of NW Bicester Exemplar Site;
- Alterations to the A41/London Road (Rodney House) junction as part of Graven Hill mitigation;
- M40 Junction 9 Phase 2 improvements;
- M40 Junction 10 Pinch Point Scheme;
- London Road level crossing closed permanently to through traffic at points immediately north and south of the current rail level crossing; and
- Removal of the existing level crossing at Charbridge Lane.

Limitations and Assumptions

8.36. The following assumptions regarding the baseline data have been made:

- All committed developments and proposed highway schemes will be built by 2031 and associated traffic flows will be on the highway network; and
- No further developments, new highway schemes or changes to public transport services, other than those previously committed or as part of the NW Bicester Masterplan, will be introduced within the area as this could affect traffic flow and pedestrian movement.

Methodology for Assessing Effects

8.37. The environmental effects of road traffic resulting from the proposals have been assessed upon the local highway network in accordance with the IEMA guidelines. The IEMA Guidelines set out two rules that are used to establish whether an environmental assessment of traffic effects should be carried out:

- Rule 1- Include road links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)
- Rule 2- Include any other specifically sensitive areas where traffic flows will increase by 10% or more.

8.38. In this instance it is considered that as the Himley Village development forms part of the NW Bicester Masterplan and is proximate to sensitive residential areas and communities, the 10% threshold should apply.

8.39. The assessment has been carried out for a total of 46 links within the identified study area across a typical working day with the effects compared across the morning and evening peak hours.

8.40. In order to determine the significance of effects, the following parameters have been considered:

- The sensitivity of each link assessed;
- The percentage increase in total traffic and/or HGVs as a result of the Development along each link assessed; and
- The environmental effects as set out within IEMA Guidelines on each link where the impacts of the Development are above the significance thresholds.

8.41. These are discussed in further detail below.

Defining the importance/sensitivity of resource

8.42. Resources are the assets and facilities which may be affected by the Development such as the highway network. Receptors are the users or beneficiaries of those resources such as pedestrians and drivers who travel within the Study Area. The IEMA Guidelines identify particular groups or locations that may be sensitive to change in traffic conditions, these include:

- People at home;
- People at work;
- Sensitive groups including children, elderly and disabled;
- Sensitive locations such as hospitals, churches, schools, and historical buildings;
- People walking;
- People cycling;
- Open spaces, recreational areas, shopping areas;
- Sites of ecological/nature conservation value;
- Sites of tourist/visitor attraction.

8.43. These groups of receptors have been divided into groups using professional judgement based on their sensitivity/value. Table 8.2 summarises the resources, corresponding receptors and their importance / sensitivity used as part of this assessment.

Table 8.2: Determining the importance/ sensitivity of resource

Sensitivity/Value of Receptor	Resource	Receptor
High	Traffic flows on highway network near schools, colleges, playgrounds, accident blackspots, retirement homes and roads without footways that are used by pedestrians.	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers.
Medium	Traffic flows at congested junctions and on highway network near doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities.	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers, people visiting shops etc.
Low	Traffic flows: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	Residents of or workers travelling to these places.
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.	Residents/workers travelling by foot or by vehicle.

Source: IEMA Guidance and professional judgement

Development Related Traffic Changes

8.44. The Bicester Saturn Model has been recommended and agreed with OCC and the Highways Agency (HA) as the appropriate tool for assessing the impacts of the Himley Village Development within the submission timescale.

8.45. The anticipated generation of the traffic from the Himley Village Development has been calculated as a proportion of the traffic generated from the full NW Bicester development of 5,607 homes. The Bicester Saturn Model has then been used to assign traffic to the highway network in the 2031 Reference Case. This has then been undertaken for the NW Bicester Development of 5,607 homes. Full details of the predicted trip generation and assignment for the Development can be found within the separate Transport Assessment for the Himley Village Development.

8.46. The proportion of traffic generated by the Himley Village Development in relation to the overall masterplan has been calculated as 26.4% in the AM peak hour, 28.5% in the PM peak hour.

8.47. These percentages have been applied to link and junction flows to identify the percentage impact of the Himley Village Development on Reference Case 2031 traffic levels.

Potential Environmental Effects and Significance

8.48. The IEMA Guidelines cover the following areas which have been considered in this Chapter:

- Pedestrian Severance;
- Pedestrian amenity;
- Driver delay;
- Pedestrian delay;
- Pedestrian Fear and intimidation;

- Accidents and safety; and
- Dust and dirt (relevant to the construction phase only)

8.49. The remaining headings in the IEMA Guidelines, with the exception of hazardous loads, are discussed in other chapters within this Environmental Statement. They include Landscape and Visual Impact (Chapter 6), Ecology (Chapter 7), Air Quality (Chapter 9), Noise and Vibration (Chapter 10) and Built Heritage and Archaeology (Buried Heritage) (Chapters 14 & 15). There are no hazardous loads associated with the Development so this section does not apply. The above list of potential environmental effects is discussed in more detail below.

8.50. In addition, the Design Manual for Roads and Bridges (DMRB) guidelines include the need to separately assess the effect of a scheme on pedestrians, cyclists and equestrians. Where relevant these have been included under the headings set out above. There are no Public Rights of Way (PRoW) or bridleways through or within the immediate vicinity of the Site as shown on the Definitive Map of Public Rights of Way (included as **Figure 8.2**). The Himley Village Development is not considered to result in significant effects on the PRoW network and this is therefore not considered further within this Chapter.

Pedestrian severance

8.51. Severance occurs when there is difficulty experienced in crossing a heavily trafficked road. The guidance set out in DMRB Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects suggests that changes in traffic flow of 30%, 60% and 90% are considered as 'minor', 'moderate' and 'substantial' changes in severance respectively. Severance change is therefore measured in terms of percentage change in traffic rather than in actual flow.

Pedestrian amenity

8.52. The pedestrian amenity threshold, as set out in the IEMA Guidelines to assess the significance of change, is where the traffic flow is doubled.

Driver delay

8.53. Driver delay is determined by assessing the percent reduction of speed in kilometres per hour on each of the links. They were assessed under the following; 5-10% reduction in speed is minor adverse effect on driver delay, 10-20% reduction of speed is moderate adverse effect and 20+% reduction in speed is a substantial adverse effect.

Pedestrian delay

8.54. Pedestrian delay can occur where there are increased traffic volumes. The IEMA Guidelines recommend that professional judgement is used to determine whether there is significant impact, rather than setting specific thresholds for assessments.

Pedestrian fear and intimidation

8.55. Fear and intimidation can be established through a combination of traffic flow, speed and composition. The IEMA Guidelines (1994) provide criteria for assessing the effects of fear and intimidation, although these are outdated (1981). Thus, the criteria have been reviewed and updated using professional judgement to reflect a more current understanding of the effects of pedestrian fear and intimidation. The updated assessment criteria have been set out in Table 8.3.

Table 8.3: Assessing Magnitude of Effect of Pedestrian Fear and Intimidation

Degree of hazard speed	Average hourly traffic flow over 18-hour day (vehicle/ hour)	Average speed over 18 hour day (mile / hour)
Substantial adverse	2,200+	50+
Moderate adverse	1,800- 2,200	30-50
Minor adverse	600-1200	10-30

Accidents and safety

8.56. Accidents and safety is assessed using the personal injury accident data obtained from highway authority records. The IEMA Guidelines recommend that professional judgement will be needed to assess the effects.

Significance Criteria

8.57. The magnitude of the effect and the sensitivity of the receptor/resource under consideration has been used to determine the significance of the effect. For the assessment criteria outlined in this section the following scale of significance and terminology has been used:

- Substantial adverse;
- Moderate adverse;
- Minor adverse;
- Negligible;
- Minor beneficial;
- Moderate beneficial;
- Substantial beneficial.

Baseline Conditions

Key highway network within the Study Area

8.58. The key roads within the study area are shown on **Figure 8.2** and are described below.

M40

8.59. The M40 bypasses Bicester to the west in a north/south alignment towards Banbury and Birmingham to the north and Aylesbury, the M25 and London to the south. Two junctions of the M40 serve the Site, namely Junction 10 situated 8.2km to the north of the Site and Junction 9 situated 5.4km to the south of the Site.

A41/ A41 Oxford Road

8.60. The A41 Oxford Road connects the south west of Bicester to the M40 at junction 9 and provides access to Middleton Stoney Road and central Bicester via a mini roundabout. It is a dual carriageway subject to the national speed limit and is bounded mainly by open fields with the exception of Bicester Village, Bicester Garden centre and the Kingsmere (South West Bicester) development. The road changes direction abruptly at Bicester Village in an easterly direction towards Aylesbury and London beyond.

A34

8.61. The A34 is accessed from the A41 at Junction 9 of the M40 leading in a south easterly direction to Oxford and beyond (the M4 and Southampton). It is a dual carriageway and is subject to speed limits that range between 50mph to 70mph.

A4095/ A4421

8.62. At the local level Bicester is bounded to the west, north and east by the A4095 and the A4421 forming a ring road, and by the A41 and Middleton Stoney Road to the south. The A4095 and the A4421 roads are generally single carriageway (widening at junctions and slip roads) and are subject to a speed limit of 40mph. The northern sections of these roads incorporate a segregated cycle and pedestrian route along the southern edge nearest the town. Junctions off the ring road with radial roads such as Banbury Road and Buckingham Road are formed with roundabouts, thus the ring road is free of traffic signals with the exception of a toucan crossing on the A4095 Southwold Lane stretch between Banbury Road and Buckingham Road roundabouts.

A4095 Howes Lane

8.63. To the east of the Site, the A4095 Howes Lane extends north/south from Bucknell Road to the junction with the B4030 Middleton Stoney Road. It is a single carriageway road, rural in character and subject to varying speed limits of 40mph and 50mph. The road is bounded by fields to the west and the backs of houses in the Highfield area to the east. The western edge is formed by a grass verge and line of mature trees set approximately 3m back from the carriageway. There are currently no footways or street lighting.

A4095 Lord's Lane

8.64. The A4095 Lords Lane is a single lane carriageway (in each direction) that extends between its roundabout junctions with the B4100 Banbury Road and Bucknell Road. The road is subject to a 50mph speed limit and street lighting is provided.

B4030 Middleton Stoney Road

8.65. Middleton Stoney Road runs parallel to the southern boundary of the Site in a south-east to north-west direction. It is subject to the national speed limit west of the Howes Lane/ Vendee Drive roundabout and a 30mph limit to the east of the roundabout. To the east of the roundabout there is a 2m footway on one side. To the west of the roundabout there are no footways and its rural character is consistent along its length with mature vegetation and drainage ditches set back 2m back from the single carriageway which is approximately 7m in width.

B4030 Vendee Drive

8.66. Vendee Drive (B4030) connects the Middleton Stoney Road / Howes Lane roundabout to the A41. It is a new single carriageway road subject to a 50mph speed limit with a segregated pedestrian and cycle route.

Shakespeare Drive

8.67. Shakespeare Drive is a local distributor road connecting Middleton Stoney Road to the A4095 Howes Lane (east of Vendee Drive) and provides access to a number of residential roads in the Highfield neighbourhood. Due to the residential surrounds it is subject to a 30mph speed limit and benefits from continuous footways and street lighting. HGVs are restricted from using this route except for access.

Bucknell Road

8.68. Bucknell Road connects the B4100 Queens Avenue in the south to the roundabout between the A4095 Howes Lane and Lords Lane in a south-east to north-west alignment. It is a lit, single carriageway street with footways on both sides of the road and provides access to a number of residential side streets. North of the A4095 it becomes a rural lane with no footways providing access to Bucknell village.

B4100 Banbury Road

8.69. The B4100 Banbury Road carriageway has a south to north alignment, from its convergence with Buckingham Road and Field Street via a roundabout (southern extent) to its roundabout convergence with the A4095 Lords Lane and Southwold Lane. To the north of the roundabout it passes the eastern extent of the NW Bicester Masterplan and is predominately rural in character and subject to the national speed limit. The B4100 connects to the A43 at Baynards Green and is a route used to access the M40 Junction 10.

Bainton Road

8.70. Bainton Road follows a general east to west alignment between the B4100 Banbury Road and the village of Bucknell (approximately 2km north-west of the Site). The carriageway is approximately 5.5m in width although there are places where passing bays are provided and there are sharp bends. It is subject to a 60mph speed limit until the fringes of Bucknell village, where the speed limit reduces to 30mph. The carriageway is not illuminated and there is an absence of formal footways.

A4095 East of Banbury Road

8.71. The A4095 is single carriageway link between Banbury Road and Buckingham Road. The carriageway is lit and the speed limit is 50mph. Right turn central bays are provided for side roads leading to the residential area to the south of the link. Land use to the north of the link consists of fields and Defence Logistics Organisation (DLO) Caversfield land. A shared use footway is provided along the southern side of the carriageway and controlled pedestrian crossings are provided to the east of the junction with Fringford Road and to the west of the roundabout on Buckingham Road. The majority of the northern side of the carriageway has a large grassed verge and is tree lined with no footway provision.

Queens Avenue, South of Bucknell Road

8.72. Queens Avenue is a single carriageway road between the signalised junction with Bucknell Road and the junction with Kings End. It is a 30mph speed limit, is street lit and parking/loading is restricted. Bus stops are provided on both sides of the carriageway, to the north of Queens Court. Footways are provided on both sides of the carriageway with a grassed buffer zone. The western footway is shared by pedestrians and cyclists. A toucan crossing facility is provided south of St John's Street, linking to the shared footpath connecting to Hunt Close. A pedestrian crossing is provided to the north of Kings End at the end of the shared use footway. Land use along Queens Avenue is mixed with residential properties (accessed via side roads/private drives), Bicester Community College and the Magistrate's Court.

A4421 Neunkirchen Way

8.73. The A4421 Neunkirchen Way link between the A41 and Peregrine Way is dual carriageway with two lanes in each direction. The speed limit is 50mph and street lighting is provided. A shared use

footway is provided along the northern side of the carriageway. There is a residential estate to the north of the link, but there are no residential frontages. To the south of the link there are fields.

A4421, East of Skimmingdish Lane

8.74. The A4421 between Bicester Road and the A4095 is single carriageway with a speed limit of 50mph. The majority of the link is unlit. Off-carriageway facilities for both pedestrians and cyclists are only provided along the southern side of the carriageway between Bicester Road and Launton Road and at the northern section of the link where it connects to the A4095. To the north of the link there is a gliding club and airfield. To the south of the link, there is a residential estate but with no frontages or access from the A4421.

A4421, North of Skimmingdish Lane

8.75. The A4421 link to the north of Skimmingdish Lane is single carriageway, with a speed limit of 50mph and has no street lighting. Off-carriageway facilities for both pedestrians and cyclists are provided along the western side of the carriageway and bus stops are located north of the A4095 roundabout. To the east of the link there is a gliding club and airfield and to the west there are residential estates but with no frontages or direct access from the A4421.

Ardley Road, East of B430

8.76. Ardley Road is a single carriageway road between Station Road and Middleton Road which crosses over the M40. It is mainly rural in character with a speed limit of 60mph, changing to 30mph at the traffic calmed entry gate to Bucknell Village. A weight restriction on vehicles over 7.5 Tonnes is in place except for access. There are no footways or adjacent paths along the route and a 'pedestrians ahead' warning sign is located within the village. Street lighting has only been provided where there is a road hump, just north of Bainton Road. Along the link there are farm houses set back from the carriageway and in Bucknell village there are properties with frontage access.

A4095 North of Chesterton

8.77. The A4095 is a single carriageway road with a speed limit of 60mph, changing to 30mph at the entry to Chesterton Village. There are no footways or footpaths provided and there is no street lighting. The road is mainly rural in character between the M40 and Chesterton Village with fields to the north and a golf course to the south. Within Chesterton Village there are residential frontages, a parish hall and a school. Footways are provided on both sides of the carriageway but there is no street lighting.

The Approach, West of Bucknell Road

8.78. The Approach is a single carriageway road connecting Hudson Street and Bucknell Road. It is a residential area with a 30mph speed limit. Footways are provided on both sides of the carriageway which is street lit. Bus stops are located on both sides of the carriageway with a shelter on the southern side. Double yellow line waiting and loading restrictions are located on the corners of the junction with Bucknell Road.

Bicester Road, East of A4421 junction

8.79. Bicester Road is a single carriageway road between the A4421 and Station Road. The speed limit is 50mph, changing to 30mph at the entry to Launton Village. National Cycle Network Route 51 is located along Bicester Road and an off-road segregated cycle/footway is provided on the southern side of the carriageway between the A4421 roundabout and the bridge over the railway line. Land

use is mixed along the link with fields to the north and residential frontages, a parish hall and a school along the southern section. Footways are provided on both sides of the carriageway but there is no street lighting. Bus stops are provided in both directions, east of The Glades.

Fringford Road, North of Caversfield

8.80. Fringford Road is a single carriageway road with a speed limit of 60mph, changing to 40mph at the entry to Caversfield village. It is rural in character with fields located either side of the carriageway. Footways/footpaths have not been provided and there is no street lighting.

Ardley Road, North of Bucknell

8.81. Ardley Road is a single carriageway road between Station Road and Water Lane. It is a 30mph road with footways provided on both sides of the carriageway for the majority of the link. There is no street lighting provided and the carriageway is fronted by residential properties and a community hall, just north of the Station Road junction. Bus stops are located south of Water Lane and a shelter provided on the western side of the carriageway.

Middleton Road, West of Bucknell

8.82. Middleton Road is a single carriageway road between Ardley Road and Bicester Road, which crosses over the M40. It is mainly rural in character with a speed limit of 60mph, changing to 30mph when entering Bucknell village. Street lighting is not provided and there are no footways or adjacent paths. Along the eastern section of the link there are residential frontages within Bucknell village. Along the remaining rural section of the link, there are accesses to farm houses/buildings and an oil distributor property, north of Bicester Road.

Green Lane, West of Chesterton

8.83. Green Lane is a single carriageway road between Northampton Road and Alchester Road, which crosses over the M40. It is rural in character and has a speed limit of 60mph, changing to 30mph at the traffic calmed entry to Chesterton Village. Within Chesterton Village there are residential frontages with a section of on-street parking bays. Street lighting and footways are only provided on the link within the village.

Wendlebury Road, East of M40

8.84. Wendlebury Road is a single carriageway road connecting between Oxford Road and the A41. It is mainly rural in character with a speed limit of 60mph road, changing to 30mph at the traffic calmed entry to Wendlebury Village. National Cycle Network Route 51 is located along Wendlebury Road and to the north of the link there is cycle facility along the westbound carriageway. Land use is predominately rural, with a garden centre just south of the A41 junction. Within Wendlebury Village there are residential frontages and a public house. There are no footways or footpaths along the link and there is no street lighting.

2012 Baseline Traffic Flows

8.85. Baseline flows for the peak hours on links across the study area have been obtained from the Bicester Saturn Model 2012 Base Year. This gives AM and PM peak hour flows and these have been factored to give 12 hour (0700 to 1900) and 18 hour (0600 to 0000) flows using a factor of 4.33 and 5.21 respectively on the total of AM plus PM peak hour flows. The factors have been derived from Automatic Traffic Count (ATC) data collected locally to NW Bicester for the NW Bicester Exemplar Development Transport Assessment. Separate factors have been derived for

the M40 using locally derived Highways Agency TRADS data, giving factors of 6.03 for the 12 hour flows and 7.04 for the 18 hour flows. It should be noted that the factors have been rounded to two decimal places in the text thus there will be minor differences to the calculated flows from the use of the full factors. The flows are set out in Table 8.4.

Table 8.4: Base year 2012 traffic flows

Link Ref	Link Description	Base Year 2012			
		AM Peak Hour	PM Peak Hour	12 Hour Flows	18 Hour Flows
1	A41 northbound, N of M40 J9	1210	1493	11705	14088
2	A41 southbound, N of M40 J9	1205	1109	10021	12060
3	A41 Oxford Rd, S of A41 junction	2562	2490	21878	26331
4	Vendee Drive, W of A41 junction	353	249	2607	3138
5	A41, N of Pringle Drive	1496	1678	13745	16543
6	Middleton Stoney Rd, W of Kings End	970	846	7864	9465
7	Middleton Stoney Rd, W of Howes Lane	556	655	5244	6312
8	Howes Lane, N of Middleton Stoney Road	618	697	5695	6854
9	Howes Lane, E of Shakespeare Drive	750	848	6920	8329
10	Lords Lane, E of Bucknell Road	1003	1118	9185	11055
11	Lords Lane, W of Banbury Road	1108	1215	10060	12107
12	Bucknell Road, N of Lords Lane	247	192	1901	2288
13	Bucknell Road, S of Howes Lane	540	833	5946	7156
14	Banbury Road, N of Lords Lane	1117	1186	9973	12003
15	A4095 E of Banbury Road	1885	1886	16330	19654
16	Banbury Road, S of A4095	457	634	4725	5686
17	Buckingham Road, S of Skimmingdish Lane	717	842	6751	8125
18	Queens Avenue, S of Bucknell Road	1035	1454	10779	12973
19	A41 E of A41 Oxford Road	2129	2265	19028	22901
20	A4421 Neunkirchen Way	1370	1661	13126	15797
21	A41, E of London Road roundabout	2293	2396	10306	24439
22	A4421, E of Skimmingdish Lane	1471	1688	13680	16465
23	Shakespeare Drive, S of Howes Lane	142	152	1273	1532
24	M40 J10 northbound off slip road	482	599	4681	5634
25	Ardley Road (E of B430)	207	195	1741	2095
26	M40 southbound on slip road (from A43)	658	354	4382	5274
27	B430 M40 over bridge	2184	2170	18855	22693
28	A4095 N of Chesterton	602	553	5002	6020
29	Shakespeare Drive, E of Middleton Stoney Road	611	455	4616	5556
30	The Approach, W of Bucknell Road	320	243	2438	2934

Link Ref	Link Description	Base Year 2012			
		AM Peak Hour	PM Peak Hour	12 Hour Flows	18 Hour Flows
31	A41 East of Pioneer Road	2141	2378	19570	23553
32	Bicester Road, E of A4421 junction	663	617	5543	6671
33	A4421 N of Skimmingdish Lane	1311	1132	10579	12733
34	Fringford Road, N of Caverfield	74	112	805	969
35	B4100 Banbury Road, N of Bainton Road	1117	1186	9973	12003
36	Ardley Road, N of Bucknell	207	195	1741	2095
37	Middleton Road, W of Bucknell	27	12	169	203
38	B4030 Middleton Stoney Road, NW of NWB	556	655	5244	6312
39	Green Lane, W of Chesterton	407	360	3321	3998
40	Wendlebury Road, E of M40	331	207	2330	2804
41	M40 northbound (mainline only), S of J9	3876	4332	43454	57812
42	M40 southbound (mainline only), S of J9	4424	4012	50828	59418
43	M40 northbound (mainline only), S of J10/N of J9	5513	4271	71000	83000
44	M40 southbound (mainline only), S of J10/N of J9	5500	5101	63872	74667
45	M40 northbound (mainline only), N of J10	5259	5849	66927	78238
46	M40 southbound (mainline only), N of J10	4842	5102	59914	70040

Pedestrian provision

8.86. The majority of Bicester is located within 5kms of the Himley Village Development and therefore accessible by cyclists and those on foot, particularly given the flat topography on which the town is situated. A detailed audit of pedestrian and cyclist facilities has been undertaken and is reported in the Transport Assessment and in Technical Appendix 2 of the separately submitted NW Bicester Masterplan Access and Travel Strategy[7]. The pedestrian provision in the immediate vicinity of the Himley Village Development is described below.

8.87. Middleton Stoney Road runs parallel to the southern boundary of the Site in a south-east to north-west direction. To the west of the new roundabout at the junction with Howes Lane/ Vendee Drive the carriageway road is subject to the national speed limit but there is no provision for pedestrians or crossing facilities. To the east of this roundabout Middleton Stoney Road is subject to 30mph speed limit, there is a footway on the northern side of the carriageway. This footway is narrow but provides the most direct route from the Site to the town centre.

8.88. Howes Lane (A4095) is a single carriageway with a 50mph speed limit. There is no provision for pedestrians and cyclists or crossing facilities, with the exception of a footway on the south side of the road between Shakespeare Drive and Bucknell Road.

8.89. At the junction of Middleton Stoney Road/ Howes Lane/ Vendee Drive, south east of the Site, there is a new roundabout. The junction provides high quality pedestrian facilities with generous footways of approximately 2.5-3m in width combined with informal pedestrian crossings on all arms of the junction with refuge islands, tactile paving strips and signage. There are two existing pedestrian

links from Howes Lane to the east of the Site connecting to the residential dwellings and local amenities within the Highfield neighbourhood and ultimately to Shakespeare Drive. Currently the southern of the two links is an uninviting pedestrian link which is narrow, unlit and lacks natural surveillance. The northern link is of higher quality and formed in two sections the first from Howes Lane to Greenford Drive and the second linking to Shakespeare Drive. The northern link from Howes Lane is well lit and provides a meandering footpath. Current severance issues therefore exist for pedestrians crossing the A4095 close to the Banbury Road junction and along the A4095 Howes Lane and Middleton Stoney Road. Current demand for movements across the A4095 and Middleton Stoney Road are low given the rural nature of the streets.

Cycling

8.90. National Cycle Network (NCN), Route 51, passes through Bicester in a south west to north east alignment, linking Launton village, Gavray Drive, Tubbs Crossing, Sheep Street, Bicester Village and Wendlebury (see **Figure 8.4**). A combination of on-road routes (purple) and off-road traffic free routes (green) sections form the route passing through Bicester via the town centre and both stations (Bicester North and Bicester Town). Along the route cyclists are required to dismount their bike along a pedestrianised section of Sheep Street in the town centre. A number of routes exist to the south and east of the Site, providing connectivity to Bicester and Caversfield respectively. Bus services

8.91. Bus Services in the town are shown in **Figure 8.5**. The bus station facilities in Bicester town centre have been redeveloped to provide bus bays on Manorsfield Road adjacent to the new retail centre at Bure Place. Table 8.5 provides a summary of the bus routes that currently operate from Manorsfield Road in Bicester town centre. The X88 showing on **Figure 8.5** appears to have recently ceased as a service.

Table 8.5: Bus routes from Bicester town centre

Service	Route	First	Last	Approximate Daytime Frequency
8	Cambridge-Bedford-Oxford	0635	2145	Every two hours
8	Oxford-Bedford-Cambridge	0740	2305	
18	Buckingham-Steeple Claydon-Bicester	0830	1745	Every two hours
18	Bicester-Steeple Claydon-Buckingham	0835	1800	
21	Bicester-Chesterton-Bicester (Circular)	0755	1755	Every 30 minutes
21	Bicester-Chesterton-Bicester (Circular) *arrivals*	0750	1820	
22	Bicester-Caversfield-Bicester (Circular)	0735	1825	Hourly
22	Bicester-Caversfield-Bicester (Circular) *arrivals*	0755	1900	
23	Bicester-Caversfield-Bicester (Circular)	0845	1745	Hourly
23	Bicester-Caversfield-Bicester (Circular) *arrivals*	0930	1830	
24	Bicester-Churchill Road-Bicester (Circular)	0800	1830	Every 30 minutes
24	Bicester-Churchill Road-Bicester (Circular) *arrivals*	0812	1842	
25	Kidlington/Oxford-Bicester *arrivals*	0725	1907	Hourly
25	Bicester-Oxford/Kidlington	0625	1910	

Service	Route	First	Last	Approximate Daytime Frequency
S5	Oxford-Gosford-Bicester-Glory Farm/Launton/Arncott/Langsford	0645	0011	Every 15 minutes
S5	Glory Farm/Arncott/Launton/Langton-Bicester-Gosford-Oxford	0555	2311	
X5	Cambridge-Bedford-Oxford	0635	2145	Every 30 minutes
X5	Oxford-Bedford-Cambridge	0740	2305	

8.92. In the vicinity of the Site, bus service 25A, which connects Bicester, Kirtlington, Kidlington and Oxford via Middleton Stoney and Heyford, uses Middleton Stoney Road. This service runs half hourly during the morning and evening peak and hourly for the rest of the day. However, currently there are no bus stops along Middleton Stoney Road as there is no demand for the service.

Rail services

8.93. Bicester is well connected to the wider UK rail network with two railway stations Bicester Town (on the original Bletchley – Oxford line) and Bicester North (on the original Great Western Mainline). The Site is situated approximately 3.2km west of Bicester Town Station and approximately 4km south west of Bicester North Station. At the time of writing Bicester Town station was closed due to the construction of the Chiltern Railways Evergreen3 railway improvement scheme. This will provide a passenger train service between Oxford and London Marylebone via Bicester. The station is due to re-open in summer 2015 with the Oxford-London link opening in spring 2016.

8.94. As can be seen from Table 8.6, the regular services throughout the day ensure a good range of destinations are readily accessible from Bicester North and Bicester Town rail stations. The employment, recreational and shopping opportunities within Oxford are available within a 30 minutes rail journey from Bicester Town station although services are only every two hours at present. There is a service approximately every 15 minutes to Banbury, Birmingham and London from Bicester North station. Once the Evergreen3 proposals are finished there will be half hourly services to London and Oxford from Bicester Town Station and a reduction in the journey time to London.

Table 8.6: Summary of rail services

Station	Route	Journey Time (approximate)	Frequency
Bicester North	To London Marylebone	60 minutes	4 per hour
	To High Wycombe	30 minutes	2per hour
	To Banbury/ Birmingham	20 minutes	4 per hour
Bicester Town	To Oxford	30 minutes	1 every 2 hours

Accidents and Safety

8.95. Personal injury accident (PIA) data was provided by OCC for the period 1st January 2009 to 31st January 2014. The PIA study area includes all roads in the vicinity of the Site, as set out in **Figure 8.6.**

8.96. There have been a total of 114 incidents with the study area over the five year period between January 2009 and January 2014; 98 slight, 14 serious and two fatal in severity. Table 8.7 and Table 8.7 provide an overview of casualties and their severity. Of the two fatal accidents; one occurred in 2012 along the B4030 Middleton Stoney Road in which a HGV travelling southeast hit a pedestrian; the second fatal accident occurred along Bucknell Road in 2010 when a vehicle travelling southeast lost control and exited the carriageway, hitting a tree and killing both driver and child passenger.

Table 8.7: All accidents by severity

	2009	2010	2011	2012	2013	2014	Total
Fatal	0	1	0	1	0	0	2
Serious	3	0	3	3	5	0	14
Slight	14	10	33	20	18	3	98
Total	17	11	36	24	23	3	114

Table 8.8: Casualties by severity

	2009	2010	2011	2012	2013	2014	Total
Fatal	0	2	0	1	0	0	3
Serious	3	0	6	3	5	0	17
Slight	17	15	43	31	26	4	136
Total	20	17	49	35	31	4	156

8.97. There have been a total of 14 pedestrian accidents over the five year study period. Table 8.9 provides an overview of pedestrian accidents and their severity. The fatal pedestrian accident within this study period is as stated above (Middleton Stoney Road). A total of four serious accidents occurred within the study period, of which two accidents occurred along Buckingham Road.

Table 8.9: Pedestrian accidents by severity

	2009	2010	2011	2012	2013	2014	Total
Fatal	0	0	0	1	0	0	1
Serious	2	0	1	1	0	0	4
Slight	1	0	5	0	3	0	9
Total	3	0	6	2	3	0	14

8.98. There have been a total of 9 cycle accidents recorded over the five year study period. Table 8.10 provides an overview of cycle accidents and their severity. The majority of cycle accidents (8 of 9) were slight with only one severe accident and no fatal accidents during the study period.

Table 8.10: Cycle accidents by severity

	2009	2010	2011	2012	2013	2014	Total
Fatal	0	0	0	0	0	0	0
Serious	0	0	0	0	1	0	1
Slight	0	1	3	2	2	0	8

	2009	2010	2011	2012	2013	2014	Total
Total	0	1	3	2	3	0	9

Cluster Analysis

8.99. Further analysis has been undertaken at key locations within close proximity to the Site where clusters of accidents have been identified from the accident data. This includes the existing key junctions within the vicinity of the Site.

Bucknell Road near Hawkwell Farm

8.100. Four accidents were recorded within a 350m section of the B4100 in the latest five year period. Two of the accidents were slight in severity, with one serious and one fatal. Three of the accidents were a result of drivers losing control of the vehicle. Causes included speeding and being under the influence of alcohol. The incident involving a fatality was due to excessive speeding, travelling too fast for conditions, aggressive driving and being impaired by alcohol. Three of the four accidents involved vehicles travelling southeast-bound along Bucknell Road.

B4100 (near Home Farm)

8.101. Five accidents in total occurred in a 70m segment of the B4100 near Home Farm, all of which were slight in severity. Two of the five accidents occurred as a result of the vehicle losing control rounding a corner along the B4100, travelling north/northwest bound. Two of the accidents occurred at the same junction adjoining Caversfield Road and the B4100. In both cases the vehicles pulling out of the junction failed to see the oncoming vehicle travelling southeast bound along the B4100, rounding a right hand bend. Another incident occurred due to a driver unfamiliar with driving on the left pulled out from a layby onto the wrong side of the road, colliding with an oncoming vehicle.

B4100 Banbury Road/A4095 Roundabout

8.102. Two incidents have been recorded at the roundabout between the B4100 and A4095 in the last five years, one of which was serious in severity and the other slight. An incident involving a car and a motorcycle occurred due to the car travelling northbound attempting to make a U-turn north of the splitter island north of the roundabout. The car driver failed to give way to a motorcycle overtaking travelling northbound, resulting in a collision and serious injury to the motorcyclist.

A4095/Buckingham Road/Skimmingdish Lane

8.103. Three accidents have been recorded at the roundabout between the A4095, Buckingham Road and Skimmingdish Lane, all of which were slight in severity. Two of the accidents were a result of vehicles colliding at the roundabout, one due to a driver failing to give way and the other due to an unknown distraction in the car. The remaining incident was a result of a driver being impaired by alcohol and losing control of the car.

B4030/Vendee Drive/Middleton Stoney Road/A4095

8.104. Two accidents have been recorded at the roundabout between the B4030 and A4095 within the last five years, both of which were slight in severity. Both accidents were caused by drivers not stopping at junctions. The cause of one accident was due to a driver speeding and acting recklessly, failing to stop at the junction and exiting the carriageway. The other incident was due to a driver being impaired by drugs failing to stop at the junction and exiting the carriageway.

Howes Lane/Shakespeare Drive

8.105. Three accidents have been recorded at the junction between Howes Lane and Shakespeare Drive, all of which were slight in severity and involving two cars. Two of the accidents were a result of a car jumping a red light, resulting in a collision. The remaining incident was due to a driver failing to give way at the junction.

Accident Summary

8.106. In summary, the number of incidents on Bucknell Road near Hawkwell Farm, on the B4100 Banbury Road and the junction of Howes Lane/ Shakespeare Drive mean that safety issues need to be considered further in the impact assessment. The number of accidents at the roundabouts does not appear to be unusual given the volume of traffic movements.

2031 Future Baseline Traffic Flows

8.107. A 2031 Future Baseline / Reference Case (without the full NW Bicester Development of 5,607 homes) has been assessed by WYG using the Bicester Saturn Model. This includes all committed and planned developments which represents maximum growth of the town without the NW Bicester Development. For the purposes of environmental assessment, this scenario is to be used as the Future Year Baseline against which the impacts of the Himley Village Development will be assessed.

8.108. It is predicted that there would be a significant increase in traffic flow for the majority of links assessed by 2031 compared to the Base Year of 2012. Table 8.11 provides the predicted 2031 Future Baseline / Reference Case traffic flows, with flows shown for the AM and PM peak hours and over a 12 and 18 hour period. The percentage increase in flow is shown. The increase in flows is the direct result of planned development in Bicester and growth in traffic movements on the wider network.

Table 8.11: 2031 Future Baseline / Reference Case (without the NW Bicester Eco-Town) Forecast Traffic Flows

Link Ref	Link Description	2031 Future Baseline/Reference Case (without development)				Percentage Change of Traffic Flow compared to Base Year 2012			
		AM Peak Hour	PM Peak Hour	Flow over 12 hours	Flow over 18 hours	AM Peak hour	PM Peak hour	Flow over 12 hours	Flow over 18 hours
1	A41 northbound, N of M40 J9	1510	1575	13360	16079	25%	5%	14%	14%
2	A41 southbound, N of M40 J9	1242	1269	10874	13087	3%	14%	9%	9%
3	A41 Oxford Rd, S of A41 junction	4324	4016	36116	43468	69%	61%	65%	65%
4	Vendee Drive, W of A41 junction	757	989	7561	9100	114%	297%	190%	190%
5	A41, N of Pringle Drive	2229	2235	19331	23266	49%	33%	41%	41%
6	Middleton Stoney Rd, W of Kings End	966	1158	9198	11070	0%	37%	17%	17%

Link Ref	Link Description	2031 Future Baseline/Reference Case (without development)				Percentage Change of Traffic Flow compared to Base Year 2012			
		AM Peak Hour	PM Peak Hour	Flow over 12 hours	Flow over 18 hours	AM Peak hour	PM Peak hour	Flow over 12 hours	Flow over 18 hours
7	Middleton Stoney Rd, W of Howes Lane	519	642	5028	6051	-7%	-2%	-4%	-4%
8	Howes Lane, N of Middleton Stoney Rd	1075	1198	9843	11847	74%	72%	73%	73%
9	Howes Lane, E of Shakespeare Drive	1077	1173	9744	11727	44%	38%	41%	41%
10	Lords Lane, E of Bucknell Road	1391	1409	12125	14593	39%	26%	32%	32%
11	Lords Lane, W of Banbury Road	1384	1448	12264	14760	25%	19%	22%	22%
12	Bucknell Road, N of Lords Lane	257	432	2984	3591	4%	125%	57%	57%
13	Bucknell Road, S of Howes Lane	516	932	6271	7547	-4%	12%	5%	5%
14	Banbury Road, N of Lords Lane	1522	1755	14191	17080	36%	48%	42%	42%
15	A4095 E of Banbury Road	2106	2163	18487	22250	12%	15%	13%	13%
16	Banbury Road, S of A4095	764	929	7332	8824	67%	47%	55%	55%
17	Buckingham Road, S of Skimmingdish Lane	1258	1252	10870	13082	75%	49%	61%	61%
18	Queens Road, S of Bucknell Road	1998	2109	17785	21405	93%	45%	65%	65%
19	A41 E of A41 Oxford Road	3505	3447	30106	36233	65%	52%	58%	58%
20	A4421 Neumkirchen Way	1849	1938	16400	19738	35%	17%	25%	25%
21	A41, E of London Road roundabout	1969	1632	15594	18768	-14%	-32%	-23%	-23%
22	A4421, E of Skimmingdish Lane	2154	2453	19951	24011	46%	45%	46%	46%
23	Shakespeare Drive, S of Howes Lane	138	85	966	1162	-3%	-44%	-24%	-24%
24	M40 J10 northbound off slip road	759	523	5552	6682	57%	-13%	19%	19%
25	Ardley Road (E of B430)	364	532	3880	4670	76%	173%	123%	123%

Link Ref	Link Description	2031 Future Baseline/Reference Case (without development)				Percentage Change of Traffic Flow compared to Base Year 2012			
		AM Peak Hour	PM Peak Hour	Flow over 12 hours	Flow over 18 hours	AM Peak hour	PM Peak hour	Flow over 12 hours	Flow over 18 hours
26	M40 J10 southbound on slip road	565	240	3486	4196	-14%	-32%	-20%	-20%
27	B430 M40 over bridge	2376	2579	21458	25825	9%	19%	14%	14%
28	A4095 N of Chesterton	1076	976	8886	10695	79%	76%	78%	78%
29	Shakespeare Drive, E of Middleton Stoney Road	950	873	7894	9501	55%	92%	71%	71%
30	The Approach, W of Bucknell Road	401	507	3932	4732	25%	109%	61%	61%
31	A41 East of Pioneer Road	3075	3009	26347	31710	44%	27%	35%	35%
32	Bicester Road, E pf A4421 junction	421	580	4335	5217	-37%	-6%	-22%	-22%
33	A4421 N of Skimmingdish Lane	1780	1641	14815	17830	36%	45%	40%	40%
34	Fringford Road, N of Caverfield	99	188	1243	1496	34%	68%	54%	54%
35	B4100 Banbury Road, N of Bainton Road	1353	1599	12784	15386	21%	35%	28%	28%
36	Ardley Road, N of Bucknell	349	533	3819	4597	69%	173%	119%	119%
37	Middleton Road, W of Bucknell	32	30	268	323	19%	150%	59%	59%
38	B4030 Middleton Stoney Road, NW of NWB	522	642	5041	6067	-6%	-2%	-4%	-4%
39	Green Lane, W of Chesterton	611	561	5075	6108	50%	56%	53%	53%
40	Wendlebury, E of M40	450	254	3049	3669	36%	23%	31%	31%
41	M40 northbound (mainline only), S of J9	4001	4310	50075	58538	3%	-1%	1%	1%
42	M40 southbound (mainline only), S of J9	4387	4077	50997	59616	-1%	2%	0%	0%
43	M40 northbound (mainline only), S of J10/N of J9	5786	6269	72633	84908	5%	0%	2%	2%

Link Ref	Link Description	2031 Future Baseline/Reference Case (without development)				Percentage Change of Traffic Flow compared to Base Year 2012			
		AM Peak Hour	PM Peak Hour	Flow over 12 hours	Flow over 18 hours	AM Peak hour	PM Peak hour	Flow over 12 hours	Flow over 18 hours
44	M40 southbound (mainline only), S of J10/N of J9	5398	4693	60800	71075	-2%	-8%	-5%	-5%
45	M40 northbound (mainline only), N of J10	5243	6053	68060	79562	0%	3%	2%	2%
46	M40 southbound (mainline only), N of J10	5877	5133	66337	77548	21%	1%	11%	11%

Potential Effects

Demolition and Construction

8.109. The potential effects during the construction phase are identified as:

- Potential effect on pedestrian and cyclist amenity and fear and intimidation due to the increase in vehicle flows and the change in flow composition i.e. an increase in large type vehicles. The effect of an increase in HGV traffic associated with construction is anticipated to be **temporary** and of **minor adverse** significance;
- Potential increase in driver and pedestrian delay due to the additional vehicles associated with the Development on the highway network together with possible temporary traffic management. The effect of an increase in vehicle flows is anticipated to be **temporary** and of **minor adverse** significance;
- Potential reduction in public safety, particularly vulnerable road users, due to the introduction of large type vehicles travelling to and from the Site. The effect of large construction vehicles travelling to and from the Development is anticipated to be **temporary** and of **minor adverse** significance;
- Creation of dust and dirt on the highway due to construction vehicles tracking mud from the construction site onto the highway network. This effect would be **temporary** and of **minor adverse** significance.

8.110. The assessment of effects associated with the construction phase of the Himley Village Development has identified that there are likely to be **minor adverse** effects for residents and business relating to the increase in construction vehicles on the local highway network. Potential delays to journey times for pedestrians and drivers may be experienced due to the volume of traffic and potential need to introduce temporary traffic management controls on route to the Development Site. The safety of road users may also be affected by the increase of large type construction vehicles.

Completed Development

Traffic Generation and Assignment

8.111. Table 8.12 shows the total predicted number of trips generated by the Himley Village Development for each link and compares them to the predicted increase in traffic flow from the Reference Case 2031. The percentage change on each link in the different time periods is then identified.

8.112. Table 8.10 highlights those links where a 10% or more increase in traffic is forecast from the Development compared to the Reference Case 2031. The impact on the following links would therefore be further considered for each factor:

- Middleton Stoney Road, W of Howes Lane;
- Bucknell Road, S of Lords Lane;
- Banbury Road, S of A4095;
- Shakespeare Drive, S of Howes Lane;
- M40 J10 northbound off slip road;
- Shakespeare Drive, E of Middleton Stoney Road;
- The Approach, W of Bucknell Road;
- Ardley Road, N of Bucknell;
- Middleton Road, W of Bucknell;
- B4030 Middleton Stoney Road, NW of NWB.

Table 8.12: Himley Village Development Flows

Link Ref	Link Description	2031 Flows without Himley Village		Himley Village Flows		2031 flows with Himley Village		Percentage Change	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1	A41 northbound, N of M40 J9	1510	1575	15	-16	1525	1559	1.0%	-1.0%
2	A41 southbound, N of M40 J9	1242	1269	-4	15	1238	1284	-0.3%	1.2%
3	A41 Oxford Rd, S of A41 junction	4324	4016	84	91	4408	4107	1.9%	2.3%
4	Vendee Drive, W of A41 junction	757	989	17	60	774	1049	2.3%	6.1%
5	A41, N of Pingle Drive	2229	2235	63	64	2292	2299	2.8%	2.9%
6	Middleton Stoney Rd, W of Kings End	966	1158	15	53	981	1211	1.5%	4.6%
7	Middleton Stoney Rd, W of Howes Lane	519	642	240	280	759	922	46.3%	43.6%
8	Howes Lane, N of Middleton Stoney Rd	1075	1198	-37	-86	1038	1112	-3.4%	-7.2%

Link Ref	Link Description	2031 Flows without Himley Village		Himley Village Flows		2031 flows with Himley Village		Percentage Change	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
9	Howes Lane, E of Shakespeare Drive	1077	1173	35	12	1112	1185	3.2%	1.0%
10	Lords Lane, E of Bucknell Road	1391	1409	-62	-58	1329	1351	-4.5%	-4.1%
11	Lords Lane, W of Banbury Road	1384	1448	-61	-96	1323	1352	-4.4%	-6.6%
12	Bucknell Road, N of Lords Lane	257	432	-31	-77	226	355	-12.2%	-17.8%
13	Bucknell Road, S of Lords Lane	516	932	53	22	569	954	10.3%	2.4%
14	Banbury Road, N of Lords Lane	1522	1755	35	138	1557	1893	2.3%	7.8%
15	A4095 E of Banbury Road	2106	2163	6	36	2112	2199	0.3%	1.7%
16	Banbury Road, S of A4095	764	929	87	75	851	1004	11.4%	8.0%
17	Buckingham Road, S of Skimmingdish Lane	1258	1252	102	79	1360	1331	8.1%	6.3%
18	Queens Avenue, S of Bucknell Road	1998	2109	33	78	2031	2187	1.6%	3.7%
19	A41 E of A41 Oxford Road	3505	3447	68	77	3573	3524	1.9%	2.2%
20	A4421 Neunkirchen Way	1849	1938	41	60	1890	1998	2.2%	3.1%
21	A41, E of London Road roundabout	1969	1632	16	19	1985	1651	0.8%	1.2%
22	A4421, E of Skimmingdish Lane	2154	2453	40	92	2194	2545	1.9%	3.7%
23	Shakespeare Drive, S of Howes Lane	138	85	38	36	176	121	27.2%	42.5%
24	M40 J10 northbound off slip road	759	523	79	50	838	573	10.4%	9.5%
25	Ardley Road (E of B430)	364	532	34	6	398	538	9.2%	1.2%
26	M40 J10 southbound on slip road (from A43)	565	240	9	-2	574	238	1.6%	-0.9%
27	B430 M40 over bridge	2376	2579	7	54	2383	2633	0.3%	2.1%
28	A4095 N of Chesterton	1076	976	29	22	1105	998	2.7%	2.3%

Link Ref	Link Description	2031 Flows without Himley Village		Himley Village Flows		2031 flows with Himley Village		Percentage Change	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
29	Shakespeare Drive, E of Middleton Stoney Road	950	873	49	99	999	972	5.1%	11.4%
30	The Approach, W of Bucknell Road	401	507	106	59	507	566	26.4%	11.7%
31	A41 East of Pioneer Road	3075	3009	3	17	3078	3026	0.1%	0.6%
32	Bicester Road, E of A4421 junction	421	580	-10	8	411	588	-2.3%	1.4%
33	A4421 N of Skimmingdish Lane	1780	1641	47	11	1827	1652	2.6%	0.7%
34	Fringford Road, N of Caversfield	99	188	1	2	100	190	1.1%	0.9%
35	B4100 Banbury Road, N of Bainton Road	1353	1599	36	10	1389	1609	2.6%	0.6%
36	Ardley Road, N of Bucknell	349	533	38	6	387	539	10.8%	1.1%
37	Middleton Road, W of Bucknell	32	30	75	125	107	155	235.4 %	415.4 %
38	B4030 Middleton Stoney Road, NW of NWB	522	642	61	110	583	752	11.6%	17.2%
39	Green Lane, W of Chesterton	611	561	8	9	619	570	1.3%	1.6%
40	Wendlebury Road, E of M40	450	254	22	-6	472	248	4.9%	-2.2%
41	M40 northbound (mainline only), S of J9	4001	4310	8	1	4009	4311	0.2%	0.0%
42	M40 southbound (mainline only), S of J9	4387	4077	1	1	4388	4078	0.0%	0.0%
43	M40 northbound (mainline only), S of J10 / N of J9	5786	6269	82	44	5868	6313	1.4%	0.7%
44	M40 southbound (mainline only), S of J10 / N of J9	5398	4693	11	-1	5409	4692	0.2%	0.0%
45	M40 northbound (mainline only), N of J10	5243	6053	8	0	5251	6053	0.1%	0.0%
46	M40 southbound (mainline only), N of J10	5877	5133	4	3	5881	5136	0.1%	0.1%

Pedestrian Severance

8.113. Table 8.13 identifies the likely impact on pedestrian severance and amenity for each of the selected links. Severance occurs when there is difficulty experienced in crossing a heavily trafficked road. The guidance set out in DMRB Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects suggests that changes in traffic flow of 30%, 60% and 90% are considered as 'minor', 'moderate' and 'substantial' changes in severance respectively.

8.114. It can be seen that the increased traffic flow from the Himley Village Development would be likely to have an effect on pedestrian severance on three of the links. The increased traffic on Middleton Road would be likely to have a **substantial adverse** effect on pedestrian severance at the **local level** in both AM and PM peak in terms of percentage impact. The increased traffic on Middleton Stoney Road and Shakespeare Drive south of Howes Lane is likely to have a **minor adverse** effect at the **local level** on pedestrian severance in at least one of the peak hours in terms of percentage impact. Shakespeare Drive and Middleton Road are more sensitive than Middleton Stoney Road with existing residential properties and other land uses such as schools.

Table 8.13: Impact on Level of Pedestrian Severance

Link ref	Link Description	2031 future baseline with Himley Village		Percentage Change from 2031 Future Baseline		Effect on Level of Pedestrian Severance	
		AM peak	PM peak	AM peak	PM peak	AM peak	PM peak
7	Middleton Stoney Rd, W of Howes Lane	759	922	46.3%	43.6%	Minor	Minor
13	Bucknell Road, S of Howes Lane	569	954	10.3%	2.4%	-	-
16	Banbury Road, S of A4095	851	1004	11.4%	8.0%	-	-
23	Shakespeare Drive, S of Howes Lane	176	121	27.2%	42.5%	-	Minor
24	M40 J10 northbound off slip road	838	573	10.4%	9.5%	-	-
29	Shakespeare Drive, E of Middleton Stoney Road	999	972	5.1%	11.4%	-	-
30	The Approach, W of Bucknell Road	507	566	26.4%	11.7%	-	-
36	Ardley Road, N of Bucknell	387	539	10.8%	1.1%	-	-
37	Middleton Road, W of Bucknell	107	155	235.4%	415.4%	Substantial	Substantial
38	B4030 Middleton Stoney Road, NW of NWB	583	752	11.6%	17.2%	-	-

Pedestrian Amenity

8.115. Table 8.14 sets out each link and identifies where there would be a likely impact on pedestrian amenity based on the predicted increase in traffic flows with the Himley Village Development Flows. The pedestrian amenity threshold, as set out in the IEMA Guidelines to assess the significance of change, is where the traffic flow is doubled.

8.116. It can be seen that of the links assessed there would be likely to be an adverse effect on pedestrian amenity on Middleton Road as a result of the Himley Village Development. This potential effect is anticipated to be of **substantial adverse** significance at the **local level.**

Table 8.14: Impact on Level of Pedestrian Amenity for 2031 Future Baseline / Reference Case with Himley Village Development

Link ref	Link Description	2031 future baseline with Himley Village		Percentage Change from 2031 Future Baseline		Effect on Level of Pedestrian Amenity	
		AM peak	PM peak	AM peak	PM peak	AM peak	PM peak
7	Middleton Stoney Rd, W of Howes Lane	759	922	46.3%	43.6%	-	-
13	Bucknell Road, S of Howes Lane	569	954	10.3%	2.4%	-	-
16	Banbury Road, S of A4095	851	1004	11.4%	8.0%	-	-
23	Shakespeare Drive, S of Howes Lane	176	121	27.2%	42.5%	-	-
24	M40 J10 northbound off slip road	838	573	10.4%	9.5%	-	-
29	Shakespeare Drive, E of Middleton Stoney Road	999	972	5.1%	11.4%	-	-
30	The Approach, W of Bucknell Road	507	566	26.4%	11.7%	-	-
36	Ardley Road, N of Bucknell	387	539	10.8%	1.1%	-	-
37	Middleton Road, W of Bucknell	107	155	235.4%	415.4%	Substantial	Substantial
38	B4030 Middleton Stoney Road, NW of NWB	583	752	11.6%	17.2%	-	-

Driver delay

8.117. In order to assess driver delay on the links identified for assessment, link speeds have been used. Where there is a reduction in link speed with the Himley Village Development compared to the Reference Case this gives an indication of increased driver delay.

8.118. Table 8.15 shows the speed in the Reference Case 2031 and with the full NW Bicester Masterplan in place, thus representing a worst case in terms of delay on each link for the Himley Village Development. The links with a substantial reduction in speed are highlighted.

8.119. The results indicate that there would be an increase in driver delay on Middleton Stoney Road west of Howes Lane, Banbury Road south of the A4095, and Shakespeare Drive.

8.120. With regard to the significance of the impacts, the following assessment was made by calculating the percentage reduction in speed between the Reference Case and the with NW Bicester Development case:

- B4030 Middleton Stoney Road: **minor adverse**;
- Banbury Road, south of A4095: **substantial adverse**; and
- Shakespeare Drive: **substantial adverse**.

Table 8.15: Change in Congested Link Speed (with Junction Delay) with Development

Link			No NW Bicester KPH		With Full NW Bicester KPH		Change In Speed (with vs No NWB) KPH	
			AM	PM	AM	PM	AM	PM
7	Middleton Stoney Road, W of Howes Lane	EB	76.6	76.56	72.08	73.38	-4.52	-3.18
		WB	76.58	75.98	69.69	70.7	-6.89	-7.88
13	Bucknell Road, S of Howes Lane	NB	48	48	48	48	0	0
		SB	48	48	48	48	0	0
16	Banbury Road, S of A4095	NB	32.34	29.73	32.29	19.65	-0.05	-10.08
		SB	44.28	44.56	43.26	44.4	-1.02	-0.16
23	Shakespeare Drive, S of Howes Lane	NB	48	48	21	21	-16	-16
		SB	48	48	31.92	.31.98	-16.08	-16.02
24	M40 J10 northbound off slip road	NB	43.22	43.55	42.62	43.37	-0.6	-0.18
29	Shakespeare Drive, E of Middleton Stoney Road	NB	48	48	31.32	31.67	-16.68	-16.33
		SB	48	48	28.08	28.95	-19.92	-19.05
30	The Approach, W of Bucknell Road	NB	22.02	21.35	19.48	20.97	-2.54	-0.38
		SB	32	32	31.73	31.05	-0.27	-0.95
36	Ardley Road, N of Bucknell	NB	43.81	36.42	43.61	37.43	-0.2	1.01
		SB	47.96	47.97	47.69	47.68	-0.27	-0.29
37	Middleton Road, W of Bucknell	NB	63.99	63.96	63.56	63.79	-0.43	-0.17
		SB	61.76	61.66	61.83	61.73	0.07	0.07
38	B4030 Middleton Stoney Road, NW of NW Bicester	EB	80	80	80	80	0	0
		WB	79.21	78.02	77.21	72.22	-2	-5.8

Pedestrian delay

8.121. The IEMA Guidelines suggest that pedestrian delay is experienced at a lower threshold when pedestrians experience a 10 second delay crossing a carriageway with no crossing facilities for a two-way flow of 1,400 vehicles per hour. The upper threshold amounts to a 40 second delay, also where no crossing facilities exist.

8.122. The likely impact of pedestrian delay based on the predicted traffic flows of the Himley Village Development has been assessed. A commentary on each link is provided in Table 8.16. The assessment highlights that all links are below the threshold volume of traffic (1,400 vehicles per hour). Thus, the effects of pedestrian delay on the links are of negligible significance except for a potential minor adverse effect anticipated on Shakespeare Drive, east of Middleton Stoney Road due to a lack of pedestrian crossings.

Table 8.16: Impact on Pedestrian Delay

Link ref	Link Description	2031 future baseline with Himley Village Development flows		Commentary
		AM peak	PM peak	
7	Middleton Stoney Rd, W of Howes Lane	759	922	The flow level is below the threshold volume of traffic. There are no destinations for pedestrians on the west side of Middleton Stoney Road. The impact would be negligible.
13	Bucknell Road, S of Howes Lane	569	954	The flow level is below the threshold volume of traffic. There are various crossing locations provided. The impact would be negligible.
16	Banbury Road, S of A4095	851	1004	The flow level is below the threshold volume of traffic. There are various crossing locations provided. The impact would be negligible.
23	Shakespeare Drive, S of Howes Lane	176	121	The flow level is well below the threshold volume of traffic. There are various crossing locations provided. The impact would be negligible.
24	M40 J10 northbound off slip road	838	573	The flow level is below the threshold volume of traffic. There are no pedestrian routes given that it is part of the motorway. The impact would be negligible.
29	Shakespeare Drive, E of Middleton Stoney Road	999	972	The flow level is below the threshold volume of traffic but there are limited crossing facilities. The impact may be minor adverse.
30	The Approach, W of Bucknell Road	507	566	The flow level is well below the threshold volume of traffic. The impact would be negligible.
36	Ardley Road, N of Bucknell	387	539	The flow level is well below the threshold volume of traffic. The impact would be negligible.
37	Middleton Road, W of Bucknell	107	155	The flow level is well below the threshold volume of traffic. The impact would be negligible.
38	B4030 Middleton Stoney Road, NW of NWB	583	752	The flow level is below the threshold volume of traffic. There are no destinations for pedestrians on the west side of Middleton Stoney Road. The impact would be negligible.

Fear and intimidation

8.123. Fear and intimidation can be established through a combination of traffic flow, speed and composition. The criteria from the IEMA Guidelines for assessing this have been set out previously in Table 8.2.

8.124. Table 8.17 indicates the predicted 2031 hourly traffic flows with the Himley Village Development arranged over an 18 hour period and identifies the likely impact of fear and intimidation. The sensitivity of the link is summarised in terms of the receptors in the vicinity, as set out earlier in Table 8.2.

8.125. The assessment of impact shows a potential **moderate/ substantial adverse** effect on Middleton Stoney Road, and a moderate adverse effect on Bucknell Road, south of Howes Lane and Middleton Road.

Table 8.17: Impact on Level of Fear and Intimidation

Link ref	Link Description	Hourly flow averaged over 18 hour period	Average speed (PM peak average of two way) kph	Assessment of Effect
7	Middleton Stoney Rd, W of Howes Lane	344	70.7	Moderate/ substantial adverse
13	Bucknell Road, S of Howes Lane	390	48	Moderate adverse
16	Banbury Road, S of A4095	310	32.0	Negligible
23	Shakespeare Drive, S of Howes Lane	84	44.8	Minor adverse
24	M40 J10 northbound off slip road	307	43.4	Minor adverse
29	Shakespeare Drive, E of Middleton Stoney Road	303	30.3	Negligible
30	The Approach, W of Bucknell Road	160	26.0	Negligible
36	Ardley Road, N of Bucknell	114	42.6	Minor adverse
37	Middleton Road, W of Bucknell	11	62.8	Moderate adverse
38	B4030 Middleton Stoney Road, NW of NWB	344	76.1	Moderate/ substantial adverse

Accidents and Safety

8.126. An analysis of personal injury accidents has been undertaken for the past five years. The study area for the accident analysis did not include all of the links being assessed in detail. As such a precautionary approach has been taken with this small number of links, such that it has been assumed that there may have been accidents on these links historically and the effect has been determined accordingly.

8.127. Table 8.18 shows that of the links assessed, a minor adverse effect may potentially be experienced on Middleton Stoney Road, M40 J10 northbound slip road, Shakespeare Drive south of Howes Lane, The Approach, Ardley Road and Middleton Road.

Table 8.18: Effect on Accidents and Safety

Link Ref	Link Description	Existing Accident Issues	Assessment of Effect
7	Middleton Stoney Road, W of Howes Lane	A pedestrian fatality was recorded but no cluster of accidents	Minor adverse
13	Bucknell Road, S of Howes Lane	None identified	Negligible
16	Banbury Road, S of A4095	None Identified with the exception of a small number at the A4095 roundabout	Negligible
23	Shakespeare Drive, S of Howes Lane	A number of incidents recorded at the junction of Howes Lane and Shakespeare Drive	Minor adverse
29	Shakespeare Drive, E of Middleton Stoney Road	None identified	Negligible
30	The approach, W of Bucknell Road	Not included in assessment	Minor adverse
36	Ardley Road, N of Bucknell	Not included in assessment	Minor adverse
37	Middleton Road, W of Bucknell	Not included in assessment	Minor adverse
38	B4030 Middleton Stoney Road, NW of NWB	A pedestrian fatality was recorded but no cluster of accidents	Minor adverse

Effect on Public Transport

8.128. There are no bus stops serving the Site and currently no demand for the service. However, on completion of the Himley Village Development there would be a significantly increased demand for public transport. Without implementation of mitigation in the form of new public transport facilities, the effect is considered to be of **minor adverse** significance at the **local** level.

Mitigation

8.129. The assessment of potential effects has identified that there are a number of locations where moderate adverse effects may arise and there is a need for further mitigation to reduce the significance of these effects. These are discussed in turn below during demolition and construction and completed development.

Demolition and Construction

8.130. The construction phase of the Development is anticipated to commence in 2016 and build out over approximately a 15 year period (to 2031). As a large proportion of the construction traffic is anticipated to be heavy goods vehicles, residential areas would be avoided, where possible, during the course of construction by heavy goods vehicle drivers associated with the Development. Construction traffic would also be restricted from travelling past schools and where this is not possible, construction vehicle movements would be restricted during start and closing times. A convoy system and banks man would be used where vehicle movements need assistance and to reduce the potential effect on the safety of road users and potential traffic management control. A lorry routing agreement would be implemented to ensure drivers use the peripheral road/ A4095 and would be prohibited from passing through the centre of Bicester unless they are transporting locally sourced materials/goods. This would be included within a Construction Traffic Management Plan to carefully phase construction vehicles to and from the Development Site.

8.131. It is anticipated that over the life of the construction period, virtually all construction traffic for the Development would use the A41/Vendee Drive from the M40 Junction 9 and the A4421 around the eastern side of Bicester. Construction traffic routing has also been carefully considered as part of the phasing of the Himley Village Development to minimise construction vehicles from coming into contact with future residents or using the same roads.

8.132. Regular wheel cleaning / dirt control would be undertaken at key stages of the construction to minimise tracking of mud onto the roads. Arrangements for regular road maintenance and cleaning, e.g. road sweeping in the vicinity of the Site access point as necessary would be included within the Construction Traffic Management Plan.

8.133. Temporary road signs and traffic management control would be provided where necessary to ensure construction vehicles have a clear route to and from Site and do not affect the safety of other road users.

Completed Development

Pedestrian Severance and Amenity

8.134. The level of traffic increase forecast on the Middleton Stoney Road, west of Howes Lane is anticipated to have a significant adverse effect on pedestrian severance and amenity. However, there are few existing properties on Middleton Stoney Road west of Howes Lane and therefore the actual impact of severance is likely to be minimal. Nonetheless, as access points into the Himley Village Development would be provided from Middleton Stoney Road, there would be a need to introduce speed limits and appropriate speed reduction measures on this section. Additionally the provision of segregated footways and cycle path along Middleton Stoney Road as part of the Himley Village Development would improve pedestrian amenity and safety. Crossing points are not considered to be required on Middleton Stoney Road because there is no development on the opposite side of the road from the Himley Village Development.

8.135. The Bicester Saturn Model forecasts an increase in traffic routing through Bucknell village and using Middleton Road both in the Reference Case and with the Himley Village Development. It is considered likely that the model does not fully take account of the difficult alignment of Bainton Road as an access to the village and may be over-predicting traffic movements. Nonetheless, it is recognised that the the routes westwards towards J10 of the M40 / south to the A34 via the village may be used by Development related traffic and affect pedestrian severance and amenity within the village. In order to minimise this effect it is proposed, as part of the wider NW Bicester transport strategy, to introduce traffic calming measures in the village, the nature and extent of which would be agreed with OCC and the Parish Council.

8.136. As part of the NW Bicester Masterplan, measures would be introduced in the area of the Shakespeare Drive link to mitigate effects on pedestrians and cyclists. These measures may include widened footways, new pedestrian crossings and speed reduction measures such as kerb build outs which narrow the carriageway, reduce crossing distance and improve visibility for pedestrians.

Driver and Pedestrian Delay

8.137. Driver delay is anticipated to increase on Banbury Road south of the A4095 junction in both the Reference Case and with the NW Bicester Development, due to the increase in traffic in this area. It is therefore proposed, as part of the wider NW Bicester transport strategy, to improve the junction in this location. A potential scheme to replace the roundabout junction with a traffic signalised cross

roads is set out in the Transport Assessment, in order to increase the junction capacity and reduce driver delay in this area.

8.138. In order to minimise effects of driver delay along Middleton Stoney Road west of Howes Lane, a minimal number of access points are proposed into the Himley Village Development from this link and are proposed as ghost island arrangements with protected right hand turn lanes. Furthermore, there would be no direct access to any proposed residential and commercial properties from Middleton Stoney Road.

8.139. The level of traffic increase forecast on the Shakespeare Drive link is anticipated to have a substantial adverse effect on driver and pedestrian delay. However, it is proposed that measures such as speed reduction measures, widened footways and crossing points are introduced in the Himley Village Development and surrounding area to reduce reliance on the private car and encourage travel by sustainable modes of transport through the Travel Plan.

Fear and intimidation

8.140. Speed reductions are proposed along Middleton Stoney Road and would reduce pedestrian fear and intimidation. Additionally segregated footways protected behind a line of mature hedgerow and incorporating street lighting will further reduce pedestrians' sense of fear and intimidation.

8.141. The measures proposed as part of the NW Bicester Masterplan including speed reduction measures (build outs for example), widened footways and crossing points on Shakespeare Drive south of Howes Lane and Ardley Road north of Bucknell will help mitigate effects on pedestrian fear and intimidation.

Accidents and safety

8.142. The increase in traffic flows generated by the Development in relation to the Himley Village Development may increase the potential for collisions on the highway network. Areas of existing collisions can be assessed to identify whether mitigation measures are required to improve facilities for vulnerable road users. As part of the ongoing development of the NW Bicester Masterplan accident remedial measures will be investigated.

Public transport

8.143. In accordance with the overall strategy for the wider NW Bicester Masterplan a one way bus loop will pass through the Himley Village development in a clockwise direction. The bus service will use the NW strategic link road (southbound) before turning westbound on the southern secondary street and entering the Site. The route will then head northbound on the primary street, continuing on this street until it connects with the NW strategic link road from where it will use Bucknell Road to access the town centre. Bus stops will be located on the primary street just north of the junction with the secondary street to the south, at the neighbourhood centre and primary school and adjacent to the sports pitches.

8.144. The new bus loop will serve the Himley Village Development as well as benefiting the existing residential area. Therefore junction improvements are proposed along the bus route to reduce the effects of driver delay.

8.145. In the early phases of the Development before the NW strategic link road and northern link have been constructed the bus service will use Middleton Stoney Road to access the Himley Village Development.

Residual Effects

Demolition and Construction

8.146. Given the Construction Traffic Management Plan that would be implemented to control the movement of heavy goods vehicles associated with the Development, the residual effects of construction traffic on driver delay and pedestrian delay, pedestrian amenity, fear and intimidation, accidents and safety and dust and dirt would be a **temporary** effect of **negligible** significance at the **local** level and **district** level.

Completed Development

Pedestrian Severance and Amenity

8.147. The effects of increased traffic flows on pedestrian severance and amenity are anticipated to be of **negligible** significance at the **local** level for the majority of links.

8.148. Given the provision of a new pedestrian and cycleway along the northern side of Middleton Stoney Road as part of the Himley Village Development, the effect on pedestrian and cyclist amenity on Middleton Stoney Road is anticipated to be of **minor beneficial** significance at the **local** level.

8.149. Shakespeare Drive and Middleton Road are more sensitive than Middleton Stoney Road with existing residential properties and other land uses such as schools therefore having an adverse effect on pedestrian severance and amenity. Following mitigation on Middleton Road the effect is anticipated to be **minor adverse** significance at the **local** level.

8.150. Due to the close proximity of the school on Shakespeare Drive south of Howes Lane the effect of pedestrian severance is likely to be a **local** effect of **minor adverse** significance during PM peak hours and **negligible** at other times of the day.

Driver and Pedestrian Delay

8.151. With the exception of Shakespeare Drive east of Middleton Stoney Road, the effect of pedestrian delay on all links with mitigation in place is anticipated to be a **permanent** effect of **negligible** significance at the **local** level.

8.152. Following mitigation on Shakespeare Drive and Banbury Road S of A4095 the effects of driver delay are anticipated to be of **minor adverse** significance at the **local** level.

Fear and intimidation

8.153. The effects of the completed Development accounting for the implementation of the mitigation on fear and intimidation on Middleton Stoney Road, Bucknell Road, Middleton Road, Ardley Road and Shakespeare Drive are anticipated to be a **permanent** effect of **minor adverse** significance at the **local** level.

8.154. No mitigation is proposed on M40 junction 10 slip road as this is unsuitable for pedestrian access therefore the effect of fear and intimidation is of **negligible** significance.

Accidents and safety

8.155. The potential effects of accidents remains with an increased volume of traffic generated from the NW Bicester Development. The effects are anticipated to be of either **negligible** or **minor adverse** significance across all links.

PRoW Network

8.156. The effects of upgrading the footpath through the Highfield residential area are anticipated to be a **permanent** effect of **minor beneficial** significance at the **local** level.

Public transport

8.157. The effects of a new bus route and bus stops are anticipated to be a permanent effect of **minor beneficial** significance at the **local** level.

Summary and Conclusion

8.158. A summary of the potential effects, mitigation and residual effects is outlined below in Table 8.19.

Table 8.19: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Increase in driver and pedestrian delay due to additional traffic flows (HGVs)	**Temporary** effect of **minor adverse** significance at the **local** and **district** level.	Produce a Construction Traffic Management Plan.	**Temporary** effect of **negligible** significance at the **local** and **district** level.
Pedestrian amenity and fear and intimidation due to additional traffic flows (HGVs)	**Temporary** effect of **minor adverse** significance at the **local** and **district** level.	Produce a Construction Traffic Management Plan.	**Temporary** effect of **negligible** significance at the **local** and **district** level.
Accidents and safety due to additional traffic flows (HGVs)	**Temporary** effect of **minor adverse** significance at the **local** and **district** level.	Produce a Construction Traffic Management Plan.	**Temporary** effect of **negligible** significance at the **local** and **district** level.
Dust and dirt on the highways from construction vehicles	**Temporary** effect of **minor adverse significance at the local** level**.**	Produce a Construction Traffic Management Plan to include requirements for wheel washing and road sweeping.	**Temporary** effect of **negligible** significance at the **local** level**.**
Completed Development			
Pedestrian severance and amenity due to increased traffic flows	The effect of pedestrian severance on Middleton Stoney Road and Shakespeare Drive S of Howes Lane is anticipated to be of **minor adverse** significance at the **local** level. The effect of pedestrian severance and amenity on Middleton Road is anticipated to be of **substantial adverse** significance at the **local** level. The effects on the other links are expected to be of **negligible** significance at the local level.	Speed limit reductions Segregated footways and cycle paths including along Middleton Stoney Road north side Appropriate traffic calming measures	The majority of links are anticipated to have an effect of **negligible** significance at the **local** level. Pedestrian severance on Middleton Stoney Road is anticipated to be a **permanent** effect of **negligible** significance at the **local** level. Pedestrian amenity on Middleton Stoney Road is expected to be **minor beneficial** significance. On Middleton Road the effects are anticipated to be **permanent** and of **minor adverse**

Description of Effect	Potential Effect	Mitigation	Residual Effect
			significance at the **local** level. On Shakespeare Drive, south Howes Lane the effect of pedestrian severance is anticipated to be of **minor adverse** significance during PM peak hours and **negligible** at other times of the day.
Driver and pedestrian delay due to increased traffic flows	The effect of driver delay on Banbury Road south of A4095 and Shakespeare Drive links are expected to be of **substantial adverse** significance at the **local** level. The effect of driver delay on Middleton Stoney Road is anticipated to be of **minor adverse** significance at the **local** level. The other links are anticipated to be of **negligible** significance at the local level.	Promotion of alternative modes of transport through the Travel Plan Junction layout alterations on the Banbury Road south of A4095 link New ghost island junctions with protected right hand turn lanes and no direct access to commercial and residential units off Middleton Stoney Road Widened footways and new crossing points	Banbury Road south of A4095 and Shakespeare Drive links are expected to have a **permanent** effect of **minor adverse** significance at the **local** level. All other links are anticipated to be a **permanent** effect of **negligible** significance at the **local** level.
Fear and intimidation due to increased traffic flows	**Permanent** effect of **negligible** to **substantial adverse** significance at the **local** level.	Speed limit reductions Segregated footways and cycle paths with appropriate lighting Widened footways and crossing points	Middleton Stoney Road, Bucknell Road, Middleton Road, Ardley Road and Shakespeare Drive are anticipated to be a **permanent** effect of **minor adverse** significance at the **local** level. All other links are anticipated to be of **negligible** significance at the **local** level.
Accidents and safety due to increased traffic flows	**Permanent** effect of **negligible/ minor adverse** at the **local** level.	Junction improvements and the promotion of alternative modes of transport through the Travel Plan	The effect of the Development is considered to be **negligible** or **minor adverse** or across all links.
Public transport services due to increased demand and traffic flows	**Permanent** effect of **minor adverse** significance at the **local** level	New bus loop through the site and bus stops Junction improvements	**Permanent** effect of **minor beneficial** at the **local** and **district** level

References

1 Institute of Environmental Management and Assessment (IEMA). (2003) *Guidelines for Environmental Impact Assessment*. EIS Review Criteria. IEMA: Lincoln.

2 *Government White Paper (*2011). *http://www.parliament.uk/about/how/publications/government/*

3 Department for Communities and Local Government (DCLG). (2012) *National Planning Policy Framework.* DCLG: London.

4 DCLG. (2009) *Planning Policy Statement 1- Eco-towns Annex.*

5 Department of Transport. (2013) *Circular 02/13 the Strategic Road Network and the Delivery of Sustainable Development.*

6 Cherwell District Council. (2014) *Cherwell Local Plan.*

7 Hyder Consulting (UK) Ltd (2014) *NW Bicester Masterplan Access and Travel Strategy.* http://www.ecobicester.org.uk/cms/content/north-west-bicester-eco-town-draft-masterplan-submitted#.VIlkYXlya70

9. Air Quality

Introduction

9.1. This Chapter, prepared by Waterman Energy, Environment & Design Ltd. (Waterman EED), presents an assessment of the significance of effects of the Himley Village Development on air quality. In particular, consideration is given to the effects of potential emissions from demolition and construction activities, as well as the effects of emissions from road traffic and the proposed heating plant associated with the Himley Village Development.

9.2. This Chapter provides a summary of relevant legislation, planning policy and guidance. A description of the methods used in the assessment are provided. This is followed by a description of the relevant baseline conditions of the Site and surrounding area, and an assessment of the effects of the Himley Village Development during the demolition and construction works and once the Development is completed and operational. Mitigation measures are identified (where appropriate) to avoid, reduce or offset any significant adverse effects identified, together with the nature and significance of likely residual effects.

9.3. This Chapter is supported by the following:

- **Technical Appendix 9.1:** Air Quality Modelling Assessment; and
- **Figure 9.1**: Site Plan and Receptor Locations.

Legislation, Planning Policy & Guidance

Legislation

European Framework Directive, 2008

9.4. Air pollutants at high concentrations can give rise to adverse effects on the health of humans and ecosystems. European Union (EU) legislation on air quality forms the basis for UK legislation and policy on air quality.

9.5. The EU Framework Directive 2008/50/EC[1] on ambient air quality assessment and management came into force in May 2008 and was implemented by Member States, including the UK, by June 2010. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.

Air Quality Standards Regulations, 2010

9.6. The Air Quality Standards Regulations[2] implement Limit Values prescribed by the EU Framework Directive 2008/50/EC. The Limit Values are legally binding and the Secretary of State (SoS), on behalf of the UK Government, is responsible for their implementation.

Environment Act, 1995

9.7. In a parallel process, the Environment Act 1995[3] required the preparation of a national air quality strategy setting health-based air quality objectives for specified pollutants and outlining measures to be taken by local authorities in relation to meeting these objectives (the Local Air Quality Management (LAQM) system).

9.8. Under Part IV of the Environment Act 1995, local authorities are required to review and assess air quality in their area by way of a staged process. Should this process suggest that any of the UK Air Quality Strategy (AQS) objectives (as defined in Table 9.1 below) will not be met by the target

dates, the local authority must consider the declaration of an Air Quality Management Area (AQMA) and the subsequent preparation of an Air Quality Action Plan (AQAP) to improve the air quality in that area in pursuit of the objectives.

9.9. Cherwell District Council (CDC) has designated Hennef Road, Banbury as an AQMA for both the annual mean NO_2 and 1-hour mean NO_2 AQS objectives. A summary of CDC's review and assessment of air quality is provided later in this Chapter. CDC are currently drafting an AQAP for the AQMA.

The UK Air Quality Strategy, 2007

9.10. The current UK Air Quality Strategy (AQS), which was published in July 2007[4] and superseded previous revisions, sets out new objectives for LPAs in undertaking their LAQM duties. The 2007 UK AQS introduced a national level policy framework for exposure reduction for fine particulate matter. Objectives in the UK AQS are in some cases more onerous than the Limit Values set out within the relevant EU Directives and the Air Quality Standards Regulations 2010. In addition, objectives have been established for a wider range of pollutants.

9.11. The Limit Values and AQS objectives of air pollutants relevant to this assessment are summarised in Table 9.1.

Table 9.1: Summary of Relevant Air Quality Limit Values and UK AQS Objectives

Pollutant	Objective / Limit Value		Date by which Objective to be Met
	Concentration	Measured As	
Objectives and Limit Values for the Protection of Vegetation and Ecosystems			
Oxides of Nitrogen (NO_x) [(a)]	30µg/m^3	Annual Mean	31/12/2000
Objectives and Limit Values for the Protection of Human Health			
Nitrogen Dioxide (NO_2)	200µg/m^3	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg/m^3	Annual Mean	31/12/2005
Particulate Matter (PM_{10}) [(b)]	50µg/m^3	24 hour mean not to be exceeded more than 35 times per year	31/12/2004
	40µg/m^3	Annual Mean	31/12/2004
Particulate Matter ($PM_{2.5}$) [(c)]	Target of 15% reduction in concentrations at urban background locations	Annual Mean	Between 2010 and 2020
	Variable target of up to 20% reduction in concentrations at urban background locations*	Annual Mean	Between 2010 and 2020
	25µg/m^3	Annual Mean	01/01/2020

Notes: [(a)] For the protection of vegetation and ecosystems at locations more than 20km from towns with more than 250,000 inhabitants or more than 5km from other built up areas, industrial installations or motorways
[(b)] Particulate matter with a mean aerodynamic diameter of less than 10 microns (µm).
[(c)] Particulate matter with a mean aerodynamic diameter of less than 2.5 microns (µm).
* Aim to not exceed 18µg/m^3 by 2020.

9.12. There are currently no statutory UK standards in relation to deposited dust and its propensity to cause nuisance. However, a deposition rate of 200mg/m^2/day (averaged over a month) is sometimes used as a threshold value for potentially significant nuisance effects[5].

National Planning Policy

National Planning Policy Framework, 2012

9.13. The National Planning Policy Framework (NPPF)[6] identifies that the planning system should aim to conserve 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 land, air, water or noise pollution or land instability.*"

9.14. Paragraph 124 of the NPPF 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."

Supplement to Planning Policy Statement 1: Eco Towns, 2009

9.15. There are no policies within the Eco-Towns Supplement to Planning Policy Statement 1[7] that relate directly to air quality. However paragraph ET11.1 of the supplement states that:

"… The town should be designed so that access to it and through it gives priority to options such as walking, cycling, public transport and other sustainable options, thereby reducing residents' reliance on private cars, including techniques such as filtered permeability. …"

9.16. This design aspiration would have a benefit on air quality.

Local Planning Policy

Cherwell Local Plan, 1996

9.17. Policy ENV1 of the Cherwell Local Plan[8] 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*."

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

9.18. Strategic Objective SO 15 of the Cherwell Submission Local Plan[9] states that:

"To protect and enhance the historic and natural environment and Cherwell's core assets, including protecting and enhancing cultural heritage assets and archaeology, maximising opportunities for improving biodiversity and minimising pollution in urban and rural areas"

9.19. Policy ESD 10 Protection and Enhancement of Biodiversity and the Natural Environment of the Cherwell Local Plan states:

"*Protection and enhancement of biodiversity and the natural environment will be achieved by the following:*

…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…"

Guidance

NPPF Planning Practice Guidance, 2014

9.20. The Government's online Planning Practice Guidance[10] (NPPG) states that air quality concerns are more likely to arise where development is proposed within an area of existing poor air quality, or where it would adversely impact upon the implementation of air quality strategies and / or action plans.

9.21. The NPPG notes that when deciding whether air quality is relevant to a planning application, considerations would include whether the development would lead to:

- significant effects on traffic, such as volume, congestion, vehicle speed, or composition;
- the introduction of new point sources of air pollution, such as furnaces, centralised boilers and CHP plant; and
- exposing occupants of any new developments to existing sources of air pollutants and areas with poor air quality.

Local Air Quality Management Policy Guidance LAQM PG(09), 2009

9.22. The Local Air Quality Management (LAQM) Policy Guidance PG(09)[11] provides additional guidance on the links between transport and air quality. LAQM.PG(09) describes how road transport contributes to local air pollution and how transport measures may bring improvements in air quality. Key transport-related Government initiatives are set out, including regulatory measures and standards to reduce vehicle emissions and improve fuels, tax-based measures and the development of an integrated transport strategy.

9.23. LAQM.PG(09) also provides guidance on the links between air quality and the land use planning system. The guidance advises that air quality considerations should be integrated within the planning process at the earliest stage, and is intended to aid local authorities in developing action plans to deal with specific air quality issues and create strategies to improve air quality. LAQM.PG(09) summarises the means in which the land use planning system can help deliver compliance with the air quality objectives.

Environmental Protection UK Guidance; Development Control: Planning for Air Quality, 2010

9.24. The Environmental Protection UK (EPUK) Guidance[12] responds to the need for closer integration between air quality and development control, and provides a framework for air quality considerations within local development control processes, promoting a consistent approach to the treatment of air quality issues.

9.25. The EPUK Guidance, which is widely used by Local Planning Authorities (LPAs), air quality consultants and developers, provides a method for assessing the significance of the likely effects of a development on air quality. The need for early and effective dialogue between the developer and LPA is identified to allow air quality concerns to be addressed as early in the development control process as possible. The guidance also provides some clarification as to when air quality constitutes a material consideration in the planning decision process.

BRE Pollution Control Guide: 'Controlling Particles, Vapour and Noise from Construction Sites', 2003

9.26. The Building Research Establishment (BRE) produced a guide[13] to assist with the control of air pollution and noise emissions from construction sites. The document sets out guidance on controlling pollution emissions through effective pre-project planning and management issues that are an essential part of any construction project. Other Guides in the series provide methods for controlling air and noise pollution from various construction and demolition activities.

Institute of Air Quality Management: Guidance on the Assessment of dust from demolition and construction, 2014

9.27. The Institute of Air Quality Management (IAQM) Construction Dust Guidance[14] provides guidance to consultants and Environmental Health Officers (EHOs) on how to assess air quality effects from construction related activities. The guidance provides a risk based approach based on the potential dust emission magnitude of the site (small, medium or large) and the sensitivity of the area to dust effects. The importance of professional judgement is noted throughout the guidance. The guidance recommends that once the risk class of the site has been identified, the appropriate level of mitigation measures are implemented to ensure that the construction activities have no significant impacts.

Eco-Bicester – One Shared Vision, December, 2010

9.28. The Eco-Bicester – One Shared Vision[15] document set outs the vison for Eco Bicester. While there are no measures in the document which relate directly to air quality one of the aspirations within the document is to encourage walking and cycling as the first choice of travel within the town by giving priority to walking, cycling and public transport. This would have a beneficial effect on air quality through reduced road traffic emissions.

Assessment Methodology and Significance Criteria

Assessment Methodology

9.29. This section of this Chapter outlines the methodology used to assess the effects on air quality arising from the demolition and construction works and from the completed and operational Development. Consultation was undertaken with the EHO at CDC to agree the methodology prior to the commencement of the assessment.

9.30. In accordance with the agreed methodology, this air quality assessment has been undertaken using a variety of information and procedures as follows:

- A review of CDC's Air Quality Review and Assessment statutory reports published as part of the LAQM regime in order to determine baseline conditions in the area of the Site;
- A review of the local area to identify sensitive receptor locations that could be affected by changes in air quality due to the Development;
- Review and use of relevant traffic flow data from the Applicant's transport consultant (Alan Baxter & Associates LLP);
- Atmospheric dispersion modelling of pollutant emissions, using the ADMS-Roads model[16] to predict the likely pollutant concentrations at the Site and the likely effect of the completed and operational Development on local air quality in terms of traffic and heating plant emissions generated. The latest NO_2 from NO_x Calculator available from the LAQM Support website[17] has been applied to derive the road-related NO_2 emissions from the NO_x outputs;

- Comparison of the predicted air pollutant concentrations with the AQS objectives;
- Determination of the effects on air quality of demolition and construction works and activities, and consideration of the environmental management controls likely to be employed during the works;
- Determination of the effects on air quality of the operational phase of the Development, based on predicted changes in air pollutant concentrations, and using the EPUK significance criteria; and
- Identification of mitigation measures, where appropriate.

9.31. The UK AQS identifies the main pollutants associated with road traffic emissions and local air quality as:

- Nitrogen oxides (NO_X);
- Particulate matter (as PM_{10} (particles with a diameter up to 10µm) and $PM_{2.5}$ (particles with a diameter up to 2.5µm));
- Carbon monoxide (CO);
- 1, 3-butadiene (C_4H_6); and
- Benzene (C_6H_6).

9.32. Emissions of total NO_X from motor vehicle exhausts comprise nitric oxide (NO) and nitrogen dioxide (NO_2). NO oxidises in the atmosphere to form NO_2.

9.33. The most significant pollutants associated with road traffic emissions, in relation to human health, are NO_2 and particulate matter. This assessment therefore focuses on these pollutants. Additional NO_x and PM_{10} emissions from the proposed energy centre have also been taken into account, to determine their contribution to overall NO_2 concentrations. CDC has declared an AQMA for Hennef Road, Banbury for both annual mean NO_2 and 1-hour mean NO_2, attributable to road traffic emissions (referred to later in this Chapter).

Construction Assessment Methodology

9.34. The major influences on air quality throughout the construction works are likely to be dust-generating activities and vehicle emissions from plant and vehicles both on and accessing / egressing the Site. Potentially, the deposition of construction derived dust can cause nuisance.

9.35. Construction derived dust effects cannot be easily quantified and therefore a more qualitative approach has been employed to predict the likely effects. The emphasis of this approach lies in the minimisation of potential dust effects at source through appropriate environmental management controls relating to, at least, ‘good practice’ site management regimes. In particular, this includes identification of good working practices and suitable mitigation measures in order to minimise the potential for dust emissions, and nuisance risk.

9.36. Premises and occupants within 100m of a demolition and / or construction site are generally considered to experience the most significant effects from dust. Typical examples of dust sensitive receptors and their associated sensitivity level are listed in Table 9.2[18].

Table 9.2: Dust Sensitive Receptors

High Sensitivity	Medium Sensitivity	Low Sensitivity
Hospitals and Clinics	Schools	Farms
Retirement Homes	Residential Areas	Light and Heavy Industry
Hi-Tech Industries	Food Retailers	Outdoor Storage
Food Processing	Offices	

9.37. The proximity of sensitive receptors and their orientation in relation to the prevailing wind, in addition to the scale and duration of construction activities all have a bearing on potential nuisance effects.

Completed Development Assessment Methodology

9.38. The effects on local air quality from traffic movements and heating plant emissions generated from the completed and operational Development have been assessed using the ADMS-Roads dispersion model. **Technical Appendix 9.1** presents the details of the modelling.

9.39. For the purposes of the modelling, traffic data for the relevant local road network has been provided by the Applicant's transport consultant (Alan Baxter & Associates LLP). Further details are provided in **Technical Appendix 9.1**. Corresponding with the latest full set of air quality data held by CDC, the baseline year of 2013 has been assessed together with the 'without Development' and 'with Development' scenarios for the year 2031, the anticipated year of completion of the Development (refer to Chapter 5: The Proposed Development).

9.40. The dispersion model predicts how emissions from roads and small scale industrial sources combine with local background pollution levels, taking account of meteorological conditions, to affect local air quality. The model has been run for the completion year of 2031, and therefore used background data and vehicle emission rates for 2031 as inputs. For the verification assessment (referred to later in this Chapter), background data and vehicle emission rates for 2013 have been used, which would be higher than the 2031 data. The model output allows pollutant concentrations to be quantified at a number of locations representative of nearby sensitive receptors.

9.41. Data relating to the proposed heating plant for the Development, has been provided by the Applicant's Building Services Engineers (BU-UK). The proposed heating plant would comprise a combination of boilers; assumed for the purposes of this chapter to comprise a gas fired Combined Heat and Power (CHP) unit, four gas fired boilers and a biomass boiler.

9.42. Full details of the modelling study, including the road traffic and heating plant data used in the assessment, are presented within **Technical Appendix 9.1**.

NO_2 Sensitivity Analysis

9.43. Analyses of historical monitoring data by Defra[19] have identified a disparity between actual measured NO_x and NO_2 concentrations and the expected decline associated with emission forecasts which form the basis of air quality modelling as described above. The precise reason for the disparity is not fully understood but is thought to be related to the on-road performance of certain vehicles compared to calculations based on Euro emission standards which inform emission forecasts. It is thought that there may be reduction in NO_x and NO_2 concentrations post 2015 when the Euro 6 emission standards begin to take effect.

9.44. A note on Projecting NO_2 Concentrations[20] published by Defra provides a number of alternative approaches that can be followed in air quality assessments, in relation to the modelling of future NO_2 concentrations, considering that future NO_x / NO_2 road-traffic emissions and background

concentrations may not reduce as previously expected. This includes the use of revised background pollution maps, alternative projection factors and revised vehicle emission factors. However, the Defra note does not form part of statutory guidance and no prescriptive method is recommended for use in an air quality assessment.

9.45. This air quality assessment has been based on current guidance, i.e. using existing forecast emission rates and background concentrations to the completion year of 2031, which assume a progressive reduction compared to the baseline year 2013. However, in addition, a sensitivity analysis has been undertaken on the basis of no future NO_x and NO_2 reductions by 2031 (i.e. considering the likely significant effect of the Development against the current baseline 2013 conditions, assuming no reduction in background concentrations or road-traffic emissions rates between 2013 and 2031). The sensitivity approach presented in this air quality assessment is now typically agreed and accepted by local authorities as being robust, and provides a clear method to account for the uncertainty in future NO_X and NO_2 concentrations in air quality assessments. The results of this sensitivity analysis which represent a more conservative assessment scenario, are presented in **Technical Appendix 9.1** and summaries in this chapter.

Background Pollutant Concentrations

9.46. The dispersion of pollutant concentrations due to road-traffic emissions and the proposed heating plant emissions has been modelled. To estimate the total concentrations due to the contribution of any other nearby sources of pollution, background pollutant concentrations have been added to the modelled concentrations. Full details in relation to the background data used within the air quality assessment are included in **Technical Appendix 9.1.**

Model Verification

9.47. Model verification is the process of comparing monitored and modelled pollutant concentrations and, if necessary, adjusting the modelled results to reflect actual measured concentrations, in order to give confidence in the accuracy of the modelling results. The model was verified by comparing the modelled annual mean NO_2 concentrations for 2013 (the latest year for which CDC air quality monitoring data is available) with monitored annual mean NO_2 concentrations from 5 CDC diffusion tubes (the nearest CDC monitors to the Site within the road traffic network supplied by Alan Baxter & Associates LLP). The adjustment of the model outputs was then undertaken. The verification and adjustment process is described in detail in **Technical Appendix 9.1**.

Potentially Sensitive Receptors

9.48. The approach adopted by the UK AQS is to focus on areas at locations where members of the public (in a non-workplace area) are likely to be exposed over the averaging time of the objective in question (i.e. over 1-hour, 24-hour or annual periods). Objective exceedences in urban areas principally relate to annual mean NO_2 and PM_{10}, and 24-hour mean PM_{10} concentrations, so that associated potentially sensitive locations relate mainly to residential properties and other sensitive locations (such as schools) where the public may be exposed for prolonged periods.

9.49. Table 9.3 presents existing sensitive receptors that have been selected due to their proximity to the road network and which may be affected by the Development. Table 9.3 also presents future sensitive receptor locations which are representative of sensitive uses proposed within the Himley Village Development itself. The future sensitive receptor locations represent areas of the Development that would likely be exposed to the worst-case air quality conditions, i.e. the lowest residential levels of the Development that would be closest to road traffic. The position of the existing and future receptor locations assessed are presented in **Figure 9.1**.

Table 9.3: Selected Receptor Locations included in the ADMS Roads modelling

Receptor ID	Address of Receptor	Receptor Type	Grid Reference		Height Above Ground (m)
			X	Y	
1	Ardley Road, Bucknell	Residential	455941	225647	0
2	Bicester Road, Bucknell	Residential	455952	225569	0
3	Middleton Road, Bucknell	Residential	455770	225504	0
4	Swallowfield Farm	Residential	455191	224952	0
5	Loevlynch House	Residential	455426	223131	0
6	A4095, Chesterton	Residential	455756	221656	0
7	B4100, Watergate Lodge	Residential	457252	226297	0
8	Fringford Road, Old School Close	Residential	458643	225146	0
9	Bricknells Farm, Fringford Road	Residential	458448	224757	0
10	A4421	Residential	459464	225338	0
11	Harmon Close	Residential	459211	224880	0
12	Pine Close	Residential	458936	224316	0
13	Juniper Gardens	Residential	458208	224460	0
14	Mullein Road	Residential	458144	224415	0
15	Trefoil Drive	Residential	457402	224005	0
16	Goldsmith Close	Residential	457188	223851	0
17	Chaucer Close	Residential	456961	223612	0
18	Kings Meadow School	School	457050	223408	0
19	Wensum Crescent	Residential	456619	223133	0
20	Isis Avenue	Residential	456435	222804	0
21	Shannon Road	Residential	456924	222626	0
22	St Marys Close	Residential	457521	222372	0
23	Bicester Community Hospital	Hospital	457982	222342	0
24	Brookside Primary School	School	458023	223008	0
25	North Street	Residential	458276	222932	0
26	Manor Farm	Residential	460386	222898	0
27	Bucknell Road	Residential	458195	222841	0
28	Queens Crescent	Residential	458099	222604	0
29	Kings End	Residential	458024	222469	0
30	Kestrel Way	Residential	459190	221258	0
31	Shearwater Drive	Residential	459972	221840	0
32	Sunderland Drive	Residential	459384	224033	0
33	Derwent Road	Residential	456772	223360	0
34	On-Site 1	Residential	455994	222925	0
35	On-Site 2	Residential	455596	223075	0

9.50. In addition to the above, Table 9.3 presents ecological receptors within the nearby Ardley Cutting Site of Special Scientific Interest (SSSI) and the Bure Park Local Nature Reserve (LNR) that have been considered with the assessment focusing on NO_x concentrations and nitrogen deposition.

Table 9.4: Selected Ecological Receptor Locations

Receptor ID	Address of Receptor	Grid Reference	Distance from Closest Road (m)	Height Above Ground (m)
36	Ardley Cutting SSSI 1	454952, 225914	15m (M40)	0
37	Ardley Cutting SSSI 2	454987, 225887	15m (M40)	0
38	Ardley Cutting SSSI 3	455576, 225321	5m (Middleton Road)	0
39	Ardley Cutting SSSI 4	455585, 225308	5m (Middleton Road)	0
40	Bure Park LNR	457623, 224175	15m (A4095)	0

Significance Criteria

Demolition and Construction

9.51. The assessment of likely demolition and construction effects has been based on:

- Consideration of the likely construction related traffic for the Himley Village Development in comparison to the total existing traffic on the surrounding road network; and
- A review of the sensitive uses in the area immediately surrounding the Site in relation to their distance and orientation.

9.52. The significance of effect has been concluded through professional judgement based on the following:

- The baseline air quality conditions in the area surrounding the Site;
- The mitigation measures that would be implemented; and
- The knowledge of how such mitigation measures are routinely and successfully applied to construction projects throughout the UK.

9.53. In addition to the above, the classification system provided in Table 9.5 was adopted, again based on professional judgement, for the assessment of potential adverse air quality effects arising from dust generated by the demolition and construction activities associated with the Development. Whether a construction site is considered to be minor or major is based on professional judgement on the basis of the size of the site, size of the development and duration of the works.

Table 9.5: Significance Criteria for Demolition and Construction

Significance Criteria	Definition
Adverse effect of substantial significance	Receptor is less than 10m from a major active construction or demolition site.
Adverse effect of moderate significance	Receptor is 10m to 100m from a major active construction or demolition site, or up to 10m from a minor active construction or demolition site.
Adverse effect of minor significance	Receptor is between 100m and 200m from a major active construction or demolition site or 10m to 100m from a minor active construction site or demolition site.
Negligible	Receptor is over 100m from any minor active construction or demolition site or over 200m from any major active construction or demolition site.

Completed Development

9.54. The significance of likely effects of the completed Development on air quality can be established through the consideration of the following factors:

- The geographical extent (local, district or regional) of effects;
- Their duration (temporary or long term);
- Their reversibility (reversible or permanent);
- The magnitude of changes in pollution concentrations;
- The exceedance of standards (e.g. AQS objectives); and
- Changes in pollutant exposure.

9.55. The aforementioned EPUK Guidance provides an approach to defining the magnitude of changes and describing the air quality effects at specific receptors recommended by the IAQM.

9.56. Table 9.6 presents the magnitude of change descriptors, based on the change in concentration predicted to be brought about by a scheme as a percentage of the relevant AQS objective. Table 9.7 and Table 9.8 present the effect significance descriptors that take account of the magnitude of changes (both beneficial and adverse) given in Table 9.6, and the concentration in relation to the AQS objective.

Table 9.6: Magnitude of Change in Relation to Changes in Concentrations of NO_2 and PM_{10}

Magnitude of Change	Changes in Pollutant Concentration Relative to the AQS Objective	Annual Mean NO_2/PM_{10}	Days PM_{10} >50µg/m^3 [(a)]
Large	Increase/decrease >10%	>4µg/m^3	>4 days
Medium	Increase/decrease 5-10%	2-4µg/m^3	2-4 days
Small	Increase/decrease 1-5%	0.4-2µg/m^3	1-2 days
Imperceptible	Increase/decrease <1%	<0.4µg/m^3	<1 days

Note: [(a)] Based on percentage of 35 days, rounded to the most appropriate whole number of days.

Table 9.7: Significance Criteria for Changes in Annual Mean NO_2 and PM_{10}

Concentration in Relation to Standard	Small	Medium	Large
Decrease with Development Scenario			
Above objective ***without*** development (>40µg/m^3)	**Beneficial effect of minor significance**	**Beneficial effect of moderate significance**	**Beneficial effect of substantial significance**
Just below ***without*** development (36-40µg/m^3)	**Beneficial effect of minor significance**	**Beneficial effect of moderate significance**	**Beneficial effect of moderate significance**
Below objective ***without*** development (30-36µg/m^3)	**Negligible**	**Beneficial effect of minor significance**	**Beneficial effect of minor significance**
Well below objective ***without*** scheme (<30µg/m^3)	**Negligible**	**Negligible**	**Beneficial effect of minor significance**
Increase with Development Scenario			
Above objective ***with*** development (>40µg/m^3)	**Adverse effect of minor significance**	**Adverse effect of moderate significance**	**Adverse effect of substantial significance**

Concentration in Relation to Standard	Small	Medium	Large
Just below ***with*** development (36-40µg/m^3)	**Adverse effect of minor significance**	**Adverse effect of moderate significance**	**Adverse effect of moderate significance**
Below objective ***with*** development (30-36µg/m^3)	**Negligible**	**Adverse effect of minor significance**	**Adverse effect of minor significance**
Well below objective ***with*** scheme (<30µg/m^3)	**Negligible**	**Negligible**	**Adverse effect of minor significance**

Note: An imperceptible change would be described as 'insignificant'.

Table 9.8: Significance Criteria for Changes in 24-hour Mean PM_{10}

Concentration in Relation to Standard	Small	Medium	Large
Decrease with Development Scenario			
Above objective ***without*** development (>35days)	**Beneficial effect of minor significance**	**Beneficial effect of moderate significance**	**Beneficial effect of substantial significance**
Just below ***without*** development (32-35 days)	**Beneficial effect of minor significance**	**Beneficial effect of moderate significance**	**Beneficial effect of moderate significance**
Below objective ***without*** development (26-32 days)	**Negligible**	**Beneficial effect of minor significance**	**Beneficial effect of minor significance**
Well below objective ***without*** scheme (<26 days)	**Negligible**	**Negligible**	**Beneficial effect of minor significance**
Increase with Development Scenario			
Above objective ***with*** development (>35days)	**Adverse effect of minor significance**	**Adverse effect of moderate significance**	**Adverse effect of substantial significance**
Just below ***with*** development (32-35 days)	**Adverse effect of minor significance**	**Adverse effect of moderate significance**	**Adverse effect of moderate significance**
Below objective ***with*** development (26-32 days)	**Negligible**	**Adverse effect of minor significance**	**Adverse effect of minor significance**
Well below objective ***with*** scheme (<26 days)	**Negligible**	**Negligible**	**Adverse effect of minor significance**

Note: An imperceptible change would be described as 'insignificant'.

Baseline Conditions

Cherwell District Council's Review and Assessment Process

9.57. CDC completed the first three rounds of the Review and Assessment Process by publishing its 2008 Progress Report[21] which concluded that no exceedance of the AQS objectives for any pollutants were likely within their administrative boundary. The 2009 Updating and Screening Assessment (USA)[22] identified that the annual mean NO_2 objective was exceeded in 2008 and that Detailed Assessments were required at the following locations:

- Horsefair, Banbury;
- Hennef Way, Banbury; and

- Queens Avenue / Kings End, Bicester.

9.58. The Detailed Assessment for Hennef Way was completed in 2010[23] and confirmed that there were exceedences of both the annual mean and 1-hour mean AQS objectives for NO_2. The area was declared as an AQMA in 2011.

9.59. The 2010[24] and 2011 Progress Reports[25] confirmed the need for Detailed Assessments at Queens Avenue, Bicester and Horsefair, Banbury and identified that a Detailed Assessment of NO_2 was also required for Bicester Road, Kidlington.

9.60. All Detailed Assessments were completed in 2012 for the three areas mentioned above. The assessments concluded that AQMAs should be declared for the NO_2 annual mean at each of the three locations. The 2014 USA[26] supported these conclusions and CDC is now in the process of declaring these areas as AQMAs. However, before declaring an AQMA for Queens Avenue / Kings End, CDC plans to evaluate the impacts of improvements to the road transport network in Bicester and will report the findings in its next USA in 2015.

Cherwell District Council Air Quality Monitoring

9.61. CDC currently undertakes monitoring of NO_2 at 10 locations within Bicester using passive diffusion tubes. There are no automatic analysers installed in the District. Table 9.9 presents the most recent monitoring data for the eight roadside and kerbside diffusion tubes. The urban background monitoring locations are discussed further in **Technical Appendix 9.1.**

Table 9.9: CDC Diffusion Tube Annual Mean NO_2 Concentrations (µg/m^3)

Site Name	Classification	Approximate Distance to Site (km)	2010	2011	2012	2013
Kings End North	Roadside	2.4	**46.2**	**43.9**	**46.0**	35.8
Queens Avenue	Kerbside	2.4	**46.0**	**42.9**	**45.0**	**41.0**
Kings End South	Roadside	2.4	**51.3**	**49.5**	**49.0**	**48.5**
Kings End West	Kerbside	2.5	36.5	30.1	31.1	29.1
Field Street	Kerbside	2.5	**46.2**	**42.9**	**41.6**	38.6
North Street	Kerbside	2.5	**44.1**	**46.1**	**45.6**	**42.7**
Causeway	Roadside	2.8	-	-	-	23.1
Market Square	Kerbside	2.9	37.2	35.7	**45.6**	37.1

Note: Data obtained from CDC Progress Report.
Exceedances of the AQS Objectives shown in **bold** text.

9.62. The NO_2 results summarised in Table 9.9 indicate that the annual mean objective (40µg/m^3) has been exceeded for at least one year at all monitoring locations except the Kings End West and Causeway sites. Despite these exceedance's, as mentioned previously, CDC has not yet declared an AQMA for Bicester town centre, as it plans to continue monitoring the concentrations at these locations to evaluate the impacts of improvements to the road transport network in Bicester, as these could modify any future AQMA boundary.

Potential Effects

Demolition and Construction

9.63. Given the scale of the Development and timeframe over which it is likely to be constructed (refer to Chapter 5: The Proposed Development) during the demolition and construction works, the Site would be considered as a 'major construction site'.

9.64. In common with all major construction sites, the demolition and construction works would have the potential to affect local air quality conditions via:

- Fugitive dust generated from demolition and construction activities;
- Exhaust emissions from demolition and construction plant e.g. excavators and breakers, piling rigs etc.; and
- Exhaust emissions from demolition and construction related vehicles accessing and egressing the Site from / to the local road network.

Nuisance Dust

9.65. The AQS objectives seek to address the health implications of fine particulate matter, which are largely derived from combustion sources such as motor vehicle engines. In the case of particles released from ground excavation works, physical demolition and construction activities and so forth, the majority of these tend to be larger particles, which generally settle out close to the works / activities and may cause annoyance due to their soiling capability. However, there are no formal standards or criteria to determine the adverse effects caused by deposited particulate matter.

9.66. Dust from demolition and construction activities within the urban environment generally does not arise at distances beyond approximately 200m from the works / activities (in the absence of mitigation), and the majority of any deposition that might give rise to significant soiling tends to occur within 50 - 100m of the works / activities. Receptors that are downwind of a construction site are at more risk of dust effects than those which are upwind. The occupiers of residential properties tend to be more sensitive to dust than occupiers of commercial properties. In addition, in built up areas, neighbouring buildings will limit the movement of dust by acting as a 'screen'.

9.67. The area surrounding the Site is predominantly occupied by agricultural land. However, there are some residential uses in proximity to the Site. The closest existing residential property to the Site is Lovelynch House immediately to the south (i.e. within 10m), encompassed by the site to the north, east and west. Gowell Farm and Aldershot Farm are located 95m east and 140m north respectively. Further residential areas are located 1.4km to the north at Bucknell, 240m east beyond the A4095 at Bicester and 1.9km northeast at Chesterton.

9.68. Given the proximity of existing sensitive receptors to the Site, it is likely that without mitigation, in the worst-case, nuisance dust from the demolition and construction works would give rise to:

- **Temporary**, **short-term**, **local** effects of **substantial adverse** significance at receptors within 10m from the Site boundary;
- **Temporary**, **short-term**, **local** effects of **moderate adverse** significance at receptors within 10m - 100m of the Site boundary;
- **Temporary**, **short-term**, **local** effects of **minor adverse** significance at receptors within 100m - 200m of the Site boundary; and
- **Negligible** effects at receptors over 200m from the Site boundary.

Construction Vehicle and Plan Emissions

9.69. Plant operating on the Site and demolition and construction related vehicles entering and egressing the Site from / to the local road network would have the potential to increase local air pollutant concentrations, particularly in respect of NO_2 and particulate matter (both PM_{10} and $PM_{2.5}$).

9.70. The number of two-way construction vehicle movements per day during the construction phase of the Development is currently not known. However, emissions from construction traffic is anticipated to be relatively small compared to existing road traffic emissions on the B4030 (5,859 daily vehicles including 6.8% Heavy Goods Vehicles (HGVs). Further details on existing traffic flows is contained within **Technical Appendix 9.1**). Taking into account the current traffic movements and background pollutant concentrations around the Site, it is considered that the likely effect of construction vehicles entering and egressing the Site to air quality would in the worst-case, give rise to a **temporary**, **short-term**, **local** effect of **moderate adverse** significance at the sensitive receptor locations along the routes used by the construction vehicles during the peak construction period. However, at all other times during the demolition and construction works, it is considered that the likely effect would, in the worst-case be **temporary**, **short-term**, **local** and of **minor adverse** significance.

9.71. Any emissions from plant operating on the Site would be very small in comparison to the emissions from traffic movements on the roads adjacent to the Site. It is therefore is considered that even in the absence of mitigation, their likely effect on local air quality would be **negligible**.

Completed Development

9.72. Effects on local air quality associated with the completed and operational Development would likely result from changes to traffic flows and emissions from the heating plant associated with the Himley Village Development.

9.73. The results of the air quality modelling of operational traffic (based on current guidance, i.e. with reduced emission rates and background concentration to the completion year of 2031) and the proposed heating plant are presented in Table 9.10 to Table 9.12. Full details are provided within **Technical Appendix 9.1**.

Nitrogen Dioxide (NO_2)

Table 9.10: Modelled NO_2 Annual Mean Concentrations at Sensitive Receptors ($\mu g/m^3$)

	2013 Base	2031 Without Development	2031 With Development	2031 Change
Receptor 1	23.3	13.9	14.0	0.1
Receptor 2	23.5	13.9	14.2	0.3
Receptor 3	23.2	13.7	14.0	0.3
Receptor 4	28.1	14.7	14.9	0.2
Receptor 5	24.7	14.1	14.2	0.1
Receptor 6	25.4	14.9	14.9	0.1
Receptor 7	26.6	15.1	15.1	0.0
Receptor 8	21.7	13.6	13.7	0.0
Receptor 9	22.0	13.8	13.9	0.0
Receptor 10	25.9	15.2	15.2	0.1

	2013 Base	2031 Without Development	2031 With Development	2031 Change
Receptor 11	24.2	14.5	14.6	0.1
Receptor 12	28.0	15.9	16.0	0.1
Receptor 13	28.6	16.2	16.3	0.1
Receptor 14	24.6	14.9	15.0	0.1
Receptor 15	24.5	15.2	15.3	0.0
Receptor 16	25.9	15.6	15.8	0.1
Receptor 17	28.2	16.9	17.0	0.2
Receptor 18	21.9	13.9	14.1	0.2
Receptor 19	26.0	15.7	15.8	0.2
Receptor 20	26.1	15.3	15.5	0.2
Receptor 21	25.8	15.2	15.5	0.3
Receptor 22	25.8	14.7	14.8	0.1
Receptor 23	35.7	20.0	20.2	0.2
Receptor 24	22.7	13.8	13.9	0.1
Receptor 25	**42.0**	23.6	24.0	0.4
Receptor 26	25.2	14.1	14.1	0.0
Receptor 27	36.6	20.2	20.5	0.3
Receptor 28	31.9	18.2	18.4	0.2
Receptor 29	34.5	19.5	19.7	0.2
Receptor 30	32.2	17.0	17.1	0.1
Receptor 31	24.6	14.6	14.7	0.1
Receptor 32	24.1	14.5	14.5	0.1
Receptor 33	23.8	15.2	15.3	0.2
Receptor 34	-	-	14.8	-
Receptor 35	-	-	14.1	-

Note: For accuracy, the changes arising from the Development have been calculated using the exact output from the ADMS-Road model (i.e. numbers to at least 10 decimal places) rather than the rounded numbers within Table 9.10.

9.74. The results indicate that for the baseline 2013, the NO_2 annual mean AQS objective (40µg/m^3) is met at all existing receptor locations except at Receptor 25, where a concentration of 42µg/m^3 is predicted. This is consistent with the results of the CDC monitoring undertaken in Bicester which has identified exceedences of the annual mean NO2 objective at the monitoring locations within the centre of Bicester, close to Receptor 25.

9.75. As discussed in **Technical Appendix 9.1**, the 1-hour mean objective for NO_2 is unlikely to be exceeded at a roadside location where the annual mean NO_2 concentration is less than 60µg/m^3. As shown in Table 9.10 predicted annual mean NO_2 concentrations in 2013 are below 60µg/m^3 at all receptor locations. Accordingly, the 1-hour mean objective is likely to be met at these locations.

9.76. In 2031, both 'without' and 'with' the Development, all existing receptors are predicted to be below the NO_2 annual mean objective. Therefore, the 1-hour mean objective is also predicted to be met at all existing receptor locations. The maximum concentration is predicted at Receptor 25 (24µg/m^3 with the Development).

9.77. The maximum increase in NO_2 concentration is 0.37µg/m^3, predicted at Receptor 25. Using the magnitude of change descriptors outlined in Table 9.6, the Development is predicted to result in an 'imperceptible' change (i.e. changes of <0.4µg/m^3 annual mean NO_2) at all existing receptors. On the basis of the significance criteria outlined in Table 9.7, the effect on the annual mean NO_2 is predicted to be **negligible** at all existing receptors. Accordingly, it is considered that the Development would also have a **negligible** effect on hourly NO_2 concentrations.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Table 9.11: Modelled PM_{10} Concentrations at Sensitive Receptors

	Annual Mean PM_{10} (µg/m^3)				Daily Mean PM_{10} (No. days > 50µg/m^3)			
	2013 Base	2031 Without Development	2031 With Development	2031 Change	2013 Base	2031 Without Development	2031 With Development	2031 Change
Receptor 1	18.5	17.1	17.1	**0.0**	1	0	0	**0**
Receptor 2	18.5	17.1	17.1	**0.0**	1	0	0	**0**
Receptor 3	18.5	17.0	17.0	**0.1**	1	0	0	**0**
Receptor 4	19.3	17.6	17.6	**0.1**	2	1	1	**0**
Receptor 5	18.8	17.2	17.2	**0.0**	2	0	0	**0**
Receptor 6	18.9	17.6	17.6	**0.0**	2	1	1	**0**
Receptor 7	19.2	17.7	17.8	**0.0**	2	1	1	**0**
Receptor 8	18.3	16.9	16.9	**0.0**	1	0	0	**0**
Receptor 9	18.3	16.9	16.9	**0.0**	1	0	0	**0**
Receptor 10	19.1	17.8	17.8	**0.0**	2	1	1	**0**
Receptor 11	18.7	17.4	17.4	**0.0**	2	0	0	**0**
Receptor 12	19.0	17.5	17.6	**0.0**	2	1	1	**0**
Receptor 13	19.1	17.6	17.6	**0.0**	2	1	1	**0**
Receptor 14	18.7	17.3	17.3	**0.0**	1	0	0	**0**
Receptor 15	18.7	17.3	17.3	**0.0**	2	0	0	**0**
Receptor 16	18.8	17.3	17.3	**0.0**	2	0	0	**0**
Receptor 17	19.0	17.6	17.6	**0.0**	2	1	1	**0**
Receptor 18	18.3	16.9	16.9	**0.0**	1	0	0	**0**
Receptor 19	19.0	17.9	17.8	**-0.1**	2	1	1	**0**
Receptor 20	18.9	17.6	17.6	**0.0**	2	1	1	**0**
Receptor 21	18.8	17.4	17.5	**0.1**	2	0	1	**1**
Receptor 22	19.0	17.5	17.5	**0.0**	2	1	1	**0**
Receptor 23	19.8	18.6	18.6	**0.1**	3	1	1	**0**
Receptor 24	18.4	16.9	16.9	**0.0**	1	0	0	**0**
Receptor 25	20.1	18.9	19.0	**0.1**	3	2	2	**0**
Receptor 26	18.7	17.1	17.1	**0.0**	1	0	0	**0**
Receptor 27	19.6	18.1	18.2	**0.1**	2	1	1	**0**
Receptor 28	19.3	18.1	18.1	**0.0**	2	1	1	**0**
Receptor 29	19.6	18.4	18.5	**0.1**	2	1	1	**0**
Receptor 30	19.5	17.9	17.9	**0.0**	2	1	1	**0**

	Annual Mean PM_{10} (µg/m³)				Daily Mean PM_{10} (No. days > 50µg/m³)			
	2013 Base	2031 Without Development	2031 With Development	2031 Change	2013 Base	2031 Without Development	2031 With Development	2031 Change
Receptor 31	18.8	17.5	17.5	**0.0**	2	1	1	**0**
Receptor 32	18.7	17.4	17.4	**0.0**	2	0	0	**0**
Receptor 33	18.7	17.4	17.3	**0.0**	1	0	0	**0**
Receptor 34	-	-	17.1	-	-	-	0	-
Receptor 35	-	-	17.1	-	-	-	0	-

Note: For accuracy, the changes arising from the Development have been calculated using the exact output from the ADMS-Road model (i.e. numbers to at least 10 decimal places) rather than the rounded numbers within Table 9.11.

9.78. As shown in Table 9.11, the annual mean concentrations of PM_{10} are predicted to be well below the objective of 40µg/m³ in 2013 and in 2031, both 'without' and 'with' the Development at all the existing receptor locations considered. The maximum predicted concentration in all scenarios is 20.1µg/m³ at Receptor 25 in 2013.

9.79. Using the magnitude of change descriptors outlined in Table 9.6, the Development is predicted to result in an 'imperceptible' change (an increase/decrease <0.4µg/m³ annual mean PM_{10}) at all existing receptors considered. On the basis of the significance of effect criteria outlined in Table 9.7 the likely effect is considered to be **negligible**.

9.80. In 2013 and in 2031 both 'without' and 'with' the Development, all existing receptor locations are predicted to be well below the 24-hour mean PM_{10} objective of 35 days exceeding 50µg/m³. The maximum predicted exceedances of 50µg/m³ in all scenarios is 3 days in 2013.

9.81. Using the magnitude of change descriptors outlined in Table 9.6, the Development is predicted to result in an 'imperceptible' change (<1 day increase / decrease in relation to the 24-hour mean PM_{10}) at 32 of the existing receptors and a 'small' change (1-2 day increase / decrease) at the remaining existing receptor (Receptor 22). On the basis of the significance of effect criteria outlined in Table 9.8 the likely effect is **negligible**.

Table 9.12: Modelled $PM_{2.5}$ Annual Mean Concentrations at Sensitive Receptors (µg/m³)

	2013 Base	2031 Without Development	2031 With Development	2031 Change
Receptor 1	12.2	10.9	10.9	0.0
Receptor 2	12.2	10.9	10.9	0.0
Receptor 3	12.2	10.8	10.9	0.0
Receptor 4	12.7	11.1	11.2	0.0
Receptor 5	12.4	10.9	10.9	0.0
Receptor 6	12.5	11.1	11.2	0.0
Receptor 7	12.6	11.2	11.2	0.0
Receptor 8	12.1	10.8	10.8	0.0
Receptor 9	12.1	10.8	10.8	0.0
Receptor 10	12.5	11.2	11.2	0.0
Receptor 11	12.3	11.0	11.0	0.0
Receptor 12	12.5	11.1	11.1	0.0
Receptor 13	12.6	11.2	11.2	0.0
Receptor 14	12.3	11.0	11.0	0.0

	2013 Base	2031 Without Development	2031 With Development	2031 Change
Receptor 15	12.3	11.0	11.0	0.0
Receptor 16	12.4	11.0	11.0	0.0
Receptor 17	12.5	11.1	11.2	0.0
Receptor 18	12.1	10.8	10.8	0.0
Receptor 19	12.5	11.3	11.3	0.0
Receptor 20	12.4	11.1	11.1	0.0
Receptor 21	12.4	11.1	11.1	0.0
Receptor 22	12.5	11.1	11.1	0.0
Receptor 23	13.0	11.7	11.7	0.0
Receptor 24	12.1	10.8	10.8	0.0
Receptor 25	13.3	11.8	11.9	0.0
Receptor 26	12.3	10.9	10.9	0.0
Receptor 27	13.0	11.4	11.5	0.0
Receptor 28	12.7	11.4	11.4	0.0
Receptor 29	12.9	11.6	11.6	0.0
Receptor 30	12.8	11.3	11.3	0.0
Receptor 31	12.4	11.1	11.1	0.0
Receptor 32	12.3	11.0	11.0	0.0
Receptor 33	12.3	11.0	11.0	0.0
Receptor 34	-	-	10.9	-
Receptor 35	-	-	10.9	-

Note: For accuracy, the changes arising from the Development have been calculated using the exact output from the ADMS-Road model (i.e. numbers to at least 10 decimal places) rather than the rounded numbers within Table 9.12.

9.82. In 2013 and in 2031 both 'without' and 'with' the Development, all existing receptor locations are predicted to be below the annual mean $PM_{2.5}$ objective of 25µg/m^3. The maximum predicted concentration in all scenarios is 13.3µg/m^3 at Receptor 25 in 2013.

9.83. Given these results, and as there is no change 'with' the Development at any receptor, it is considered that the effects on annual mean $PM_{2.5}$ of the Development are considered to be **negligible**.

Conditions within the Development

9.84. As shown by the results in Tables 9.10 to 9.12, the predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations for locations within the Himley Village Development itself are below the relevant objectives in 2031. As such, it is considered that for the NO_2, PM_{10} and $PM_{2.5}$ objectives, the effect of introducing residential uses to the Site would be **negligible**.

Ecological Assessment

9.85. Table 9.13 presents the modelled NOx concentration at the ecological receptors within the Ardley Cuttings Quarry SSSI and Bure Park LNR.

Table 9.13: Modelled NO_x Annual Mean Concentrations at the Ecological Receptors in 2031 ($\mu g/m^3$)

	2031 Without Development	2031 With Development	2031 Change	Predicted Change as % of AQS Objective
Receptor 36	**30.0**	**30.2**	0.2	0.71
Receptor 37	**38.4**	**38.6**	0.2	0.68
Receptor 38	13.4	13.8	0.4	1.36
Receptor 39	13.3	13.7	0.4	1.34
Receptor 40	16.1	16.2	0.0	0.11

9.86. The annual average modelled concentration of NO_x at two of the ecological receptors exceed the AQS objective of $30\mu g/m^3$. This is due to the proximity of these receptors to the M40 (distance). The AQS is met at the other three ecological receptors. The DMRB guidance[27] states that increases in annual mean NOx concentrations of less than $2\mu g/m^3$ at ecological designations are not considered significant. It is therefore considered that the Development will have a **negligible** effect on ecological receptors as a result of changes in air quality.

Nitrogen Dioxide Sensitivity Analysis Results

9.87. The results of the sensitivity analysis (i.e. considering the likely air quality effects of the Himley Village Development against the current baseline, 2013 conditions, assuming no reduction in background concentrations or road traffic emission factors between 2013 and 2031) are presented in Table A1.9 in **Technical Appendix 9.1**. The overall predicted concentrations are higher than those presented above for 2031 due to higher background concentrations and vehicle emissions rates in 2013 than 2031.

9.88. As shown in Table A1.9 in **Technical Appendix 9.1**, in 2031, both 'without' and 'with' the Development, assuming no improvements in future NO_x and NO_2, the NO_2 annual mean objective is exceeded at four of the existing receptor locations and is met at the remaining 29 of the existing receptor locations. The maximum predicted concentration at Receptor 25 is $53.8\mu g/m^3$ in 2031 'with' the Development. In accordance with the magnitude of change as outlined in Table 9.6 and the significance of effects criteria outlined in Table 9.7, assuming no improvements to NO_x and NO_2, the Development is predicted to result in a **negligible** effect at twenty eight existing receptors and a **minor adverse** effect at the remaining five receptor locations.

9.89. The predicted annual mean NO_2 concentrations in 2013 and 2031 are predicted to be below $60\mu g/m^3$ at all receptor locations and as such the 1-hour mean objective is likely to be met at these locations. Given this, it is considered that the Development would also have a **negligible** effect on 1-hour mean NO_2 concentrations.

9.90. When assuming no future improvements in NO_x and NO_2 background concentrations or road traffic emissions, predicted NO_2 concentrations on the Site are below the objective of $40\mu g/m^3$ at all receptor locations. Based on these results, the 1-hour mean objective would also be met at all receptors. As such, it is considered that for the NO_2 objectives, even assuming no improvements in future NO_x and NO_2, the effect of introducing residential uses to the Site would be **negligible**.

Mitigation

Demolition and Construction

Nuisance Dust

9.91. To minimise the release of dust and air pollution during the demolition and construction works, in accordance with relevant best practice guidance, a number of measures would be implemented during the demolition and construction works in order to reduce and minimise the effects of nuisance dust. Such measures would be detailed in a Construction Environmental Management Plan (CEMP) and would include:

- Routine dust monitoring at sensitive residential locations with the results used to inform the most appropriate mitigation controls, the effectiveness of which would be monitored and reviewed;
- Recording of any exceptional incidents that cause dust and air quality pollutant emissions, either on or off-Site, and the action taken to resolve the situation in the log book;
- Removal of materials that have potential to produce dust, where possible;
- Enclosure of material stockpiles at all times and damping down of dusty materials during dry weather;
- Provision of appropriate hoarding and / or fencing to reduce dust dispersion and restrict public access;
- Maintenance of Site fencing, barriers and scaffolding;
- Control of cutting or grinding of materials on the Site and avoidance of scabbling;
- Dust generating machinery e.g. disk cutters to be fitted with vacuums;
- Appropriate handling and storage of materials, especially stockpiled materials;
- Restricting drop heights onto lorries and other equipment;
- Fitting all equipment with dust control measures such as water sprays, wherever possible;
- Using a wheel wash, avoiding of unnecessary idling of engines and routing of Site vehicles as far from sensitive properties as possible;
- Ensuring bulk cement and other fine powder materials are delivered in enclosed tankers and stored silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- Using low emission alternative fuelled plant where feasible;
- Using gas powered generators rather than diesel if possible (these are also quieter) and ensuring that all plant and vehicles are well maintained so that exhaust emissions do not breach statutory emission limits;
- Switching off all plant when not in use;
- Not allowing fires on the Site; and
- Ensuring that a road sweeper is available to clean mud and other debris from hard-standing, roads and footpaths.

9.92. Such measures are routinely and successfully applied to major construction projects throughout the UK, and are proven to reduce significantly the potential for adverse nuisance dust effects associated with the various stages of demolition and construction work.

Construction Vehicle and Plant Emissions

9.93. As outlined within Chapter 8: Transport, all demolition and construction traffic logistics would be agreed with CDC. A lorry routing agreement would be prepared to ensure drivers use the peripheral road/A4095 and avoid passing through the centre of Bicester. Full details would be set out within a Construction Traffic Management Plan (CTMP).

Completed Development

9.94. As identified earlier in this Chapter, even in the absence of mitigation, the Development is predicted to have a **minor adverse** to **negligible** effect on local air quality. Therefore, mitigation measures would not be required. However, as noted within **Chapter 8: Transport**, a Travel Plan would be produced for the Himley Village Development with the aim of reducing the number of car trips associated with the Development by actively promoting alternative modes of transport. This would have the potential to bring about air quality benefits.

Residual Effects

Demolition and Construction

Nuisance Dust

9.95. Following the implementation of appropriate environmental management controls as summarised above, the likely residual effects of demolition and construction nuisance dust would be reduced to a **temporary**, **short-term**, **local** effect of **moderate adverse** significance at receptors within 10m of the Site boundary, **minor adverse** significance at receptors within 100m of the Site boundary and a **negligible** significance at receptors over 100m from the Site boundary.

Construction Vehicle and Plant Emissions

9.96. Following the implementation of the measures set out in the CTMP, it is anticipated that the likely residual effect of construction vehicles entering and egressing the Site to air quality would be **temporary**, **short-term**, **local** and of **minor adverse** significance during the peak construction period. However, at all other times during the demolition and construction works, it is considered that the likely residual effect would, be **negligible**.

9.97. Even in the absence of mitigation, the likely effect of any emissions from plant operation on the Site is considered to be **negligible**. This would therefore remain as the likely residual effect.

Completed Development

9.98. As identified earlier in this Chapter, even in the absence of mitigation, the Himley Village Development is predicted to have a **minor adverse** to **negligible** effect on local air quality. Mitigation measures would therefore not be required, and the residual effects would remain **minor adverse** to **negligible**. However, as noted within **Chapter 8: Transport** a Travel Plan for the Development would be produced with the aim of reducing the number of car trips associated with the Development. This would have the potential to bring about air quality benefits.

Summary and Conclusion

Table 9.14: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Dust from construction activities	**Temporary, short – medium term**, local effect of **negligible** to **substantial adverse** significance	Routine environmental management control measures to prevent and control dust as specified in a CEMP.	**Temporary, short – medium term,** local effect of **negligible** to **moderate adverse** significance
Emissions from construction vehicles	**Temporary**, **short-medium term**, local effect of **moderate** to **minor adverse** significance.	Routine environmental management measures to control construction traffic as specified in a CTMP.	**Temporary**, **short-medium term**, local effect of **minor adverse** to **negligible** significance.
Emissions from construction plant	**Negligible**	None Required	**Negligible**
Completed Development			
Emissions from traffic and heating plant associated with the completed Development	**Minor adverse** to **negligible**	Travel Plan	**Minor adverse** to **negligible**
Introduction of residential receptors	**Negligible**	None Required	**Negligible**

References

1 European Commission. (2014) *Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.*
2 Defra. (2010) *The Air Quality Standards (England) Regulations.*
3 Office of the Deputy Prime Minister (ODPM). (1995) *The Environment Act 1995.*
4 Defra. (2007) *The Air Quality Strategy for England, Scotland, Wales & Northern Ireland.*
5 Bate, K.J. and Coppin, N.J. (1991) *Dust impacts from mineral workings.* Mine and Quarry, 20 (3) pp31 - 35.
6 Department for Communities and Local Government (DCLG). (2012) *National Planning Policy Framework.* DCLG: London.
7 DCLG. (2009) *Planning Policy Statement: Eco-Towns: A Supplement to Planning Policy Statement 1.*
8 Cherwell District Council. (1996) *Cherwell Local Plan.*
9 Cherwell District Council. (2014) *The Cherwell Local Plan– Submission.*
10 Department for Communities and Local Government. (2014) *Planning Practice Guidance: Air Quality* (ID 32) (06th March 2014).
11 Defra. (2009) *Local Air Quality Management Policy guidance PG(09).* Defra, London.
12 Environmental Protection UK. (2010) *Development Control: Planning for Air Quality.* EPUK: London.
13 Building Research Establishment (BRE). (2003) *Controlling particles, vapour and noise from pollution from construction sites*
14 Institute of Air Quality Management. (2014) *Guidance on the Assessment of dust from demolition and construction.*
15 Eco Bicester Strategic Delivery Board. (2010) *Eco Bicester – One Shared Vision.*
16 Cambridge Environmental Research Consultants Ltd. (2014) *ADMS-Roads: Version 3.2.SP1.*
17 DEFRA. (2014) *AEA, NO_x to NO_2 Calculator*. http://laqm1.defra.gov.uk/review/tools/monitoring/calculator.php (16th June 2014).
18 Ireland, M. (1992) *Dust: Does the EPA Go Far Enough? Quarry Management*. August 1992, 23–24.
19 DEFRA. (2014) *LAQM FAQshttp://laqm.defra.gov.uk/faqs/faqs.html*
20 DEFRA. (2012) *Local Air Quality Management: Note on Projecting NO_2 Concentrations.*
21 Cherwell District Council. (2008) *Air Quality Review and Assessment Progress Report.*
22 Cherwell District Council. (2009) *Air Quality Updating and Screening Assessment.*
23 Cherwell District Council. (2010) *Detailed Assessment, Hennef Way, Banbury.*
24 Cherwell District Council. (2010) *Air Quality Review and Assessment Progress Report.*
25 Cherwell District Council. (2011) *Air Quality Review and Assessment Progress Report.*
26 Cherwell District Council. (2014*) Air Quality Updating and Screening Assessment.*
27 Highways Agency (2007) *Design manual for Roads and Bridges Volume 11 Environmental Assessment Section 3 Environmental Assessment Techniques Part 1 HA207/07 Air Quality.*

10. Noise and Vibration

Introduction

10.1. This Chapter, prepared by Waterman Energy, Environment & Design Ltd (Waterman EED), presents an assessment of the likely significant noise and vibration effects resultant from the Himley Village Development upon existing off-Site and future on-Site sensitive receptors (SRs). In addition, this Chapter presents an assessment of the suitability of the Site for residential development. An assessment of the demolition and construction phase together with the completed and operational phase of the Himley Village Development are presented.

10.2. This Chapter provides a summary of relevant legislation, planning policy and guidance. This is followed by a description of the methods used to assess the likely significant effects associated with the Himley Village Development and to evaluate the baseline conditions relevant to the Site. The nearest SRs surrounding the Site are identified and the likely significant direct and indirect noise and vibration effects of the Development are evaluated. Where required, mitigation measures are recommended to prevent, reduce or offset significant adverse effects and the likely residual effects identified.

10.3. Supporting information relating to the noise and vibration assessment is contained within the following appendices:

- **Technical Appendix 10.1:** Acoustic Glossary;
- **Technical Appendix 10.2:** Baseline Noise Survey;
- **Technical Appendix 10.3:** Construction Assessment Methodology and Significance Criteria; and
- **Technical Appendix 10.4:** Traffic Noise Assessment.

Legislation, Planning Policy & Guidance

Legislation

Control of Pollution Act, 1974

10.4. Part III of the Control of Pollution Act 1974 (CoPA)[1] is specifically concerned with pollution. With regard to noise, the CoPA covers construction sites; noise in the street; noise abatement zones; codes of practice; and Best Practicable Means (BPM).

National Planning Policy

National Planning Policy Framework, 2012

10.5. The National Planning Policy Framework[2] (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF is a material consideration in planning decisions.

10.6. With regard to noise the NPPF states that:

"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 noise pollution."

In support of this, paragraph 123 states that planning decisions should aim to:

"*Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development; and*

identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason".

10.7. Annex 3 of the NPPF states that the document replaces Planning Policy Guidance 24 'Planning and Noise' (PPG24)[3] but falls short of providing any specific technical guidance.

10.8. Web based guidance on the NPPF has been issued with regard to noise[4] although it does not explicitly state acceptable construction noise levels or indeed acceptable operational noise levels in the context of maintaining existing residential or commercial amenity. The National Planning Practice Guidance does outline the qualitative effects of noise exposure and what action should be taken and states that:

"Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment."

Noise Policy Statement for England, 2012

10.9. The Noise Policy Statement for England (NPSE)[5] sets out the long term vision of Government noise policy as follows:

'Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.'

10.10. The policy aims, through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development, to:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life.

10.11. The NPSE sets out three terms with regard to noise effects:

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

10.12. The above terms are not defined in-terms of absolute levels within the NPSE which acknowledges that these will change with regard to noise source and receiver types.

Supplement to Planning Policy Statement 1: Eco-Towns, 2009

10.13. Supplement to Planning Policy Statement 1[6] contains a range of minimum standards which could be adopted by developers in order to meet the wider objectives of the Planning Policy Statement on Climate Change planning policies. The standard aim is to ensure that eco towns are exemplars of good practice and provide a showcase for sustainable, greener, lower carbon living. This document does not contain guidance or policy specifically pertaining to noise.

Local Planning Policy

Cherwell Local Plan, 1996

10.14. The Cherwell Local Plan[7] aims to ensure that noise-sensitive developments are not located in positions where they will be subject to severe noise pollution. Examples of noise sensitive developments include new dwellings, nursing homes, hostels, hospitals, hotels, residential colleges and schools.

10.15. Policy ENV1 states:

"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."

10.16. The council will 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.

10.17. Where a source of pollution is already established and cannot be abated, the Council will seek to limit its effect by ensuring that development within the affected area maintains a suitable distance from the pollution source.

10.18. Policy ENV3 states:

'Development sensitive to noise generated by road traffic will be:

I. Refused where external noise levels exceed 72dB $L_{Aeq,16hr}$ and 66dB $L_{Aeq,8hr}$ between 07:00 – 23:00hrs and 23:00-07:00hrs respectively.

II. Generally resisted where external noise levels between 07:00-23:00hrs and 23:00-07:00hrs fall into the ranges 63-72dB $L_{Aeq,16hr}$ and 57-66dB $L_{Aeq,8hr}$ respectively.

III. Expected to achieve a specified internal acoustic environment when the external noise levels between 07:00-23:00hrs and 23:00-07:00hrs fall into the ranges 55-63dB $L_{Aeq,16hr}$ and 45-57dB $L_{Aeq, 8hr}$ respectively.'

10.19. Policy ENV4 states:

'Development sensitive to noise generated by rail traffic will be:

I. Refused where external noise levels exceed 74dB $L_{Aeq,16hr}$ and 66dB $L_{Aeq,8hr}$ between 07:00 – 23:00hrs and 23:00-07:00hrs respectively.

II. Generally resisted where external noise levels between 07:00-23:00hrs and 23:00-07:00hrs fall into the ranges 66-74dB $L_{Aeq,16hr}$ and 59-66dB $L_{Aeq,8hr}$ respectively.

III. Expected to achieve a specified internal acoustic environment when the external noise levels between 07:00-23:00hrs and 23:00-07:00hrs fall into the ranges 55-66dB $L_{Aeq,16hr}$ and 45-59dB $L_{Aeq, 8hr}$ respectively.'

10.20. Policy ENV5 states:

'Notwithstanding policies ENV3 and ENV4 development sensitive to vibration will be resisted in locations where vibration levels are likely to affect the material comfort of end users.'

10.21. Paragraph 10.8 of the adopted local plan notes that:

"Where there is a clear need for noise sensitive development in a location satisfying the criteria described in clause (ii) of the above policies, development will be expected to achieve a constant

specified internal acoustic environment, ie: the design is likely to have to incorporate acoustic mechanical ventilation."

10.22. Paragraph 10.9 notes that where noise events regularly exceed 82dB L_{AMax} during the night time (23:00-07:00), the criteria described in (ii) in the above policies shall apply.

Cherwell District Non Statutory Local Plan, 2011

10.23. The policies relating to noise within this document mirror those presented in the adopted local plan.

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

10.24. The proposed updates to the Cherwell Local Plan contains no alterations relevant to the Himley Village Development. The emerging local plan is subject to examination, and is likely to be adopted in 2015. The assessment has therefore been made against the existing Local Plan.

Eco-Bicester – One Shared Vision, December, 2010

10.25. The One Shared Vision document[8] sets out the shared vision for Eco Bicester, and aims to ensure that new developments at Bicester integrate with the existing town. It includes standards for future developments within Bicester, as well as for the future eco-town development at NW Bicester. This document contains no guidance or policy specifically pertaining to noise.

Guidance

IEMA Guidelines for Environmental Noise Assessment, 2014

10.26. The IEMA Guidelines for Environmental Noise Assessment[9] address the key principles of noise impact assessment and are applicable to all development proposals where noise effects may occur.

10.27. The guidance provides advice with regards to the collection of baseline noise data, prediction of noise levels and how noise should be assessed. The guidance recognises that the effect associated with a particular noise impact will be dependent on a number of factors including but not limited to the sensitivity of the receptor, frequency and duration of the noise source and time of day. However, it stops short of providing specific assessment criteria which developments should achieve but instead suggests that the methodology adopted should be selected on a site by site basis with reference to relevant national and local standards.

British Standard 5228: - Code of Practice for Noise and Vibration Control on Construction and Open Sites, 2014

10.28. BS 5228[10] part one and part two[11] provides guidance on the assessment of noise and vibration effects during the development of a site, including procedures for estimating noise levels from construction activities and vibration attributable to vibratory rolling and piling activities.

10.29. The guidance does not define acceptable limits. However, it does provide potential methods for assessing the significance of noise and vibration effects, which should be defined on a site-specific basis. BS 5228 also provides guidance on minimising potential effects through the use of mitigation and the adoption of BPM.

British Standard BS 6472-1: Guide to Evaluation of Human Exposure to Vibration in Buildings. Part 1: Vibration Sources other than Blasting, 2008

10.30. BS 6472-1[12] provides guidance on the measurement and assessment of vibration levels affecting humans in buildings resulting from sources such as road and rail traffic or building services systems.

10.31. The probability of adverse comment is assessed by considering the vibration dose value (VDV), which quantifies the total exposure to vibration over a specified period.

British Standard 4142 Methods for rating and assessing industrial and commercial sound, 2014

10.32. BS 4142[13] provides a method for the rating and assessment of sound of an industrial and/or commercial nature. The assessment method allows the likely effects of sound on people to be determined. The significance of the sound depends upon the margin by which the 'rating level' ($L_{Ar,Tr}$) exceeds the background level (L_{A90}). Typically the greater this difference the greater the magnitude of the impact. Table 10.1 presents the significance of impact based on noise difference between the rating level and background level.

Table 10.1: BS4142 Significance of Impact

Noise Difference (Rating Level – Background)	Significance [1]
+≥ 10 dB	Indication of significant adverse impact
+5 dB	Indication of adverse impact
≤0	Indication of low impact

Note: [1] Adverse impacts include but are not limited to annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

10.33. The 'rating level' is equal to the specific sound level if there are no acoustic features present (tonal/impulsive/intermittent). Depending on the acoustic feature an acoustic correction of +2 to +9dB may be applied to obtain the rating noise level. Where a sound has more than one acoustic feature then the appropriate acoustic corrections are summed.

British Standard 8233: 2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

10.34. BS 8233[14] provides guidelines for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building. The criteria relevant to the Himley Village Development are presented in Table 10.2.

Table 10.2: BS 8233 Guideline Noise Levels for Residential Spaces

Activity	Location	Daytime $L_{Aeq,\ 16\ hour}$ (07:00 to 23:00)	Night-Time $L_{Aeq,\ 8\ hour}$ (23:00 to 07:00)
Resting	Living room	35dB	Not applicable
Dining	Dining room / area	40dB	Not applicable
Sleeping (daytime resting)	Bedroom	35dB	30dB

10.35. When considering external amenity spaces such as gardens balconies and terraces, the guidance provided in BS 8233 states:

"For traditional external areas that are used for amenity space, such as gardens or patios it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".

World Health Organisation Guidelines for Community Noise, 1999

10.36. The World Health Organisation (WHO)[15] document provides guidance of a similar nature to BS 8233, although it places more emphasis on the potential health effects associated with noise. Specifically, the document recommends internal and external noise levels that will provide an acoustic environment that is conducive to uninterrupted speech and sleep. Daytime noise limits aim to prevent the majority of the population being moderately or seriously annoyed by noise. Night-time noise limits are intended to ensure a good night's sleep. Table 10.3 presents a summary of the WHO guideline values.

Table 10.3: WHO Recommended Guideline Values

Specific Environment	Critical Health Effects	L_{Aeq} (dB)	Time Base (hours)	$L_{Amax,fast}$ (dB)
Outdoor living area	Serious annoyance, daytime and evening	55	16	Not applicable
	Moderate annoyance, daytime and evening	50	16	Not applicable
Dwelling, indoors Inside bedrooms	Speech intelligibility and moderate annoyance, daytime and evening	35	16	Not applicable
	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

Building Bulletin 93 Acoustic Design of Schools: A Design Guide, 2004

10.37. Building Bulletin 93 (BB93)[16] aims to provide a regulatory framework for the acoustic design of schools in support of the Building Regulations. It aims to give supporting advice for the planning and design of schools and to provide a comprehensive guide to the design of new school buildings.

10.38. With regards to planning and site feasibility, the document sets out a number of criteria relating to the selection of a site for use as a school. Although the guidance predominantly relates to internal noise levels, when selecting a site for school use, BB93 recommends that for new schools 60dB $L_{Aeq,30min}$ should be regarded as an upper limit for external noise at the boundary of external premises used for formal and informal outdoor teaching and recreation areas. However, the guidance recognises that it is possible to meet the specified indoor ambient noise levels on sites where external noise levels are as high as 70dB $L_{Aeq,30min}$ but notes that this would require considerable building envelope sound insulation, screening or barriers.

10.39. In addition to the above, BB93 notes that noise levels in unoccupied playgrounds playing fields and other outdoor areas should not exceed 55dB $L_{Aeq,30\ min}$ and there should be at least one area suitable

for outdoor teaching where noise levels are below 50dB $L_{Aeq,30\ min}$. Where this is not possible due to a lack of suitably quiet sites acoustic screening should be used were appropriate to reduce noise levels within these areas as far as is practicable.

10.40. Required guideline internal noise levels for teaching spaces are provided in Table 1.1 of BB93 a selection of which are reproduced as Table 10.4 below.

Table 10.4: BB93 Specification for Internal Noise Levels

Area	Upper Limit Internal Noise Level (dB $L_{Aeq,\ 30mins}$)
Drama Studio, Music Performance / Recital Room, Frank Barnes & SEN cellular teaching / learning spaces	30
Reception, nursery and mainstream cellular teaching learning spaces, study rooms, interview / counselling rooms, medical rooms	35
Resource Areas, Science Labs, D&T and Art Rooms, Indoor Sports Hall, Dance Studio, Gym, Offices*, Staff rooms*	40
Dining Rooms, Atria, Circulation and stairs*, Entrance Lobby*, Changing Rooms*, Learning Street	45
Kitchens*, WCs*	50

* Part E of Schedule 1 to the Building Regulations 2000 (as amended by SI 2002/2871) applies to teaching and learning spaces and is not intended to cover administration and ancillary spaces (see under Scope in the Introduction of this Schedule). For these areas the performance standards are for guidance only.

10.41. In addition, BB93 indicates that maximum noise levels should not regularly exceed 55dB $L_{A01,30min}$ in any spaces used for teaching. BB93 also provides information on the required sound insulation between areas and reverberation properties of the various room uses.

Calculation of Road Traffic Noise, 1988

10.42. The guidance provided within Calculation of Road Traffic (CRTN)[17] provides a method for the calculation of road traffic noise levels, taking into account factors such as distance between the road and receptor, road configuration, ground cover, screening, angle of view, reflection from façades and traffic flow, speed and composition. The noise parameter calculated is the LA10-18 hour and is based on the 18 hour Annual Average Weekday Traffic (18hr-AAWT).

DMRB Volume 11, Section 3, Part 7 Noise and Vibration (2011)

10.43. The Design Manual for Roads and Bridges (DMRB)[18] provides guidance on the assessment of the impacts that road projects may have on levels of noise and vibration. The latest revision provides updated advice on calculating night-time noise levels, determining the extent of the study area and selecting appropriate traffic speed data. DMRB states that where appropriate the standard may be applied to existing roads.

10.44. Within the introduction section it states that “the standard must be used forthwith on all road projects for the assessment of noise and vibration impacts associated with construction, improvements, operation and maintenance associated with motorways and trunk roads.

Assessment Methodology and Significance Criteria

Assessment Methodology

10.45. The assessment of likely significant noise and vibration effects has involved the following:

- identifying potentially sensitive existing and future SRs on and within the surrounding area of the Site;
- establishing the baseline noise and vibration conditions currently existing at the Site and at existing SRs surrounding the Site using existing baseline data by Hyder Consulting Ltd;
- assessing the suitability of the Site for the residential-led Development in terms of the prevailing baseline noise conditions but also having consideration of future potential noise levels from transportation noise sources;
- assessing likely noise and vibration levels generated during the demolition and construction works associated with the Development;
- establishing design aims for plant and services associated with the Development;
- assessing likely noise levels from the completed and operational Development (with reference to current guidance as detailed earlier in this Chapter);
- formulating proposals for mitigation (where appropriate); and
- assessing the likely significance of any residual noise and vibration effects.

Demolition and Construction Noise

10.46. As noted in Chapter 5: The Proposed Development, demolition and construction would occur in phases. Exact timing will be determined dependant on a number of external factors, however it is anticipated that work will commence in 2016, with a completion date of 2031. Noise levels associated with these works have been estimated based upon the plant typically used for such a development and are based on source noise levels contained within BS 5228.

10.47. To assess the likely significant effects of demolition and construction works on existing SRs surrounding the Site the 'ABC Method' provided in BS 5228, has been used. This method defines category threshold values which are determined by the time of day and existing prevailing ambient noise levels. The noise generated by demolition and construction activities is then compared with the prevailing ambient noise level. If the construction noise level exceeds the 'threshold value', a significant effect is deemed to occur.

10.48. Noise threshold levels have been established for the relevant existing SRs based upon the prevailing baseline noise levels. Noise levels associated with the demolition and construction works have been predicted using the calculation methodology detailed within BS 5228. Calculations representing a worst-case scenario over a one-hour period with plant operating at the closest point to the nearest SR and in the absence of mitigation are presented. In practice, noise levels would tend to be lower owing to greater separation distances, screening effects and periods of plant inactivity.

10.49. It has not been possible to determine noise level changes arising from demolition and construction traffic as forecast data is not available at this stage. On this basis a qualitative assessment has been made.

Demolition and Construction Vibration

10.50. There are two aspects of vibration that require consideration:

- Potential vibration effects on people or equipment within buildings; and
- Potential vibration effects on buildings.

10.51. There are currently no British Standards that provide a methodology for predicting levels of vibration from demolition and construction activities other than BS 5228, which relates to percussive, or vibratory, rolling and piling only. As stated in BS 5228, and as generally accepted, the threshold of vibration perception for humans in residential environments is typically in the PPV range 0.15 to 0.3 mm/s at frequencies between 8 Hertz (Hz) and 80Hz with complaints likely at 1 mm/s. Based on historical field measurements undertaken by Waterman EED and having regard to information contained within BS 5228, Table 10.5 details the distance at which certain activities may give rise to 'just perceptible' levels of vibration.

Table 10.5: Distance at which Vibration May Just be Perceptible

Construction Activity	Distance from Activity when Vibration may Just be Perceptible (metres)[1]
Heavy vehicles	5 – 10
Excavation	10 – 15
CFA Piling	15 – 20
Rotary Bored Piling	20 – 30
Vibratory Piling	40 – 60

Note: [1]Distances for perceptibility are only indicative and dependent upon a number of factors, such as the radial distance between source and receiver, ground conditions, and underlying geology.

10.52. It is a widely held belief that if vibration can be felt, then damage to property is inevitable. However, vibration levels at least an order of magnitude higher than those for human disturbance are required to cause damage to buildings. It is generally accepted that building damage would not arise at PPV levels below 12.5 mm/s.

Residential Amenity

10.53. Following the introduction of the NPPF, which supersedes Planning Policy Guidance 24: Planning and Noise[19] there is no specific guidance within England for the assessment of the suitability of a site for noise sensitive development. As such, in order to assess the suitability of the Site for residential development, guidance has been sought from BS 8233, WHO Guidelines and Cherwell's Local Plan Policies ENV 3 and ENV 4, which specify acceptable noise levels for residential Development.

10.54. Baseline noise levels, established by Hyder Consulting Ltd in 2010, together with baseline traffic data (2012) for the local road network, have been used to generate noise contour plots across the Site using the software package CADNA-A. Consideration has also been given to future noise levels. Future noise levels have been predicted based on forecast traffic flows and composition in the opening year of the Development 2031. It is against these predicted future noise levels which comparison has been made. It should be noted that night-time noise levels have been derived using the calculation methodology detailed in document '*Converting the UK traffic noise index $L_{A10,18h}$ to EU noise indices for noise mapping'* by the Transport Research Laboratory[20].

Suitability of the Site for School Development

10.55. An assessment has been undertaken of the suitability of the Site for the proposed Himley Village School based on advice within BB93 and the Land-Use Parameter Plan 4 (**Figure 5.3**) with regard to its location. The noise contour plots, used to assess the suitability of the Site for residential development, have been used to indicate prevailing and future noise levels at the proposed school location. The CADNA-A noise levels have been compared against the BB93 criteria to determine the suitability of the Site for school use.

Fixed Mechanical Plant and Building Services

10.56. The guidance provided in BS 4142 has been used to assess whether noise from fixed plant and building services (including the Energy Centre) would be likely to give rise significant adverse impacts for existing and future SRs.

Playing Fields

10.57. There is no recognised procedure to determine the noise impact from use of sports pitches and playing fields. In this respect the selected assessment procedure for existing SRs is comparative and based on the change in the prevailing ambient noise level. The significance of potential noise impacts on existing SRs has been assessed based upon the predicted change in the prevailing noise level.

10.58. With regard to future SRs, which have no baseline on which to draw comparison, the predicted noise level is compared to the WHO guideline value of 55dB L_{Aeq} and 50dB L_{Aeq} to protect the majority of people from becoming seriously and moderately annoyed respectively.

Non-Residential Uses and Servicing Noise

10.59. Specific details with regards to the end users of the non-residential elements of the development are not known at this stage and would be dependent on the future tenants. As such, a qualitative assessment has been undertaken.

Road Traffic Noise

10.60. The changes in noise levels, attributable to changes in road traffic flows and volumes, resulting from the Himley Village Development have been calculated using traffic data provided by the Applicant's transport consultants (Alan Baxter and Associates LLP) (refer to **Technical Appendix 10.4**). Traffic flow data have been provided for the 'with' and 'without' Development scenarios for the anticipated year of completion of the Himley Village Development (2031) and includes traffic associated with future cumulative schemes (with the exception of other schemes within the NW Bicester Masterplan) within the wider study area (refer to Chapter 19: Cumulative Effects). It should be noted that the traffic data for the year of completion also takes account of the proposed NW Bicester Link Road (Boulevard) which is located to the east of the Site.

10.61. Basic Noise Levels (BNLs) have been calculated for the road links covered by the Transport Assessment (TA) (refer to **Technical Appendix 10.4**). The calculations use the 18-hour Average Annual Weekday Traffic (AAWT) flow, % HGV composition and average vehicle speed for each road link. The BNLs were calculated using the calculation methodology provided in the CRTN. The likely effects of changes in road traffic noise were evaluated by consideration of the estimated changes in $L_{A10,(18\ hour)}$ road traffic noise level on the local highway network as a result of the operation of the completed Development in the year of completion 2031.

Significance Criteria

Demolition and Construction Noise & Vibration

10.62. As outlined above, to assess the significance of effects from demolition and construction noise on existing SRs, 'The ABC Method' provided in BS 5228-1:2009 was used. With regards to vibration, assessment has been made against the criteria for human perception as presented in BS 5228.

10.63. The criteria in Table 10.6 were adopted to provide transparency in the definition of the significance of identified effects. Full details are provided in **Technical Appendix 10.4**.

Table 10.6: Significance Criteria for the Assessment of Demolition and Construction Noise and Vibration

Significance	Level Above Threshold Value dB(A)	Level of Vibration	Definition
Insignificant	≤ 0 to 2.9	≤ 0.14mm/s	The effect is not of concern
Adverse effect of minor significance	3.0 to 4.9	>0.14mm/s to <1mm/s	The effect is undesirable but of limited concern
Adverse effect of moderate significance	5.0 to 9.9	1mm/s to 3mm/s	The effect gives rise to some concern but is likely to be tolerable depending on scale and duration
Adverse effect of substantial significance	≥10	>3mm/s	The effect gives rise to serious concern and it should be considered unacceptable

Residential Amenity

10.64. The assessment of residential amenity is not a direct effect of the Himley Village Development but rather a product of the prevailing noise environment, although it is recognised that the noise environment could be changed by the Himley Village Development. In view of this it is not appropriate to attach significance criteria to it. Rather, the assessment of residential amenity has been undertaken in line with relevant and credited guidance on noise, notably, BS 8233: 2014 and WHO Guidelines (a widely accepted approach). As previously noted, consideration has also been given to the specific noise policies set out in CDC's Local Plan.

Suitability of the Site for Residential and School Development

10.65. Similar to the assessment of residential amenity, assessment of the suitability of the Site for School use is not a direct environmental effect of the Development itself. Assessment has therefore been undertaken by comparison of the predicted noise levels at the proposed school location with those recommended within BB93.

Fixed Mechanical Plant & Building Services

10.66. When assessing the significance of likely effects from fixed plant (including the Energy Centre) and building service noise on SRs, the criteria presented in Table 10.7 have been used. The criteria recommended by Waterman to safeguard residential amenity is that noise from new plant is controlled to at least 5dB below the existing background noise level. This will need however to be agreed with CDC.

Table 10.7: Significance Criteria for Building Services Plant Noise Assessment

Significance	Difference between Plant Rating and Background Levels (dB(A))
Insignificant	≤ -10
Adverse effect of minor significance	> -10 to 0
Adverse effect of moderate significance	>0 to ≤5
Adverse effect of substantial significance	>5

Playing Fields

10.67. There is no recognised procedure to determine the noise impact from use of sports pitches and playing fields. In this respect the selected assessment procedure for existing SRs is comparative and based on the change in the prevailing ambient noise level. The significance of potential noise impacts on existing SRs has been assessed based upon the significance criteria presented as Table 10.8.

Table 10.8: Significance of Noise Level Change

Significance	Change in Noise Level dB(A)	Subjective Response
Insignificant	<3.0	Imperceptible
Minor, adverse	3.0 to 4.9	Perceptible
Moderate, adverse	5.0 to 9.9	Up to a doubling of loudness
Substantial, adverse	≥10	Over a doubling of loudness

10.68. With regard to future SRs, which have no baseline on which to draw comparison, the predicted noise level is compared to the WHO guideline value of 55dB L_{Aeq} and 50dB L_{Aeq} to protect the majority of people from becoming seriously and moderately annoyed respectively.

Non-Residential Uses and Servicing Noise

10.69. In the absence of guidelines for assessing the effects of noise break out from the proposed commercial uses of the Development, together with servicing noise upon SRs, the significance criteria in Table 10.9 have been used, in line with those commonly used by acoustic professionals.

Table 10.9: Significance Criteria for Non-Residential and Servicing Noise Assessment

Significance	Change in Prevailing Noise Level dB(A)	Definition
Insignificant	< 3.0	The effect is not of concern.
Adverse effect of minor significance	3.0 to 4.9	The effect is undesirable but of limited concern.
Adverse effect of moderate significance	5.0 to 9.9	The effect gives rise to some concern but is likely to be tolerable depending on scale and duration.
Adverse effect of substantial significance	> 10	The effect gives rise to serious concern and it should be considered unacceptable.

Road Traffic Noise

10.70. Noise effects arising from road traffic have been assessed in accordance with the significance criteria detailed in Table 10.10. These significance criteria are widely used by acoustic practitioners and are based on the subjective response of people to noise e.g. a noise level change of 3dB(A) is generally imperceptible whereas a noise level change of 10dB(A) is generally perceived as a doubling or halving of the noise level.

Table 10.10: Significance Criteria for Road Traffic Noise Assessment

Significance	Change or Difference in Noise Level, dB(A)
Insignificant	0 to 0.9
Adverse effect of minor significance	1.0 to 2.9
Adverse effect of moderate significance	3.0 to 4.9
Adverse effect of substantial significance	> 5

Baseline Conditions

Sensitive Receptors

10.71. The area surrounding the Site is predominantly agricultural in nature. Existing SRs have been identified (refer to Table 10.11 and **Figure 10.1**), based upon the locations which have the potential to experience significant noise and vibration effects due to the demolition and construction works and / or the operation of the completed Development.

Table 10.11: Existing Sensitive Receptors

SR Number	Type of Receptor	Address / Name	Approximate Distance from Site Boundary
SR A	Residential	Lovelynch House	10m south
SR B	Residential	Gowell Farm	95m east
SR C	Residential	Aldershot Farm	140m north
SR D	Residential	Himley Farm	Within site boundary

Baseline Noise Monitoring

10.72. The baseline noise survey data used by Hyder Consulting Ltd in the ESs that accompanied the North West Bicester Outline Planning Applications 1 and 2, was used for assessment of the proposed Himley Village Development.

10.73. Hyder Consulting Ltd conducted the baseline noise survey over a typical 24 hour period between the 13th and 14th October 2010. Noise monitoring locations were selected to be representative of both existing and proposed SRs. Unattended sound level meters were installed, supplemented with two attended short term measurements representative of key roads affecting the noise climate at this location. The short-term attended noise measurements were undertaken following the shortened measurement method outlined in CRTN. Vibration monitoring was also undertaken in proximity to the railway line located approximately 315 m to the north of the Site boundary.

10.74. The dominant noise source affecting the Site was noted by Hyder Consultancy Ltd as being road traffic noise.

10.75. The noise monitoring locations are shown on **Figure 10.1** with a summary of the measured noise levels extracted from Appendix 9 of the NW Bicester Application 2, South of Railway ES, presented as Table 10.12. The full monitoring results are presented in **Technical Appendix 10.2**.

Table 10.12: Baseline Noise Monitoring Results

Date	Period	Duration	$L_{Aeq,T}$ dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB		$L_{AFmax,5min}$ dB
			Ave[1]	Ave[2]	Range	Ave[2]	90th Percentile[3]
LTN1	Day	07:00-23:00	68	72	33-64	49	83
	Night	23:00-07:00	62	57	20-52	30	82
LTN2	Day	07:00-23:00	57	59	32-52	47	68
	Night	23:00-07:00	52	47	22-51	34	67
LTN3	Day	07:00-23:00	50	49	30-47	41	74
	Night	23:00-07:00	47	41	24-47	33	73
LTN4	Day	07:00-23:00	61	49	37-49	44	90
	Night	23:00-07:00	55	45	30-48	39	87
LTN5	Day	07:00-23:00	65	69	36-58	47	82
	Night	23:00-07:00	57	47	25-49	33	78
LTN6	Day	07:00-23:00	65	69	58-53	45	85
	Night	23:00-07:00	58	54	41-55	46	81
STN1	Day	14:50-17:50	84	86	80-83	81	89
	Night	02:11-03:11	74	78	54-57	56	86
STN2	Day	10:00-13:36	58	63	37-49	41	77
	Night	02:02-	51	42	34-66	41	81

Notes:
[1] Logarithmic average over the day / evening / night survey periods.
[2] Arithmetic average over the day / evening / night survey periods.
[3] The 90th percentile L_{AFmax} value (equivalent to the 10th highest measured L_{AFmax} level) has been used in the assessment and is considered representative of typical L_{AFmax} levels experienced.
All figures rounded to nearest whole decibel.

10.76. Due to the distance between the Site and the railway line, approximately 315 metres, vibration has not been considered when assessing the suitability of the Site for residential use.

Potential Effects

Demolition and Construction

10.77. The calculated worst-case, unmitigated noise levels associated with the demolition and construction works are presented in **Technical Appendix 10.3**. A summary of the results and the associated significance of effects for the SRs relevant to this assessment are presented as Table 10.13 and Table 10.14 respectively. At present, it is not anticipated that piling will be used for construction of any of the building elements although assessment of this is presented for information purposes.

10.78. During the development, Himley Farm bungalow and the buildings to the south and west of Himley Farm are to be demolished. Himley Farm bungalow is located a minimum of 350m from the nearest SR, and therefore noise associated with demolition of this building is predicted to be **insignificant**. With regard to the buildings to the south and west of Himley Farm, due to their proximity to Himley Farm, the potential effects of demolition would be **substantial adverse**.

10.79. With regard to construction, for the closest sensitive receptors (SR-A and SR-D), works have been assumed to be undertaken at a minimum distance of 15m from the properties.

Table 10.13: Summary of Predicted Noise Levels During the Construction Works

SR (refer to Figure 10.1)	Description	Activity and Noise Level (dB(A))			
		Earth Moving	Piling, Excavation and Sub-structure works	Concreting	Road Paving
SR – A	Lovelynch House	81	81	82	76
SR - B	Gowell Farm	65	65	66	60
SR - C	Aldershot Farm	63	62	62	57
SR - D	Himley Farm	81	81	82	76

Table 10.14: Significance of Noise Effects During the Construction Works

SR (refer to Figure 10.1)	Activity and Noise Level (dB(A))			
	Earth Moving	Piling, Excavation and Sub-structure works	Concreting	Road Paving
SR A	**Temporary**, **short-term**, **local** and of **substantial adverse significance**	**Temporary**, **short-term**, **local** and of **substantial adverse significance**	**Temporary**, **short-term**, **local** and of **substantial adverse significance**	**Temporary**, **short-term**, **local** and of **substantial adverse significance**

SR (refer to Figure 10.1)	Activity and Noise Level (dB(A))			
	Earth Moving	Piling, Excavation and Sub-structure works	Concreting	Road Paving
SR B	**Temporary**, **short-term**, **local** and of **minor adverse significance**	**Temporary**, **short-term**, **local** and of **minor adverse significance**	**Temporary**, **short-term**, **local** and of **minor adverse significance**	**Insignificant**
SR C	**Insignificant**	**Insignificant**	**Insignificant**	**Insignificant**
SR D	**Temporary**, **short-term**, **local** and of **substantial adverse significance**	**Temporary**, **short-term**, **local** and of **substantial adverse significance**	**Temporary**, **short-term**, **local** and of **substantial adverse significance**	**Temporary**, **short-term**, **local** and of **substantial adverse significance**

10.80. Due to distance attenuation, insignificant effects are predicted at SR C with up to minor adverse at SR B. Under a worst-case scenario, when works are being undertaken at the shortest distance to SR A and SR D with no mitigation, substantial adverse effects are predicted for all construction phases, with the exception of demolition where substantial adverse effects are only predicted at Himley Farm.

Demolition and Construction Traffic Noise

10.81. Construction vehicular access would initially be from the south via the existing Himley Farm track off Middleton Stoney Road (refer to Chapter 5: The Proposed Development). As the development progresses, construction vehicles will access the Site via the new east west link roads which would connect into the new NW Bicester Link Road (Boulevard).

10.82. There is the possibility of adverse effects to occur from construction vehicles but it is not possible to quantify them at this stage as the number of additional HGV vehicles on the local road network has not yet been forecast. However, taking account of current traffic movement on Middleton Stoney Road that would be used to access the Site from the south, 6195 AAWT-18h (421 HGVs), it is considered that the likely effect of construction vehicles entering and egressing the Site to noise levels would in the worst-case, give rise to a **temporary**, **short-term**, **local** effect of **moderate adverse** significance at the sensitive receptor locations along the routes used by the construction vehicles during the peak construction period reducing to **temporary**, **short-term**, **local** and of **minor adverse** significance at all other times.

Demolition and Construction Vibration

10.83. As noted earlier in this Chapter and consistent with the information provided within Chapter 5: The Proposed Development, the construction of the Himley Village Development is not anticipated to require the use of CFA piling. However, there is potential for activities other than piling to give rise to perceptible vibration. With reference to Table 10.5, it is considered that in the absence of mitigation, there may be the potential for some temporary, short-term, local effects of **minor adverse** significance, particularly during excavation or earth moving operations that take place within 20m of any SR. At this distance, only SR A and SR D would be subject to perceptible vibration

effects. The vibration levels are however unlikely to be of the level to cause cosmetic damage, due to the type of works (no piling) and the distances involved.

Completed Development

Residential Amenity

10.84. A three-dimensional CADNA/A noise model has been produced to predict the prevailing and future levels of noise across the Site. The noise model has utilised the traffic data supplied by the applicants transport consultants (Alan Baxter & Associates LLP) to calibrate its output.

Prevailing Baseline Noise Levels

10.85. **Figure 10.2** presents the prevailing daytime noise levels across the Site. The majority of the Site is currently exposed to daytime noise level of ≤55dB $L_{Aeq,16h}$ which WHO recommend to protect the majority of people from serious annoyance. Generally where noise levels are ≤55dB $L_{Aeq,16h}$, then standard thermal double glazing in combination with trickle ventilation should allow BS8322 internal ambient noise levels (IANL) to be achieved. Where façade noise levels are ≤50dB $L_{Aeq,16h}$, then daytime IANLs of 8233 are likely to be satisfied with windows open. Once the Site is built-out, this is likely to be applicable to a large proportion of the Site with the exception of residential buildings located within the southern and western areas of the Site.

10.86. **Figure 10.3** presents the prevailing night-time noise levels across the Site. The majority of the Site is currently exposed to night-time noise levels of ≤45dB $L_{Aeq,8h}$. Night-time noise levels of ≤45dB $L_{Aeq,8h}$ indicates that the BS8233 internal ambient noise levels (IANLs) are likely to be satisfied with windows open.

10.87. Indicative night-time L_{Amax} values have been determined based on the differential between the baseline L_{Aeq} and L_{Amax} values, having regard to the BNL values and attenuation with distance. WHO recommend that external L_{Amax} noise levels should not exceed 60dB L_{Amax}, which would give an internal level of 45dB L_{Amax} with windows open, to safeguard restorative sleep. Based on an un-occupied Site the stand-off distance to 60dB L_{Amax} from the B4030 to the south of the Site is approximately 155 metres. When the Site is built-out then buildings located adjacent to Site boundaries would act to screen noise from the surrounding transportation noise sources thereby reducing noise levels further into the Site and reducing stand-off distances to the daytime 55dB $L_{Aeq,16h}$ contour and night-time 45dB $L_{Aeq,8h}$ contour and 60dB L_{Amax} value.

10.88. For the remaining areas of the Site, with the exception of a narrow strip of land directly adjacent to the B4030 to the south (with a depth 35 metres during the daytime period and 25 metres during the night-time period), the requirements of CDC's Local Plan Policy ENV 3 iii are satisfied in that daytime noise levels range from 55-63 dB $L_{Aeq,16h}$ and night-time noise levels range from 45-57dB $L_{Aeq,8h}$.

Residential Amenity – Future Noise Levels

10.89. Given that the Development is likely to cause changes to the surrounding road network and hence noise emissions, future noise levels that residents of the Himley Village Development may be exposed to have been considered. Further to this, when the Development is built-out (2031) the proposed 'Link Road' located to the east of the Himley Village Development is located closer to the Site boundary than the existing Howes Road. The daytime and night-time future noise contour plots are shown as **Figure 10.4** and **Figure 10.5** respectively.

10.90. During the daytime period the majority of the Site is predicted to be exposed to noise levels of ≤55dB $L_{Aeq,16h,}$ although this is area is reduced compared to the baseline (prevailing) scenario. With the exception of a strip of land adjacent to the B4030 of 45 metres depth, the remainder of the Site is predicted to be exposed to noise levels between 55-63dB $L_{Aeq,16h}$ thereby satisfying Policy ENV 3 iii of the CDC Local Plan.

10.91. During the night-time period, part of the northern part of the Site is predicted to be exposed to noise levels of ≤45dB $L_{Aeq,8h}$. This area is much smaller when compared with the baseline scenario. At night-time the majority of the Site is predicted to be exposed to noise levels of 45-57dB $L_{Aeq,8h}$ which satisfies Policy ENV 3 iii of the CDC Local Plan, with the exception of a strip of land approximately 35 metres depth adjacent to the B4030 which is predicted to be exposed to noise levels between 57-66dB $L_{Aeq,8h}$.

10.92. Indicative night-time L_{Amax} values have been determined based on the differential between the baseline L_{Aeq} and L_{Amax} values, having regard to the BNL values and attenuation with distance. Based on an un-occupied Site the stand-off distance to 60dB L_{Amax} from the B4030 to the south of the Site is approximately 205 metres.

10.93. When the Site is built-out then buildings located adjacent to Site boundaries would act to screen noise from the surrounding transportation noise sources thereby reducing noise levels further into the Site and reducing stand-off distances to the daytime 55dB $L_{Aeq,16h}$ contour and night-time 45dB $L_{Aeq,8h}$ contour and 60dB L_{Amax} value.

10.94. Essentially, in order for the BS8233 IANLs to be achieved with windows open, façade noise level during the daytime period should be ≤50dB $L_{Aeq,16h}$ with night-time values of ≤45dB $L_{Aeq,8h}$ and ≤60dB L_{Amax}. Residential buildings satisfying this criteria would not require any specific mitigation.

10.95. Residential buildings located at the southern, eastern and western Site boundaries are likely to exceed BS8233 IANLs with windows open. Mitigation in the form of suitable glazing and ventilation strategy is therefore likely to be required. Mitigation is discussed later within this report.

Site Suitability for School Use

10.96. The suitability of the Site for School use has been inferred from the future potential 2031 daytime noise contours illustrated in **Figure 10.4** and Land-Use Parameter Plan 4 (**Figure 5.3**). It is recognised that this is indicative as the contours are for an un-occupied Site and therefore represent worst-case with regard to potential external noise levels.

10.97. The predicted noise levels at the location of the school are ≤55dB $L_{Aeq,16h}$. When the Site is built-out the noise levels within this area should be even lower, due to screening afforded by the intervening buildings to the surrounding road network. Given the predicted noise levels for the un-occupied site are ≤55dB $L_{Aeq,16h}$, then this should be suitable for school use. This is made on the basis of advice contained within BB93 which recommends that for new schools 60dB $L_{Aeq,30min}$ should be regarded as an upper limit for external noise at the boundary of external premises used for formal and informal outdoor teaching and recreation areas.

Fixed Mechanical Plant and Building Services

10.98. As described within Chapter 5: The Proposed Development, in addition to residential elements, the development allows for a mix of other use types, including education, office and commercial uses. Any plant associated with such uses has the potential to cause disturbance from noise.

10.99. At this stage in the design, the exact make and model of plant is unknown. Accordingly, it is not possible to undertake noise predictions to determine the significance of the likely effects from the

operation of such plant. Consequently, a plant noise emission limit has been set assuming that all plant would operate continuously throughout the year.

10.100. In view of the above, and based upon the guidance given in BS 4142, noise limits applicable to new mechanical plant associated with the Himley Village Development (including the Energy Centre) and building services have been specified and summarised in Table 10.15.

Table 10.15: Plant Noise Limits at Nearest SRs

Location	Period	Minimum Measured $L_{A90,T}$	Plant Noise Emission Limit $(L_{Ar,Tr})^{1+2}$
NSR A	Daytime	45	35
	Night-time	46	36
NSR B	Daytime	47	37
	Night-time	33	≤33[3]
NSR C	Daytime	47	37
	Night-time	33	≤33[3]
NSR D	Daytime	47	37
	Night-time	33	≤33[3]

Notes: [1] If there is determined to be tonal or intermittent content emitting from plant then an acoustic feature correction should be applied in accordance with BS4142:2014
[2] Noise limits apply at a position 1m from the façade of the nearest noise sensitive properties and include the total contribution.
3 Low minimum background noise level. Noise limit proposed ≤ to LA90 minimum value.

10.101. At this stage in the design, plant specification would be sufficiently flexible to ensure that suitably quiet, non-tonal plant can be procured and / or mitigation options such as screening (e.g. acoustic louvres) could be installed as necessary to ensure that the Plant noise criteria set out in Table 10.15 are met. Provided the noise limits in Table 10.15 are satisfied, **insignificant** effects are predicted.

10.102. With regard to residential uses which form part of the Development, it is recommended that plant noise levels should not exceed 40dB $L_{Ar,Tr}$ at 1 metre from the façade of the nearest property. This would result in an IANL of 25-30dB L_{Aeq}, thereby satisfying the BS8233 night-time criteria with windows open.

Playing Fields/Sports Pitches

10.103. Noise from the proposed playing fields/sports pitches has the potential to give rise to adverse noise effects on the surrounding land-uses. This assessment is based on their usage being predominantly during the daytime with potential evening use.

10.104. Noise levels at the surrounding areas, which may be residential, have been predicted based on source noise measurements taken by Waterman during a football match on a Multi-Use Games Area (MUGA) and the use of CADNA-A noise modelling software.

10.105. Noise measurements were taken at both the centre line and behind the goal area. Measurements behind the goal area were higher and have therefore been used calibrate the noise model for each sports pitch area. The key noise sources were noted to be players calling and shouting to each other and impact noise associated with the ball hitting the boundary fence. The average source noise measurements are presented in Table 10.16.

Table 10.16: Measured Noise Levels of Football Match on MUGA

Description	Noise Level dB LAeq,90-minute	Maximum Noise Level dB LAF,max
Centre Line (average)	66	94
Behind Goal (average)	69	92

10.106. **Figure 10.6** illustrates the predicted noise contour plot resultant from usage of all sports pitches concurrently. The assessment is based on one football pitch adjacent to the school and five within the playing fields area located at the northern part of the Site, as illustrated on the Landscape Parameter Plan (**Figure 5.2**). These number of football pitches were assumed based on the available area. Within the immediate vicinity of the sports pitches noise levels are likely to be above 55dB L_{Aeq}. However, noise levels from this usage drop to ≤55dB L_{Aeq} within a relatively short distance from the pitch, approximately within 35 to 40 metres. Residential dwellings located at distance of less than 35 metres from sports pitches are therefore likely to be exposed to noise levels above 55dB L_{Aeq} when the sports pitches are in use. On this preliminary assessment, noise effects from use of playing fields/sport pitches are likely to range from **insignificant** to **minor adverse**. This will, however, ultimately be dependent on the final layout of the residential buildings.

Non-Residential Uses and Servicing Noise

10.107. The Himley Village Development would include commercial use elements, including but not limited to a veterinary surgery, hotel, retail and office uses. At this stage in the development, the details of fit out servicing associated with these elements has not been established. Noise break out from the structural elements is expected to be **insignificant** due to the façade insulation that would be provided by the buildings. This would attenuate internally generated noise to below existing ambient noise levels.

10.108. Standard controls, secured through planning conditions relating to opening hours and use of outside space would be used to minimise the likely noise effects. This would also act to mitigate against potential noise effects from servicing noise. Therefore, noise effects associated with non-residential uses and servicing noise is expected to be **insignificant.**

Road Traffic Noise

10.109. Based upon traffic data provided by the Applicant's transport consultant (ABA), the likely change in road traffic noise on the local road network due to traffic generated by the completed and operational Development is presented in Table 10.17. Full details of the road traffic noise assessment are provided within **Technical Appendix 10.4**. Details of traffic flows on the M40 were provided separately by Alan Baxter & Associates LLP.

Table 10.17: Predicted Change in Road Traffic Basic Noise Level (BNL), dB $L_{Aeq,18hr}$

Link Number	Road Link	Difference in dB $L_{A10,18hr}$ BNL (Base + Development) - (Base)		
		2013 No Development (Base)	2031 With Development (Base + Development)	Change
1	A41 northbound, N of M40 J9	74.6	74.6	0.0
2	A41 Oxford Rd, S of A41 junction	73.7	73.7	0.0
3	Vendee Drive, W of A41 junction	78.9	79.0	0.1
4	A41, N of Pingle Drive	72.1	72.3	0.2
5	Middleton Stoney Rd, W of Kings End	74.8	74.9	0.1
6	Middleton Stoney Rd, W of Kings End	71.6	71.7	0.1
7	Middleton Stoney Rd, W of Howes Lane	69.0	70.6	1.6
8	Howes Lane, N of Middleton Stoney Rd	71.9	71.6	-0.2
9	Howes Lane, E of Shakespeare Drive	71.8	71.9	0.1
10	Lords Lane, E of Bucknell Road	72.8	72.6	-0.2
11	Lords Lane, W of Banbury Road	72.8	72.6	-0.2
12	Bucknell Road, N of Lords Lane	62.9	62.1	-0.7
13	Bucknell Road, S of Lords Lane	66.1	66.3	0.2
14	Banbury Road, N of Lords Lane	69.7	69.9	0.2
15	A4095 E of Banbury Road	74.6	74.7	0.0
16	Banbury Road, S of A4095	66.8	67.2	0.4
17	Buckingham Road, S of Skimmingdish Lane	68.5	68.8	0.3
18	Queens Avenue, S of Bucknell Road	70.6	70.8	0.1
19	A41 E of A41 Oxford Road	72.9	73.0	0.1
20	A4421 Neunkirchen Way	70.3	70.4	0.1
21	A41, E of London Road roundabout	70.1	70.1	0.0
22	A4421, E of Skimmingdish Lane	71.1	71.3	0.1
23	Shakespeare Drive, S of Howes Lane	58.0	59.2	1.2
24	M40 J10 northbound off slip road	71.9	72.3	0.4
25	Ardley Road (E of B430)	69.2	69.4	0.2
26	M40 J10 southbound on slip road (from A43)	69.9	69.9	0.0
27	B430 M40 over bridge	76.6	76.7	0.1
28	A4095 N of Chesterton	71.4	71.5	0.1
29	Shakespeare Drive, E of Middleton Stoney Road	67.1	67.4	0.3
30	The Approach, W of Bucknell Road	64.1	64.8	0.7
31	A41 East of Pioneer Road	72.3	72.4	0.0
32	Bicester Road, E of A4421 junction	64.5	64.5	0.0
33	A4421 N of Skimmingdish Lane	69.8	69.9	0.1
34	Fringford Road, N of Caversfield	59.1	59.1	0.0
35	B4100 Banbury Road, N of Bainton Road	74.4	74.5	0.1
36	Ardley Road, N of Bucknell	69.2	69.4	0.2

Link Number	Road Link	Difference in dB $L_{A10,18hr}$ BNL (Base + Development) - (Base)		
		2013 No Development (Base)	2031 With Development (Base + Development)	Change
37	Middleton Road, W of Bucknell	57.6	63.9	6.3
38	B4030 Middleton Stoney Road, NW of NWB	70.4	71.0	0.6
39	Green Lane, W of Chesterton	70.4	70.4	0.1
40	Wendlebury Road, E of M40	68.2	68.3	0.1
41	M40 Northbound S of J10/N of J9	83.8	83.8	0.0
42	M40 Southbound S of J10/N of J9	83.8	83.8	0.0
43	M40 Northbound N of J10	83.8	83.8	0.0
44	M40 Southbound N of J10	83.8	83.8	0.0

10.110. The results in Table 10.17 indicate that for the majority of traffic links, noise increases as a result of the Himley Village Development are predicted to be less than 1dB, and are therefore **insignificant**. Two road links are forecast to have noise increases of 1.2 and 1.6 dB, resulting in an **adverse** impact of **minor** significance. A gradual increase of less than 2dB is, however unlikely to be perceptible and is therefore not a cause for concern.

10.111. Traffic noise along link 37, Middleton Road west of Bucknell, is predicted to increase by up to 6.3dB due to the forecast increase in traffic flow with the Himley Village Development compared to without the Development. This represents an **adverse** effect of **substantial** significance, which is likely to affect the two residential receptors located adjacent to this road link. However, although a significant change to existing traffic flows is predicted, the overall flow remains low (1339 vehicles) and consequently the overall noise level generated by vehicles along this link of 63.9dB $L_{A10,18\ hour}$ is also relatively low, when compared to existing noise levels experienced adjacent to this link of approximately 70dB $L_{A10,18\text{-}hour}$. Therefore, it is likely that in reality the potential effect would be somewhat tempered. In addition, as set out in Chapter 8: Transport, the traffic model may be over-predicting traffic movements along this link. However, in order to discourage use of this link, traffic calming measures are proposed in the village as part of the wider NW Bicester transport strategy.

Mitigation Measures and Residual Effects

Demolition and Construction

10.112. As detailed in Chapter 5: The Proposed Development, a Construction Environmental Management Plan (CEMP) would be formulated in consultation with CDC and in accordance with other relevant guidance. The CEMP would set out a range of mitigation measures and environmental controls which would include for the management of demolition and construction related noise and vibration. The CEMP would set out suitable plant and working methods which would be agreed with CDC prior to commencement of works. Monitoring of noise and / or vibration would also be undertaken, where necessary. Works would be limited to the specified hours (refer to Chapter 5: The Proposed Development) and would be subject to agreement with CDC. Control measures to minimise noise would include:

- Use of hoarding to the required height and density appropriate to the noise sensitivity of the Site;
- Use of modern, quiet and well maintained machinery such as electric powered plant, where possible, and hoists using the Variable Frequency Converter drive system;

- Vehicles and mechanical plant used for the works would be fitted with exhaust silencers, which would be maintained in good and efficient working order and operated in such a manner as to minimise noise emissions in accordance with the relevant EU / UK noise limits applicable to that equipment or no noisier than would be expected based the noise levels quoted in BS 5228. Plant should be properly maintained and operated in accordance with manufacturers' recommendations. Electrically powered plant would be preferred, where practicable, to mechanically powered alternatives;
- Noise and vibration monitoring on the Site, where necessary, to enable different working methods to be adopted, as appropriate, to maintain suitable noise levels at sensitive receptors;
- Liaison with the occupants of adjacent properties potentially most affected by noise or vibration from activities on the Site. The occupants would be informed of the nature of the works, proposed hours of work and anticipated duration prior to the commencement of activities; and
- Establish noise and vibration target levels (a Section 61 agreement under the Control of Pollution Act 1974[21] (COPA)) to reduce noise and vibration to a minimum in accordance with best practicable means, as defined in Section 72 of COPA.
- All delivery and unloading would be undertaken within the Site, rather than on adjacent roads. In addition, all companies / suppliers requiring access to the Site would be allocated a specific arrival time, where possible, to minimise travel / waiting time and traffic congestion around the Site.

10.113. With regards to traffic management during the demolition and construction works, as detailed in **Chapter 8: Transport**, all traffic logistics would be agreed between CDC, contractors and the Applicant. Such measures would be set out within a Construction Traffic Management Plan. Consideration would also be given to the avoidance (or limited) use of road during peak hours, where practicable.

Completed Development

Residential Amenity

10.114. Based on prevailing and future predicted noise levels across the Site, mitigation is only likely to be required at the Site boundaries within the vicinity of the surrounding road noise sources in order to provide suitable residential amenity. The provision of suitable glazing in combination with an appropriate ventilation strategy would allow the IANLs of BS8233 to be satisfied.

10.115. The type of mitigation required would be developed at detailed design stage when stand-off distances from the southern boundary adjacent to the B4030 are known. The type of mitigation required in order to provide suitable residential amenity will also be dependent on the adjacent land uses to the eastern, western and northern boundaries. The additional screening afforded by intervening buildings in adjacent development areas may act to reduce the required mitigation for buildings on these boundaries.

10.116. Depending on the stand-off distance from the southern Site boundary and the B4030, standard double glazing of the appropriate specification in combination with passive attenuating ventilation should provide appropriate sound reduction.

10.117. With regard to external amenity areas within the vicinity of the Site boundaries, mitigation could comprise:

- Strategically locating external amenity areas at the rear of buildings, thereby benefiting from screening afforded by the building itself;

- Provision of acoustic grade garden fencing to offer localised reduction in noise levels; and
- Development of soundscapes, such as water features to mask the noise of the prevailing road traffic noise.

Suitability for School Development

10.118. Predicted daytime noise levels at the proposed Himley Village School are ≤55dB $L_{Aeq,16h}$ and are therefore suitable for this use.

Fixed Mechanical Plant and Building Services

10.119. Mitigation for building services and fixed plant include the following measures:

- Procurement of 'quiet' non-tonal plant;
- Locate plant and air vents away from SRs;
- Acoustic enclosures;
- In-duct attenuators;
- Acoustic louvres; and
- Isolation of plant from building structures.

Playing Fields/Sports Pitches

10.120. Mitigation for playing fields/sports pitches to reduce the potential impact from this source is to ensure residential areas are set-back thereby safeguarding the surrounding residential amenity. Preliminary indications based on football usage are that a set-back of 35 to 40 metres should allow noise levels of ≤55dB L_{Aeq} to be achieved, which according to WHO is the noise level to protect the majority of the population from serious annoyance. This will however indicative and will vary with sports type.

Should there be a requirement to locate residential dwellings in close proximity to playing fields/sports pitches then additional mitigation measures such as inclusion of a boundary fence/earth bunds or restriction of hours of usages, may be required.

Non-Residential Uses and Servicing Noise

10.121. With regard to noise break out from the non-residential land uses of the Himley Village Development, the final façades should be designed to restrict external noise level to 5dB(A) below the prevailing ambient noise level.

10.122. A Delivery and Servicing Management Plan should be implemented for those non-residential land uses where significant servicing is required to ensure that the potential effects of servicing and delivery noise is minimised. The Plan should include:

- Managing the deliveries (including by courier) and servicing requirements of future occupants;
- Hours of operation of the Service Bays; and
- Refuse and recycling collections.

Road Traffic Noise

10.123. As noted in Chapter 8: Transport, a Travel Plan for the Himley Village Development would be produced to promote sustainable forms and transport and aim to reduce the number of car trips associated with the Himley Village Development.

Residual Effects

Demolition and Construction Noise

10.124. Accounting for the implementation of mitigation, as summarised above and based on guidance within BS8233, it should afford 10dB(A) reduction. The likely residual noise levels associated with demolition of the buildings to the south and west of Himley Farm are a short term, temporary effect of **moderate adverse** significance. The likely residual noise levels associated with construction works are presented in **Technical Appendix 10.3** and summarised in Table 10.18 with significance of residual effects presented as Table 10.19.

Table 10.18: Summary of Predicted Likely Residual Construction Noise Levels (Mitigation)

SR (refer to Figure 10.1)	Description	Activity and Noise Level (dB(A))			
		Earth Moving	Piling, Excavation and Sub-structure works	Concreting	Road Paving
SR – A	Lovelynch House	71	71	72	66
SR - B	Gowell Farm	55	55	56	50
SR – C	Aldershot Farm	53	52	52	47
SR - D	Himley Farm	71	71	72	66

Table 10.19: Significance of Likely Residual Construction Noise Effects (Mitigation)

SR (refer to Figure 10.1)	Activity and Noise Level (dB(A))			
	Earth Moving	Piling, Excavation and Sub-structure works	Concreting	Road Paving
SR A	**Temporary**, **short-term**, **local** and of **moderate adverse significance**	**Temporary**, **short-term**, **local** and of **moderate adverse significance**	**Temporary, short-term, local and of moderate adverse significance**	**Insignificant**
SR B	**Insignificant**	**Insignificant**	**Insignificant**	**Insignificant**
SR C	**Insignificant**	**Insignificant**	**Insignificant**	**Insignificant**
SR D	**Temporary**, **short-term**, **local** and of **moderate adverse significance**	**Temporary**, **short-term**, **local** and of **moderate adverse significance**	**Temporary, short-term, local and of moderate adverse significance**	**Insignificant**

10.125. With mitigation residual effects are predicted to be **insignificant** at SR-B and SR-C with **moderate** adverse effects at SR-A and SR-D.

10.126. With regard to construction traffic, following implementation of a Construction Traffic Management Plan, residual effects are likely to be insignificant, temporary, local **minor adverse** at worst.

Demolition and Construction Vibration

10.127. Following the implementation of appropriate mitigation measures, as detailed above, construction-generated vibration would have **insignificant** effects on SRs adjacent to the Site.

Completed Development

Residential Amenity

10.128. With mitigation, the majority of areas would be suitable for the proposed residential uses. Although amenity areas within the vicinity of the B4030 are likely to exceed the WHO noise criteria of 55dB $L_{Aeq,16h}$ in the 2031 scenario, it should be noted that exceeding the WHO criteria may not necessarily preclude development, as stated in BS 8322:2014:

"In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".

10.129. It should also be noted that many of the uses along Middleton Stoney Road would comprise of non-residential uses and therefore less noise sensitive.

Suitability for School Development

10.130. Predicted daytime noise levels at the proposed Himley Village School are ≤55dB $L_{Aeq,16h}$ and are therefore suitable for this use.

10.131. In order to satisfy BB93 required IANLs with windows open, school façade noise levels should be ≤45-50dB L_{Aeq}. Noise levels within outdoor teaching areas should be ≤50dB L_{Aeq}. These should be easily achievable for the area proposed for school use in the Land Use Parameter Plan (**Figure 5.3**).

Fixed Mechanical Plant and Building Services

10.132. Provided appropriate mitigation measures are implemented to achieve the proposed noise limits set out in Table 10.15, the likely residual noise effects of fixed mechanical plant and building services associated with the Himley Village Development are likely to be **insignificant**. It is considered that the achievement of the proposed noise limits would be secured by means of an appropriately worded planning condition.

Playing Fields/Sports Pitches

10.133. Assuming appropriate setbacks or mitigation in the form of a boundary fence/earth bunds or restriction of hours of usage residual effects range from **insignifican**t to **minor adverse**.

Non-Residential Uses and Servicing Noise

10.134. With regard to noise break out from the non-residential land uses of the Development, provided that the final façade designs of the buildings would allow an external noise level of 5dB(A) below the prevailing ambient noise level, then the likely **insignificant** effect would be maintained as the likely residual effect.

10.135. Owing to the fact that servicing traffic noise and noise associated with the unloading / loading of servicing vehicles would be controlled through a Delivery and Servicing Plan and planning controls this is also likely give rise to insignificant effects, no mitigation is required and the likely residual effect would remain as **insignificant**.

Road Traffic Noise

10.136. As noted in Chapter 8: Transport, a Travel Plan for the Development would be produced to promote sustainable forms and transport and aim to reduce the number of car trips associated with the Himley Village Development. However, as the reduction in car trips cannot be quantified, the residual effects of road traffic noise remain the same as the predicted potential effects, namely predominantly insignificant, with minor adverse effects on 2 road links and substantial adverse residual effects on 1 road link. With regard to the latter, although a significant change to existing traffic flows is predicted, the overall flow remains low and consequently the overall noise level generated by vehicles along this link is also relatively low, when compared to existing noise levels experienced adjacent to this link. In addition, traffic calming measures are proposed to discourage use of this link.

Summary and Conclusion

10.137. Table 10.20 provides a summary of the potential and residual effects of the Himley Village Development together with conclusion with regard to the suitability of the Site of residential and school use.

Table 10.20: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Demolition and Construction Noise	**Insignificant to temporary** effect of **substantial adverse** significance at the **local** level.	Implementation of a CEMP and best available techniques.	**Insignificant to temporary** effect of **moderate adverse** significance at the **local** level.
Construction Vibration	**Insignificant to temporary** effect of **minor adverse** significance at the **local** level.	Implementation of a Site specific CEMP and best available techniques.	**Insignificant** to **temporary, short-term, local** effect of **minor adverse** significance**.**
Construction Traffic	**Insignificant** to temporary effect of **minor adverse** significance at the local level.	Construction Traffic Management Plan.	**Insignificant**
Completed Development			
Residential Amenity	**Requirements of WHO and BS8233 predominantly satisfied.**	Appropriate glazing and ventilation strategy at southern site boundary, with consideration at eastern, western and northern site boundaries.	**Insignificant**

Description of Effect	Potential Effect	Mitigation	Residual Effect
School Amenity	**Requirements of BB93 satisfied.**	None proposed	**Requirements of BB93 satisfied**
Fixed Mechanical Plant & Building Services (including the Energy Centre)	**Insignificant**	Assumed mitigation inherent to design of buildings/structures housing fixed plant and mechanical services. Planning noise condition.	**Insignificant**
Playing Fields	**Insignificant** to **permanent** effect of **minor adverse** significance when in use at local level	None proposed	**Insignificant** to permanent effect of **minor adverse** significance when in use at local level
Road Traffic Noise	**Insignificant** to **permanent** effect of **minor adverse** at local level on 2 road links and **substantial adverse** on 1 road link	Travel Plan	I**nsignificant** to **permanent** effect at local level of **minor adverse** on 2 links and **substantial adverse** on 1 link.

References

1 *Control of Pollution Act, 1974*
2 Communities and Local Government. (2012) *The Planning Policy Planning Framework.*
3 Department of Education (DoE). (1994). *Planning Policy Guidance 'Planning and Noise*
4 Department for Communities and Local Government. (2014) *Noise.* http://planningguidance.planningportal.gov.uk/blog/guidance/noise/
5 Defra. (2010) *Noise Policy Statement for England.*
6 Department for Communities and Local Government. (2009) *Planning policy Statement: eco-towns – A supplement to Planning Policy Statement 1.*
7 Cherwell District Council. (2006) *Cherwell Local Plan.*
8 Cherwell District Council. (2010) *Eco-Bicester – One Shared Vision*
9 IEMA. (2014) *Guidelines for Environmental Noise Impact Assessment.*
10 British Standard (BS). (2009) *+A1 2014: Code of practice for noise and vibration control on construction and open sites, Part one: Noise*.
11 BS5228. (2009) *Code of practice for noise and vibration control on construction and open sites, Part Two: Vibration.*
12 BS6472-1. (2008) *Guide to evaluation of human exposure to vibration in buildings, vibration sources other than blasting.*
13 BS. (2014) *BS4142: Methods for rating and assessing industrial and commercial sound.*
14 BS. (2014) *BS8233: Guidance on Sound Insulation and Noise Reduction for Buildings.*
15 World Health Organisation (WHO). (1999) *Guidelines for Community Noise.*
16 DoE. (2000) *Building Bulletin 93: Acoustics in Schools.*
17 Department of Transport. (1988) *Calculation of Road Traffic Noise.*
18 Highway Agency. (2011) *Design Manual for Road and Bridges, Volume 11 Environmental Assessment, Section 3, Environmental Assessment Techniques, Part 7 Noise and Vibration.*
19 HM Government. (2010) *The Building Regulations Approved Document F – Means of Ventilation.*
20 Abbott, P.G. and, Nelson, P.M. (2002) *Converting the UK traffic noise index LA10,18h to EU noise indices for noise mapping:* PR/SE/451/02. Transport Research Laboratory.

11. Water Management

Introduction

11.1. This Chapter, written by Waterman Energy, Environment & Design Ltd (Waterman EED), presents an assessment of the likely significant effects of the Himley Village Development on flood risk, drainage and potable water use.

11.2. The planning policy context, methods used to assess the potential effects of the Himley Village Development together with a description of the baseline conditions currently existing at the Himley Village Site are set out in this Chapter. The potential effects of the Himley Village Development are assessed against this baseline, and the likely significant residual effects determined, taking into account any mitigation measures that are proposed to prevent, reduce or offset any adverse effects identified.

11.3. This Chapter is based on the findings of a Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS) for the Himley Village Development undertaken by Alan Baxter and Associates. The FRA and SWDS has been forms part of the suite of planning documents. The Chapter is also based on the Water Cycle Study (WCS) undertaken by Hyder Consulting which is presented as **Technical Appendix 11.1** and was submitted as part of the NW Bicester Masterplan submission[1]. In accordance with the EIA Scoping Opinion, a Water Framework Directive Screening Assessment has been undertaken and is presented in **Technical Appendix 11.2**.

Legislation and Planning Policy Context

Legislation

Water Framework Directive, 2000/60/EC

11.4. The Water Framework Directive[2] applies to all European Union (EU) water bodies and aims to ensure they are protected from harm and that improvements in water quality can be made.

11.5. Although the Water Framework Directive discusses ways to mitigate the effects of flooding, it does not contain any specific flood risk management objectives. In general terms there is an onus on developers to protect and, if possible, enhance water bodies close to proposed developments.

Land Drainage Act, 1991

11.6. The Land Drainage Act[3] sets out the responsibilities and powers of the National Rivers Authority (now Environment Agency (EA)), Internal Drainage Boards, Local Planning Authorities (LPAs) and riparian landowners. Under the Act, the EA and LPAs have discretionary powers of management and maintenance for Main Rivers and Ordinary Watercourses respectively. However, it is the riparian owner, i.e. the landowner through which the watercourse flows, who is ultimately responsible for its maintenance.

Water Resources Act, 1991

11.7. The Water Resources Act[4] relates to the control of the water environment. The main aspects of the Act which are relevant include provisions concerning land drainage, flood mitigation and controlling discharges to watercourses to prevent water pollution.

Water Industry Act, 1991

11.8. The Water Industry Act[5] (as amended) covers a wide range of provisions that the privatised Water Companies must follow. The main relevant provisions relate to trade effluent discharges made to sewers for which the privatised companies act as the regulatory authorities. Under this Act, discharge of effluent to the public sewer can only take place with the agreement or consent of the sewerage undertaker (i.e. the water company). The water companies control the nature and composition of the effluent, the maximum daily volume allowed, the maximum flow rate and the sewer into which the effluent is discharged.

Water Act, 2003

11.9. The Water Act[6] amends the Water Resources Act 1991 and the Water Industry Act 1991. The Act brings about a number of changes including streamlining arrangements for flood defence organisation and funding; changes to the types of abstraction licences; and places a duty on water companies to conserve water and prepare for drought.

Flood and Water Management Act, 2010

11.10. The Flood and Water Management Act[7] (2010) removes the automatic right of connection into public water sewers and places the onus on the Local Planning Authorities (LPA) to adopt Sustainable Drainage Systems (SuDS).

Water Act, 2014

11.11. The Water Act 2014[8] aims to improve water supply and sewerage resilience while providing an effective market for the water sector. It largely applies to England and Wales and mainly amends the Water Industry Act 1991.

National Planning Policy

National Planning Policy Framework (2012)

11.12. The National Planning Policy Framework[9] (NPPF) states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. Where development is necessary, it must be made safe without increasing flood risk elsewhere.

11.13. The NPPF states that when determining planning applications, Local Planning Authorities should ensure that flood risk is not increased elsewhere and only consider development in areas at risk of flooding where it can be demonstrated that:

- Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location; and
- Development is appropriately flood resilient and resistant, includes safe access and escape routes where required, any residual risk can be safely managed (including emergency planning), and priority is given to the use of Sustainable Drainage Systems (SuDS).

11.14. The Planning Practice Guidance (PPG)[10] provides additional guidance to Local Planning Authorities, to ensure effective implementation of the planning policies set out within the NPPF regarding development in areas at risk of flooding. The guidance retains key elements of superseded NPPF Technical Guidance[11] and Planning Policy Statement 25 Development and Flood Risk Practice Guide[12] (PPS25) and is accessed via a web-based portal.

11.15. The PPG states that developers and Local Planning Authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of SuDS. Referencing information provided by the EA, PPG provides advice on taking climate change into account, setting out recommended contingency allowances for net sea level rise and peak rainfall intensities, which should be increased by between 5% and 30% from now until the year 2115. It also advises on flood resilience and resistance measures when dealing with the residual risks remaining after applying the sequential approach and mitigating actions.

11.16. The PPG also includes advice on flood risk vulnerability and flood zone compatibility. The following flood zones refer to the probability of river and sea flooding, without the presence of defences:

- Zone 1 - low probability: less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year;
- Zone 2 - medium probability: between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year;
- Zone 3a - high probability: 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability flooding from the sea (>0.5%) in any year; and
- Zone 3b - the functional floodplain: where water has to flow or be stored in times of flood; identification should take account of local circumstances but would typically flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme 1 in 1000 (0.1%) flood.

11.17. Flood risk vulnerability is split into five classifications in Table 2 of the PPG, as follows, and the compatibility of these within each Flood Zone is set out in Table 3 of the PPG.

- Essential Infrastructure, e.g. essential transport and utility infrastructure, wind turbines;
- Highly Vulnerable, e.g. emergency services (those required to be operational during flooding), basement dwellings;
- More Vulnerable, e.g. residential dwellings, hospitals, schools, hotels, drinking establishments;
- Less Vulnerable, e.g. retail, offices, storage and distribution, leisure, restaurants; and
- Water-Compatible Development, e.g. docks, marinas, wharves.

National Standards for Sustainable Drainage Systems

11.18. The National Standards for Sustainable Drainage Systems[13], published in draft format in December 2011 for review, outlines the requirements for design, construction, operation and maintenance of SuDS.

11.19. Part 1 of the Standards outlines the key principles regarding SuDS and states what requirements must be followed for SuDS to comply with the National Standards.

11.20. Part 2 outlines the design requirements for SuDS along with construction and maintenance requirements. As part of this section, the standards indicate a hierarchy for discharging runoff from a site. This hierarchy must be applied to all developments to ensure that the most sustainable method is used, which is also appropriate to the development in question.

11.21. The hierarchy is as follows:

- Discharge to the ground;
- Discharge to a surface water body;

- Discharge to a surface water sewer; and
- Discharge to a combined sewer.

11.22. Planning Policy Statement: Eco-Towns, A supplement to Planning Policy Statement 1Planning Policy Statement: Eco-Towns, A supplement to Planning Policy Statement 1 14 provides the standards in relation to eco-town developments and water and flood risk management. NW Bicester is stated as one of the four eco-towns to which this document applies. The following policies are provided in relation to water and flood risk management within eco-towns:

- *Policy ET17 'Water' – Eco-towns should be ambitious in terms of water efficiency across the whole development, particularly in areas of serious water stress, and should contribute, where existing water quality leaves scope for further improvement towards improving water quality in their localities.*

  Planning applications for all eco-towns should be accompanied by a water cycle strategy that provides a plan for the necessary water services infrastructure improvements. The water cycle strategy should have been developed in partnership with interested parties, including the local planning authority, the Environment Agency, and the relevant water and sewerage companies through a water cycle study. The strategy should:

  (a) Assess the impact that the proposed development will have on water demand within the framework of the water companies' water resource management plans and set out the proposed measures which will limit additional water demand from both new housing and new non-domestic buildings

  (b) Demonstrate that the development will not result in a deterioration in the status of any surface waters or ground-waters affected by the eco-town; and

  (c) Set out proposed measures for improving water quality and managing surface water, groundwater and local watercourses.

  Eco-towns should:

  (a) Incorporate measures in the water cycle strategy for improving water quality and managing surface water, groundwater and local watercourses to prevent surface water flooding from those sources; and

  (b) Incorporate sustainable drainage systems (SUDS) and, except where this is not feasible, as identified within a relevant Surface Water Management Plan, avoid connection of a surface water run-off into sewers.

  Planning applications for all eco-towns should include a strategy for the long term maintenance, management and adoption of the SUDS.

  Eco-towns in areas of serious water stress should aspire to water neutrality, ie For every new development, total water use across the wider area after the development must be equal to or less than total water use across the wider area before the development".. In particular, the water cycle strategy should set out how:

  (a) The development would be designed and delivered to limit the impact of the new development on water use, and any plans for additional measures, e.g. within the existing building stock of the wider designated area, that would contribute towards water neutrality

  (b) New homes will be equipped to meet the water consumption requirement of Level 5 of the Code for Sustainable Homes [80 litres per person per day]; and

  (c) New non-domestic buildings will be equipped to meet similar high standards of water efficiency with respect to their domestic water use.

- *Policy ET18 'Flood Risk Management' – The location, layout and construction of eco-towns should reduce and avoid flood risk wherever practicable. Eco-towns should not increase the risk of flooding elsewhere and should use opportunities to address and reduce existing flooding problems.*

  There is a strong expectation that all of the built-up areas of an eco-town (including housing, other public housing and infrastructure) will be fully within Flood Zone 1 – the lowest risk. Flood Zone 2 (medium risk) should, as far as possible, be used for open spaces and informal recreational areas that can serve as multi-functional spaces, for example, those used for flood storage. There should be no built-up development in Flood Zone 3 with the exception of water-compatible development and, where absolutely necessary, essential infrastructure as defined in Table 2 of the PPG.

Local Planning Policy

The Non-Statutory Local Plan, 2011

11.23. There are a number of policies pertaining to flood risk and drainage within Cherwell District Council's (CDC) Non-Statutory Local Plan[15]. This is not part of the statutory development plan but has been approved as interim planning policy for development control purposes. This was intended to review and update the Local Plan adopted in 1996 which contains no saved policies in relation to flood risk and drainage. Information on the relevant policies is set out below:

- **Policy EN11 'Water Quality' –** This policy sets out the requirement for development only to be permitted where adequate water resources exist, or can be provided without detriment to existing uses such as abstractions, river flows, water quality, agriculture, fisheries, navigation, amenity, nature conservation.
- **Policy EN14 'Flood Defence' –** This policy sets out restriction of development in areas at risk from flooding which would result in net loss of floodplain storage, which would impede the flow of flood water or increase the risk of flooding elsewhere.
- **Policy EN15 'Surface Water Run-off and Source Control'** – states new development will not be permitted should they be likely to result in an adverse impact from surface water run off unless, the proposals include appropriate source control or attenuation measures.

Cherwell Local Plan 2006 - 2031, Submission Draft and Amendments, 2014

11.24. **Policy ESD 6 –** Sustainable Flood Risk Management outlines how CDC will manage flood risk within the district. This includes ensuring appropriate development, protection and restoration of floodplain areas and the consideration of flood risk for developments.

11.25. **Policy ESD 7 –** Sustainable Drainage Systems (SuDS) outline CDC requirements in relation to new developments and the use of measures to control surface water run-off.

Cherwell District Council's Strategic Flood Risk Assessment

11.26. The Strategic Flood Risk Assessment (SFRA)[16] for Cherwell and West Oxfordshire has been undertaken as part of the Local Development Framework and the final version was published in April 2009.

11.27. The maps included in the SFRA do not identify any risk of flooding at the Himley Village Site.

Assessment Methodology and Significance Criteria

Assessment Methodology

11.28. The baseline conditions of the Himley Village Site and surroundings were established by Alan Baxter and Associates as part of the Flood Risk Assessment and Surface Water Drainage Strategy through the following:

- Site visit undertaken to examine the local water features and topography of the area, and to identify potential flood flow routes towards the Himley Village Site;
- Inspection of the EA's Flood Zone maps;
- Consultation with the EA, CDC and Thames Water Utilities Limited (TWUL) to establish relevant flooding history at the Himley Village Site and obtain any other relevant information;
- Review of the CDC SFRA (April, 2009);
- Establishment of the Himley Village Site's existing baseline conditions relating to surface water run-off and potential sources of flood risk;
- An assessment of the feasibility of a range of SuDS solutions for Himley Village ; and
- An assessment of the flood risk to Himley Village and the effects of the proposed surface water drainage strategy.

11.29. The Water Cycle Study undertaken by Hyder Consulting comprised the following:

- Consultation with TWUL, the EA, CDC, Natural England and OCC;
- Identification of the existing potable water and waste water drainage infrastructure capacity;
- Calculation of the likely water demand for the NW Bicester Masterplan;
- Calculation of the likely waste water demand for the NW Bicester Masterplan;
- Identification of measures to reduce the potable water demand;
- Identification of potential measures to manage foul water.

Significance Criteria

11.30. In accordance with Chapter 2: EIA Methodology, the relative significance of potential and residual drainage and flood risk effects was determined using the scale of significance presented in Table 11.1. The significance criteria were determine using professional judgement.

Table 11.1: Significance Criteria for Drainage, Flood Risk and Potable Water Effects

Significance Criteria	Description of Criteria
Substantial beneficial.	Substantial local scale or moderate to substantial regional scale reduction in flood risk and / or a substantial increase in drainage capacity. Substantial local scale or moderate to substantial regional scale reduction in potable water use.
Moderate beneficial.	Moderate local scale reduction in flood risk and / or a moderate increase in drainage capacity. Moderate local scale reduction in potable water use.
Minor beneficial.	Minor local scale reduction in flood risk and / or a minor increase in drainage capacity. Minor local scale reduction in potable water use.

Significance Criteria	Description of Criteria
Negligible.	No appreciable effect on flood risk and / or the demand for drainage. No change in potable water use or slight increase in potable water use in an area where there is sufficient water capacity and no water stress.
Minor adverse.	Minor local scale increase in flood risk and / or change in groundwater flows and / or minor increase in demand for drainage. Minor or temporary local increase in potable water use in an area of water stress but where there is sufficient capacity.
Moderate adverse.	Moderate local scale increase in flood risk and / or change in flow of groundwater and / or a moderate increase in the demand for drainage. Moderate local to regional permanent increase in potable water use in an area of water stress but where there is sufficient capacity.
Substantial adverse.	Substantial local scale or moderate to substantial regional scale increase in flood risk, and / or groundwater flow, and / or a substantial increase in the demand for drainage. Moderate to substantial local to regional permanent increase in potable water use in an area of water stress where there is insufficient capacity.

Baseline Conditions

11.31. LIDAR data indicates the Himley Village Site slopes from the north west (appox. 96m AOD) to the south east (approx. 85m AOD).

Geology

11.32. The underlying geology is described in detail within Chapter 12 of this ES. In summary, the Himley Village Site underlain by the Great Oolite Group comprising of Cornbrash Limestone (CB), which is in turn underlain by the Forest Marble Formation (FMF). At a greater depth the Himley Village Site is underlain by White Limestone Formation (WLF). The geological maps indicate that superficial deposits are likely to be absent from the Himley Village Site.

11.33. Ground investigation works conducted in the vicinity of the Himley Village Site[17] identified the following ground conditions, which are likely to be representative of the conditions at Himley Village:

Table 11.2 Geological Investigation

Stratum	Estimated Thickness	Description
Topsoil	0 – 0.2m	
Subsoil	0.2 – 0.6m (up to 0.8 in places)	comprising an orange/brown gravelly/sandy Clay or sandy clayey Gravel
Weathered Limestone	0.6 – 1.9m (up to 2.9 in places)	yellow sandy Gravel and in places yellow/grey Clay, grading to completely weathered Limestone (Cornbrash Formation)
Cornbrash Formation	1.9 – 7m	alternating Limestone and Clay bands of the Cornbrash Formation.

Hydrology

11.34. There are no surface water courses on the Himley Village Site. The nearest named water course is the Gagle Brook located 260m south of the Himley Village Site flowing in a south easterly direction. The Langford Brook, a tributary of the River Bure, is located 400m north of the Himley Village Site and flows in an easterly direction. The River Bure is located 1,100m east of the Himley

Village Site flowing in south easterly direction through the Bure Park nature reserve and into the centre of Bicester.

11.35. The Himley Village Site has a number of existing drainage features, which are formed from farm land drainage ditches conveying surface water to existing watercourses. To the east of the Himley Village Site, a drainage ditch south of Gowell's Farm, approximately 165m east of the Site, flows into a culvert under the A4095. This ditch discharges a proportion of the existing surface water run-off from the Himley Village Site. The majority of the Himley Village Site naturally drains towards the south and south east through a number of drainage ditches into a 840m long swale running parallel with the B4030 (Middleton Stoney Road). Two outlets have been identified from this swale beyond the south west and south east corners of the Himley Village Site that are likely to discharge to Gagle Brook.

11.36. There are two ponds located on the Himley Village Site; a small pond to the east of Himley Farm and a larger pond to the south east of the Farm.

Hydrogeology

11.37. The hydrogeology underlying the Himley Village Site is described in detail within Chapter 12 of this ES. The underlying bedrock is designated Secondary A Aquifer, which is described by the EA as 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.' There are no Groundwater Source Protection Zones (SPZ) in the vicinity of the proposed Himley Village Site.

11.38. A Surface Water Drainage Plan undertaken by Hyder in 2014[18] reported on limited soakaway tests undertaken as part of an intrusive investigation in 2010. These indicated little infiltration.

Foul and Surface Water Drainage

11.39. There are no foul or surface water sewers crossing the Himley Village Site. Surface water is discharged via a network of land drains as described above. Foul water from Himley Farm is discharged to a small scale biological sewage treatment plant discharging to ground and foul water from Himley Farm Bungalow is discharged to a septic tank.

11.40. TWUL operate a Waste Water Treatment Works (WWTW) located to the south east of the Himley Village Site. This takes foul water from Bicester for treatment and discharge into the Langford Brook. TWUL advised Hyder as part of the NW Bicester Masterplan WCS that improvement works to Bicester WWTW are proposed under the AMP6 business plan to accommodate the planned growth within Bicester.

11.41. TWUL advised Hyder in 2013, that the existing sewer network serving Bicester has some spare capacity but because some areas of the network comprises combined surface and foul water sewers, this capacity is not available during wet weather. Therefore likely be insufficient capacity within the network for future foul water flows from the Himley Village Site.

Potable Water

11.42. Himley Farm and Himley Farm Bungalow are supplied with potable water from the TWUL supply network. There are no public water supply boreholes within 5km of the Himley Village Site, three licensed groundwater abstractions and four registered private water supply boreholes. The nearest water supply boreholes are located at Lords Farm, approximately 750m north east of the Himley Village Site and Bignall House approximately 840m to the south of the Himley Village Site.

11.43. Hyder Consulting Ltd has undertaken a Water Cycle Study for the NW Bicester Masterplan[1]. This study identified that the Bicester area is considered to be water-stressed, although the statutory water undertaker for the area – TWUL has the ability to provide adequate supply of potable water to the NW Bicester Masterplan, despite increasing population, and decreasing availability of water resources. This is achieved through increased metering within the area, water efficiency campaigns, revised tariffs to encourage behavioural change and implementation of groundwater resource development schemes.

11.44. Potable water supplies from TWUL are primarily supplied from abstractions from the River Thames and its tributaries, stored in reservoirs. According to TWUL, the majority of the supply for Bicester is sourced from near Oxford. Water is abstracted from the River Thames to the west of Oxford, stored, treated, and then transmitted northwards with the assistance of a large pumping station near the A44 to the west of Bicester. Potable water is stored in a Distribution Service Reservoir (DSR) to the north west of Bicester, and the town is then supplied from here via a 450mm main which runs through the NW Bicester Masterplan Area along the existing bridleway.

11.45. TWUL advise that they have recently upgraded the capacity of the pumping station, and the main from the DSR to Bicester. Additionally, TWUL completed the Bicester ring main in 2012, which allows increased resilience in supplying the town, and is designed to cater for the next 40 years of development as assessed by TWUL.

11.46. TWUL also advised that the part of the network with the lowest capacity for development is the transfer main from the pumping station to the DSR, however this can be upgraded through the normal funding cycle and hence should not be considered a constraint to the NW Bicester Masterplan development.

11.47. According to the draft revised Water Resources Management Plan (WRMP), TWUL estimate that the average per capita consumption of potable water in the Swindon and Oxfordshire Water Resources Zone in 2011/12 was 156 litres per person per day for properties without a meter, and 129 litres per person per day for metered properties.

Flood Risk

Fluvial Flooding and Overland Flows

11.48. Alan Baxter and Associates has consulted with the EA who has confirmed that there are no known sources of flooding within the Himley Village Site. The Himley Village Site is located in Flood Zone 1; where there is a less than 1 in 1000 year risk of flooding. Consequently all of Himley Village will be located within areas at low risk of flooding from fluvial sources.

Ground Water

11.49. Maps of Areas Susceptible to Groundwater Flooding (ASTGWF) included in the SFRA[19], show the proportion of each 1km grid square where geological and hydrological conditions indicate that groundwater may emerge. To the south west of the railway line which corresponds to the Himley Village Site, no groundwater flood susceptibility has been defined. There are no known incidences of ground water flooding at the Himley Village Site.

11.50. Site investigation work undertaken by Hyder for the NW Bicester Masterplan, as presented in **Technical Appendix 12.6**, does however indicate that groundwater is present near surface (between 0.5m and 4m below ground level).

Surface Water Drainage and Foul Drainage Flooding

11.51. TWUL owns assets around the Himley Village Site. There are no known public sewers within the Himley Village Site boundary. The modelling undertaken by Hyder of the surface water drainage of the wider NW Bicester Masterplan area, as presented in **Technical Appendix 11.1** did not highlight any flooding issues impacting on the Himley Village Site.

11.52. The SFRA highlights a report from CDC that there is a known history of sewer flooding in Bicester which results from a limited capacity within the network. However, there are no known incidences of surface or combined drainage flooding at the Himley Village Site.

Infrastructure Failure

11.53. The Himley Village Site is not closely located to any reservoirs, canals or any other raised water storage assets, therefore the Himley Village Site is not at risk from flooding from artificial sources. As the Himley Village Site is not affected by or would affect raised water storage assets, this source of flooding is not considered further in this Chapter.

Potential Effects

Demolition and Construction

11.54. This section describes the potential effects of demolition and construction of Himley Village. The potential effects are those occurring in the absence of mitigation.

Fluvial Flooding and Overland Flows

11.55. Given that the Himley Village Site is located in Flood Zone 1, the risk of fluvial flooding during demolition and construction is considered to be low and the associated effect **negligible**.

11.56. As construction progresses, the amount of hardstanding would increase across the Himley Village Site. However, the SuDS would be phased with the construction of the Himley Village Site. It is therefore concluded that the construction works would not alter the risk of overland flooding, which would remain low, and the associated effect would be **negligible**.

Ground Water Flooding

11.57. Based on investigations undertaken by Hyder, it is likely that groundwater will be encountered relatively near the surface which may enter excavations for foundations. Dewatering of excavations may therefore be required using standard techniques such as sumps and pumps. Pumping of groundwater from the excavations could potentially create 'drawdown' effect on the surrounding groundwater levels. However, there are no groundwater abstractions within close proximity to the Himley Village Site and therefore the effect on local groundwater is considered to be **negligible**.

11.58. The SuDS would be constructed in the early part of each phase of construction and would be designed to take dewatering effluent and surface water run-off from the construction site. Where necessary, the dewatering effluent and/or surface water run-off would be passed through settlement tanks and/or oil water interceptors before being discharged. The discharge rates and volumes of water would be agreed with the EA prior to the commencement of the construction works. It is therefore anticipated that dewatering would have a **negligible** effect on flood risk and drainage.

Surface Water Drainage and Foul Drainage Flooding

11.59. Installation of temporary site drainage during the construction works would have the potential to influence the surface water drainage from the Himley Village Site. However, as described above, it is proposed to discharge surface water to the SuDS in agreement with the EA. The effect on surface water drainage flooding is therefore **negligible**.

11.60. It is currently proposed to have conventional foul drainage connections on the Himley Village Site for the future Himley Village Development. However, TWUL has confirmed that there is limited capacity in the existing network. The potential for installation of an on-site waste water treatment system or the requirement for infrastructure upgrades will be investigated further during the detailed design. The foul water connections will be made during the early stages of construction to provide suitable foul water drainage from the construction site facilities. On the basis that either a suitable waste water treatment facility on the Himley Village Site and/or infrastructure upgrades are provided as necessary, the effect on foul drainage capacity is **negligible**.

Potable Water Supply

11.61. Potable water supplies would be provided to the Himley Village Site in the early stages of construction from conventional network connections plus potentially on-site sources. However, the presence of construction workers on the Himley Village Site and construction works themselves have the potential to significantly increase the demand for potable water. TWUL has confirmed that the water supply network has sufficient capacity however, the increased use of potable water is a **moderate adverse** effect.

Completed Development

Fluvial Flooding and Overland Flows

11.62. The Himley Village Site is located in an area at low risk of fluvial flooding. The effect on Himley Village is therefore **negligible**.

Ground Water

11.63. Based on site investigations undertaken by Hyder Consulting, resting groundwater levels are approximately 0.5m to 4m below ground level. No groundwater flood susceptibility has been defined on the ASTGWF included in the SFRA. There are no known incidences of ground water flooding at the Himley Village Site. However, should basements be constructed, these should be water proofed in accordance with BS 8110 Part 1[20] to prevent seepage. On the basis that such water proofing is installed, the risk of groundwater flooding is low with a corresponding **negligible** effect.

Surface Water Drainage and Foul Drainage Flooding

11.64. Surface water drainage would be managed using a Sustainable Drainage System (SuDS) ensuring greenfield run off rates from the Himley Village Site. Key pathways for surface water flow through the Himley Village Site would be swales located within the green corridors, as set out in the Outline SuDS Parameter Plan, **Figure 5.7**. The swales as well as conveying surface water runoff will also act to attenuate water by using a series of check dams and detention basins integrated in to the landscape where the natural topography can provide additional storage. Where swales intercept highway infrastructure, culverts are currently proposed to convey water under the highway. To avoid flooding at the culvert locations due to blockages etc. secondary channels or emergency overspill mechanisms may be provided as part of the surface water strategy detailed design.

11.65. Any increase in surface water runoff from caused by the Himley Village Development will be stored within the primary swales and detention basins. As noted above, surface water drainage will be attenuated with a limiting discharge of 2 litres per second per hectare. Therefore, there should be no increase in off-site flood risk as a result of the development. The effect of the Himley Village Development on surface water drainage and off-site flood risk is therefore **negligible**.

11.66. Foul water would likely be discharged via new foul sewers connecting directly to the existing Bicester WWTW. Alternatively an on-site WWTW would be provided. TWUL has confirmed that the sewage treatment works will have sufficient capacity or can be upgraded as required, subject to future chemical quality requirements. However, potential providers of the on-site WWTW have confirmed that such chemical quality requirements could be met by the on-site WWTW at a reasonable price. The effect of Himley Village on foul water capacity is therefore considered **negligible**.

Potable Water Supplies

11.67. TWUL has indicated that the Site is located in an area of water stress. However, they have available capacity within the system to serve Himley Village. Himley Village will nevertheless result in a significant increase in potable water consumption resulting in a **moderate adverse** effect.

Mitigation

Demolition and Construction

11.68. The assessment has concluded that all effects relating to flood risk and drainage would be negligible during demolition and construction. No additional mitigation is therefore required.

Potable Water Supplies

11.69. During construction, dewatering effluent and/or surface water run off would be re-used, subject to appropriate agreements with the EA and CDC, for dust suppression and to minimise water use.

Completed Development

11.70. The assessment has concluded that all effects relating to flood risk and drainage would be negligible for the completed Himley Village Development. No additional mitigation is therefore required.

Potable Water Supplies

11.71. In accordance with the requirements of the Supplement to PPS1: Eco-Towns, the Himley Village Development would meet the requirements of Code for Sustainable Homes Level 5 in relation to water use. This requires a residential water consumption of less than 80 litres per person per day.

11.72. Hyder Consulting has assessed how this level of water consumption can be achieved in their Water Cycle Study. In order to realistically achieve a level of 105 litres per person per day the specification and installation of the following water efficient fixtures would be required:

- 2.6/ 4.0 l dual flush toilet;
- 9 l/minute shower;
- 150 l bath;
- 6 l/minute taps;
- Conventional dishwasher and washing machine, assumed to use 4.5 and 17.16 l/p/d respectively; and

- No potable water use for car washing or irrigation.

11.73. In order to further reduce the consumption of potable water, toilets and washing machines that conventionally use potable water supplies would need to be supplied by non-potable sources such as rainwater harvested water. This could be supplied at either a plot or a neighbourhood level. This would enable the level of 80 litres per person per day to be achieved.

11.74. For non-residential uses the following water efficient fixtures and fittings are proposed to be installed to reduce potable water demand:

- 2.6/ 4.0 l dual flush toilets;
- Dry urinal systems;
- Kitchen and bathroom taps limited to 5 l/minute and 3 l/minute respectively; and
- 3.5 l/minute showers.

11.75. As with the residential properties, a proportion of the water supply could be provided by non potable supplies in order to reduce potable water demand.

11.76. PPS1 Supplement also requires eco-towns in areas of serious water stress to aspire to water neutrality. Hyder's WCS has shown that with implementation of water efficiency measures together with a reclaimed source of non-potable water to substitute with potable water used for toilet flushing and laundry, a reduction of approximately 40% in water use could be achieved compared with a conventional construction.

Residual Effects

Demolition and Construction

Flood Risk and Drainage

11.77. The residual effect of the Himley Village Development on flood risk and drainage and the residual effects of flood risk and drainage on the Himley Village Development during the demolition and construction works would remain **negligible**.

Potable Water Supplies

11.78. During construction, dewatering effluent and/or surface water run off would be re-used, subject to appropriate agreements with the EA and CDC, for dust suppression and to minimise water use. However, use of potable water during construction would still be greater than that required of the current Himley Village Site resulting in a **minor adverse** effect.

Completed Development

Flood Risk and Drainage

11.79. The Himley Village Site is located in an area at low risk of flooding. A SuDS system has been incorporated into the design of the scheme to minimise surface water run-off from the Himley Village Site. Foul water would be discharged either to an on-site WWTW or to the Bicester WWTW owned and operated by TWUL. TWUL has confirmed that the Bicester WWTW will have capacity to accept foul drainage from the Himley Village Site subject to future chemical criteria. The effect of the Himley Village Development on flood risk and drainage is therefore **negligible**.

Potable water

11.80. In accordance with the requirements of the Cherwell District Local Plan and the NW Bicester Masterplan, the Himley Village Development would meet the requirements of Code for Sustainable Homes Level 5 in relation to water use. This requires a residential water consumption of less than 80 litres per person per day. This would be achieved through water efficiency measures and use of a reclaimed source of non-potable water to substitute with potable water used for toilet flushing and laundry. However, the Himley Village Development will nevertheless result in a significant increase in potable water consumption resulting in a **moderate adverse** effect.

Summary and Conclusion

11.81. A summary of the potential effects, mitigation and residual effects is set out in Table 11.3 below.

Table 11.3: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Fluvial Flooding	**Negligible**	None required	**Negligible**
Groundwater Flooding	**Negligible**	None required	**Negligible**
Surface Water Drainage and Foul Drainage Flooding	**Negligible**	None required	**Negligible**
Potable water use	**Temporary** effect of **moderate adverse** significance at the **local to regional** level.	Re-use of dewatering effluent and surface water run off for dust suppression and other construction uses	**Temporary** effect of **minor adverse** significance at the **local to regional** level.
Completed Development			
Fluvial Flooding	**Negligible**	None required.	**Negligible**
Groundwater flooding	**Negligible**	None required	**Negligible**
Surface Water Drainage and Foul Drainage Flooding	**Negligible**	None required	**Negligible**
Potable water use	**Temporary** effect of **moderate adverse** significance at the **local to regional** level.	Implementation of water efficiency measures and reclamation of water for non potable uses.	**Temporary** effect of **moderate adverse** significance at the **local to regional** level.

References

[1] Hyder Consulting (UK) Ltd. (2014) *NW Bicester Masterplan Water Cycle Study Detailed Report (referenced: 5010-UA005241-UU71R-01).* http://www.ecobicester.org.uk/cms/sites/ecobicester/files/folder/ecoBicester/5010-UA005241-UU71R-01%20Detailed%20Water%20Cycle%20Study.pdf

[2] European Commission (2000). *Water Framework Directive, (2000/60/EC).* Office of the Deputy Prime Minister.

[3] Office of the Deputy Prime Minister (ODPM). (1991) *Land Drainage Act*. Her Majesty's Stationery Office: London.

[4] *The Water Resources Act 1991*. The Stationary Office: London.

[5] *The Water Industry Act 1991*. HMSO: London.

[6] *Water Act 2003*. HMSO: London.

[7] Flood & Water Management Act 2010. HMSO: London.

[8] Water Act 2014. HMSO: London.

[9] Department for Communities and Local Government. (2012) *National Planning Policy Framework.*

[10] Department for Communities and Local Government. (2014) *Planning Practice Guidance.*

[11] Department for Communities and Local Government. (2012) *National Planning Policy Framework Technical Guidance.*

[12] Communities and Local Government. (2009) *Planning Policy Statement 25: Development and Flood Risk Practice Guide*.

[13] Defra. (2011) *National Standards for Sustainable Drainage Systems: Designing, constructing, operating and maintaining drainage for surface runoff.* http://www.defra.gov.uk/consult/.

[14] Department for Communities and Local Government. (2009) *Planning Policy Statement: Eco-Towns, A supplement to Planning Policy Statement 1*. https://www.gov.uk/government/uploads/system/.../pps-ecotowns.pdf

[15] Cherwell District Council. (2011) Non-Statutory Local Plan, Available http://www.cherwell.gov.uk/index.cfm?articleid=9633

[16] Cherwell District Council (2009) Cherwell and West Oxfordshire Strategic Flood Risk Assessment. http://www.cherwell.gov.uk/index.cfm?articleid=4356

[17] Hyder Consulting (UK) Ltd. (2014) *NW Bicester Masterplan: Water Cycle Study Detailed Report (referenced: 5010-UA005241-UU71R-01).* http://www.ecobicester.org.uk/cms/sites/ecobicester/files/folder/ecoBicester/5010-UA005241-UU71R-01%20Detailed%20Water%20Cycle%20Study.pdf

[18] Hyder Consulting (UK) Ltd. (2014) *Surface Water Drainage Plan.* http://www.ecobicester.org.uk/cms/sites/ecobicester/files/folder/ecoBicester/5004-UA005241-BMR-03-SurfaceWaterDrainageStrategy.pdf

[19] Cherwell District Council (2009) Cherwell and West Oxfordshire Strategic Flood Risk Assessment. http://www.cherwell.gov.uk/index.cfm?articleid=4356

[20] BS 8110-1:1997, Structural Use of concrete. *Code of Practise for Design and Construction*: British Standards, 1997.

12. Ground Conditions and Contamination

Introduction

12.1. This Chapter seeks to assess the effect of the Himley Village Development on ground conditions and soil and groundwater contamination. In particular, it considers the potential effects of soil and groundwater contamination on environmental receptors including human health and the quality of surface waters and groundwater.

12.2. This Chapter describes the legislative and policy context, the methods used to assess the effects, the baseline conditions currently existing at the Site and surrounds, together with the potential direct and indirect effects of the Himley Village Development both during construction and operation. The mitigation measures required to prevent, reduce or offset the effects are outlined together with the residual effects.

12.3. The Chapter has been written by Waterman Energy, Environment & Design and largely draws on information collated from an Envirocheck report and consultation with key departments within Cherwell District Council including Environmental Health, Building Control and Planning. In addition, a number of third party reports are available for areas in the vicinity of the Site. These reports and information is provided in a number of technical appendices as follows:

- **Technical Appendix 12.1**: Landmark Envirocheck Report and Historical Maps;
- **Technical Appendix 12.2**: Landmark Envirocheck Datasheets;
- **Technical Appendix 12.3**: Cherwell District Council Consultation Responses;
- **Technical Appendix 12.4**: Hyder Consulting (UK) Limited. NW Bicester Eco Development. Desk Study – Masterplan Site. Ref. 2501-UA001881-UP33R-01. November 2010;
- **Technical Appendix 12.5**: Hyder Consulting (UK) Limited. NW Bicester Eco Development. Groundwater Supply: Feasibility Study. Ref. 5040-UA005241-UP31R-01. October 2013
- **Technical Appendix 12.6**: Hyder Consulting (UK) Limited. NW Bicester Eco Development. Geotechnical Interpretive Report – Masterplan Site. Ref. 2507-UA001881-UP33R-01. February 2011.

Legislation, Planning Policy & Guidance

12.4. Land contamination is regulated under several regimes including environmental protection, environmental permitting, waste management, planning and development control, and health and safety legislation. A summary of the relevant national legislation is provided below.

Legislation

Environmental Protection Act, 1990

12.5. Specific UK legislation on contaminated land is principally contained within Part IIA of the Environmental Protection Act (EPA), 1990, as inserted by Section 51 of the Environment Act 1995[1]. The legislation endorses the principle of a 'Suitable for Use' approach to contaminated land, where remedial action is only required if there are unacceptable risks to defined Statutory Receptors which include human health and the receiving environment, taking into account the use of the land and its environmental setting.

Contaminated Land (England) Regulations, 2006

12.6. The Contaminated Land (England) Regulations, 2006[2] and accompanying statutory Guidance (Defra Circular 01/2006)[3] provide amendments to and supersede the original Regulations and Guidance issued in 2000. The amendments largely address the incorporation of land contamination by virtue of radioactivity. The Guidance describes a risk assessment methodology in terms of 'significant pollutants' and 'significant pollutant linkages' within a source-pathway-receptor conceptual model. The model comprises:

- The principal pollutant hazards (source) associated with the Site;
- The existence, or absence, of plausible pathways which may exist between the identified hazards and receptors(s); and,
- The principal Statutory Receptor(s) at risk from the identified hazards, for example, people, environmental assets, surface, or groundwater.

12.7. For land to be determined as 'contaminated' in a regulatory sense, and therefore requiring remediation (or a change to a less sensitive use), all three elements (source-pathway-receptor) of a significant pollutant linkage must be present. The legislation places a responsibility on the Local Authority to determine whether the land in its area is contaminated by consideration of whether:

- Significant harm is being caused;
- There is a significant risk a significant harm being caused; or,
- Pollution of Controlled Waters is being, or is likely to be, caused.

And, in regard of radioactivity:

- Harm is being caused; or
- There is a significant possibility of such harm being caused.

12.8. Local Authorities rely heavily on the advice of the Environment Agency in relation to environmental matters for example in their approach to the analysis of pollution of 'Controlled Waters'.

Water Resources Act, 1991

12.9. The Water Resources Act[4] seeks to protect the quality of groundwater, surface water and marine waters, collectively defined as 'Controlled Waters.' The Act is of specific relevance to soil contamination in those cases where the nature, extent and mobility of contamination present a risk of pollution to Controlled Waters. In such cases, the land owner is committing an offence if the pollution of Controlled Waters is not prevented once the Site has been identified as being a source of contamination.

National Planning Policy

National Planning Policy Framework, 2012

12.10. In addition to the contaminated land regime, contamination is also managed via the planning regime, through the National Planning Policy Statement Framework (NPPF) 2012[5]. The NPPF sets out the government's planning policies and how they are expected to be applied. With regard to new developments the NPPF aims to prevent 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 or land instability.

12.11. In addition, the NPPF sets out that when considering a planning application, a site must be suitable for its new use taking account of ground conditions and land instability, including hazards from

natural sources or former activities such as mining or pollution arising from previous uses. This should be balanced against any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation.

12.12. The NPPF also outlines that post remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990.

Supplement to Planning Policy Statement 1: EcoTowns, 2009

12.13. The Government's objectives for eco-towns are set out in the Supplement to Planning Policy Statement (PPS) 1 and include to promote sustainable development by amongst other items, ensuring that eco-towns achieve sustainability standards significantly above equivalent levels of development in existing towns and cities.

12.14. Contaminated land is not specifically mentioned in the PPS1 Supplement, however there is a requirement that the development will not result in a deterioration in the status of any surface waters or ground-waters affected by the eco-town. In addition, measures should be incorporated in the water cycle strategy for improving water quality and managing surface water, groundwater and local watercourses to prevent surface water flooding from those sources.

Local Planning Policy

Cherwell Local Plan, 1996

12.15. The Council's main environmental objective contained in the 'Cherwell Local Plan' is to seek to protect the environment and prevent pollution through the control of development. Through the implementation of the Plan, the Council will 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.

12.16. Water Quality and Contaminated Land are addressed in Chapters ENV7 and ENV12. ENV7 states that development which will adversely affect to a material level, the water quality of surface or underground water bodies, including rivers, canals, lakes and reservoirs as a result of directly attributed factors will not be permitted.

12.17. Chapter ENV12, Contaminated Land, states that 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 further occupiers of the Site. In addition, the development will only be permitted if it is not likely to result in contamination of the surface or underground water resources.

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

12.18. The Cherwell Local Plan is due to be amended and proposed modifications have been submitted. Limited changes relate to ground conditions and contaminated land, however, is noted that the modified plan states that housing development in Cherwell will be expected to make effective and efficient use of land. The Council will encourage the re-use of previously developed land in sustainable locations.

Guidance

Eco-Bicester – One Shared Vision, December, 2010

12.19. Eco-Bicester, December 2010 sets outs the shared vision of the Eco Bicester Strategic Delivery Board (SDB) by detailing the standards for the eco development including people, places, transport, environmental sustainability and infrastructure.

12.20. No specific measures relating to ground conditions or contaminated land are noted. However, the above document identifies that measures will be incorporated in the water cycle strategy for improving water quality and managing surface water, groundwater and local watercourses to prevent surface water flooding from those sources.

Assessment Methodology and Significance Criteria

Assessment Methodology

12.21. The report is based on the following information sources:

- Site Reconnaissance undertaken on 12 November 2014;
- Landmark Envirocheck Report and Historical Plans;
- Consultation with relevant geological and hydrogeological maps; and
- Consultation with Cherwell District Council Departments of Environmental Health, Building Control and Planning.

12.22. In addition a number of third party reports which are available on the Eco Biceseter web-site[6] and are provided as technical appendices for ease of reference have been reviewed which relate to areas of the Site:

- Hyder Consulting (UK) Limited. NW Bicester Eco Development. Desk Study – Masterplan Site. Ref. 2501-UA001881-UP33R-01. November 2010;
- Hyder Consulting (UK) Limited. NW Bicester Eco Development. Groundwater Supply: Feasibility Study. Ref. 5040-UA005241-UP31R-01. October 2013;
- Hyder Consulting (UK) Limited. NW Bicester Eco Development. Geotechnical Interpretive Report – Masterplan Site. Ref. 2507-UA001881-UP33R-01. February 2011.

12.23. The Preliminary Environmental Risk Assessment contained within this Chapter has been undertaken in general accordance with the Model Procedures for Management of Land Contamination (Contaminated Land Report 11 – Environment Agency, September 2004).

12.24. The desk study information above has been collated and reported in general accordance with current best practice guidance on the assessment of contaminated land, including the DEFRA Contaminated Land Report 11.

12.25. A preliminary conceptual model for the Site is included as Table 12.8 to summarise the potential hazards and risks at the Site.

Significance Criteria

12.26. Contaminated land legislation and guidance focuses on the site-specific assessment of potential pollutant linkages. There is no specific methodology or guidance for the assessment of impacts on ground conditions for the purposes of EIA. Significance criteria have therefore been developed based on professional judgement and relevant experience, using the standard criteria adopted by

Waterman for Environmental Statements, as outlined in Chapter 2: EIA Methodology. The criteria are based on the potential magnitude and duration of the effect, the sensitivity of the receiving environment and the likelihood of the impact occurring. An explanation of the significance criteria used in this Chapter is provided in Table 12.1.

12.27. For the purposes of ground conditions assessment, the 'risk' presented by a site is determined using a source-pathway-receptor model, in line with regulatory requirements and best practice.

Table 12.1: Significant Criteria for Ground Conditions and Contamination Assessments

Magnitude of Change	Criteria
Substantial Adverse	High risk site classification – acute or severe chronic effects to human health and/or animal/ plant populations predicted. Effect on a potable groundwater or surface water resource of regional importance e.g. Principal Aquifer, public water reservoir or inner protection zone of a public supply borehole.
Moderate Adverse	Medium risk site classification and proven (or likely significant) pollutant linkages with human health and/or animal/plant populations, with harm from long-term exposure. Effect on a potable groundwater or surface water resource at a local level e.g. effect on an outer groundwater source protection zone. Temporary alteration to the regional hydrological or hydrogeological regime or permanent alteration to the local regime.
Minor Adverse	Medium risk site classification and potential pollutant linkages with human health and / or animal / plant populations identified. Reversible, localised reduction in the quality of groundwater or surface water resources used for commercial or industrial abstractions, Secondary Aquifer etc.
Negligible	Low risk site classification – No appreciable impact on human, animal or plant health, potable groundwater or surface water resources.
Minor Beneficial	Risks to human, animal or plant health are reduced to acceptable levels. Local scale improvement to the quality of groundwater or surface water resources used for commercial or industrial abstraction.
Moderate Beneficial	Significant reduction in risks to human, animal or plant health, to acceptable levels. Significant local improvement to the quality of potable groundwater or surface water resources. Significant improvement to the quality of groundwater or surface water resources used for public water supply.
Substantial Beneficial	Major reduction in risks to human, animal or plant health. Significant regional scale improvement to the quality of potable groundwater or surface water resources.

Baseline Conditions

Current Land-use

12.28. The Site, which is irregular in shape, is accessed from the B4030 highway located adjacent to the southern Site boundary through a metal farm gate. A track runs from this gate to Himley Farm yard. The farm yard comprises three adjoined structures; a farm house (barn conversion), barn, and outbuildings and connected lean-to structure. A wooden shed housing goats is present in the west of the farm yard along with a breeze block structure of unknown use. A breeze block and metal clad, steel framed barn is present in the south of the farm yard and is utilised for the storage of hay bales and farm animals. A waste storage area is located to the north of the farm yard and was

recorded to hold old wires, wood, and metal including a 1,400 litre diesel fuel tank located on hardstanding.

12.29. The farm yard is surrounded by fields in all directions totalling 10 parcels of land. The field directly adjacent to the west of the farm yard was currently occupied by sheep enclosed within an electric fence. The field adjacent to the southeast of the farm yard is occupied by pig sties, horses, sheep and cows separated by electric fences. A pond is also present within the south of the field and within the field directly to the north and northeast of the farm yard. Ditches, which were observed to be dry at the time of inspection, and hedgerows separate the parcels of land at the Site. The fields in the south of the Site have been utilised for the cultivation of crops. An area of mounded soil, now vegetated, was noted to the centre and south of the Site.

12.30. Himley Farm Bungalow is located in the south of the Site, adjacent to the west of the access track. The bungalow is accompanied by a 500 litre gas oil tank utilised to heat the bungalow. A garage and tractor are located to the immediate north of the bungalow with a 2,400 litre double skinned diesel oil tank, located on a small block of concrete hardstanding. To the south of the bungalow lies a fenced off area with chicken coops and turkeys. A 1,000 litre diesel oil tank is located to the east of this area.

12.31. Three lines of overhead electrical cables cross the Site.

12.32. A site features plan detailing potential current contaminative land uses at the Site is presented as **Figure 12.1.**

Historical Land-use

12.33. A review of historical maps obtained from Landmark Information Group and a summary of relevant information is shown in chronological order in Table 12.2.

12.34. In summary, the Site was denoted as farmland in the early maps which has remained in use as farmland until present mapping. A number of farms and farm buildings are denoted at discrete intervals at the Site. A large section towards the north-western boundary is denoted as Piggeries from 1996.

Table 12.2: Summary of Site History

Source	Site	Surroundings
1881 Oxfordshire 1:2,500	The Site is denoted as farmland divided into a series of fields with a number of tree lined roads. Himley Farm is denoted within the centre of the Site as an L-shaped building and an outhouse. Parkers Farm is denoted at the north-western corner of the Site.	The surrounding area comprises of similar farmland divided into a series of fields by tree-lined roads and field boundaries. A number of farms surround the Site. Bicester is located approximately 1.5km to the east of the site boundary.
1899 &1900 Oxfordshire 1:2,500 and 1:10,000	No significant changes noted.	A series of small ***Quarries*** are denoted approximately 200m and 400m to the southwest and southeast of the Site.
1922 & 1923 Oxfordshire 1:2,500 and 1:10,000	Further buildings are denoted around Himely Farm. Parkers Barn is now denoted ***as Feoffee Barn*** with a small pond adjacent. A small excavation with Spring denoted is located in the centre of the Site.	A ***Limekiln Quarry*** is denoted approximately 500m to the northeast of the Site

Source	Site	Surroundings
1967-68 Ordnance Survey Plan 1:2,500	An unnamed building is denoted at the southern boundary. Himley Farm has increased in size with further buildings denoted.	No significant changes noted.
1971-1995 Ordnance Survey Plan 1:2,500	No significant changes noted.	No significant changes noted.
1988 Ordnance Survey Plan 1:10,000	No significant changes noted.	Bicester has increased in size and the western boundary is located approximately 200m from the eastern site boundary.
1996 Ordnance Survey Plan 1:2,500	A large area at the north-west corner of the Site is denoted as ***Piggeries.***	No significant changes noted.

Ground Conditions

12.35. The natural geological sequence beneath the Site is summarised in Table 12.3. It has been established from the British Geological Survey 1: 50,000 scale Geological Maps, Sheet 219 (Solid[7] and Drift Edition).

12.36. The geological maps indicate that the Site is underlain by the Great Oolite Group comprising of Cornbrash Limestone (CB), which is in turn underlain by the Forest Marble Formation (FMF). At a greater depth the Site is underlain by White Limestone Formation (WLF). The geological maps indicate that superficial deposits are likely to be absent from the Site.

12.37. Ground Investigation works have been conducted in the vicinity of the Site, which provides information on the likely ground conditions at the Site:

- Topsoil 0-0.2m thickness;
- Subsoil 0.2-0.6m (up to 0.8m deep in places), comprising an orange/brown gravelly/sandy Clay or sandy clayey Gravel;
- Weathered Limestone 0.6m to 1.9m (up to 2.9m deep in places) of yellow sandy Gravel and in places yellow/grey Clay, grading to completely weathered Limestone (Cornbrash Formation); and,
- Cornbrash Formation – from 1.9 to 7m depth, alternating Limestone and Clay bands of the Cornbrash Formation.

Table 12.3: Summary of Ground Conditions

Stratum	Area Covered	Estimated Thickness	Typical Description	Encountered Strata
Cornbrash Limestone	Whole Site	10m	A blue-ish grey to olive / brown limestone which is medium to fine-grained, predominantly bioclastic wackestone and packstone with sporadic peloids.	Weathered limestone surface between 0.6 and 1.9m bgl, described as yellow sandy gravel in places yellow/grey Clay. 1.9 to 7.0m bgl Cornbrash Limestone described as alternating Limestone and Clay bands.

Stratum	Area Covered	Estimated Thickness	Typical Description	Encountered Strata
Forest Marble Formation	Whole Site	5 – 10m	Grey calcareous mudstone with lenticular beds of bioclastic, ooidal limestone.	Not encountered.
White Limestone Formation	Whole Site	5 – 15m	Mainly fine grained limestone (mudstone may be present)	Not encountered.

Ground Gas

12.38. Limited ground gas monitoring has been undertaken to date across a wider Site which is detailed within the Hyder Geotechnical Interpretive Report (Ref. 2507-UA001881-UP33R-01). The ground gas results to date indicate the Site may be designated as a Characteristic Situation 1, requiring no special precautions. This is considered a preliminary classification which should be confirmed in future site investigations.

12.38. A landfill Site, Gowell Farm, is located approximately 320m to the northeast of the Site, (Ref. EAHLD13573) which was licensed for the disposal of inert industrial, commercial and household waste. This landfill may represent a source of both off-site contamination and ground gas.

Radon

12.39. The landmark Envirocheck datasets state that the Site is within an area that does not require radon protection measures. However, the BRE Guidance[8] on Radon indicates the Site is within an area where basic radon protection measures should be installed, or a BR 211 Radon Report[9] should be obtained. A BR 211 Report is available within the Hyder Desk Study (Ref. 2501-UA001881-UP33R-01) which indicates the Site will require Basic Protection Measures within buildings and structures.

Controlled Waters - Hydrogeology

12.40. The Environment Agency Groundwater Designation Maps[10] classifies the underlying Cornbrash Limestone as a Secondary A Aquifer and the Forest Marble Formation as a Principal Aquifer. The Site does not lie within a Groundwater Source Protection Zone.

12.41. There are a total of four licensed groundwater abstraction points, reported by the Envirocheck within 1,000m of the Site boundary. All abstractions are from the Great Oolite Member and are licenced for General Farming and Domestic use. The groundwater abstraction points are located at 640m to the east, 780m to the northeast, 860m to the south-east and 985m to the south of the Site. The Envirocheck report does not report any licensed groundwater abstractions on Site.

12.42. There is a licensed discharge registered to the Site located at Himley Barns for the discharge of final/treated sewage effluent to a freshwater tributary of Pingle Stream. Further licenses are held at other farms and properties surrounding the Site. It is likely these discharges relate to septic tank discharges to the ground.

12.43. Groundwater was encountered within a number of trial pits excavated by Hyder during the ground investigation, but not consistently within all pits. Groundwater was struck between 0.6m and 2.6m bgl, which is consistent with the top of the Cornbrash Limestone strata.

12.44. Information within the third party reports indicates that the groundwater flow is likely to follow the regional geological dip towards the south-east. Local variations maybe present towards the watercourses.

Controlled Waters - Hydrology

12.45. There are no watercourses on Site, however, 2 No. ponds are located to the centre of the Site, refer to **Figure 12.1** for location. In addition, a number of drainage ditches are located at field boundaries, which were all noted to be dry at the time of the Site visit.

12.46. The nearest watercourses are approximately 400m to the north and 260m to the south of the Site. The Gagle Brook is designated as a Secondary River and is located approximately 260m to the south of the Site at its nearest point. The Langford Brook is designated as a Tertiary River and is located 400m to the north of the Site. The Langford Brook is a tributary of the River Bure.

12.47. The Landmark Envirocheck also identifies two below ground watercourses designated as 'Culverts more than 50m in length' located approximately 285m to the northwest and southwest of the Site.

Cherwell District Council Consultation

12.48. The Environmental Protection Officer at CDC was contacted with respect to relevant information pertaining to the Site. The full consultation response is presented in **Technical Appendix 12.3**, a summary is provided below:

- The Site has not been determined as Contaminated Land under Part 2A of the Environmental Protection Act 1990. The information CDC has on the Site does not indicate the Site is likely to be determined as Contaminated Land;
- The Site may be investigated in the future under CDC's inspection duties for Part 2A due to historical land uses on the Site;
- There are no records of landfills / Made Ground on the Site or within 50 metres of the Site. There is a record of a small historical surface water feature on the Site which may have been infilled;
- The bedrock at the Site is Cornbrash Limestone, which is a Secondary A Aquifer;
- No records of abstraction boreholes exist at the Site. However, 2No. boreholes are located in the immediate vicinity of the Site, the nearest of which is at Gowell Farm, Biceser; and,
- No water wells or private water wells are known to exist at the Site.

12.49. The Building Control Officer (BCO) was contacted with respect to relevant information pertaining to the Site. The BCO confirmed that the area has historically comprised of farmland and the solid deposits are likely to be Cornbrash so unlikely to require more than 1000 deep foundations. In addition, a Radon survey would be recommended to confirm the need for Basic protection measures. Full details of the consultation are presented in **Technical Appendix 12.3**.

12.50. Consultation with the Planning Department was undertaken and all planning information is held on-line with the Council's planning portal. All planning related information was downloaded from the website and is presented in **Technical Appendix 12.3**, a summary of relevant information is provided below:

- Installation of a Klargester Biodisc (septic tank) to service Himley Barns in 2009. Ref. 09/00031/F;
- Conversion of 2 adjoining barns to form 1 dwelling with bed and breakfast accommodation in 2007. Ref. 07/00729/LB; and
- Construction of two agricultural buildings with apron in 2006. Ref. 06/01477/AGN.

Unexploded Ordnance

12.51. The Site is located approximately 4km to the west of Bicester Airfield and 8km to the south-east of Upper Heyford Airfield. Bicester Airfield was operational from 1911, and was used for training

purposes only and did not run operational duties. Upper Heyford was also operational from 1916 and was also used for training uses. Both locations were possible targets for bombing regimes in World Wars and therefore an Unexploded Ordnance Risk (UXO) is considered to exist.

12.52. A Regional Unexploded Bomb Risk Map, Oxfordshire Report was commissioned by Hyder to investigate the UXO risk at the Site. The report states the UXO risk at the Site is considered to be Low, which is defined as are those areas with a bombing density of up to 10 bombs per 1000 acres.

Current Potentially Contaminating Sources

12.53. The Site walkover, undertaken by Waterman on 12 November 2014, identified a number of potentially contaminating sources, refer to **Figure 12.1** for locations. Table 12.4 presents a summary of these activities.

Table 12.4: Summary of Current and Historic Contamination Sources Identified at the Site

Source	Potential Contaminant	Key Potential Hazards and Pathways
General farming practices	Metals, pathogens, fertilisers, fuels	Contamination of soils and subsequent risk to human health via direct contact, inhalation, ingestion of soil and home-grown vegetables. Contamination of groundwater underlying the Site through vertical and lateral migration.
Piggery	Metals, pathogens, fertilisers, fuels	Contamination of soils and subsequent risk to human health via direct contact, inhalation, ingestion of soil and home-grown vegetables. Contamination of groundwater underlying the Site through vertical and lateral migration.
Radon	Radon gas	Inhalation of radon gas
2,400l diesel fuel tank	Diesel fuel – TPH and PAHs	Contamination of soils and subsequent risk to human health via direct contact, inhalation, ingestion of soil and home-grown vegetables. Contamination of groundwater underlying the Site through vertical and lateral migration.
1,400l diesel fuel tank	Diesel fuel – TPH and PAHs	
1,000l diesel fuel tank	Diesel fuel – TPH and PAHs	
500l gas oil tank	Oil/hydrocarbons – TPH and PAHs	
Potential Underground Septic Tank	Pathogens, and sewage including heavy metals	
Waste materials stored adjacent to farmhouse	Metals, hydrocarbons	Potential contamination of the soils and groundwater.
Mounded vegetated material	Made Ground, potential asbestos containing materials	Potential for Made Ground, construction materials and potential asbestos containing materials to be present. Potential risk to human health via direct contact, inhalation, ingestion of soil and home-grown vegetables. Contamination of groundwater underlying the Site through vertical and lateral migration.

12.54. A preliminary conceptual site model is presented in Table 12.5, illustrating the potential pollutant linkages at the Site.

Previous Ground Investigation Information

12.55. Hyder undertook a ground investigation (Ref. Ref. 2507-UA001881-UP33R-01) in 2010 across a much larger area, but including this Site. Chemical testing was undertaken for a range of contaminants. One elevated concentration of arsenic was recorded at one location, which was marginally above a residential with plant uptake end-use. The location of the elevated contaminant concentrations are unknown, however, they are considered to represent an indication of the likely contaminants to be recorded at the Himley Village Site.

Table 12.5: Preliminary Conceptual Site Model

Source	Pathway	Receptor	Risk	Justification
Human Health				
Made Ground and potential contaminants including metals, hydrocarbons, solvents, phenols, pesticides/ herbicides/ fertilisers	Direct Contact Ingestion of soil and dust Inhalation of dusts and vapours Ingestion of homegrown vegetables	Current and Proposed Site Users	Low to Medium	The potential exists for contamination to be present within areas of former use including around the farm buildings. The Himley Village Development will comprise an increase in hardstanding but gardens will be present within the residential areas allowing direct contact with the underlying soils
Diesel, gas oil and septic tanks	Direct Contact Ingestion of soil and dust Inhalation of dusts and vapours Ingestion of homegrown vegetables	Current and Proposed Site Users	Low to Medium	The potential exists for contamination to be present within areas of former use including farm buildings. The Himley Village Development will comprise an increase in hardstanding but gardens will be present within the residential areas allowing direct contact with the underlying soils.
Made Ground and potential contaminants including metals, hydrocarbons, solvents, phenols, pesticides/ herbicides/ fertilisers, pathogens	Direct Contact Ingestion of soil and dust Inhalation of dusts and vapours	Construction Workers	Medium	The potential exists for contamination to be present within the Site soils. However, with good Site management and Health and Safety procedures the risk can be reduced to Low.
Controlled Waters				
Made Ground and potential contaminants including metals, hydrocarbons, solvents, phenols, pesticides/ herbicides/ fertilisers, pathogens	Leaching from Site soils Groundwater migration	Secondary A Aquifer	Medium	The limited thickness of soils and potentially permeable nature of the superficial deposits indicates a potential pathway to the underlying aquifer.
Diesel, gas oil and septic tanks	Leaching from Site soils Groundwater migration	Secondary A Aquifer	Medium	The limited thickness of soils and potentially permeable nature of the superficial deposits indicates a potential pathway to the underlying aquifer.

Source	Pathway	Receptor	Risk	Justification
Made Ground and potential contaminants including metals, hydrocarbons, solvents, phenols, pesticides/ herbicides/ fertilisers, pathogens	Surface water runoff to streams Groundwater migration	On-Site Ponds, Gagle Brook to the south and Langford Brook to north	Low to Medium	The limited thickness of soils and potentially permeable natures of the superficial deposits indicates a potential pathway to the on-site ponds. The distance to the off-site watercourses reduces the risk to Low.
Ground Gas				
Ground Gas (Made Ground, in-filled areas or off-site Landfill)	Migration of gas through the subsurface	On-Site buildings	Low to Medium	The limited thickness of superficial deposits is likely to reduce the risk of ground gas generation on site. The off-site landfill represents a potential risk due to migration of ground gas onto the Site through the permeable superficial deposits.
Radon	Migration of gas through the subsurface	On-site buildings	Low to Medium	A potential risk exists at the Site which should be further investigated to determine the need for protection measures.

Potential Effects

Demolition and Construction

12.56. Limited buildings and structures are present at the Site. Himley Farm Bungalow and the buildings adjacent to Himley Farm will be subject to demolition and the existing above ground fuel tanks will be removed. Mounded areas of soil which have become vegetated and which may represent areas of Made Ground and therefore a potential contamination source, would be removed. The removal of potential primary contamination sources would result in a **permanent local minor beneficial** effect.

12.57. Material will be generated as a result of the demolition of existing buildings on the Site, and as part of construction processes such as excavation of foundations, excavation for services and potentially removal of contaminated soil hotspots (if identified). Laboratory analysis would be undertaken to determine the re-use potential of the excavated soils within the Himley Village Development, where possible. Should re-use on Site not be possible, use at other construction sites within the vicinity would be investigated. Excess material would be taken to an off-site waste management facility for re-use or disposal. The receiving waste management site would be appropriately licensed and assuming that legislative requirements are adhered to, the re-use or disposal of this material would result in a **negligible** effect in relation to contamination.

12.58. The construction works for the Himley Village Development have the potential to affect local groundwater and surface water quality through:

- Introduction of new pathways for contaminants in the soil and groundwater e.g. through foundations extended into bedrock;
- Mobilisation or release of contamination which is currently present in a stable or contained form in the soil or groundwater e.g. during excavation of foundations etc.

- Introduction of potentially polluting activities to the Site during construction e.g. concrete pouring, release of suspended sediments to surface waters, storage of fuels and chemicals in the Site compound, spills and leaks of fuels and oils from construction vehicles etc; and
- Incorrect disposal of surface water and shallow groundwater that is likely to collect within excavations during the construction works.

12.59. It is considered that at worst, a **temporary local minor adverse** effect could occur to the on-Site ponds and the underlying Secondary A Aquifer and potentially the underlying Principal Aquifer.

12.60. Although the extent of contamination at the Site is likely to be limited and soil contamination would be removed during excavation works (if considered necessary), there remains potential for damage to new concrete foundations and structures and plastic service pipework through direct contact with residual contaminated soils. This is considered to be at worst a **permanent local minor adverse** effect for the Development, which can easily be mitigated as discussed below.

12.61. Construction staff, may be exposed to contaminants during the construction phase, particularly during the earthworks operations e.g. through direct contact, ingestion of soils or inhalation of dust and / or vapours. However, worker safety is subject to mandatory Health and Safety regulations. These regulations set out the extensive requirements for the protection of the workforce and stress the importance of appropriate procedures in the event of the workforce encountering pockets of unknown contamination.

12.62. Adherence to the legislative requirements described above would significantly reduce the health and safety risk posed to construction site workers by minimising the risk of direct and/or indirect inhalation, ingestion or contact with contaminated soil, dust, gas, groundwater or contaminated surface water run-off. The potential contamination risks and effects of the demolition and construction works on site workers would therefore be **negligible**.

12.63. In respect of public safety, the Site would be surrounded by hoarding and secured. The risk to individual members of the public during demolition and construction works would therefore be **negligible.**

Completed Development

12.64. A qualitative assessment of likely completed Development effects has been undertaken, based on reasonable worst case assumptions. The completed development could potentially affect ground conditions on the Site via the introduction of:

- New sensitive receptors onto the Site, namely future residential site users; and,
- Potential sources of hydrocarbon contamination through storage of fuel and localised fuel spillages in car parks / residential properties / roads.

12.65. Potentially sensitive contamination receptors (in relation to human health) would comprise site users and staff. Although the potential for contamination at the Site is expected to be relatively limited and likely to be restricted to areas around the existing buildings, there remains potential for areas of contamination to be encountered. In the absence of mitigation, the potential effects on human health receptors are considered **permanent, local** and **minor adverse.**

12.66. The Development will comprise an increased percentage of hardstanding groundcover compared to the existing site uses. However, it is anticipated that surface water will be collected and directed into swales to detention basins to infiltrate back into the ground or discharge to existing watercourses. The effects of the Development on the controlled waters receptors is considered to be **negligible**.

12.67. As described in Chapter 5: The Proposed Development, the Development would comprise residential, commercial and community uses. These land uses are considered unlikely to introduce a potentially significant pollution source although fuel storage for backup generators and within the energy centre is likely to be present. However, fuel would be located on hardstanding within the buildings or in bunded areas constructed in accordance with current legislation[11] [12]resulting in a low risk of future contamination of the ground and therefore a **negligible** effect. The risk future contamination of the ground and therefore a **negligible** effect.

12.68. Vehicles associated with the Development will be parked in a number of areas on site. Oil-water interceptors will be installed within main and public car parking areas to minimise the potential for oils to enter the surface water drainage system. There is therefore potential for a pollution incident although the magnitude of such an incident with controlled drainage is likely to be low. The resultant impact is considered to be **negligible.**

12.69. Waste collection, waste water treatment plant and waste segregation areas would be located on hardstanding resulting in a **negligible** effect.

12.70. The Site is located within an area of potential radon risk, which may require basic radon protection measures within buildings and structures. On the basis that such protection measures will be installed in line with the requirements of the Building Regulations, the presence of new sensitive receptors on the Site would result in **negligible effects**.

Mitigation

Demolition and Construction

12.71. Further ground investigation work will be undertaken, prior to commencement of the Himley Village Development to investigate potentially contaminated areas, delineate local anomalies and further inform foundation design. The investigation would be focussed around those areas of the Site with the potential for contamination to be present, for example around the fuel storage areas as well as providing a reasonable coverage across the remainder of the Site.

12.72. Following the ground investigation, a Remediation Strategy if required and materials management plan would be developed and agreed with Cherwell District Council (and the Environment Agency, if required). Following completion of any necessary remediation works, a site completion report would be issued to Cherwell District Council, for their acceptance of the works completed and to sign-off Development as being suitable for use.

Exposure of Soil to Leaching

12.73. Made Ground or spoil generated during the construction works containing 'leachable' (i.e. potentially soluble or otherwise mobile) contaminants would be identified through leachate testing and suitably contained, by bunding or similar containment measures, to prevent the release of contamination through surface water runoff.

Ground Works

12.74. The existing foundation slabs and areas of hardstanding to be removed as part of the demolition works would be screened and crushed for re-use on Site, where feasible. Demolition material would also be screened and crushed for re-use on-Site or in other nearby construction projects where possible.

12.75. Laboratory analysis would be undertaken to determine the re-use potential of excavated soils within the Himley Village Development, where possible. Should re-use on Site not be possible, use at

other construction sites within the vicinity would be investigated. Excess material would be taken to an off-site waste management facility for re-use or disposal.

12.76. Foundation operations would be undertaken in accordance with best practice guidance[13], in order that new pollutant pathways are not created between potential Made Ground and the underlying Secondary A Aquifer.

12.77. Service corridors would be protected from potential residual contamination in the soils and groundwater as required. A Water Supply Pipeline Risk Assessment will be undertaken and suitable materials installed.

Site Management

12.78. Method Statements and Risk Assessments will be prepared for construction staff and personnel. This would also include the requirement to damp down soils and stockpiles to minimise mobilisation of potentially contaminated soils as dust.

12.79. A Construction Environmental Management Plan (CEMP) would be implemented to ensure that fuels and potentially polluting or hazardous materials e.g. solvents and oils, are stored on areas of hardstanding within appropriately designed bunds, in accordance with Environment Agency Pollution Prevention Guidelines[14]. Spill kits would be available and deliveries of fuel would be supervised. The CEMP would also include general pollution prevention guidelines for the construction works, again based on Environment Agency guidance[15] together with an emergency action plan detailing action to be taken in the event of a spill.

12.80. Water would be removed from on-site excavations by use of sump pumps and diverted to temporary storage on-site prior to discharge. Some on-site pre-treatment e.g. filtration and/or oil separation may be required prior to discharge. Given the expected limited potential for encountering significant volumes of contaminated groundwater, it is currently proposed that this water would be discharged into the swales and detention basins forming part of the Sustainable Drainage System (SuDS). Should the water be contaminated and therefore be unsuitable for discharge via the SuDS, it would be disposed of under a trade effluent consent from Thames Water Utilities Limited. In the unlikely event that heavily contaminated water is identified, that fails the criteria of the trade effluent consent, it would be removed by tanker for off-site treatment and disposal.

Completed Development

12.81. All storage of chemicals or fuels would be stored in appropriate containers on hardstanding. In the unlikely event that fuels are stored outside, the fuel tanks would be appropriately bunded in accordance with current legislation. Oil-water interceptors would be installed on the drains from main and public car parking areas to minimise the potential for oils to enter the surface water drainage system. Surface water infiltration will be collected and stored in Detention Basins prior to discharge, the design of the surface water system will allow management of potentially impacted water. Soils used in areas of landscaping would be suitable for their intended use.

12.82. Radon protection will be required to be confirmed, however if necessary, basic radon protection measures would be installed within completed developments.

Residual Effects

Demolition and Construction

12.83. Through the completion of a site-specific site investigation, the potential for contamination at the Site will be further assessed. The Applicant is committed to undertaking site investigation works as part of the Himley Village Development, to ensure contamination risks are comprehensively addressed and the Development is 'suitable for use'. The strategy for any remediation works required would be agreed with Cherwell District Council. The Development is therefore considered to comply with the NPPF and the removal or remediation of potential contamination from the Site provides a residual **permanent, local minor beneficial** effect.

12.84. Providing mitigation measures are adequately implemented, residual effects to construction workers and controlled waters during the construction works, and to structures and services to be installed on-site are concluded to be **negligible**.

12.85. Implementation of a CEMP which would stipulate the use of bunded fuel tanks, contingency planning and other Site management measures would reduce contaminative risks to ground and groundwater via accidental spillage of materials and fuels resulting in a **negligible to temporary, local minor adverse effect**.

Completed Development

12.86. **Negligible** residual effects are anticipated for the Development once completed.

Summary and Conclusion

Table 12.6: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Treatment and disposal of contaminated soils	**Permanent** effect of **minor beneficial** significance at the **local** level**.**	Implementation of a further environmental ground investigation, assessment of the requirement for remediation and implementation of remediation measures to ensure reduction in potential contamination levels prior to disposal.	**Permanent** effect of **minor beneficial** significance at the **local** level**.**
General construction practices	**Permanent** effect of **minor adverse** significance at the **local** level**.**	Appropriate working methods will minimise the potential risks associated with introduction of new contamination or mobilisation of existing contamination during construction.	**Negligible**
Treatment of potentially contaminated soils on-site to allow re-use during the construction project	**Negligible**	None required	**Negligible**

Description of Effect	Potential Effect	Mitigation	Residual Effect
Contaminative risks to water resources posed by foundation activities	**Temporary effect** of **minor adverse** significance at the **local** level**.**	Implementation of a further intrusive ground investigation. Should significant contamination be recorded finalisation of foundation design with consultation with the Environmental Agency through a Foundation works Risk Assessment.	**Negligible**
Contaminative risks to water resources via leaching of soils	**Temporary, short to medium term, local and of minor adverse significance**	Implementation of a further environmental ground investigation, segregation and containment of contaminated soils to prevent uncontrolled release of runoff.	**Negligible**
Contaminative risks to ground and groundwater via accidental spillage of materials and fuels.	**Temporary, short term, local and of minor adverse significance**	Implementation of a CEMP which would stipulate the use of bunded fuel tanks and contingency planning and other Site management measures.	**Temporary, short term, local and of negligible to minor adverse significance**
Completed Development			
Contamination risks to future occupants of the proposed Development	**Minor Adverse**	Implementation of a further environmental ground investigation, assessment of the requirement for remediation and implementation of remediation measures and gas protection measures to buildings as necessary.	**Negligible**
Risks to future concrete and plastic pipework from residual contamination	**Minor adverse**	Implementation of a further environmental ground investigation. Completion of a Water Supply Pipeline Risk Assessment together with selection of an appropriate concrete classification.	**Negligible**
Contamination of the ground during operation	**Negligible**	Provision of petrol interceptors to external drainage as necessary. Appropriate storage of chemicals, fuel and waste.	**Negligible**
Ground gas / radon risk to future occupants of Development	**Negligible**	Implementation of suitable ground gas and radon protection measures in the affected areas if deemed necessary through ground investigation.	**Negligible**

References

1 Environment Protection Act (1990).
2 *The Contaminated Land (England) Regulations 2006: Statutory Instrument 2006.* No.1380. Environmental Protection.
3 *Environmental Protection Act 1990: Part 2A.* Contaminated Land. Defra Circular 01/2006.
4 *The Water Resources Act, 1991: Statutory Instrument 1911.* No. 57. Environmental Protection.
5 Department for Communities and Local Government. (2012) *National Planning Policy Framework.* Department for Communities and Local Government: London.
6 NW Bicester EcoTown – Draft Masterplan http://www.ecobicester.org.uk/cms/content/north-west-bicester-eco-town-draft-masterplan-submitted#.VJBelXlF3mJ
7 British Geological Survey Geological Survey. (2002) *Sheet 219 Buckingham.* Solid and Drift Edition: 1:50,000 Series.
8 BRE. (2007) *Radon, Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment.*
9 British Geological Survey. (2009) *BRE 211 Radon Report. Advisory report on the requirement for radon protective measures in new buildings and Extensions.* Report Id: GR_200946/1.
10 British Geological Survey. (2014) *Hydrogeology Viewer.* http://mapapps.bgs.ac.uk/hydrogeologymap/hydromap.html
11 DEFRA & the Environment Agency (2010*) Pollution Prevention Guidelines Above Ground Oil Storage Tank: PPG2.* *http://adlib.everysite.co.uk/adlib/defra/content.aspx?id=123124*
12 *Oil Storage Regulations (2001).*
13 Westcott, F, J., Lean, C, M, B. and Cunningham, M. L. (2001) *Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention.* National Groundwater & Contaminated Land Centre report NC/99/73.
14 Environment Agency. (2001) *General guide to the prevention of pollution.*
15 Environment Agency. (2012) *Working at construction and demolition sites: preventing pollution.*

13. Agriculture and Soils

Introduction

13.1. This chapter written by Waterman Energy, Environment & Design Ltd provides an assessment of the likely significant effects of the Himley Village Development on Agriculture and Soils. It considers the resources of agricultural land and soil material, as well as the farm businesses occupying the Site and neighbouring land that could experience effects resulting from the construction and operation of the Himley Village Development.

13.2. This chapter provides a summary of relevant legislation and planning policy and a description of the methodology adopted for the assessment. This is followed by a description of the relevant baseline conditions of the Site and the surrounding area, and an assessment of the likely significant effects of the Himley Village Development during construction and once completed and operational. Mitigation measures are identified, where appropriate, to avoid, reduce or offset any adverse effects, following which a summary of the residual effects of the Development is provided, having regard to mitigation adopted.

13.3. This chapter is supported by **Technical Appendix 13.1**: Agricultural Land Classification Baseline Data.

Legislation, Planning Policy & Guidance

13.4. The protection from non-agricultural development of the Best and Most Versatile (BMV) agricultural land is a long held objective in English Planning Guidance. Planning Policy Statement 7: Sustainable Development in Rural Areas (3 August 2004)[1] continued the planning guidance of the previous Planning Policy Guidance 7 with regard to the conservation of BMV agricultural land.

13.5. With the introduction of the National Planning Policy Framework (NPPF) 27 March 2012[2] the guidance to conserve BMV agricultural land is maintained.

National Planning Policy

National Planning Policy Framework, 2012

13.6. Paragraph 112 of the NPPF states:

> *Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. 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.*

13.7. The glossary of the NPPF gives the following definition:

> *Best and most versatile agricultural land: Land in grades 1, 2 and 3a of the Agricultural Land Classification.*

Local Planning Policy

Cherwell Local Plan, 1996

13.8. The Cherwell Local Plan adopted 1996[3], originally contained Policy AG1 that covered the protection of BMV agricultural land. However this policy was not saved following direction from the Secretary of State, so no longer forms part of the Local Plan.

Cherwell Non-Statutory Local Plan, 2011

13.9. Further development of the Cherwell Local Plan 2011[4] was discontinued in 2004 and was approved as Interim Policy for development control purposes. Planning development was then focused on production of a Local Development Framework (LDF), however the Non-Statutory Cherwell Local Plan 2011 is still used as planning guidance.

13.10. Within the plan direct policies relating to the protection of BMV such as Policy EN16 state that development on BMV agricultural land will not be permitted unless there is a greater need for the development following adequate assessment on alternative options. Land other than BMV land should always be used in preference.

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

13.11. The Cherwell Submission Local Plan[5] notes that the presence of BMV land has been taken into account in the identification of Policy Areas for residential and commercial development, such as Policy Bicester 1 which relates to the NW Bicester eco-town.

13.12. The emerging Policy Bicester 1: NW Bicester Eco Town, requires *'an assessment of whether the site contains best and most versatile land, including a detailed survey where necessary'.*

Guidance

Agricultural Land Classification

13.13. Natural England Technical Information Note 049 (TIN049)[6] Agricultural Land Classification: protecting the best and most versatile agricultural land, provides guidance on the application of the Agricultural Land Classification Guidelines[7] including survey methodology.

Code of Practice for the Sustainable Use of Soils on Construction Sites

13.14. The Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[8] provides guidance on the conservation of soil for beneficial reuse at development sites, safeguarding both the mass of the soil resource and its functional capacity. The application of this code of practice is voluntary, however following the guidance can deliver clear benefits in terms of sustainable use of a finite resource, minimising the generation of waste and sediment from a construction site and the cost effective delivery of the development.

Farming Circumstances

13.15. The NPPF does not provide direction on the potential effect of development on individual farm businesses. In the absence of such guidance, this chapter follows the advice given by the superseded Planning Policy Guidance Note 7 (PPG7) and considers the effect of development on the following factors:

- The location of development in relation to farms;
- Farm size and structure;
- Buildings and other fixed equipment;
- Irrigation; and
- Other effects of development on agriculture such as impact on drainage networks.

13.16. This practice is in common with EIA for other large development proposals, such as the recent High Speed 2 rail line. The Design Manual for Roads and Bridges[10] (Volume 11, Part 6) continues to reference PPG7 for the assessment of farming circumstances.

Eco-Bicester – One Shared Vision, December, 2010

13.17. The Eco Bicester document has no guidance relevant to Agriculture and Soils.

Assessment Methodology and Significance Criteria

Assessment Methodology

Agricultural Land Quality

13.18. As part of this assessment the Site has been subject to an Agricultural Land Classification (ALC) survey by a specialist Soil and Agriculture consultant. The on-Site ALC survey was undertaken in line with Natural England's TIN049, with a survey density at the semi detailed scale. Semi detailed scale (one soil sample point per two hectares) was chosen as existing ALC survey work to the north and east[9] shows extensive areas of Grade 3b land, with the same land form and underlying geology (the Cornbrash Formation limestone).

Soil Resources

13.19. The Code of practice for the sustainable use of soils on construction sites (Defra March 2011) recommends the use of the soil physical characteristics data, collected as part of an ALC survey, to identify topsoil and subsoil units for separate handling and beneficial reuse. This approach, followed in this assessment, continues the practice that was used by the former MAFF ALC survey teams for minerals sites to advise on appropriate land restoration,

Farming Circumstances

13.20. The assessment methodology for assessing farming circumstances is taken from the now superseded national planning guidance document PPG7.

Significance Criteria

13.21. Best and most versatile agricultural land is a strategic, finite and irreplaceable national resource with longstanding policy to prevent the unnecessary loss of such land to non-agricultural development. Land in ALC Grades 1, 2 and 3a is considered to be the nation's best and most versatile land. Paragraph 112 of the NPPF directs that where it is deemed necessary to develop on the best and most versatile land, land in lower grades should be taken in preference to land in higher grades where possible.

13.22. Agricultural land cannot practically be created or translocated. Nor can a compensatory area of land have its ALC grade enhanced. There is therefore no beneficial effect or mitigation with regard to agricultural land quality.

13.23. Land has a soil resource associated with it. This soil has a functional capacity that can be degraded or lost (for instance contamination of soil) in addition to the potential for loss of the soil material itself. Some functions of soil, such as preservation of cultural artefacts and the support of biodiverse habitats, are covered in other topics of this ES. For this chapter the capacity of the soil for agricultural production is the primary issue.

13.24. Soil is for all practical intents and purposes a non-renewable resource. Therefore the preservation and beneficial reuse of this resource is desirable in its own right, for instance subsoil arisings used for structural landscaping and biodiverse habitat creation, and topsoil preserved for amenity planting, residential and community gardens.

13.25. As for the loss of agricultural land and soil there are no set significance criteria for effects on farm businesses or the individual enterprises of a farm business. Effects can include the direct loss of land to a farm business, and the indirect limitation of agricultural land use.

13.26. For the agricultural land resource, the presence of best and most versatile land is considered 'sensitive', and the absence 'insensitive'. There are therefore no gradations of sensitivity for the presence of land in Grades 1, 2 and 3a. Magnitude for effects on best and most versatile land takes into account the quality and extent of the affected land and the nature of the development.

13.27. The sensitivity of soil material varies in relation to its physical characteristics, for instance high clay content increasing the vulnerability of soil to structural damage while in a wet and plastic consistency. Topsoil is typically of greater sensitivity than subsoil as it is more limited in extent and the higher organic matter content can fuel a faster transition to anaerobic conditions.

13.28. The sensitivity of farmland and farm enterprises can vary, for instance breeding livestock being more sensitive to disturbance from dog walkers than arable cropping.

13.29. Tables 13.1, 13.2 and 13.3 illustrate the magnitude of impact criteria for agricultural land resource, soil and farm businesses used in this EIA. These magnitude criteria are not absolute, and can be qualified, for instance looking at the relative areas of land quality grades affected, and a farm business as a whole, rather than individual enterprises.

Table 13.1: Magnitude of Change Criteria: Agricultural Land Resource

Magnitude of Change	Criteria
High	Loss of BMV land including higher quality land in Grades 1 and 2. (Adverse)
Medium	Loss of Best and Most Versatile (BMV) land in Grade 3a. (Adverse)
Low	Loss of productive agricultural land in Grade 3b. (Adverse)
Negligible	No loss of agricultural land.

Table 13.2: Magnitude of Change Criteria: Soil Resources

Magnitude of Change	Criteria
High	Disposal of topsoil or loss of productive functional capacity e.g. land contamination. (Adverse)
Medium	Loss of topsoil for agricultural production but retained for beneficial reuse, or degradation of productive capacity. (Adverse)
Low	Loss of subsoil for agricultural production but retained for beneficial reuse. (Adverse)
Negligible	Marginal loss of soil material such as light erosion from construction easement. (Adverse)

Table 13.3: Magnitude of Change Criteria: Farming Circumstances

Magnitude of Change	Criteria
High	Termination of a farm business. (Adverse) Creation/expansion of primary farm enterprise. (Beneficial)

Magnitude of Change	Criteria
Medium	Termination of a farm enterprise. (Adverse) Creation/expansion of new farm enterprise. (Beneficial)
Low	Constraint of a farm enterprise. (Adverse) Enhancement of existing farm enterprise. (Beneficial)
Negligible	Minor interruption to farm enterprise planning. (Adverse) Temporary enhancement of existing farm enterprise. (Beneficial)

Table 13.4: Sensitivity of Receptor: Soil Resources

Sensitivity/Value of Receptor	Example Criteria
Very High	Eroded soil material causing contamination (sediment, eutrophication and pathogens).
High	Puddling of clay rich soil. Accumulation of persistent toxins such as heavy metals.
Medium	Compaction and structural degradation.
Low	Exposed soil surface vulnerable to erosion and capping.

Table 13.5: Sensitivity of Receptor: Farming Circumstances

Sensitivity/Value of Receptor	Example Criteria
Very High	Breeding livestock and stock with biosecurity restrictions.
High	High value vegetable and fruit crops.
Medium	Dairy requiring daily collection of perishable milk.
Low	Housed livestock.

Table 13.6: Impact Significance Matrix

		Magnitude of Change			
		High	Medium	Low	Negligible
Sensitivity of receptor	**Very High**	Substantial	Substantial / Moderate	Substantial / Moderate	Moderate / Minor
	High	Substantial / Moderate	Moderate / Minor	Moderate / Minor	Minor / Negligible
	Med	Substantial / Moderate	Moderate / Minor	Minor / Negligible	Negligible
	Low	Moderate / Minor	Moderate / Minor	Negligible	Negligible

Baseline Conditions

Agricultural Land Resource

13.30. A semi detailed ALC survey of the Site found agricultural land in Grades 3a (good quality agricultural land) and 3b (moderate quality agricultural land). Grade 3b predominates covering 74.5ha with Grade 3a covering 11.7ha.

13.31. The Grade 3b land comprises shallow, freely drained soils with common or many stones. The limited soil depth to the underlying Cornbrash parent material places a soil depth limitation on this land, which in places is joined by a topsoil stone content limitation where stones greater than 20mm exceed 15% of the soil volume.

13.32. Grade 3a land is found where there is a greater depth of soil over the underlying Cornbrash parent material. Depth and topsoil stone content do not limit overall ALC grade. The water retaining capacity of the medium textured soil coupled with the local climate conditions result in a soil droughtiness limitation to Grade 3a.

13.33. Non Agricultural land within the Site comprises farm and residential buildings, hard standing and woodland.

13.34. The ALC grade distribution is shown in **Figure 13.1**, with area estimates given in Table 13.7 below. **Technical Appendix 13.1** is the ALC survey report which includes field survey data.

Table 13.7: Agricultural Land Classification Grade Distribution

Grade	Area (hectares)	Area (percentage)
3a	11.7	13
3b	74.5	83
Non Agricultural	3.8	4
Total	90	100

13.35. A previous ALC survey for the NW Bicester Applications 1 and 2 shows ALC grades overlapping the Himley Village Site, outside of the boundary of the Application 1 and 2 Sites[11]. The overlapping area of mapped ALC grades from the Application 1 Site ES shows agricultural land to be predominantly Grade 3b, but with two small contrasting areas, one of Grade 3a land and one of Grade 4. As the original survey data supporting the identification of these two areas is not available and these small areas were not resolved by the semi detailed survey, they have not been mapped. Introducing these areas without the support of the site assessment would introduce selection bias to the field survey.

Soil Resources

13.36. Soil resources present on the site comprise medium textured topsoils with a variable stone content, overlying either a medium textured subsoil or the Cornbrash parent material without a significant subsoil below plough depth. The subsoil resource where present has a similar texture to the topsoil material, but with a lower organic matter content. The soil resource present at the Site is considered to be of medium sensitivity as it is vulnerable to loss of functional capacity through structural degradation that is both costly and time consuming to remediate.

Farming Circumstances.

13.37. Two farm businesses occupy land within the Site. Both are owner occupiers of the land.

13.38. The first, Farm Business A, occupies a single arable field that is part of a larger farm business. This field occupies the south eastern corner of the Site adjoining Middleton Stoney Road; a hedge with no gates separates this field from the remaining agricultural land within the Site. The total owner occupied area is approximately 25 acres (10.5 hectares). The landowner is understood to reside in Chile at present and the field is managed by an arable contractor. Contact was made with the landowner's arable contractor, but farming circumstances information for the whole of Farm Business A was not available from the landowner's agent within the assessment period. Therefore,

the scale and nature of this farm business is not known. The single arable field is considered to be of medium sensitivity, being productive for Farm Business A, but not crucial to the larger arable enterprise.

13.39. Farm Business B (Himley Farm) occupies the remainder of the agricultural land within the site. The only additional farmland owned by Farm Business B is the remainder of the three fields to the west cut by the Site boundary. This total owner occupied area (including that outside of the Site boundary) is approximately 220 acres (89 hectares). The farm does not rent any additional land to supplement the owner occupied land.

13.40. Farm Business B runs several small and specialised livestock enterprises including pigs (pedigree Kunekune, a small breed commonly kept as pets), sheep, suckler cattle and various fowl (chickens, turkeys, guineafowl, ducks and geese). Livestock are bred and fattened on the farm, the butchered carcases being sold direct to consumers in the local area. Some are also sold to other breeders/smallholders and as pets. The land also supports horses and ponies for the landowner's own amenity.

13.41. When surveyed (November 2014) all of Farm Business B land was either being grazed or was under stubble. Electric fences are used to make stock proof areas within the larger fields and to separate the larger livestock and horses as necessary. Ley pasture has been rotated through the arable cropping. All arable land work is carried out using a contractor. Forage crops (hay and silage) have also been taken using contractors on occasion.

13.42. The individual livestock enterprises are small and in combination do not take up all of the farms available grazing or labour. However the farmer does not intend to invest in new stock given the current uncertainty over the future of the Himley Village Development. The sheep and pig herds are therefore only expanding slowly through the retention of some breeding stock. The rate of expansion is particularly limited for the pigs given the need to bring in or exchange suitable boars to prevent in-breeding. The sensitivity of Farm Business B is considered to be Medium as the existing farm enterprises (arable and small scale livestock) can relocate with relative ease.

13.43. No public rights of way cross the Site. The only incidence of fly tipping found on the Site was at the field gate to the road for the Farm Business A field, where construction waste had been dumped.

13.44. Adjoining agricultural land to the east of the Site is occupied by Farm Business A. To the west of the Site the remains of three fields bisected by the Site boundary are owned by Farm Business B. Agricultural land to the north and northwest of the Site is in unrelated ownership and occupancy.

Potential Effects

Demolition and Construction

Agricultural Land Resource

13.45. Agricultural land quality is not a characteristic that can be effectively moved to or replicated at a new location. It is a resource that is either retained for future agricultural production or sterilised by built development. Therefore there is no separation of completed development and construction effects for agricultural land quality. These effects will be covered under completed development effects.

Soil Resources

13.46. Construction of the proposed development will include the stripping, movement, storage and reuse of the soil resource within the Site. All such soil handling operations and trafficking by construction

vehicles will carry the potential for degradation of the soil resource, particularly when the soil is in a plastic condition after rain.

13.47. Topsoil stored in bunds can develop anaerobic conditions as consumption of organic matter depletes oxygen faster than it can be replenished in the core of the bund. Anaerobic conditions in soil are hostile to plant root growth, damaging the soil's functional capacity to support plant growth.

13.48. With green cover removed, soil material is vulnerable to mobilisation and erosion from raindrop impact, particularly if in a disturbed and loosened condition. In addition to being a loss of the soil resource, eroded soil material can cause additional adverse effects including impairing water quality and increasing flood risk.

13.49. Construction activity can result in a medium magnitude of change to a soil resource of medium sensitivity, giving rise to a long term impact of **Moderate Adverse** significance at the local level. The significance is considered to be Moderate as opposed to Minor as there are two changes of medium magnitude, loss of topsoil to agricultural production and degradation of the soil functional capacity.

Farming Circumstances

13.50. Agricultural occupant's loss of agricultural land within the Site area to construction work is the same as the loss of the land to the completed development, and is considered under the effects of the completed development.

13.51. Construction activities can have additional effects on adjoining agricultural land, including impaired access due to construction traffic and road closures, and the generation of dust (cement and dry soil from site haul roads) that settles on crops impairing quality. This would be a low magnitude effect. The majority of this land is arable and of low sensitivity to such effects, however the pasture fields to the north east are considered to be of medium sensitivity (dust impairing the palatability of the forage) resulting in an impact of **Minor Adverse** significance at the local level.

Completed Development

Agricultural Land Resource

13.52. Development of the Site will result in the loss of 86.2ha of agricultural land to the national resource. Of this land 74.5ha is Grade 3b land and 11.7ha is Grade 3a. The Grade 3a land is considered to be among the nation's resource of best and most versatile land and therefore is sensitive to loss. The permanent loss of 11.73ha of Grade 3a land is of medium magnitude resulting in a permanent impact of **Moderate Adverse** significance at the national scale. Grade 3b land is considered to be 'insensitive' and therefore loss of this land is insignificant.

Soil Resources

13.53. Soil resources within the completed Development could be lost and/or have its functional capacity, impaired, for instance the paving over of residential gardens and compaction of amenity lawns and sports pitches. However, such effects will be limited to discreet area such as residential gardens rather than on a larger scale under agricultural management. The sensitivity is considered to be low and the magnitude of change, negligible resulting in an impact of **Negligible** significance.

Farming Circumstances

13.54. The effect of the Himley Village Development on Farm Business A cannot be accurately quantified as the land agent or land owner could not be spoken to. However, development of the Site will

release capital to Farm Business A. Given the significant differential between the value of agricultural land and a consented planning site, the capital from this single field will enable reinvestment that enhances the return from the farm business. For instance acquiring replacement land of superior quality and / or area, investment in modernisation of farm facilities and equipment, or the establishment of a new farm enterprise.

13.55. For Farm Business A, the capacity to assess the impact of the loss of this field is limited as little is known of the remainder of the farm business. However, given the benefit to the unit of the release of capital, and the land take being a single field, the effect is considered to be of **Negligible** significance in the worst instance.

13.56. The magnitude of change of the Himley Village Development on Farm Business B is substantial owing to the Development taking the majority of the Business. Following development of the land only the remnants of the three fields to the west of the Site, dissected by the Himley Village Development, will remain. These three fields will have limited commercial agricultural value once split into two.

13.57. However, though the release of capital to the businesses (in excess of the agricultural value of the land) the effect is expected to be beneficial. Farm Business B will be in a position to acquire replacement farm land. As for Farm Business A there is the potential to increase the farmed area, acquire superior quality land, invest in modernising farm facilities, expansion of the livestock enterprises and in establishing new or diversified enterprises.

13.58. A small area of Himley Farm will remain in the possession of Farm Business B, and will either be retained as outlying land, let out or sold. The value of this land to Farm Business B, an agricultural tenant or buyer will be limited following development as any removal of the internal hedgerows will need consent, the presence of the hedgerows would make continued arable management impractical, and use for grazing livestock would require an improved access for lorries, livestock handling pens and drinking troughs.

13.59. Farm Business B will be in a position to acquire a replacement farm with the resources to develop its current small specialist livestock and fowl enterprises. The future direction of Farm Business B can then be shaped as appropriate to the farm land and facilities available. Therefore, taking into account the limitations on continued use of the bisected fields to the west, the overall impact on Farm Business B is considered to be long term and of **Moderate Beneficial** significance at the local level.

13.60. The Himley Village Development will be bounded by agricultural land to the north, east and west. The introduction of new urban edge to this adjoining agricultural land can increase so called urban fringe effects including trespass, damage to standing crops, disturbance of livestock by dogs and the tipping of waste. The Himley Village Development could therefore place additional constraints on agricultural production for the adjoining arable and livestock enterprises which are of medium sensitivity.

13.61. However, the Himley Village Development incorporates areas of green open space and woodland forming a buffer between the new residential property and the remaining agricultural land. Such buffers provide an amenity area reducing trespass pressure on the agricultural land, and by avoiding garden boundaries adjoining farmland, prevent urban fringe impacts such as extension of gardens onto farmland, the tipping of garden and household waste onto the field margins and the exercising of dogs by releasing them onto farmland. With the incorporation of buffers, the magnitude of change (constraint on farm enterprise) is low resulting in an effect of **Negligible** significance.

Mitigation

Demolition and Construction

Soil Resources

13.62. Prior to construction work commencing a Soil Management Plan would be produced as a component of the Construction Environmental Management Plan (CEMP), and agreed with the Local Planning Authority. This Soil Management Plan will follow the guidance given in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009) and will draw upon the site specific soil data from the ALC survey. This management plan will seek to optimise the reuse of soil material within the Site area, matching soil characteristics to the requirements of the end use.

13.63. For example, the lower stone content topsoil will be more suitable for specific end uses and the topsoil associated with the Grade 3a land does not have a high stone content. However for sensitive uses, screening soil material for larger stones will be beneficial, so any mixing of high and low stone content topsoil can be reversed on Site. Similarly, owing to its lower organic matter content, subsoil, where present, should not be combined with the topsoil. Bulking out the topsoil with the subsoil from the Site would dilute the value of the topsoil as a growing media. Subsoil should therefore be stripped (where necessary), stored and reused separately from the topsoil resource.

13.64. Through the adoption of an appropriate Soil Management Plan the soil resource within the Site can be conserved and prioritised for non-agricultural but beneficial reuse, firstly as part of the Himley Village Development and secondly, where an excess of material arises, offsite. As well as conserving the soil resource from the Site this approach minimises the need to source soil material from offsite to deliver the Himley Village Development.

13.65. The Soil Management Plan will include guidance on the appropriate techniques for handling and storing soil material, including the moisture content at which soil units should not be handled to avoid structural degradation such as compaction and smearing. It will also avoid unnecessary trafficking of construction site vehicles over the soil resource. Compliance with the Soil Management Plan through the construction phase would maximise the retention of soil material for beneficial reuse within the site and minimise loss of functional capacity of that soil.

Farming Circumstances

13.66. The CEMP will include provisions to prevent the generation of dust from the construction site, such as the laying of dust on haul roads by wetting the surface in dry conditions. Construction vehicle movements will also be managed by the CEMP with the aim of minimising traffic disruption and congestion on the local roads, with particular attention to sensitive periods such as harvesting.

Completed Development

13.67. There is no effective mitigation for the loss of best and most versatile land. Completed Development effects upon the soil resource are **negligible**, and the design of the Himley Village Development incorporates features to reduce the export of urban fringe effects onto neighbouring agricultural land.

Residual Effects

Demolition and Construction

Soil Resources

13.68. By adopting a Soil Management Plan, the quantity and functional capacity of the soil resource will be maintained for beneficial reuse, prioritising use within the Himley Village Development Site. As a result the effect of construction on the soil resource will reduce to **Minor Adverse** significance, the effect being long term and local.

Farming Circumstances

13.69. The CEMP will help to minimise traffic disruption hampering access to agricultural land, particularly during sensitive periods such as harvest time. It will also act to minimise dust generation. As a result the temporary, short term and local effect of construction will be of **Negligible** significance.

Completed Development

13.70. As there is no mitigation for the loss of best and most versatile agricultural land resource, the loss of 11.7ha of Grade 3a land will remain a permanent and national effect of **Moderate Adverse** significance.

13.71. For soil resources, residual impacts of the Himley Village Development remain **Negligible**.

13.72. For the two occupying farm businesses, the effect is long term and of **Moderate Beneficial** significance for Farm Business B, resulting from the release of capital enabling substantial reinvestment. For Farm Business A, the sale for development of a single field is considered to be of **Negligible** significance at worst, however the beneficial effects are difficult to assess as little is known of the wider farm business.

Summary and Conclusion

Table 13.8: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Soil Resource	**Long Term** effect of **moderate adverse** significance at the **local** level**.**	Implementation of a Soils Management Plan.	**Long Term** effect of **minor adverse** significance at the **local** level.
Farming Circumstances	**Temporary** effect of **Minor Adverse** significance at the **local** level.	Construction traffic management and dust suppression.	**Temporary** effect of **Negligible** significance at the **local** level.
Completed Development			
Loss of best and most versatile agricultural land	**Permanent** effect of **moderate adverse** significance at the **national** level**.**	None.	**Permanent** effect of **moderate adverse** significance at the **national** level**.**
Soil resource	**Negligible**	None	**Negligible**
Release of Capital to Farm Business A and B	**Long Term** effect of Negligible to **Moderate**	None	**Long Term** effect of Negligible to **Moderate**

Description of Effect	Potential Effect	Mitigation	Residual Effect
	Beneficial significance at the **local** level.		**Beneficial** significance at the **local** level.

References

1 OPDM. (2004) *Planning Policy Statement 7: Sustainable Development in Rural Areas.* http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/archived/publications/planningandbuilding/pps7

2 OPDM. (2012) *National Planning Policy Framework*. https://www.gov.uk/government/publications/national-planning-policy-framework--2

3 Cherwell District Council. (2014) *Cherwell Local Plan, Adopted 1996.* http://www.cherwell.gov.uk/index.cfm?articleid=1735

4 Cherwell District Council. (2011) *Non-statutory Cherwell Local Plan 2011* http://npa.cherwell.gov.uk/LocalPlan/written/cpt9a.htm#12

5 Cherwell District Council. (2014) *Cherwell Submission Local Plan, 2006-2031.* http://www.cherwell.gov.uk/index.cfm?articleid=9803

6 Natural England. (2009) *TIN049: Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land.* http://publications.naturalengland.org.uk/publication/35012

7 Ministry of Agricultural, Fisheries and Food. (1988). *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land*. http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines-1988.pdf

8 Defra. (2011) *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.* https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites

10 Highways Agency. (2013) *Design Manual for Roads and Bridges.* http://www.standardsforhighways.co.uk/ha/standards/dmrb/index.htm

11 Hyder Consulting. (2014) *Outline Applications 1 and 2 NW Bicester Planning Application A2 Dominion.*

14. Built Heritage

Introduction

14.1. This Chapter of the Environmental Statement (ES), prepared by Alan Baxter & Associates LLP, presents information on the likely significant effects of the Himley Village Development on the built heritage resource within the Site and a defined study area. This assessment encompasses built heritage only; archaeology and historic landscape are addressed separately in Chapter 15: Archaeology. This Chapter presents the regulatory and policy framework for the assessment and describes the methodologies used to assess the potential significant effects of the Himley Village Development. Baseline conditions are then described, and potential effects are discussed, followed by details of mitigation measures proposed and an assessment of significant residual effects. A summary of the assessment together with relevant conclusions is then provided and a list of references completes the chapter.

14.2. This Chapter has been informed by baseline data gathered during the production of a Heritage Statement which is presented in **Technical Appendix 14.1**.

Legislation, Planning Policy & Guidance

14.3. This assessment has been undertaken in accordance with current international and national legislation, and national, regional and local plans and policies relating to conservation in the context of the Himley Village Development. The Himley Farm barns are Grade II listed, therefore any works that might affect their value, including setting, are subject to statutory control, in accordance with national and local policies as described below.

Legislation

Planning (Listed Buildings and Conservation areas) Act 1990[1]

14.4. The overarching legislation governing the consideration of applications for building consent that affect heritage assets is contained in the Planning (Listed Buildings and Conservation Areas) Act 1990. Sections 16(2) and 66(1) of the Act require local planning authorities, when considering whether to grant listed building consent, to have special regard to the desirability of preserving a listed building or its setting or any features of special architectural or historic interest which it possesses.

National Planning Policy

National Planning Policy Framework, 2012[2]

14.5. Section 12 of the National Planning Policy Framework, entitled Conserving and Enhancing the Historic Environment contains guidance on heritage assets which includes listed buildings and conservation areas. Amongst its core principles, the NPPF states at Paragraph 17 that planning should conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations. The following paragraphs are relevant to this application:

14.6. Para 128 requires that '*in determining an application the local planning authority should require an applicant to describe the significance of the heritage assets affected, including any contributions made by their settings.*'

14.7. Para 129 requires '*local authorities to assess and identify the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset).*'

14.8. Para 132 emphasises that when considering the impact of a development on the significance of a heritage asset the local planning authority should avoid harm or loss of the asset through development within its settings.

14.9. Para 134 states that '*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.*'

14.10. Para 137 states that *'local planning authorities should look for opportunities to enhance or better reveal the significance of a heritage asset through development within its settings. Proposals that preserve those elements of the settings that make positive contribution to or better reveal the significance of the heritage asset should be treated favourably.*'

14.11. The NPPF defines setting as follows:

'*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 the significance or may be neutral.*'

Supplement to Planning Policy Statement 1: eco-towns, 2009[3]

14.12. Eco-town standard (ET) 15: Landscape and historic environment states that *'Planning applications for eco-towns should demonstrate that they have adequately considered the implications for the local landscape and historic environment. This evidence, in particular that gained from landscape character assessments and historic landscape characterisation should be used to ensure that development complements and enhances the existing landscape character. Furthermore, evidence contained in relevant Historic Environment Records, should be used to assess the extent, significance and condition of known heritage assets (and the potential for the discovery of unknown heritage assets) and the contribution that they may make to the eco-town and surrounding area. Eco-town proposals should set out measures to conserve and, where appropriate, enhance heritage both assets and their settings through the proposed development.'*

Local Planning Policy

Cherwell Adopted Local Plan, 1996[4]

14.13. Policies within the Adopted Local Plan 1996 (November 1996) were saved and will continue to be used until they are replaced by the new Local Plan. Policies relevant to the present application are contained in Chapter 9 Rural Conservation, Urban Conservation and Design.

14.14. Policy C19 states that before the determination of an application for the alteration, demolition or extension of a listed building applicants will be required to provide sufficient information to enable an assessment to be made of the likely impact of their proposals on the special interest of the structure, its setting, or special features.

14.15. Policy C20 states that special care will be taken to ensure that development which is situated within the setting of a listed building respects the architectural and historic character of the building and its setting.

Cherwell Non-Statutory Local Plan 2011 (December 2004) [5]

14.16. The Non Statutory Local Plan 2011 (December 2004), supposed to update and review the Adopted Local Plan 1996 (November 1996), was never completed and adopted. The plan has nevertheless been approved as interim planning policy for development control purposes. Chapter 9 Conserving and Enhancing the Environment, Policy EN39 states that '*Development should preserve listed buildings, their features and settings, and preserve or enhance the character or appearance of designated conservation areas, as defined on the proposals map. Development that conflicts with these objectives will not be permitted.'*

14.17. Policy EN44 states that 'Special care will be taken to ensure that development that is situated within the setting of a listed building respects the architectural and historic character of the building and its setting.'

Emerging Cherwell Local Plan 2011 – 2031[6]

14.18. Paragraph 9.45 of this document states that '*The setting of a listed building may often form an essential part of its character e.g. gardens or grounds laid out to complement its design or function. In the case of a group of listed buildings in a settlement, the wider setting may comprise a large part of the street scene.*

14.19. *In considering development proposals under the above policy* [Policy ESD16: The Character of the Built and Historic Environment] *the Council will have regard to the desirability of preserving the setting of listed buildings and will resist development which would adversely affect it.'*

Guidance

14.20. Other documents and guidance used in this report included the *Design and Conservation Strategy for Cherwell 2012-2015,* which sets out the Council's remit in these areas, within the broader Planning framework.

14.21. In addition, the English Heritage publication *The Setting of Heritage Assets* (2011) sets out EH guidance on managing change within the settings of heritage assets, including historic buildings, sites, areas, and landscapes.

Eco-Bicester – One Shared Vision, December, 2010[7]

14.22. The development standards of the Eco Bicester development discusses how new development can be integrated into the town of Bicester. In the Landscape and Historic Environment section, the document states that, *'Development should complement and enhance the existing landscape character. Proposals should set out measures to conserve and, where appropriate, enhance heritage both assets and their settings.'*

Assessment Methodology and Significance Criteria

Assessment Methodology

General

14.23. The specific aims of the assessment are to assess the value of the built heritage assets within the study area and the potential effect of the Himley Village Development on them. The study area of this report has been defined in **Technical Appendix 14.1** principally as the red line boundary of the Himley Village Development Site, but also takes into account the larger quadrant of land bounded by the B4030 Middleton Stoney road, the B4095 Howes Lane, the M40 and the railway track to the north, because of its relationship with the historic field boundaries.

Methodology for establishing the baseline

14.24. The desk based assessment included consulting the Bicester Local History Society, Bicester Library, Oxfordshire Historic Environment Record (HER), English Heritage National Heritage List, on-line research and analysis of a selection of historic Ordnance Survey (OS) maps.

14.25. A site survey was undertaken on 18 September 2014; this covered the Site, and included a detailed visual inspection (internal and external) of the listed buildings on the Site.

Significance Criteria

14.26. The following methodology for assessing effects has been adopted. This approach is based on the concept that the environmental effect of a development, in relation to an individual asset, is determined through identifying the value of the receptor and then assessing the effect that the development would have on the receptor.

14.27. This well-established approach is derived from a combination of designated status and professional judgement. It is based on criteria set out in the 2011 ICOMOS document, *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*[8], and the 2013 Highways Agency guidance *Design Manual for Roads and Bridges: Volume 11 - Environmental Assessment*[9]. It takes into account the NPPF, the Secretary of State's Principles of Selection for Listing Buildings[10] and English Heritage's *Conservation Principles.*[11] It also considers the National Planning Practice guidance on setting and the 2012 English Heritage guidance 'The Setting of Heritage Assets'[12].

14.28. The following three tables set out the criteria for assessing the value of the heritage receptor, the magnitude of the change and the overall significance of the effect, which is determined through a combination of value and magnitude of change.

Table 14.1: Value of Receptor

Value of Receptor	Criteria
Very High	International significance – exceptional interest World Heritage Sites
High	National significance – special interest Grade I and II* listed buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments
Medium	Regional significance – regional interest Conservation Areas, Grade II listed buildings, Grade II Registered Parks and Gardens

Value of Receptor	Criteria
Low	Local significance – local interest Locally listed buildings, undesignated heritage assets of local importance

14.29. The criteria for assessing the magnitude of change i set out in table 14.2 below (note the significance of effect can be adverse or beneficial).

Table 14.2: Magnitude of Change

Magnitude of Change	Criteria
High	Considerable change, such that the receptor is totally altered Comprehensive change to setting
Medium	Change such that the receptor is clearly altered Considerable change to setting
Low	Minor change such that the receptor is slightly altered Slight change to setting
Negligible	Very minor changes to the receptor or setting

14.30. Table 14.3 shows how the value of receptor and the magnitude of change are combined to arrive at the significance of the effect. Based on a professional judgment, a 'significant' effect in terms of the EIA regulations is considered to be one of moderate significance or above; these are highlighted in bold in the table.

Table 14.3: Significance of Effect Matrix (note the significance of effect can be adverse or beneficial)

		Magnitude of Change			
		High	**Medium**	**Low**	**Negligible**
Value of Receptors	**Very High**	**Substantial**	**Substantial/ moderate**	**Moderate**	Minor
	High	**Substantial/ moderate**	**Moderate**	**Moderate/** minor	Minor
	Medium	**Moderate**	**Moderate**/ minor	Minor	Negligible
	Low	**Moderate** /minor	Minor	Negligible	Negligible

Baseline Conditions

Built Heritage Assets

14.31. Himley Farm comprises seven structures, all of which were (or still are) connected to agricultural processing and storage.

14.32. There is one listed built heritage receptor within the study area for the Site. This comprises two barns on Himley Farm, grouped together under one Grade II listing.

14.33. The west wall of the northern barn has a date stone inscribed with the date 1760. The first cartographic evidence for the buildings dates to 1833, which depicts the farm as comprising three buildings that do not correspond to the current layout of Himley Farm. Evidence for phases of

development at Himley Farm is therefore inconclusive, but on the basis of cartographic evidence and a visual assessment, it is reasonable to conclude that the barns date from the early nineteenth century. Himley Farm appears, in its current layout, on the Ordnance Survey (OS) map of 1881. This depicts that the barns are linked by a smaller building and to the north of the yard the long stable building is visible. In 2004, the northern barn was converted into a dwelling by the current owner. The southern barn is now used as storage.

14.34. The barns are connected by a third structure, built with similar building materials and in a similar form. The barns are adjoined by a fourth building, which was probably a stable for small animals, projecting from the north-east corner of the north barn and extending along the whole length of the yard. There is also a former pigsty adjoining the southern barn. These are curtilage structures, and have been discussed in more detail in **Technical Appendix 14.1**.

14.35. The two remaining structures on the Himley Farm are modern farm storage sheds, separate from the other buildings. They have no heritage value and will not be discussed further.

14.36. The barns have architectural importance as an example of hand-threshing barns in the Oxfordshire vernacular style, where the function directly influenced the design, built in local materials. The barns have archaeological importance as evidence of historic farming processes e.g., the barn doors and stone slit ventilators facilitated hand-threshing. Apart from the roof structures, neither barn contains any historic fixtures or fittings. The barns have historical importance because they demonstrate the continuation of agricultural traditions in this area throughout the nineteenth and early-twentieth century. It is not known when the barns ceased to be used for their original purpose.

14.37. By nature of their Grade II listing, the barns have **medium value.**

Setting of the Built Heritage Assets

14.38. The historic setting of the barns comprised a working, farmed landscape. The barns were used for the processing of wheat and other cereals, and were located in their landscape to facilitate the transport of raw materials for threshing and storage. It is not known when the barns ceased to be used for their original purpose, but the northern barn became residential in 2004.

14.39. There are two aspects to the existing setting of the barns; physically the setting is composed of their immediate and extended setting. Both the immediate and extended setting need to be scrutinized in terms of use and their visual qualities.

14.40. The immediate setting is the courtyard of buildings. This arrangement is typical of historic farmsteads and is comprised of the listed barns, a number of ancillary farm buildings and a courtyard enclosed by walls. This immediate setting adds to the historic and archaeological interest of the designated heritage assets as the arrangement and character of the ancillary buildings survive from their historic agricultural use making the buildings immediately recognisable as farm buildings. There are some views from the heritage assets into the courtyard though the lack of windows means the views are quite limited. However the fact the courtyard is no longer used for its original purpose reduces the contribution of the immediate setting.

14.41. The extended setting is comprised of the surrounding fields. The heritage assets can be seen from a considerable distance around the open countryside. The surrounding fields maintain a field pattern which is relatively unchanged since the nineteenth century. These field boundaries give the appearance of cultivated farmland. However, there are no crops currently grown which reduces this agricultural-use link between the two and reduces its contribution to the listed barns' significance.

14.42. The visual contribution of the extended setting is largely limited to the views gained from the access track from which the farm buildings can be seen in the context of the fields and field boundaries. The isolation of the buildings surrounded by fields, adds to their historic and archaeological interest as it reinforces their character as historic farm buildings. However, the architectural interest is reduced by a large twentieth-first century farm building which dominates the approach. There are some limited views of the buildings from the A4030 to Middleton Stoney and none from the A4095 Howes Lane due to vegetation and the gradient of the land. There are no public rights of way from which the barns can be seen.

14.43. The setting of the barns is of **medium value.**

Potential Effects

Demolition and Construction

14.44. The listed Himley Farm barns and curtilage structures are to be retained with no direct works to the barns. The buildings to the south and west of the listed barns, which are of no historic merit, will be demolished.

14.45. There are therefore two indirect potential construction effects to be considered on the built heritage receptor.

14.46. The first potential construction effect is construction works in the proximity of the barns, potentially leading to damage. However, given that no development is proposed in the area immediately surrounding the barns, the potential for accidental damage is minimised and the magnitude of change is **low.** Given this is an asset of medium value, the effect of any structural damage to the built heritage receptor would be to be **permanent** and of **minor adverse significance.**

14.47. The second potential construction effect is a change in the setting of the barns, including any access to, and amenity of, the barns during the construction process. Due to the presence of construction machinery and new buildings under construction, the magnitude of change is **medium** on a receptor of medium value resulting in a **temporary** effect of **moderate/minor adverse significance.**

Completed Development

14.48. There are no direct works to the barns.

14.49. There is one indirect potential effect of the Himley Village Development on the barns, and this is the change of setting. The completed Himley Village Development will change the setting from agricultural land to planned suburban development. This area of farmland was allocated as appropriate for housing development in 2009, in order to achieve the increased provision of housing across the region.

14.50. As discussed in paragraph 14.38, the current setting of the barns is informed by their visual connection to the surrounding landscape. The historic field boundaries have been acknowledged through the layout of the Himley Village Development and the original approach road to the barns is to be maintained. Together with the adjacent educational and community uses, the barns will be integrated into the heart of Himley Village Development, providing a hierarchy within the plan.

14.51. There are views out of the barns over fields, but the design of the building means the view is restricted to long viewing corridors of the horizon and skyscape, rather than wide panoramas of the surrounding countryside. The large twentieth-first century grain store which currently obstructs the view from the access track to the barns, its removal as part of the works will improve the approach to the barns and reading of the barns close to.

14.52. There is no effect on heritage receptors outside the site boundary e.g. Conservation Areas, Listed Buildings and the non-designated heritage assets of Aldershot Farm and Gowell Farm as the Development is too far away to have any effect.

14.53. The magnitude of change is medium on a receptor of medium value. The effects of the completed development on the setting of the barns is therefore anticipated to be **long-term**, **permanent** and of **moderate/minor adverse significance.**

14.54. The summary of the Significance of effect is set out in table 14.4 below.

Table 14.4 Significance of effect

Element	Heritage value	Magnitude of impact	Significance of effect
Demolition and Construction			
Damage to the Grade II listed barns	Medium	Low	Minor adverse Permanent
Change in setting to the Grade II listed barns.	Medium	Medium	Moderate/minor adverse Temporary
Completed Development			
Change in setting to the Grade II listed barns	Medium	Medium	Moderate/minor adverse Permanent

Mitigation

Demolition and Construction

14.55. A Construction Environmental Management Plan (CEMP) should be prepared and implemented, as well as provision of protective hoardings and the establishment of safe routes across the Site for construction vehicles which avoid close contact with the barns. A condition survey of the barns of the barns should be carried out prior to work starting on Site. This will significantly reduce the potential for damage.

14.56. A historic building record (Level 1 or 2) of the barns and their setting should be undertaken prior to commencement of work. This will mitigate the change in setting during the construction phase.

Completed Development

14.57. At this stage of the development, no further mitigation is proposed.

Residual effects

Demolition and Construction

14.58. After inclusion of the mitigation measures, the residual effect of damage to the barns is **negligible**.

14.59. There is no practical way of mitigating the effects of the Himley Village Development on the setting of the Himley Farm Barns. The residual effect on the setting of the barns would therefore remain **moderate/minor adverse**.

Completed Development

14.60. The residual effect of the completed development remains **moderate/minor adverse.**

Summary and Conclusion

14.61. The summary of the residual effect is set out in table 14.5 below.

Table 14.5: Summary of Potential and Residual Effects

Element	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Damage to the Grade II listed barns	Permanent, and of minor adverse significance	Construction management plan for the Site, monitoring of the barns, and appropriate protective hoardings	Negligible
Change in setting to the Grade II listed barns.	Short-term, temporary, and of moderate/minor adverse significance	Level 1-2 historic building record to be provided	Moderate/minor adverse
Completed Development			
Change in setting to the Grade II listed barns	Permanent effect of moderate/minor adverse significance	None	Moderate/minor adverse

14.62. In conclusion, the proposals have sought to minimise harm to the setting of the listed barns; however, the residual effect of the impact of the Development on the setting of the barns is **moderate/minor adverse.**

References

[1] Town and Country Planning Act 1990, http://www.legislation.gov.uk/ukpga/1990/8/contents

[2] National Planning Policy Framework 2012, Ch. 12, https://www.gov.uk/government/publications/national-planning-policy-framework--2

[3] Planning Policy Statement: eco-towns - A supplement to Planning Policy Statement 1, 2009, https://www.gov.uk/government/publications/eco-towns-planning-policy-statement-1-supplement

[4] Cherwell Adopted Local Plan, 1996, http://www.cherwell.gov.uk/index.cfm?articleid=9632

[5] Cherwell Non-Statutory Local Plan 2011 (December 2004), http://npa.cherwell.gov.uk/LocalPlan/Plan_index.htm

[6] Cherwell Local Plan 2011 – 2031, http://www.cherwell.gov.uk/index.cfm?articleid=9803

[7] Eco-Bicester – One Shared Vision, December 2010, https://www.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/roadsandtransport/transportpoliciesandplans/areatransportstrategies/bicester/EcoBicester-OneSharedVision.pdf

[8] ICOMOS, 2011, *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, http://www.icomos.org/world_heritage/HIA_20110201.pdf*

[9] Highways Agency, 2013, *Manual for Roads and Bridges: Volume 11 - Environmental Assessment, http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol0/section1.htm*

[10] DCMS, 2010, Principles of Selection for Listing Buildings, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/137695/Principles_Selection_Listing_1_.pdf

[11] English Heritage, 2008, Conservation Principles, Policies and Guidance, http://www.englishheritage.org.uk/publications/conservation-principles-sustainable-management-historic-environment/

[12] English Heritage, 2011, The Setting of Heritage Assets, http://www.helm.org.uk/guidance-library/setting-heritage-assets/

15. Archaeology (Buried Heritage)

Introduction

15.1. This chapter has been prepared by Waterman Energy, Environment & Design (Waterman EED). It considers the effects of the Himley Village Development on buried heritage resources within the Site and the surrounding area. In particular, it considers the effects of the demolition and construction works and of the completed Himley Village Development.

15.2. The chapter describes relevant legislation, policy and guidance concerning the management of buried heritage resources through the planning process, the methodology to assess baseline conditions, the potential effect of the Himley Village Development on the buried historic environment and any mitigation measures that may be required in order to prevent, reduce or offset any adverse effects arising from it.

15.3. The preparation of this chapter has been informed by a desk-based, buried heritage assessment completed by Waterman EED in November 2014. The Waterman desk-based assessment is included as **Technical Appendix 15.1**. The assessment has also been informed by an Interpretation of Aerial Photographs for Archaeology report, an Archaeological Geophysical Survey and an Archaeological Evaluation report for the NW Bicester Masterplan. These reports are included as **Technical Appendices 15.2, 15.3 and 15.4**.

15.4. It should be noted that the interrelated issues of extant, built heritage are dealt with in a Built Heritage Statement and Built Heritage Environmental Statement (ES) chapter produced by Alan Baxter & Associates. As such, and where relevant, this chapter should be read in conjunction with these documents included as Chapter 14 and **Technical Appendix 14.1** of this ES.

Legislation, Planning Policy & Guidance

National Legislation

Ancient Monuments and Archaeological Areas Act 1979[1]

15.5. Heritage assets designated under the Ancient Monuments and Archaeological Areas Act (1979) are considered to be of national importance. Any works causing damage to heritage assets designated as scheduled monuments are a criminal offence under the Act. Consent to carry out prescribed works in scheduled monuments can be granted by the Secretary of State. Consents, where given, are usually subject to conditions. The Act operates wholly outside of the planning system, although most regional and local planning policies for the historic environment make some reference to scheduled monuments.

National Planning Policy

National Planning Policy Framework (NPPF)[2]

15.6. Section 12 of the NPPF, *Conserving and enhancing the historic environment* provides Government policy on planning and the historic environment. Section 12 of the NPPF states, in paragraph 128, that a planning applicant is required *"to describe the significance of any heritage assets affected, including any contribution made by their setting".*

15.7. As a minimum, the NPPF requires that the relevant historic environment record will be consulted and any heritage assets likely to be affected by the proposal will have their significance assessed

using appropriate expertise. Where an application site may have an effect on heritage assets, an appropriate desk assessment should be provided to inform the planning authority's decision-making and, where appropriate, field evaluation will be undertaken to further inform planning decisions.

15.8. Section 12, paragraph 132, of the NPPF adds that "*heritage assets are irreplaceable, any harm or loss should require clear and convincing justification*" and Section 12, paragraphs 133 and 134 state that any harm caused by the proposal to heritage assets should be weighed against the public good of the proposal, including securing the optimum viable use of the asset(s).

Local Planning Policy

Cherwell Local Plan

15.9. Current planning policy from Cherwell District Council comprises the Cherwell Adopted Local Plan 1996 and the Non-Statutory Cherwell Local Plan 2011. This latter document was in preparation when work was discontinued due to changes to the national planning system, but it has been approved as interim planning policy for development control purposes. Both of these documents are due to be replaced by the new Cherwell Local Plan (2006-2031). Both the saved policies of the Cherwell Adopted Local Plan 1996 and the Non-Statutory Cherwell Local Plan 2011 contain policies which are relevant to this assessment.

15.10. Policy C25 states "*in considering proposals for development which would affect the site or setting of a Scheduled Ancient Monument, other nationally important archaeological sites and monuments of special local importance, the council will have regard to the desirability of maintaining its overall historic character, including its protection, enhancement and preservation where appropriate*".

15.11. Paragraph 9.56 goes on to say that it must be acknowledged that should the character and setting of an archaeological site or monument, which may include historic landscapes, parks and gardens, be damaged or even destroyed by certain forms of development, policy C25 will apply.

15.12. From the Non-Statutory Cherwell Local Plan there are two policies of particular relevance. ENV47 states that "*the council will promote sustainability of the historic environment though conservation, protection and enhancement of the archaeological heritage and its interpretation and presentation to the public*". It goes on to add that scheduled monuments and sites of national and regional importance and their settings will be preserved; sites, buildings, landscapes and their settings of archaeological interest will require assessment through a desk-top study and possibly field evaluation; and that development that would adversely affect archaeological remains must either preserve them *in situ* or provide other suitable mitigation.

15.13. Policy ENV44 states that "*special care will be taken to ensure that development that is situated within the setting of a listed building respects the architectural and historic character of the building and its setting*".

Relevant National, Regional and Local Research Agendas

15.14. This assessment makes reference to national and regional research frameworks, namely the Solent Thames Research Framework[3].

National Guidance

15.15. Following the publication of the National Planning Policy Framework, PPS5 was deleted. However the Practice Guide issued by English Heritage[4] remains a valid and Government endorsed document. Although the references in the document to PPS5 policies are now redundant, the

policies in the NPPF are very similar and the intent is the same, so the Practice Guide remains almost entirely relevant and useful in the application of the NPPF.

15.16. The online Planning Policy Guidance[5] on Conserving and Enhancing the Historic Environment was issued by the Department for Communities and Local Government in March 2014 as a web-based resource.

15.17. Additionally, English Heritage published draft written guidance (currently open for public and professional comment) intended to assist local planning authorities, planning and other consultants, owners, applicants and other interested parties in implementing historic environment policy in the National Planning Policy Framework and the related guidance given in the Planning Practice Guidance, published by the Government in March 2014. This updated guidance comprises three separate documents:

- Historic Environment Good Practice Advice Note 1: The Historic Environment in Local Plans;
- Historic Environment Good Practice Advice Note 2: Decision-Taking in the Historic Environment; and
- Historic Environment Good Practice Advice Note 3: The Setting of Heritage Assets.

15.18. These documents, along with some additional more detailed information (termed Technical Advice in Planning) will replace both the PPS 5 Planning and the Historic Environment: Historic Environment Planning Practice Guide (2010) and various pieces of English Heritage guidance, as part of a wider guidance review the organisation is currently carrying out. The PPS5 Practice Guide remains in place for the time being but it is expected that the Government will cancel it once the post-consultation versions of these advice notes are published.

Assessment Methodology and Significance Criteria

Assessment Methodology

15.19. This assessment has included the following:

- Appraisal of relevant heritage assets noted on the Oxfordshire Historic Environment Record (HER) within a 1 km study area from the Site boundary;
- Consultation of relevant heritage information in local, regional and national archives, as appropriate;
- Consultation of previous Heritage studies for the Site, including the DBA undertaken by Hyder consulting in 2014[6], and fieldwork reports by Oxford Archaeology[7] and Northamptonshire Archaeology[8];
- Consultation of online resources;
- Appraisal of English Heritage data sets;
- Appraisal of designated heritage assets and areas, including conservation areas, local lists and archaeological alert area designations, in the immediate area;
- A walk-over survey of the Site and immediate area;
- Assessing the presence of known heritage likely to be affected by the Himley Village Development proposal;
- Assessing the potential for unknown heritage assets likely to be affected by the Himley Village Development proposal; and

15.20. The sources consulted include information in the HER, which consists of records of heritage assets. These relate to sites, find spots, historic buildings and heritage investigations in the area, as well as any known information relating to listed buildings and scheduled monuments. **Figure 15.1** shows all relevant HER records in the study area (1 km radius from the boundary of the Site), **Figure 15.2** shows all previous heritage investigations. Appendix C of **Technical Appendix 15.1** contains a full list of all HER records in the search area. The number references used in the text are those used by the HER. There are also references to the NMR numbers as published online by English Heritage via the Heritage Gateway, National Heritage for England, and Pastscape websites.

15.21. The Oxfordshire History Centre was visited in order to obtain information from early maps, documents and secondary sources.

15.22. The Site was visited on 10th November 2014. The aim of the visit and walkover was to identify any features of heritage merit, and the ground conditions. Most of the Site was accessible from public footpaths, roads and other rights of way. A photographic record of the visit was made.

Significance Criteria

15.23. This section describes how the potential effect of the Himley Village Development upon the heritage significance of the Site and surrounding landscape has been assessed.

15.24. In order to more fully understand the effect of the Himley Village Development on the significance of known and potential heritage, the assessment provides a comparable analysis of the heritage significance against the magnitude of impact. This assessment is based on the criteria set out by the Design Manual for Roads and Bridges[9] (DRMB) and ICOMOS[10], and is a clear way of understanding the magnitude of impact, and how levels of effect vary according to the significance of the heritage asset.

15.25. The heritage significance of the Site is discussed above. The magnitude of impact will be assessed based on the criteria set out in Table 15.1 below. As a general principle, any change resulting in a positive impact should be encouraged.

Table 15.1: Magnitude of Impact

Magnitude of Impact	Description
Substantial Beneficial	The proposed changes will significantly improve the overall setting and character of heritage assets, revealing and/or enhancing important characteristics which were previously unknown or inaccessible. There would be a substantial improvement to important elements of the asset.
Moderate Beneficial	The proposed changes will considerably improve the setting or overall character of the heritage asset. There may be an improvement in key uses and beneficial change (e.g. the creation of coherency) to the characteristics of the asset.
Minor Beneficial	The proposed changes may cause a minor improvement to the setting or overall character of a heritage asset.
Negligible	The proposed changes will have a minimal impact on the heritage asset or on the overall character of the surrounding context.
Neutral	The proposed changes will have no impact on the heritage asset.
Minor Adverse	The proposed changes will have minor impact on the setting or overall character of a heritage asset. Change of this magnitude may be acceptable if suitable mitigation is carried out.

Magnitude of Impact	Description
Moderate Adverse	The proposed changes will negatively alter the setting or overall character of the heritage asset. It will likely disturb key features and detract from the overall heritage significance. Change of this magnitude should be avoided where possible, but can be minimised or neutralised through positive mitigation.
Substantial Adverse	The proposed changes will significantly damage the overall setting and/or character of heritage assets. They will cause a notable disruption to, or in some cases, complete destruction of, important features. Change of this magnitude should be avoided.

15.26. The intrinsic heritage sensitivity (referred to as Significance in the NPPF and IfA[11] and EH[12] guidance) unique to each heritage asset can be defined as the sum of tangible and intangible values which make it important to society. This may consider age, aesthetic and the fabric of an asset as well as intangible qualities such as associations with historic people or events.

15.27. To assess the heritage sensitivity of the Site this report has drawn guidance from English Heritage[11] which recommends making assessments under the categories of: Evidential, Historical, Aesthetic and Communal Value.

15.28. The sensitivity of the heritage assets within the Site will be assessed using a number of ratings:

- **High:** A feature, space or theme which is significant at national or international level. These will tend to have a high cultural value and form an important element of a building or site;
- **Medium:** A feature, space or theme which is significant at a regional or national level. These will tend to have some cultural merit and form a significant part of the building or site;
- **Low:** A feature, space or theme which is of local or regional significance;
- **Neutral**: A feature, space or theme which has no cultural significance but is also not considered intrusive to heritage value.

15.29. The overall significance of the effect on an attribute, is a function of the value of the attribute and the magnitude of impact. This is summarised in Table 15.2 below.

Table 15.2: Significance of Effect

Criteria		Heritage Sensitivity/ Value			
		Neutral	Low	Medium	High
Magnitude of Impact	**Substantial**	Minor	Minor / Moderate	Moderate / Substantial	Substantial
	Moderate	Negligible / Minor	Minor	Moderate	Moderate / Substantial
	Minor	Negligible / Minor	Negligible / Minor	Minor	Minor / Moderate
	Negligible	Negligible	Negligible / Minor	Negligible / Minor	Minor
	Neutral	Negligible	Negligible	Negligible	Negligible

Baseline Conditions

15.30. The following presents information about the known designated and undesignated heritage assets within the 1km buffer study area. All heritage assets within the study area are listed in Appendix C of **Technical Appendix 15.1** and the assets discussed are shown on **Figure 15.1**.

Designated Heritage Assets

15.31. There are no scheduled monuments, world heritage sites, registered parks and gardens or registered battlefields within the study area. Within the site boundary the two Barns at Himley Farm are designated Grade II. There are four listed buildings outside the Site boundary and within the Study area, two in Caversfield and two in Bucknell, located to the north east and north-west of the Site respectively.

Historical Overview

Prehistoric (up to 42 AD)

15.32. The earliest archaeological evidence within the study area is Neolithic material recovered from the area of a post medieval quarry to the south-east of the Site (MOX24475). Additional Neolithic evidence is present to the north of the Site where an enclosure, pit and trackway were identified through excavation (MOX24518).

15.33. Other evidence for prehistoric human activity dates to the Iron Age (c. 800 BC – AD 43) and comprises a settlement consisting of a ring ditch, boundary ditch, oven and pit (MOX26600). This is located in the area of the former Slade Farm which also produced some Mesolithic evidence.

15.34. The only recorded assets within Site itself are also prehistoric. In the centre of the Site are anomalies identified by geophysical survey and subsequent evaluation (EOX5650). The anomalies are sub-rectangular and sub-circular ditched enclosures, curvilinear ditches and pits that are likely to date to the later prehistoric or Roman periods. A geophysical survey[13] and evaluation[14] of the Site have also identified a trackway or droveway of uncertain date. In addition, in the same area, a crop mark of a rectilinear enclosure (MOX5631) was recorded. It is likely that this feature was also one of the anomalies recorded by a geophysical survey[15].

15.35. There is a possible ring ditch of unknown date (MOX5629) located 648 m to the south east of the Site. Features of this type are most likely to date to the Bronze or Iron Ages (c. 2200 BC – AD 43). A ring ditch could indicate a round barrow, a funerary monument usually constructed over an inhumation burial or cremation, or a round house, depending on the size. As these details were not available for this asset it is not possible to be more specific.

15.36. These assets indicate primarily later prehistoric activity in the study area, with an area of more intensive activity directly to the north of the Site indicated by the geophysical anomalies of the survey undertaken for a previous planning application (R3.0046/14) which included the current Site (**Figure 15.3**).

Roman (43 AD to 409 AD)

15.37. There is one heritage asset dating to the Roman period within the study area. This is located 60 m to the east of the Site, and comprises enclosures, including a rectangular enclosure, and associated finds (MOX26613). This is likely to be associated with a Romano-British settlement and may indicate either settlement or agricultural activity.

15.38. There was a more substantial Roman settlement approximately 1 mile to the west of the centre of modern Bicester (MOX8461). The town, Alchester, was occupied from AD 43 to the fifth century when the site became increasingly waterlogged and was eventually abandoned. There was initially a Marching Camp surrounded by a defensive ditch and, whilst the fort was in operation, a civilian settlement grew up outside it. The fort was abandoned in the mid A.D. 60s but the settlement continued to expand as an administrative and market focus in the area. Temples and several stone

buildings have been identified within the town and a stone town wall was built in the second century (www.blhs.org.uk).

15.39. This indicates evidence for Roman activity within the study area. The presence of a settlement in close proximity to the Site indicates there is potential for unknown Roman archaeology to be present.

Early Medieval (410 AD to 1065 AD)

15.40. There are no recorded heritage assets dating to the early medieval period within the study area.

15.41. The Site lies within the civil parishes of Bucknell and Bicester. There is evidence of a Saxon settlement at Bicester and it is recorded in the Domesday Book. The Saxon settlement is thought to have been located to the north of the Roman town and adjacent to the Roman road. The name Bicester is thought to originate from Bernecestre which can be interpreted as meaning 'the fort of the warriors' or 'of Beorna', possibly a notable person in the area in the Anglo Saxon period[16]. Bucknell village lies to the north of the Site, just beyond the boundary of the study area and is mentioned in the Domesday Book as Buchelle.

15.42. It is likely that during the early medieval period the Site formed part of the hinterland of the settlements of Bicester and Bucknell. Any activity on the Site at this time is likely to be agricultural in nature.

Medieval (1066 AD to 1539 AD)

15.43. Two listed buildings in the vicinity date to the medieval period: the Church of St Lawrence (LB UID 1046533) in Caversfield and a church yard cross (LB UID 338850) in Bucknell.

15.44. There is further evidence for medieval activity within the study area, to the east of Middleton Stoney, in the form of a deserted medieval village (MOX4971). Deserted medieval villages indicate the abandonment or contraction of settlements and are fairly common in the later medieval period. In this case the village never expanded again, but the continued use of the church indicates that there must have been occupation in the area, possibly comprised of scattered farms rather than a nucleated settlement.

15.45. The town of Bicester developed further in the medieval period and was granted a market in 1239 A.D. The early town developed at King's End and Market End, linked by a causeway across the Bure River. Evidence of the medieval town can be observed in the tenth century houses in Priory Lane and Manorsfield Road, and the present property boundaries in the town centre which reflect the medieval burgage plots. Medieval Bicester expanded further once Bicester Priory was founded in 1182 A.D. Excavations in the 1960s revealed a religious complex containing a large church, which housed the shrine of St Edburg, and other associated monastic buildings, including a hospital.

15.46. During the medieval period the Site would have formed part of the hinterland of the settlements of Bucknell, Caversfield and Bicester and the most likely activity within the Site at this time would have been agricultural in nature.

Post Medieval (1540 AD to 1750 AD) and Industrial (1751 AD to 1900 AD)

15.47. There are geophysical anomalies highlighted by the geophysical survey undertaken by Northamptonshire archaeology[17], probably representing ditches, at South Lodge Stables, on the south-east edge of Caversfield. It is possible that these may indicate former field boundaries or field drainage and if so are likely to date to this period.

15.48. The two designated barns at Himley Farm were also constructed during the post medieval period and are visible on historic ordnance survey mapping dating to the 1890s.

15.49. There has been no Historic Landscape Characterisation produced for Oxfordshire but the Cherwell District Landscape Assessment, undertaken in 1995, provides some useful information for determining the historic value and time depth of the landscape. In addition cartographic analysis indicates changes that have occurred within the landscape.

15.50. The cartographic sequence for the Site, demonstrates that much of the area was farmed in an open field system until the late eighteenth century, when enclosure awards were passed, and the landscape began to be divided into smaller fields with individual owners. The sequence of Ordnance Survey maps, which began in the later nineteenth century, records the same field boundaries present today within the Site. As enclosure maps were not available for this area, it is not possible to determine if these boundaries date to the initial period of enclosure or are a slightly later development. The villages of Bucknell and Caversfield are largely unchanged throughout the map sequence. The key change in the area is the expansion of Bicester and therefore increasing urbanisation in the area bordering the Site. Within the wider landscape surrounding the Site there has been a slight reduction in the amount of field boundaries.

15.51. The Cherwell and District Landscape Assessment[18] describes the landscape within which the Site lies as the Oxfordshire Estate Farmlands character area. This area runs from Bletchingdon in the south, around the north of Bicester and up to the county boundary with Northamptonshire, and is characterised by a rolling landform and a pattern of woodland and mixed farmland. Much of the landscape in this character area is associated with estates linked to the extensive areas of remaining eighteenth century parkland, and this is one of the special features of the character area. The closest evidence for parkland is at Bignell Park to the south of the Site, although this dates to the later nineteenth century and so is not classed as part of the eighteenth century parkland. The Landscape Assessment characterises the local landscape within and around the Site as large scale open farmland or large scale undulating farmland. The former has weak field patterns while the latter has strong field patterns, which are given definition by well-maintained hedges.

15.52. The Landscape Assessment draws out some of the key landscape elements of the area surrounding the Site but does not designate it as an area of high landscape value. As with other parts of Cherwell, the area to the north of Bicester has been considerably affected by military development. Military airfields such as RAF Bicester are dominant features in the landscape where they occur.

15.53. Other key features in the landscape of the Cherwell district are small settlements. Many of these date to the early medieval and medieval periods and a significant number of these settlements experienced abandonment or shrinkage as a result of social and economic change in the late medieval or post medieval period. The two closest villages to the Site, Caversfield and Bucknell, have a church which dates to the Anglo-Saxon period, and medieval or earlier origins, respectively. Both the villages experienced shrinkage in the post medieval period with little remaining of Caversfield except for the church and the manor house. The predominant architecture in these settlements is of the vernacular style which is typical for the district.

15.54. Overall, the historic landscape within which the Site is located can be described as typical for the area. It is of a predominantly rural nature characterised by late eighteenth and early nineteenth century arable fields. Any activity within the Site in the post medieval period is most likely to be in line with this use of the landscape, and any features that may be present would be agricultural in nature.

Twentieth Century onwards (1901 AD onwards)

15.55. There are no recorded heritage assets dating to this period.

Potential Effects

Demolition and Construction

15.56. The Site has potential to yield evidence of heritage assets relating to the prehistoric, Romano-British, medieval and post medieval periods. While there is demonstrable good survival for archaeological remains, they are likely to be of no more than medium sensitivity (of local or regional significance). The Himley Village Development has the potential to damage, truncate or remove these remains, and this can be assessed as a substantial adverse magnitude of impact.

15.57. The effect of the Himley Village Development upon buried archaeological remains is therefore anticipated to be **long-term**, **permanent**, **local** and of **moderate/substantial adverse** significance. This is because the construction works will result in the removal of archaeological remains present within the built footprint of the Himley Village Development.

Completed Development

15.58. The completed development will have no further effect upon buried archaeological remains beyond that outlined in the demolition and construction phase as there will be no further intrusive activities.

Mitigation

Demolition and Construction

15.59. The Site has already been subject to extensive evaluation, including desk based assessment, aerial photographic interpretation, geophysical survey and trial trenching. The results of these are summarised in **Technical Appendix 15.1**. These investigations have identified the presence of Iron Age, Romano British and post medieval archaeological remains within the Site. As such the nature and extent of archaeology is well understood. The form of further mitigation proposed consists of further archaeological investigations, through a watching brief of works in the ground, to be implemented as part of a suitably worded planning condition on the planning consent.

Completed Development

15.60. The completed development will have no further effect upon buried archaeological remains and as such no further mitigation is proposed.

Residual Effects

Demolition and Construction

15.61. With mitigation in place there remains a residual effect of **long-term**, **permanent**, **local** and of **moderate/substantial adverse** significance. This is because, despite mitigation being in place, archaeological remains of moderate sensitivity will still be significantly truncated and in some case completely destroyed by the Himley Village Development. While these remains will be preserved through record, their removal means that a moderate/substantial adverse impact remains.

Completed Development

15.62. The completed development will have no further effect upon buried archaeological remains beyond that outlined in the demolition and construction phase as there will be no further intrusive activities.

Summary and Conclusion

Table 15.3: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Destruction of Iron Age, Romano-British and post medieval remains	**Permanent** effect of **moderate/substantial adverse** significance at the **local** level**.**	Archaeological watching brief of ground works secured through planning condition	**Permanent** effect of **moderate/substantial adverse** significance at the **local** level**.**
Completed Development			
None	**N/A**	None	**N/A**

References

[1] HMSO. (1979) *Ancient Monuments and Archaeological Areas Act 1979.*
[2] Department for Communities and Local Government. (2012) *National Planning Policy Framework.*
[3] http://www.english-heritage.org.uk/professional/research/strategies/research-resources/
[4] English Heritage. (2010) *PPS5: Planning for the Historic Environment – Practice Guide.*
[5] Department for Communities and Local Government. (2014) *Online Planning Policy Guidance*. http://planningguidance.planningportal.gov.uk/
[6] Hyder Consulting Ltd. (2014) *Bicester Eco Development - Application 2 (South of Railway): Cultural Heritage Desk-Based Assessment*
[7] Oxford Archaeology. (2014) *Bicester Eco Development, Bicester, Oxfordshire.* Archaeological Evaluation Report Volume 1 – 3
[8] Northamptonshire Archaeology. (2012) *Archaeological Geophysical Survey for the Proposed Bicester Eco Development, Oxfordshire*.
[9] The Highways Agency. (2007) *Design Manual for Roads and Bridges*. Volume 11, Section 3, Part 2 HA 208/ 07 *Cultural Heritage*
[10] International Council on Monuments and Sites (ICOMOS) (2010) *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*
[11] Institute for Archaeologists. (2012) *Standard and Guidance: Desk Based Assessments*
[12] English Heritage. (2008) *Conservation Principles – Policies and guidance for the sustainable management of the historic environment.*
[13] Northamptonshire Archaeology. (2012) *Archaeological Geophysical Survey for the Proposed Bicester Eco Development, Oxfordshire*.
[14] Oxford Archaeology. (2014) *Bicester Eco Development, Bicester, Oxfordshire. Archaeological Evaluation Report.* Volume 1 – 3
[15] Northamptonshire Archaeology. (2012) *Archaeological Geophysical Survey for the Proposed Bicester Eco Development*.
[16] Lobel, M. D. (1959) *A History of the County Of Oxfordshire.* Vol 6. Victoria County History. Vol 14-56
[17] Northamptonshire Archaeology. (2012) *Archaeological Geophysical Survey for the Proposed Bicester Eco Development*. Oxfordshire.
[18] Cobham Resource Consultants. (1995) *Cherwell District Landscape Assessment for Cherwell District Council.*

16. Socio-Economics and Community

Introduction

16.1. This Chapter, which was written by Waterman, Energy, Environment & Design (Waterman EED), presents an assessment of the likely significant socio-economic effects of the Himley Village Development on the existing socio-economic conditions within the local and wider surrounding area.

16.2. In undertaking the assessment, consideration was given to relevant national and local planning policies. The likely significant effects of the Himley Village Development are assessed during the demolition and construction period, and once completed and operational. Mitigation measures required to prevent, reduce or offset likely significant adverse effects are described. Finally, the nature and significance of the likely residual socio-economic effects, taking into account any mitigation or enhancement measures, are presented.

16.3. The Chapter is supported by **Technical Appendix 16.1**, which provides a breakdown of costs included in the estimation of average local household expenditure and **Technical Appendix 16.2**, which includes the calculations that support the socio-economic assessments.

Legislation, Planning Policy & Guidance

National Planning Policy

National Planning Policy Framework, 2012

16.4. The National Planning Policy Framework[1] (NPPF) sets out 12 core planning policies and how they are to be applied. There is a presumption towards sustainable development which is encapsulated within a number of planning principles including the following:

- Proactively identifying and meet housing, business, infrastructure, local and other development needs to drive economic development and encourage thriving local communities across the country;
- Support local strategies for improvement of health, social and cultural well-being for everyone, and meeting local needs for community and cultural services and facilities;
- Working in partnership when delivering large scale development such as new settlements or extensions of existing settlements; and
- Undertaking an integrated planning approach for the location of economic uses, housing, and communities' services and facilities.

16.5. Local plans produced by Local Planning Authorities (LPAs) are influenced by the strategic policies for development and growth that are laid out in the NPPF.

Supplement to the Planning Policy Statement 1 (SPPS1): Eco-Towns, 2009

16.6. The Supplement to Planning Policy Statement 1 (SPPS1)[2] regarding Eco-Towns presents a more challenging range of minimum standards for eco-town developments (i.e., settlements with a minimum 5,000 homes), to serve as examples of good practice and sustainable living. Standards include the following:

- Provision of 30% affordable housing tenure;
- All homes to achieve Building for Life Silver Standard and Level 4 Code for Sustainable Homes; and

- 40% of the total area to be green infrastructure, with a minimum of 50% green space to be publicly accessible.

Local Planning Policy

16.7. Local planning policy in Cherwell District is controlled by two local plans: the Adopted Cherwell Local Plan 1996 and the Non-Statutory Local Plan 2011. A revised Cherwell District Local Plan has been submitted to the Secretary of State for Communities and Local Government (January 2014). Proposed Modifications were submitted in October 2014[3]. These plans and their relationship to development in Cherwell, particularly Bicester, are summarised below.

Adopted Cherwell Local Plan, 1996

16.8. The Adopted Cherwell Local Plan[4] sought to protect the environment, character and agricultural resources of Cherwell District, by focusing new development, in the preferred locations of Banbury and Bicester. Elsewhere in the rural parts of the District, development, and consequent expansion of population would be more restricted, particularly within the Oxford Green Belt.

16.9. The Adopted Cherwell Local Plan identified the need for sufficient quality and quantity of affordable housing in Cherwell to meet all housing needs, and to provide a suitable quantity and quality of open space and sport and recreation provision especially from new developments.

16.10. The Adopted Cherwell Local Plan intends Bicester to be a self-sufficient community to live and work, with identified deficiencies in provision of services, facilities and infrastructure addressed, and ensuring the existing settlement is properly integrated with new development.

Non-Statutory Cherwell Local Plan, 2011 (December 2004)

16.11. The Non-Statutory Local Plan 2011[5] was submitted to update the Adopted Local Plan 1996, but has not been formally adopted. However, it has been approved as interim planning policy for development control purposes and supports much of the Adopted Local Plan[6].

16.12. Plans include supporting the provision of significant new housing and economic development at Bicester, encouraging development of Town Centres as commercial, economic and social foci of their respective communities, protecting the Oxford Green Belt, minimising motorised traffic growth and improving / safeguarding public transport, and improving open spaces / sports and recreation provision[7].

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

16.13. The Cherwell Submission Local Plan 2006 – 2031[8], sets out a revised plan to maximise sustainable development and growth within the District over the next twenty years. The plan broadly covers three interrelated themes: sustainable local economy, sustainable communities and ensuring sustainable development. It contains area specific policies, including Bicester, along with an infrastructure delivery plan. Specific policies of relevance to this assessment area are summarised below.

16.14. Policy PSD1: the Council will proactively favour sustainable development and will approve, without delay, planning applications that accord with the Local Plan policies, unless material considerations indicate otherwise.

16.15. Policy BSC3: at Bicester, affordable housing should be provided on proposed developments which include 10+ dwellings.

16.16. Policy BSC4: the housing mix in new developments should meet a range of needs and circumstances (such as homes for the elderly).

16.17. Policy BSC7: new schools should be located in areas that are sustainable, and should be co-located with other services and facilities where possible to create community hubs.

16.18. Policy BSC8: sufficient and appropriate resources and services to secure health and well-being of people will be secured in partnership with health providers, NHS and other stakeholders. Specific to Bicester, more GP provision is needed, and the Community Hospital needs replacing.

16.19. Policy BSC10: open spaces, outdoor sport and recreation provision are important social infrastructure that should grow to meet the needs of expanding local populations. The Council will work to meet identified deficiencies in provision. New developments should ensure sufficient quantity and quality of open spaces, including access to them.

16.20. Policy BSC11: provides local standards for provision of different types of outdoor recreation, including green space, play space and outdoor sports provision, as well as guidelines for qualitative standards of provision. New developments will be required to contribute towards open space, sports and recreation facilities.

16.21. Policy Bicester 1 North West Bicester Eco-town: plans for this development, covering 345 hectares (ha), include the following:

- The creation of approximately 5,000 jobs,
- The inclusion of employment within mixed use local centre hubs;
- Approximately 5,000 homes, with 30% being affordable tenure,
- All homes to meet Building for Life and minimum Level 5 of the Code for Sustainable Homes,
- 40% of the total area allocated to green infrastructure and half of that to be publicly accessible,
- Provision of extra care housing; education, health and green infrastructure and other community facilities, and
- Plans for long term local ownership and management of community infrastructure.

16.22. Policy Bicester 7: seeks to establish an urban edge park, around the edge of the town, to protect existing green space networks and secure new open space and linear route provision which links with public footpaths and cycleways around the town and connecting through the town to the countryside.

Schedule of Proposed Main Modifications to the (Submission) Local Plan (Part 1), October 2014

16.23. Following submission of the Cherwell Local Plan 2006 – 2031, in January 2014[9], a number of revisions were formally submitted in October 2014, following a consultation period (22 August – 3 October 2014). The major modifications related to increasing new housing delivery over the plan period based on revised assessments of the District needs. They included extensions of housing development on previously proposed sites and new development sites to meet revised predictions for housing. The number of homes required in Cherwell from 2014 onwards was revised to 21,734 (up from 13,852).

16.24. Major modifications related to the NW Bicester Eco-town (Policy Bicester 1) included:

- Revising the housing requirement up to 6,000 homes, with 3,292 to be delivered, between 2014 and 2031, and an additional 2,707 homes expected after 2031;
- Revising the job opportunities target to at least 3,000 job opportunities within the plan period, which includes 1,000 B Use Class jobs at NW Bicester;

- Extension to the employment development area in Policy Bicester 11 (formally North East Bicester Business Park), up from 8ha to 15ha. Reduction in job creation from 1,092 minimum to approximately 1,000; and
- Clarification regarding the maximum walking distance to the closest primary school in NW Bicester, of 800m.

16.25. Policy Bicester 7 is to be updated to include provision for indoor as well as outdoor sports provision.

Assessment Methodology and Significance Criteria

Assessment Methodology

16.26. There are no published standards or technical guidelines that set out a preferred methodology for assessing the likely socio-economic effects of a development. However, there are a series of commonly used methodologies and recognised approaches to quantifying economic effects both during the construction of a development and following its completion. Other established techniques are frequently adopted to assess the social effects of a development. The following section outlines the methodologies used within this assessment. Where possible, the likely significant socio-economic effects are quantified, but where this is not feasible, a qualitative assessment is provided using professional judgement.

16.27. The methodology for the socio-economic assessment comprises the following:

a. A review of relevant social and economic planning policy at national and local levels;

b. A summary of the socio-economic baseline conditions at the local and district level (defined below), using established statistical sources with comparative data provided at the county and national levels, where applicable (as referenced below);

c. Assessment of the likely significant socio-economic effects of the Development, using the following approaches;

- Estimation of the direct Full Time Equivalent (FTE) jobs, and resultant Gross Value Added (GVA), generated by demolition and construction of the Himley Village Development;
- An estimation of the direct employment lost as a result of the Himley Village Development, based on a review of existing and proposed intentions of current occupiers;
- An estimation of the gross and net job yields (FTE jobs and GVA) created by the completed and operational Himley Village Development, taking account of multiplier and displacement effects (presented in Table 16.1).
- An estimation of the additional local expenditure created by the completed and operational Himley Village Development;
- An estimation and quantification of the residential element of the Development's predicted population and child yield, having regard to residential unit numbers, tenure and sizes;
- An appraisal of the effects of the new residential units upon housing demand and type;
- An appraisal of the effects of the additional population arising from the residential element of the Himley Village Development on existing services and facilities;
- A qualitative evaluation of the potential socio-economic effects arising from the environmental enhancements and public realm improvements proposed as part of the Himley Village Development; and

- A qualitative assessment of the potential effects of the Himley Village Development upon public safety and wellbeing;

d. Identification of appropriate mitigation or benefit enhancement measures, where necessary.

16.28. The baseline socio-economic conditions (and effects) were established at various spatial scales, taking into account the following factors:

- The unique characteristics of the Himley Village Site, the wider NW Bicester Masterplan area and the surrounding communities who could be directly and indirectly affected by the Himley Village Development;
- The administrative boundaries for the local area, taking account of the availability of published data;
- Ensuring consistency with the spatial scales used for the analysis carried out to support the NW Bicester Masterplan:
  - Population and demographics modelling carried out by Barton Willmore[10];
  - Economic baseline and strategy, completed by SQW[11]; and
  - Social and Community Infrastructure Report, by Barton Willmore[12].

16.29. The baseline socio-economic conditions were estimated through the interpretation of information from the following data sources:

a. 2001 / 2011 Census data;

b. Population projections developed by Barton Willmore (2014)

c. Office of National Statistics (ONS) Annual Business Survey (2013);

d. Business Register and Employment Survey (BRES) data (2010);Department for Education statistics (Annual Schools Census data) (2013/14);

e. Oxfordshire Pupil Place Plan 2014 – 2018 (July 2014);

f. Cherwell District Council Open Space Update 2011;

g. Department of Communities and Local Government Indices of Multiple Deprivation (2010);

h. Supporting documents produced as part of the NW Bicester Masterplan; and

i. Reports produced by, and on behalf of, the Cherwell District Council (CDC) and Oxfordshire County Council (OCC).

16.30. The following specific assessment methodologies were used:

a. Demolition and construction related employment effects were assessed using standard ratios of construction employment to output, assuming an average output per employee of £156,418 per year (i.e. one construction worker equates to £156,418 of construction industry output) as outlined in the ONS Annual Business Survey (2013)[13]. A conventional approach to converting 'job years' to FTE posts was adopted; whereby one permanent FTE job equates to 10 person-years of employment. In the absence of capital costs this assessment has assumed the total capital cost of the Himley Village Development to be in the region of £400m, this is based on a pro-rata assessment of a similar residential-led mixed use scheme for 675 homes– fully costed in 2014;

b. Completed Development employment generation (direct) was calculated by applying standard job density ratios to the commercial floorspace figures provided for the Development, using the methodology set out within the Homes and Communities Agency (HCA)'s Employment Densities Guide[14];

c. Associated GVA from direct employment during the Construction Phase and for the Completed Development were calculated from national GVA statistics, derived from the ONS Annual Business Survey for GVA per employee – based on different industry sectors[15];

d. Completed Development population and child yield were calculated based on the results of the population projection models developed by Barton Wilmore for the NW Bicester Masterplan; and

e. Completed Development household spend was calculated by estimating the spending generated by future residents of the Himley Village Development on the basis of an estimated average total weekly household expenditure of £274.90 on household goods and services. This figure is developed from the most recently published ONS figures for average family spend (in 2012)[16]. This figure excludes average spends on Transport; Housing; Fuel and Power; and Communications, since it is unlikely that expenditures in these areas would accrue within the local economy. A breakdown of the ONS costs included in the estimation of average household expenditure for the Development is provided in **Technical Appendix 16.1**.

Assumptions and Limitations

16.31. Health and wellbeing effects are considered in Chapter 17 Human Health. Therefore this chapter does not consider health services and infrastructure.

16.32. It is assumed that construction would be phased over a 15-year construction period (from 2016 to 2031). It is assumed that the Himley Village Development would be completed and operational in 2031.

16.33. Calculation of employment generation at full occupancy for the Himley Village Development is based upon the amount of floor space per employee provided for each non-residential employment generating land use. Using HCA guidance, and based on the specific commercial uses proposed within the Himley Village Development, Table 16.1 sets out the employment density ratios that have been used and the rationale. The area schedules provided for the Himley Village Development may change and are currently maximum areas (no minimum areas have been provided) but have been assumed to be correct, for the purpose of this assessment.

Table 16.1: Assumptions Regarding Employment Densities for Non-residential Floorspace at the Himley Development

Employment Use Type	Employment Density	Himley Village Development	Rationale
Office (B1)	1 FTE job per 12 sqm NIA	1,000 sqm GIA (800 sqm NIA*)	HCA Guidance
Retail (A1 – A5)	1 job per 18 sqm NIA	560 sqm NIA	HCA Guidance
Pub/Community (D1)	1 job per 50 sqm (GIA)	400 sqm (GIA)	HCA Guidance
Veterinary surgery	1 job per 50 sqm (GIA)	2,000 sqm (GIA	HCA Guidance
Health facility	1 job per 50 sqm (GIA)	500 sqm (GIA)	HCA Guidance
Hotel (C1)+	One job per 3 bedrooms	40 bedroom hotel	HCA guidelines
Retirement Village	A village creates approximately 30 new jobs	One 100-bed retirement village	Extra Care Charitable Trust (2014) Better Lives for Older People

Employment Use Type	Employment Density	Himley Village Development	Rationale
Two form entry (FE) primary school plus nursery	1 employee per 36 sqm (GIA)	2,700 sqm (GIA)	HCA Guidance
Nursery	1 employee per 36 sqm (GIA)	100 sqm (GIA)	HCA Guidance
Homeworking	14.2% of working population	2,142 working adults, in 1,700 households	Based on CDC average proportion of people who worked from home & assumed average of 1.26 working adults per household (Cherwell Economic Analysis Report, August 2012)

Source: Figures derived from the Himley Village Land-use Schedule
Notes: * assuming standard conversion factor of 0.8 gross to net as recommended in HCA Guidance
+ Assumed to be budget hotel

16.34. It is assumed that employees would be drawn from a wider catchment area than the surrounding communities. While many of the benefits of the Himley Village Development would remain within the District, some indirect and induced benefits from direct employment would accrue across Oxfordshire and the South East. These wider economic benefits are calculated using supplier and income multipliers.

16.35. Economic multipliers refer to the indirect employment effects generated by the purchase of goods and services by residents and businesses located in a development, and the induced employment generated by the consumption expenditures of those directly and indirectly employed by businesses located at a development.

16.36. Displacement is an estimate of those effects that may reasonably have been attained by other competitors in the absence of a development i.e. sales accruing to businesses located at a new development that would otherwise have accrued to other existing businesses. As well as displaced activity, a proportion of economic benefits 'leak' out of the local area i.e. where economic benefits occur outside the area of focus.

16.37. The multiplier, displacement and leakage factors used for the economic assessment were sourced from Government guidance[17], and are summarised in Table 16.2. These assumptions are based on the average displacement, leakage and multipliers at the regional level and are used across all employment use types.

Table 16.2: Multiplier, Leakage and Displacement Factors Applied to the Economic Assessment

Displacement Factor (%)	Leakage Factor (%)	Multiplier Effects (%)
30	11.3	1.45

Source: Department of Business Innovation and Skills (2009)

16.38. The socio-economic assessment calculated potential population and child yields from the completed Himley Village Development, using results from the demographic modelling carried out by Barton Willmore for the NW Bicester Masterplan: assuming similar patterns of population change for the Himley Village Development. The demographic modelling assessed four housing growth scenarios:

- Housing development within NW Bicester only;

- Housing development proposed for other large development sites surrounding Bicester, identified within the CDC Local Plan;
- Existing housing stock in Bicester and other smaller development sites; and
- The demographic population changes are a result of all three scenarios together.

16.39. The modelling of the NW Bicester scenario considered two ranges for housing development between 2011 and 2053:

a. a baseline trajectory which assumed a total of 6,000 housing units by 2052/53; and

b. an upper trajectory which assumed a more accelerated rate of development (6,000 units completed by 2041).

16.40. Results from both trajectories are presented when estimating the changes in population attributed to the Himley Village Development. However, to adopt a conservative approach to assessing the indirect effects of population increase on existing capacity of community services and infrastructure only the higher ranges were considered.

Significance Criteria

16.41. Since there is no formalised technical guidance or criteria available to assess the significance of socio-economic effects, potential effects have been assessed by applying the criteria described below. Using professional judgement, and having regard to the impacts of the Himley Village Development on the relevant baseline conditions, socio-economic effects are considered in terms of their overall effect on the Site and surrounding areas in the context of policy guidance and existing conditions. Where possible, the likely socio-economic effects are quantified; however, some assessments by their nature can only be evaluated on a qualitative basis.

16.42. The significance of each effect is determined on the basis of the expected results against the following criteria:

a. The **direction** of an effect which is deemed to be either:

- Beneficial, resulting in an advantageous or positive change to a socio-economic resource or receptor; or
- Adverse, resulting in a disadvantageous or adverse change to a socio-economic resource or receptor.

b. The **duration** of the activity that impacts upon a resource or receptor, which is considered either as follows:

- Short-term: those associated with the early phases of the demolition and construction period;
- Medium-term: those associated with the whole construction phase (assumed to last for 15 year period);
- Permanent: typically those associated with the completed and operational Development.

c. The geographical extent, which considers the policy / administrative boundary within which an effect occurs and is assessed at the following spatial scales:

- Local Area - Bicester Town: this area comprises of the five settlement wards of Bicester North, Bicester West, Bicester East, Bicester South and Bicester Town, and is used to define existing local economic and labour force characteristics, local housing, community services and infrastructure, open spaces and play spaces, crime and deprivation;

- - Wider Bicester Area: this area comprises of Bicester Town, and the surrounding wards of Caversfield, Launton, and Ambrosden and Chesterton, and is used to define local educational facilities and capacity;
- - Bicester Wider Area together with the ward of Fringford: this area is used to characterise, and define changes in, the local population and demographics (and is based on the modelling carried out for the Demographic Profile Report developed for the NW Bicester Masterplan[18]);
- District – within the administrative boundaries of CDC; or
- County – within the administrative boundaries of OCC.

16.43. The geographical location of the Site in relation to the ward boundaries are illustrated on **Figure 16.1.**

16.44. The **magnitude** of an effect, has been quantified where possible, and described as being:

a. Minor – the Development would result in a short, small or highly localised change to a socio-economic resource or receptor;

b. Moderate – the Development would result in a moderate, more widely demonstrable change to a socio-economic resource or receptor, which would typically be experienced beyond the local scale, and if adverse could be considered a key factor in the decision-making process;

c. Substantial – the Development would result in a geographically extensive, or substantial change to a socio-economic resource or receptor, and if adverse would likely represent a key factor in the decision-making process; or

d. Negligible – the Development would result in no perceptible change to, or a variation within normal baseline conditions, of a socio-economic resource or receptor.

Baseline Conditions

General Socio-Economic Context of the Site and its Surrounding Area

16.45. The Site is part of the NW Bicester Eco-town which falls within the administrative area of Cherwell District Council (CDC). Cherwell is a predominantly rural district, located within the north of Oxfordshire County and has been earmarked for significant development over the next two decades, including the development of the NW Bicester Eco-Town.

16.46. The Site falls across the boundaries of two wards: Ambrosden and Chesterton, and Caversfield. The wards of Ambrosden and Chesterton, and Caversfield are both predominantly rural, with small settlements. Bicester West ward is adjacent to the Site and is the closest community (**Figure 16.1**).

16.47. The Site occupies an area of approximately 90.3 hectares (ha) and comprises of predominantly agricultural land, with Himley Farm buildings located in the centre of the Site.

Population and Demographic Characteristics

16.48. The following sections provide an overview of the demographic characteristics of the local resident populations. Comparative information for the district, region and England are also provided where applicable.

16.49. The local area for the characterisation of the local populations is defined as the Bicester Wider Area which encompasses the wards of Ambrosden and Chesterton, Bicester North, Bicester East, Bicester South, Bicester West, Bicester Town, Caversfield and Launton, together with the ward of

Fringford. This spatial area matches the wards covered by the demographic modelling undertaken for the NW Bicester Masterplan.

Population Trends

16.50. Headline comparison population data for the wards comprising of the Wider Bicester Area together with Fringford ward, CDC OCC and England are provided in Table 16.3.

Table 16.3: Total Resident Populations (2001 and 2011)

Administrative Area	2001	2011	% Change (2001-2011)
Wider Bicester Area and Fringford ward (aggregated total)	40,265	43,713	8.7
Bicester North	5,649	7,014	24.2
Bicester East	6,186	5,846	-5.5
Bicester South	4,364	5,411	24
Bicester West	7,548	7,425	-1.6
Bicester Town	4,918	5,158	4.9
Ambrosden and Chesterton	3,331	3,850	15.6
Caversfield	2,894	3,017	4.3
Launton	3,042	3,629	19.3
Fringford	2,333	2,363	1.3
CDC	131,785	141,868	7.6
OCC	605,488	653,798	8.0
England	49,138,831	53,012,456	7.9

Source: ONS National Census 2001[19, 20, 21], 2011 [22, 23]

16.51. Between 2001 and 2011, the total resident population of the Bicester Wider Area and Fringford grew by 8.7%. At the District level the total number of residents grew by 7.6% for the same period.

16.52. Although the local area experienced net growth between 2001 and 2011, this hides a great variability between the wards. Bicester North, Bicester South, Launton, and Ambrosden and Chesterton all experienced relatively rapid growth of between approximately 16% and 24%, while the wards of Bicester East and Bicester West actually experienced net losses of their resident populations for the same period.

16.53. Headline data on household size, and population density (2011) are provided in Table 16.4.

Table 16.4: Household Size and Population Density, 2011

Demographics	Wider Bicester Area & Fringford*	CDC	OCC	England
Total residents	43,713	141,868	653,798	53,012,456
Households with at least one resident	17,287	56,728	258,855	22,063,368
Average household size (persons per household)	2.5	2.5	2.5	2.4

Demographics	Wider Bicester Area & Fringford*	CDC	OCC	England
Population density (persons per hectare)	21.71	2.4	8.26	4.1

Source: ONS 2011[24]
Note: * Aggregated total for the wards of Bicester North, Bicester East, Bicester South, Bicester West, Bicester Town, Ambrosden and Chesterton, Caversfield, Launton and Fringford.

16.54. At the last census, all administrative areas had similar average household sizes.

16.55. The Wider Bicester Area and Fringford ward, exhibited a more urban population density, compared to the District which exhibits a very rural population density compared to the county and national levels. This was nearly 10 times the population density of CDC.

Future Baseline Population Forecast

16.56. Based on ONS population projections, CDC and England both exhibit similar levels of incremental growth over a 20 year forecast period. CDC is predicted to see 14.4% growth from 2011 to 2031, while England would see 14.3% for the same period.

Age Structure

16.57. Table 16.5 presents a breakdown of the 2011 Census resident population, and the degree of change experienced from the previous 2001 Census, for the Bicester Wider Area and Fringford ward (aggregated total), CDC, OCC and England.

Table 16.5: Breakdown of Age Structures from 2011 Census, and change from 2001 Census

Age Cohorts	Wider Bicester Area & Fringford*		CDC		OCC		England	
	2011 No. (%)	%Change from 2001	2011 No. (%)	%Change from 2001	2011 No. (%)	%Change from 2001	2011 No. (%)	%Change from 2001
0-4	3,315 (7.6)	+6.6	9,819 (6.9)	+11.5	41,056 (6.3)	+14.6	3,318,449 (6.3)	+13.4
5-15	6,007 (13.7)	+2.2	18,627 (13.1)	-1.5	81,184 (12.45)	-1.5	6,704,387 (12.6)	-3.9
16-64	29,303 (67.0)	+6.2	91,723 (64.7)	+6.2	427,816 (65.1)	+7.1	34,329,091 (64.8)	+9.2
65+	5,088 (11.6)	+26.9	21,699 (15.3)	+22.4	103,742 (16.14)	+18	8,660,529 (16.4)	+10.9

Source: ONS National Census 2001, 2011[25]
Note: * Aggregated total for the wards of Bicester North, Bicester East, Bicester South, Bicester West, Bicester Town, Caversfield, Ambrosden and Chesterton, Launton and Fringford.
Percentages may not add to 100%, due to rounding

16.58. The Bicester Wider Area and Fringford ward, and CDC have comparatively younger age profiles, with higher proportions of their total population represented in the younger age cohorts. However, from 2001 to 2011 the degree of change for very young children (0 to 4 years) was smallest in the local area. The number of older children (5 to 15 years) living in the local area has increased the most, especially when compared to the regional and national levels which depict a downward trend in comparison.

16.59. The proportion of the total population of working age (16 to 64 years) in the Bicester Wider Area and Fringford ward is increasing at a slower rate compared with OCC and England, but is broadly similar to the District. Looking at future baseline trends, the SWQ Baseline report found that the

percentage of people of working age would drop by 2031. The proportion of working age residents in CDC would be lower in 2031 than it had been in 2011.

16.60. The age cohort that experienced the greatest degree of change in the local area (2001 - 2011) were those at, or above, retirement age. This is a trend that is expected to continue over the next 20 years. Forecasts, show that CDC's population will continue to age. The CDC's Older People Housing Strategy (2010)[26] predicted that the number of people aged 65 and older would increase 91%, by 2031. This was estimated to be around 30% higher than national average increases for the same period.

Ethnicity

16.61. The headline ethnicity data for the Wider Bicester Area and Fringford ward, CDC, OCC and England are provided in Table 16.6.

Table 16.6: Ethnicity of Resident Population, expressed as Percentage of the Total Population (2011)

	Wider Bicester Area & Fringford* (%)	CDC (%)	OCC (%)	England (%)
White	94.8	92.2	90.9	85.4
Mixed	1.9	1.8	2.0	2.3
Asian/ Asian British	2.7	4.3	4.8	7.8
Black/ Black British	1.6	1.4	1.7	3.5
Other	0.4	0.4	0.5	1.0

Source: ONS Census 2011[27]
Note: * Aggregated total for the wards of Bicester North, Bicester East, Bicester South, Bicester West, Bicester Town, Caversfield, Ambrosden and Chesterton, Launton and Fringford.

16.62. At the last census, the population of the Bicester Wider Area including Fringford ward, was the least ethnically diverse, when compared to CDC, OCC or England.

Economic Characteristics

16.63. The following section provides an overview of economic and labour market characteristics for the local and district areas. Where information is available, this is provided at ward level. In all cases appropriate comparisons are made with trends at regional and national levels.

16.64. The local area for the characterisation of baseline economic conditions is defined as the Bicester Wider Area, which encompasses the wards of Bicester North, Bicester East, Bicester South, Bicester West, Bicester Town, Ambrosden and Chesterton, Caversfield and Launton. This is the same spatial scale used in the Economic Baseline Report produced by SWQ for the NW Bicester Masterplan.

District Economy

16.65. CDC is identified as a relatively affluent area, with areas of deprivation. Overall, employment levels are high, although the District has a relatively low skills base and lower earnings. The District has traditionally been dependent on the manufacturing sector for employment which has been declining since 1998.

Local Employment Sectors

16.66. The largest employment sectors within CDC are Distribution, Manufacturing, Office, Retail and other services, and the Public sector (e.g., health, defence and education)[28].

16.67. Employment sectors identified as future growth areas for CDC include Environmental goods and services, Construction, Auto engineering, Logistics, Professional, business and financial services, and Knowledge intensive manufacturing[29]. The local economy is changing with growth experienced in the tourism and leisure industry, and distribution[30]. The percentage of the working population employed in key sectors identified for future growth in Bicester Town are provided in Table 16.7, with comparative data for the Bicester Wider Area, CDC, OCC and England.

Table 16.7: Percentage of Working Population Employed in Key Sectors for Growth (2011)

Employment Sector	Bicester Town (%)	Wider Bicester Area (%)	CDC (%)	OCC (%)	England (%)
Environmental goods and services	0.5	1	1	1	1
Construction of buildings & high value construction	1	1	1	2	2
Auto Engineering & High Performance engineering	1	2	1	4	2
Knowledge Intensive manufacturing	0.4	0.3	0.3	1	1
Logistics	13	10	7	5	6
Professions, business and financial services	2	2	2	2	4

Sources: SQW analysis of 2011 Census Data; Waterman analysis of 2011 Census data

16.68. Logistics is comparatively well represented locally; comprising 13% of Bicester Town's employment and 10% of the Bicester Wider Area. Other potential growth areas represent less than 5% (combined) of the working population of Bicester Town, and 6% for the Bicester Wider Area.

16.69. Employment sectors identified as over represented within Bicester Town included Manufacturing which comprised 11.8%, and Wholesale and retail trade, repair of motor vehicles and motor cycles, comprising 10.7%. Over represented sectors comprised around a third of Bicester Town's total employment (2011) [31].

16.70. Other sectors identified as important employment sectors in Bicester Town which comprise 40% of the total employment[32] include the following:

- Health and social work activities;
- Construction;
- Professional scientific and technical activities;
- Accommodation and food services activities;
- Information and communication; and
- Administrative and support service activities.

16.71. The major employers in Bicester Town are largely retail based (Bicester Village, Tesco and Fresh Direct[33]). Local employment hubs in and around Bicester Town include the town centre, Bicester Village (a high-end retail factory outlet in the centre), Bicester Innovation Centre (Bicester East

ward), Avonbury Business Park (northeastern corner of the NW Bicester Masterplan area), Cherwell Innovation Centre and Heyford Park Business Centre (both located in Upper Heyford).

16.72. Bicester Town's international reputation for high-end retail shopping and its proximity to regional heritage assets such as Blenheim Palace (approx. 14km southwest) and Waddesdon Manor (18km southeast) has resulted in an important localised tourism and leisure industry supported by a range of budget to luxury accommodation options. There are a number of local heritage buildings within Bicester which also contribute to the local tourism industry, as well as providing a distinct local character to the town.

16.73. Bicester has also traditionally had strong economic ties to Oxford City, with a relatively high degree of commuting to the City for employment[34].

16.74. Bicester is identified by CDC as one of two strategic town centres for shopping and leisure, with six strategic employment sites identified for significant future economic growth and development, totalling 122ha of proposed employment land.

Educational Attainment

16.75. Table 16.8 provides data on the educational attainment of the workforce for Bicester Town and the Bicester Wider Area. Comparative data for CDC, OCC and England are also presented. These data provide an indication of the potential labour market skill levels available within these administrative areas.

Table 16.8: Educational Attainment (2011)

Qualification	Bicester Town (%)	Wider Bicester Area (%)	CDC (%)	OCC (%)	England (%)
With Qualifications	80.5	78.4	76.2	79.7	74
Level 1 Qualifications	17.0	16.8	15.2	12.0	13.3
Level 2 Qualifications	16.8	16.7	15.8	13.8	15.2
Level 3 Qualifications	12.7	12.5	11.6	13.3	12.4
Level 4 Qualifications and Above	26.2	26.7	28.1	35.7	27.4
Other Higher Qualifications	7.8	5.7	5.5	4.9	5.7
Apprenticeship	3.5	3.8	4.1	3.5	3.6
No qualifications	17.5	17.4	19.7	16.7	22.5

Source: SQW analysis of 2011 Census data[35]
Note: Percentages are a proportion of the total working age population, and do not always add to 100% due to rounding

16.76. Bicester Town and Bicester Wider Area have comparatively larger proportions of their residents with lower levels of qualifications, although fewer residents with no qualifications at all, when compared to CDC and England. CDC has a relatively lower proportion of residents with qualification and higher proportion of residents with no qualifications. Only the England average is lower. OCC exhibits a different pattern compared to the other administrative areas, with higher proportions of more highly educated residents.

Skills and Training

16.77. Reports produced by and for CDC, such as the draft Local Plan and the Economic Development Strategy, highlight the need to enhance basic skills such as literacy and numeracy within the District, as well as investing in higher level skills to meet the changing and diversifying local markets.

16.78. The SWQ Baseline report found that overall a lower proportion of working age CDC residents had participated in training.

Economic Activity

16.79. Table 16.9 shows the economically active, employment and unemployment rates for Bicester Town, the Bicester Wider Area, CDC, OCC and England.

Table 16.9: Economic Activity and Employment Rates (2011)

Economic Activity	Bicester Town (%)	Bicester Wider Area (%)	CDC (%)	OCC (%)	England (%)
Economically Active*	88.2	85.8	85.2	81.8	79.2
In employment	82.3	80.1	79.1	74.9	71.7
Unemployed	2.41	7.75	0.03	0.01	4.69

Source: SQW Analysis of 2011 Census data
Notes: * Refers to people aged 16 to 64 who are in employment, or unemployed but available and actively seeking work.

16.80. Bicester Town and the Bicester Wider Area have higher proportions of economically active residents and in employment, compared to the district and regional equivalents. Bicester Town exhibits the greatest proportion of people in employment.

16.81. Although the unemployment rate in Bicester Town was comparatively low compared to the national average, the District and County had unemployment rates that are near zero. In comparison, the Bicester Wider Area has a comparatively high unemployment rate which was over three times the rate of Bicester Town.

Full Time, Part Time Employment and Self-Employment

16.82. Table 16.10 shows the breakdown of full-time verses part-term employment of residents within Bicester Town, the Bicester Wider Area, CDC, OCC and England.

Table 16.10 Full-time and Part-time Employment (2011)

Employment Status	Bicester Town (%)	Bicester Wider Area (%)	CDC (%)	OCC (%)	England (%)
Full-Time	78.7	78.8	75.7	76.1	73.8
Part-time	21.3	21.2	24.3	23.9	26.2

Source: SQW Analysis of 2011 census data

16.83. Bicester Town and the Wider Bicester Area have larger proportions of their working population in full-time employment, compared to CDC, OCC and England. Conversely they have comparatively lower proportions of their residents engaged in part-time work.

16.84. Bicester Town and the Wider Bicester Area have comparatively small proportions of their resident populations that are self-employed, when compared to CDC, OCC and England[36].

Resident Employment by Occupation

16.85. Headline data regarding employment of residents within different occupational categories are provided in Table 16.11.

Table 16.11: Employment by Occupation (2011)

Occupation Category	Bicester Town (%)	Bicester Wider Area (%)	CDC (%)	OCC (%)	England (%)
Managers, directors & senior officials	11.1	12.0	11.6	12.0	10.9
Professional	15.5	15.5	16.7	22.7	17.5
Associate professional & technical	13.8	15.6	13.1	13.6	12.8
Administrative and secretarial	12.5	12.1	11.3	10.3	11.5
Skilled trades	11.2	11.2	11.8	10.7	11.4
Caring, leisure and other service	7.8	7.6	8.4	8.3	9.3
Sales and customer services	10.3	9.4	8.8	6.9	8.4
Process plant and machine operatives	7.2	6.6	7.8	5.7	7.2
Elementary	10.7	10.0	10.6	9.7	11.1

Source: SQW Analysis of 2011 Census Data
Note: Percentages are a proportion of the total number of households, and may not always add to 100% due to rounding

16.86. The highest proportions of local residents in the Bicester areas were employed in the Professional, and Associate Professional and technical occupations categories which comprised 29.3% in Bicester Town and 31.1% in the Bicester Wider Area. This compares to 29.8% in CDC, 36.3% in OCC and 30.3% in England.

16.87. The least well represented occupations amongst residents in Bicester area were Caring, leisure and other service occupations, and Process plant and machine operatives. These categories comprised of 15% in Bicester Town, 14.2% in Bicester Wider Area, 16.2% in CDC, 14% in OCC, and 16.5% in England.

Average Incomes

16.88. Table 16.12 provides the gross average weekly income for residents of CDC, OCC and England, compared against the gross average weekly income for those who work in CDC, OCC and England.

Table 16.12: Gross Average Weekly Pay – for Residents and Workers (2011)

Earnings	CDC (£)	OCC (£)	England (£)
Resident - Gross weekly pay	536.8	560.7	512.7
Worker – Gross weekly pay	489.3	536.6	512.1
Difference between resident and worker pay	47.5	24.1	0.6

Source: SQW analysis of 2011 Census data
Note: Percentages are a proportion of the total working age population, and do not always add to 100% due to rounding

16.89. Although the gross average weekly pay in CDC is higher than the national average, the difference between the gross weekly amount paid to someone who lives in CDC and works in CDC is nearly £50 less. This is indicative of the availability of lower paid jobs within CDC and strongly suggestive of a higher degree of commuting for work outside the District, to access better paid, higher value employment[37].

Housing Characteristics

Housing Tenure

16.90. Levels of home ownership are comparatively high and rental levels comparatively low in Bicester Town settlement and the Bicester Wider Area, when compared district, regional and national levels. Social rented accommodation in the Bicester areas were lower than the levels exhibited in CDC, OCC and England (2011)38. Table 16.13 provides a breakdown of housing tenure within the wards that comprise Bicester Town (2011).

Table 16.13: Housing Tenure in Bicester Town area (2011)

Tenure	Bicester North	Bicester East	Bicester Town	Bicester South	Bicester West	Bicester Town Settlement*
All Households (No.)	**2,683**	**2,246**	**2,380**	**2,136**	**2,841**	**12,286**
Owned (outright, with mortgage/ loan)	72.3	73.4	58.9	70.9	79.6	71.0
Shared Ownership	0.3	0.6	0.9	0.6	0.4	0.6
Social Rented	7.8	14.9	21.2	5.4	10.4	11.9
Private Rented	19	10.1	17.2	22.6	8.8	15.5
Living Rent Free	0.6	1	1.8	0.7	0.9	1

Source: ONS National Census 2011[39]
Note: Percentages are a proportion of the total number of households, and do not always add to 100% due to rounding
* Aggregated total for the wards of Bicester North, Bicester East, Bicester South, Bicester West and Bicester Town

16.91. Most of the wards within Bicester Town settlement had high levels of home ownership, above the Town average. In Bicester West ward, nearly four-fifths of households owned their own homes. The exception to this pattern is Bicester Town ward, where home ownership was significantly lower than the Town average (under 60%). Bicester Town ward had a high proportion of residents who rented (nearly 40%), with around one fifth of households living in social rented accommodation. Bicester South ward also had relatively higher proportions of renters (28%), although most were private rentals.

Housing Need

16.92. A Strategic Housing Market Assessment (SHMA) was published in 2014 and considered housing needs across Oxfordshire[40]. It found that the relatively strong and resilient housing market in OCC resulted in longer renting periods and an increase in overcrowding, as affordability of homes decreased between 2001 and 2011. Looking forwards, pressures likely to influence housing need included the need to support population growth and economic development growth.

16.93. Overall, the SHMA concluded that 93,560 to 1,060,560 additional homes would be required between 2011 and 2031, to support economic growth, and the delivery of affordable housing. This equates to approximately 4,678 to 5,328 homes a year. CDC was estimated to require 1,090 to 1,190 additional homes per annum, during that period.

16.94. Bicester was one of two locations identified by CDC in their draft Local Plan (2006 – 2031)[41] as being most suitable for absorbing larger scale sustainable housing development that is needed in the District. Parts of Bicester Town settlement suffer from deprivation such as poor housing and lower incomes. Part of the strategic vision for a more sustainable integrated community encompassing housing development in Bicester include higher quality housing, and greater choices for residents, including affordable housing.

16.95. Housing for the older population, is identified as a key element of CDC's vision for sustainable communities. In preparation for the aging of the district population over the next 20 years (2011 to 2031), CDC prepared a housing strategy[42] to address the needs of its increasing older residents.

Community and Wellbeing Characteristics

16.96. Community services and infrastructure of importance to local residents include educational institutions and local amenity spaces, as well as other resources which contribute to the well-being and inclusiveness of neighbourhoods, such as community centres. Community infrastructure and services located within Bicester Town and the surrounding areas (where applicable) are identified on **Figures 16.2** and **16.3**, and are described below.

16.97. Primary health care facilities and community health are covered in Chapter 17: Human Health.

Education Facilities

Early Years Provision

16.98. Pre-school educational facilities for children under 5 years are provided through a range of resources, including local authority and private run nurseries, primary schools (with nursery classes), playgroups, children's centres or privately through child minders.

16.99. Within the Bicester Wider Area, there are 11 primary schools with nursery classes, which have a combined capacity of 230 places for children aged 3 to 4. In 2015, an additional school will expand to include a nursery class (see Table 16.14). There are also 12 nursery, daycare facilities, playgroups and pre-school facilities in the Bicester Wider Area[43].

16.100. There are four children's centres which provide a range of services and facilities including drop-in centres for under 5s, and activities for fathers and their children, located in Bicester Town, Caversfield ward and Ambrosden and Chesterton ward.

16.101. The closest facilities to the Site, include the following:

- Bicester North ward: two primary schools with nursery classes and one playgroup/ toddler group;
- Bicester West ward: two primary schools with nursery classes, one preschool and one nursery; and
- Ambrosden and Chesterton ward: two preschools/ nurseries (located in Chesterton settlement).

Primary School Provision

16.102. There are 16 primary schools located within Bicester[1] and shown in Table 16.14 which presents data on capacity and school roll.

Table 16.14: Local Primary School Capacity within Bicester (2013/14)

School	Nursery Places (fte)	School Capacity	Number on School Roll	Surplus
Kings Meadow Primary School*	**15**	**442**	**374**	**68**
Southwold County Primary School*	**26**	**380**	**328**	**52**
Bure Park Primary School*	**30**	**480**	**462**	**18**
Brookside Primary School*	**26**	**315**	**255**	**60**
Chesterton CE Primary School	**0**	**140**	**127**	**13**
St Mary's Catholic Primary School (VA)	**0**	**315**	**267**	**48**
Five Acres Primary School*#	26	420#	305	115
Langford Village Community Primary School*	39	420	468	-48
Longfields Primary School and Nursery*	40	315	276	39
St Edbury's CE Primary School (VC)*$	0	210$	169	41
Heyford Park Free School **	0	60+	19	41
Glory Farm Primary School* / Bicester Learning Academy	13	459	407	52
Fringford	0	210	177	33
Fritwell	0	459	407	52
Charlton-on-Otmoor CE Primary School*	10	105	85	20
Launton CE School*	5	140	117	23
Totals	**230**	**4,870**	**4,243**	**627**

Source: Oxfordshire County Council (2014)[44]
Notes: Schools in bold = located closest to the Site
* Primary school with nursery
** Provides for all ages from 4 to 16 years. Capacity shown only for opening primary year. Capacity will increase in future years
# Recently expanded to 2 form entry (FE) (Sept. 2013)
$ Due to expand to 2FE in Sept 2015, with increased capacity to 420. It will include a nursery class at that time

16.103. Across the Bicester Wider Area, all primary schools are operating with 627 surplus places, equating to approximately 13% of their combined total. In the six primary schools closest to the Site, there are currently 258 surplus places, equating to 12% of their total combined capacity. St Edburg's CE School is set to double its capacity from 1FE to 2FE in 2015, providing an additional 210 places (in SW Bicester) [45].

[1] Covers the towns and villages of Bicester, Charlton-on-Otmoor, Chesterton, Finmere, Ambrosden, Fringford, Fritwell, Upper Heyford and Launton, defined as Bicester by OCC for educational planning purposes

16.104. OCC has identified that demand for primary education is rising, with new housing developments being a significant contributory factor to this trend[46]. Current pupil projections, taking account of natural population changes as well as known and planned housing developments, are estimated to result in a 14% increase in primary school numbers from 2013/14 to 2018/19. OCC plans to address increasing demand with the provision of expanded and new primary schools in Bicester.

Local Secondary School Provision

16.105. Older children typically travel further to access secondary school education, therefore the secondary schools located within the District are presented here. In CDC there are eight secondary schools with a combined total capacity of 9,235 school places and 7,246 pupils on the school roll (2013/14). There are 1,989 surplus places, which equates to 21.5% nominal surplus capacity[47].

16.106. There are three secondary schools located within Bicester and the surrounding area, which are presented in Table 16.15, with data on capacity and school roll.

Table 16.15: Secondary School Capacity within Bicester Town and the Surrounding Area (2013/14)

School	Capacity	Number on School Roll	Surplus
Bicester Community College (Bicester)	1,494	890	604
The Cooper School (Bicester)	1,315	1,274	41
Heyford Park Free School (Upper Heyford)*	60**	58	2
Total	**2,869**	**2,222**	**107**

Source: OCC 2014[48]
Notes: * Provides for all ages from 4 to 19 years
** School opened in Sept 2013. This figure refers to the opening year capacity only

16.107. The three schools closest to the Site are operating at 4% combined capacity, although Bicester Community College is currently operating with about 40% surplus capacity. Heyford Park Free School opened in September 2013 and its capacity will increase year on year, up to a maximum capacity of 840 children (all years).

16.108. From 2013/14 to 2018/19, secondary school pupil numbers are projected to rise by 12%. Currently, there is a surplus of places across all secondary schools in OCC, although this is expected to decline as existing children move through primary school. To accommodate increased demand OCC intends to open one new secondary school in CDC, including Bicester[49].

Open Space Provision

16.109. CDC has audited its green spaces audits (updated in 2011)[50]. The results for Bicester Town are summarised in Table 16.16.

Table 16.16: Available Green Spaces located within Bicester Town

Open Space type	Description	Total Size (Ha)	Ha per 1,000 Population	Local Urban Standard ha per 1,000 Population
Parks and gardens	Garth Park (including gardens, bandstand area, children play area, skateboard park)	2.63	0.09	0.48
Natural and semi-natural green space	5 sites	17.71	0.59	0.69
Amenity green space	44 Sites	36.72	1.23	0.5
Outdoor sports facilities	5 multi-use games areas	-		1.13
Allotments and community gardens	5 sites	2.86	0.1	0.37
Children and Young Persons		3.26	0.1 – younger children 0.01 – older children	0.59 – younger children 0.19 – older children
Civic spaces	Market Square /Market Hill	-		

Source: CDC Open Spaces Strategy 2011 Update
Notes: - Not specified

16.110. The closest open spaces to the Site include Shakespeare Drive (located in Bicester West ward 500m east of the Site) and Purslane Drive (located in Bicester North ward, 1km northeast). There are also green spaces that could be accessed in the wards surrounding the Site, such as Waddesdon Manor, near Caversfield (located in the Rural Central zone) or Bignell Park, in Ambrosden and Chesterton ward (located in the Rural South zone).

Sports and Recreation Provision

16.111. Cherwell's Playing Pitch Strategy (2008)[51] identified the following sports facilities in Bicester:

- 9 adult football pitches;
- 3 junior football pitches;
- 12 mini-soccer pitches;
- 2 rugby pitches; and
- 1 hockey field.

16.112. The Playing Pitch Strategy identified a need to improve the quality and quantity of outdoor sports facilities to accommodate future population growth. In particular, it identified a shortfall of eight junior football pitches and two rugby pitches in Bicester. The strategy outlined a variety of measures which would be adopted to meet the future shortfall, such as community access to pitches at primary schools, providing new facilities and refurbishing existing pitches.

16.113. Bicester Leisure Centre located in Bicester West ward, provides opportunities for swimming, squash, all weather floodlit pitches, 10-pin bowling alley and activity halls. There are a wide range of fitness classes and a crèche. There is also a private gym within the Town.

16.114. Outside of school hours, the Cooper School Sports Facility provides sports venues in the evenings and weekends. The Bicester Hockey Club is based at Coopers School. It is managed by the

Bicester Sports Centre. There is a swimming pool located in the Bicester Hotel, located in the village of Chesterton.

16.115. There are a number of sports clubs that also operate in Bicester, such as located at Garth Park, which includes the Bicester Bowls Club and Bicester Tennis Club, Bicester Rugby Football Club and Langford KEA Football. The Bicester Sports Associate provides facilities within Bicester (Oxford Road), and also in Chesterton. Faculties include cricket, football (all ages) and rugby union.

16.116. The Wider Bicester area provides opportunities for other outdoor sports activities including fishing (e.g., on the River Ray, River Cherwell), horse riding, hunting and golf (Bicester Country Club and Chesterton Golf Club).

Play Space Provision and Young People

16.117. In Bicester Town, 58 facilities were identified as available for play and social activities for children and young people. Facilities include equipped play areas, ball courts and skate parks[52]. Accessibility to play spaces throughout Bicester Town is not uniform, with a greater number of facilities in the north and western parts of the Town. There is no, or limited, provision in the centre, Langley Village and pockets in the north east of the Town[53].

16.118. Garth Park provides a dedicated children's play area and skateboard park. A 7-screen cinema is located at the recently refurbished Pioneer Square shopping centre.

16.119. There are also play facilities located nearby in Bucknell in the Caversfield ward.

Other Community Facilities/ Resources

16.120. There is one library located within Bicester Town (approximately 2.3km from the Site), which is open Monday – Saturday.

16.121. There are eight community centres located within Bicester Town[54], which provide a range of community support services such as groups for toddlers or the over 50s.

16.122. West Bicester and Emmanuel Church community centres are the closest to the Site (located 850m and 1.4km, respectively). These centres provide venues for several community services such as a pre-school, and sports facilities at West Bicester Community Centre, and the Bure Park Resident Association in Emmanuel Church Community Centre.

16.123. There are also 13 community organisations in Bicester covering a range of interests and age groups e.g., women's organisations, elderly, community and voluntary[55]. The Market Square /Market Hill civic space is well used. There is a weekly market and Farmers Market (fortnightly). The Square hosts annual and specialist community events, such as the Bicester Town Carnival.

Crime

16.124. Crime rates for CDC are comparatively low. Bicester Town Ward has higher crime rates than the other surrounding wards (May 2013 - September 2014). This should be considered in the context of the higher activity rates within the town in comparison to the less populated rural wards.

16.125. The most commonly reported crimes across CDC and Bicester Town settlement from May 2013 to September 2014, were for 'Anti-Social Behaviour' followed by 'Violence' and 'Theft'. In the 17 months to September 2014, Anti-Social Behaviour accounted for approximately 25% of all reported crime in the District.

16.126. From May 2013 to September 2014 there was an overall decline in the total number of offences across the wards within Bicester Town Settlement, and across CDC.

Deprivation

16.127. The Indices of Multiple Deprivation (IMD) are the Government's official measure of economic and social deprivation in England[56]. The overall IMD rating is produced using a combined analysis of a range of separate social and economic indicators to produce an overall IMD rating. Subsets of these indicators are also used to rank areas within what are known as 'domains' of deprivation: there are seven such domains comprising Income, Employment, Health Deprivation and Disability, Education, Skills and Training, Barriers to Housing and Services, Crime and Living Environment. The latest IMD statistics were published in 2010.

16.128. The IMD comprise a group of 38 statistical indicators, used to rank levels of deprivation in 2,482 neighbourhoods known as Lower Super Output Areas (LSOAs) in England.

16.129. The combined outputs for those LSOAs falling within the Cherwell District provide a ranking of 240 out of 326 Local Authority districts in England (where 1 is the most deprived). CDC falls just outside the less deprived local authorities in England[57].

16.130. The Site itself falls within LSOA Cherwell 011B. This LSOA is ranked as 21,912 out of 32,482, placing it within the upper 65% least deprived LSOAs in England.

Potential Effects

Demolition and Construction

Loss of Agricultural Employment

16.131. The Himley Village Development would result in the development of the farmland that currently occupies the majority of the Site. The majority of the farmland is owned and farmed by the occupier of Himley Farm. A single field in the south east of the Site is under separate ownership and is farmed by a contractor. At this time, the existing farmer of Himley Farm who lives within a barn conversion located at Himley Farm in the centre of the Site, intends to remain on Site and continue small scale farming. The south eastern field forms part of a wider farming business. The future plans for this business are currently unknown.

16.132. The loss of the farm land would be mitigated by the payment of market rates to the owners. With regard to employment, it is likely that some contractors would be employed to undertake seasonal work. Although Bicester Town is urban, much of the surrounding areas and the District are rural in nature. It is assumed that given the lead time to construction in 2016, any contract businesses would be able to adjust to the future loss of any contracts on the existing farmland, which are likely to be small scale. The effect of the Himley Village Development on the loss of agricultural employment is anticipated to be of **negligible** significance at the District level.

Temporary Employment Generation and Associated Gross Value Added

16.133. Although final capital costs have not been calculated at this stage in the design process, the likely development costs associated with the Himley Village Development are estimated to be approximately £400 million, as set out in the Assessment Methodology.

16.134. Using the turnover per construction worker of £156,418, it is estimated that 2,557 man years of construction employment would be created by the Development equating to 256 FTE jobs. Recognising that there are around 6,000 construction jobs in Oxfordshire[58] and given the duration of the construction phase (15 years), the construction of the Himley Village Development would add additional longer-term jobs to the region. With unemployment at 7.75% in the Bicester Wider Area

(and 2.41% in Bicester Town), it is expected that some construction employment would be taken up by local residents.

16.135. Based on the GVA per employee in the construction sector of £61,179, it is estimated that the construction element of the Himley Village Development would generate an additional £91.8 million in GVA terms at the regional level or approximately £6million per year based on a 15 year construction programme.

16.136. The construction of NW Bicester would be expected to provide a significant number of specialist jobs in modern construction techniques[59]. The Himley Village Development could therefore provide opportunities for existing and future apprentices to learn skills that could enable future prospects in new technological construction techniques. This aligns with the employment sectors identified for growth within Bicester and CDC.

16.137. Therefore, based on the above the effects of the construction of the Himley Village Development is expected to be **medium term, regional** and of **minor beneficial** significance.

Associated Expenditure (Employee and Procurement)

16.138. Additional indirect benefits are expected as result of construction activities, notably the expenditure by construction employees on local goods and services, such as accommodation, food and drink, and recreational activities. Additional revenue would also be generated by the procurement of material, goods and services. Although difficult to quantify, the effect of the Himley Village Development on expenditure during the construction phase is expected to be **medium term, regional** and of **minor beneficial** significance.

Completed Development

Employment Generation

16.139. Using the employment densities summarised in the Assessment Methodology above, and taking account of multiplier, displacement and leakage effects set out in Table 16.1, the employment effects of the Development are estimated in Table 16.17.

Table 16.17: Employment Generation from the Himley Village Development, Assuming Full Occupancy

Type	Area/ Working Adults	Employment Density	Indicative Gross Jobs	Indicative Net Jobs
Office	800 sqm (NIA)	One job per 12 sqm (NIA)	67	61
Retail	560 sq (NIA)	One job per 18 sqm (NIA)	31	28
Pub/Community	400 sqm (GIA)	One job per 50 sqm (GIA)	8	7
Veterinary Surgery	2,000 sqm (GIA)	One job per 50 sqm (GIA)	40	36
Health Facility	1,500 sqm (GIA)	One job per 50 sqm (NIA)	30	27
Hotel*	40 bed	One job per three beds	13	12

Type	Area/ Working Adults	Employment Density	Indicative Gross Jobs	Indicative Net Jobs
Retirement Village	100 beds	Each village creates 30 new jobs	30	27
School	2,700 sqm (GIA)	One job per 36 sqm (GIA)	75	68
Nursery	100 sqm (GIA)	One job per 36 sqm (GIA)	3	3
Homeworking	2,142 working adults	14.2% of workers work from home	304	275
Total			**601**	**544**

Source: Adapted from the Supplement to Economic Development Strategy for NW Bicester[60] (2014) / based on figures referred to in the Land Use Schedule for Himley Village Development Rev D141118.
Note: * Assumed to be a budget hotel

16.140. The total employment likely to be generated from the completed and fully occupied Himley Village Development is estimated to be in the region of 601 gross FTE jobs and 544 net FTE additional jobs.

16.141. Based on a figure of £45,696 GVA per employee, it is anticipated that the completed and fully occupied Himley Village Development would result in an annual GVA injection of around £24.8million per annum into the regional economy.

16.142. Although the unemployment rate at the District and Regional level is almost at zero, it is significantly higher in Bicester Town (2.41%) and the Bicester Wider Area (7.75%). It is therefore likely that some jobs would be taken up locally by existing residents, as well as being taken by new residents and/or by people residing outside the Local Area.

16.143. The Himley Village Development would contribute towards the wider economic growth and restructuring of the Bicester economy by providing employment opportunities generated from inward investment attracted to the new employment land and property. In turn, this could support employment, training and skills development opportunities for local people and new residents as noted in the Economic Development Strategy produced to support the NW Bicester Masterplan.

16.144. Taking into consideration the above, the effect of the fully implemented and occupied Himley Village Development on employment generation is expected to be **permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial** significance at the **regional** level.

Creation of Housing Stock

16.145. The Himley Village Development would bring forward up to 1,700 residential dwellings by 2031, over eight phases, although at this time the current timing of each phase is unknown. The proposed housing delivery over each phase is outlined in Table 16.18.

Table 16.18: Phasing Programme for Housing Delivery

Phase	Housing Development	Accumulated Total of Completed Housing Units
Phase 1	Development would begin in the southernmost fields, with circa 290 dwellings.	290
Phase 2	Development would extend northwards from Phase 1, with circa 200 dwellings.	490
Phase 3	Development would extend into the centre of the Site, with circa 190 dwellings	680
Phase 4	Development would extend further north into the fields immediately south of Himley Farm, with circa 300 dwellings.	980
Phase 5	Development would extend into the final parts of the eastern and central fields, with circa 210 dwellings.	1,190
Phase 6	Development would extend to the final parts of the western fields, with circa 145 dwellings.	1,335
Phase 7	Development would extends eastwards along the new construction access route from the Boulevard, with circa 145 dwellings.	1,480
Phase 8	Final phase to the north east, with circa 220 dwellings.	1,700

16.146. Once completed the 1,700 dwellings constructed as part of the Himley Village Development would contribute to the following housing targets:

- It would provide approximately 28% of the revised housing target of 6,000 homes for NW Bicester[61];
- It would provide about 50% of the revised housing target for NW Bicester for the time period 2014 to 2031 (3,292 homes) [62];
- It would provide 7% of the housing target identified in the Cherwell Submission Local Plan, 2006-2031 (23,800 homes between 2011 and 2031); and
- It would provide 1.6% of the Oxfordshire housing target over the same 20 year period.

16.147. The delivery of 1,700 houses would support economic growth and development in the area, by providing high quality housing for existing and new employees, as well as the economic benefits accrued due to the demolition and construction phase (as identified above).

16.148. The Himley Village Development would provide both market and affordable housing units on-Site. Table 16.19 provides the breakdown of housing delivery; assuming a 70:30% split between market and affordable units, in line with the requirements of PPS1 Supplement.

Table 16.19: Market and Affordable Housing mix within the Himley Village Development

Housing Type	Market	Affordable	Total
1 Bed	118	50	168
2 Bed	476	204	680*
3 Bed	398	170	568
4 Bed	146	63	209
5 Bed	53	22	75
Total	1,191	509	1,700

Note: * assumes a 50% spilt between houses and flats

16.149. Approximately 50% of the residential units would be family housing (3+ bedroom dwellings). The provision of 509 units of affordable housing, including 255 family size units, would contribute towards increasing the affordable housing stock within CDC.

16.150. All new housing stock would be built to high sustainable development standards. All homes would be constructed to achieve a minimum of Code for Sustainable Homes Level 5 and designed to Lifetime Homes standards.

16.151. Given the above provision in meeting the housing targets identified by CDC and OCC for Bicester and the wider area, the effect of the completed Himley Village Development on housing is anticipated to be **permanent** and of **moderate beneficial significance** at the **district** level.

16.152. In addition to providing 1,700 high quality homes, the Himley Village Development would provide a 100-bed retirement village. As set out in the CDC Strategy, housing for older residents is a planning priority, to accommodate the forecast increase in the elderly population over the plan period (2011 – 2031). Furthermore, all homes would be designed to Lifetime Homes standards which would enable dwellings to be easily adapted to changing needs as residents get older, enabling people to stay in their own homes.

16.153. Based on the provision noted above, the effect of the completed Himley Village Development in meeting CDC's planning priority for addressing immediate and future housing needs for its elderly population, is anticipated to be **permanent**, **district** and of **minor beneficial significance**.

Local Expenditure

16.154. The new households introduced as a result of the Himley Village Development would result in increased spending within the local economy. Assuming an average local spend of £274.90 per week, it is estimated that 1,700 households could result in up to £24.3 million per annum spent on household goods and services; including convenience and comparison shopping, and recreation and leisure activities. It is assumed that this expenditure would accrue locally, given the range of shops and amenities within the Bicester Wider Area.

16.155. Given, the relatively low levels of home ownership and the high degree of renting within some wards in the Bicester Wider Area, and the provision of affordable housing as part of the Himley Village Development it is reasonable to assume that some existing residents would relocate to the new development. Assuming, based on professional judgement, that 20% of residents would relocate from other parts of the Bicester Wider Area they would not represent new spending within the local area. If 80% of households relocated from outside the Bicester Wider Area, the Himley Village Development would result in an estimated additional local expenditure of £19.4 million per annum. This figure does not take account of additional expenditure generated from residents of the

retirement village or new employees who live outside the local area. Therefore, it represents a conservative estimation of likely local expenditure generated.

16.156. Taking account of the combined estimated predicted household expenditure, the effects of the completed Development on local expenditure is anticipated to be **permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the **district** level.

Changes to the Local Population

16.157. Using the approach referred to in the Assessment Methodology Section, the Himley Village Development is estimated to generate the population yields presented in Table 16.20. The table provides the baseline and upper trajectory results, assuming that the delivery of 1,700 homes would exhibit the same population density ratios projected for 1,575 homes (NW Bicester baseline trajectory scenario) and 1,600 homes (NW Bicester upper trajectory scenario).

Table 16.20: Projected Population Yield of the Himley Village Development (NW Bicester only – baseline and upper trajectory results)

Baseline Trajectory			Upper Trajectory		
No. Houses	**Total Pop**	**Ave HH Size**	**No. Houses**	**Total Pop**	**Ave HH Size**
50	147	2.94	71	221	3.11
125	389	3.11	214	596	2.79
250	709	2.84	393	1,074	2.73
375	1,030	2.75	634	1,697	2.68
525	1,425	2.71	876	2,333	2.66
675	1,820	2.70	1,117	2,951	2.64
825	2,214	2.68	1,359	3,586	2.64
975	2,603	2.67	1,600	4,191	2.62
1,125	2,978	2.65	**1,700***	**4,449**	**2.62**
1,275	3,346	2.62			
1,425	3,275	2.30			
1,575	4,097	2.60			
1,700*	**4,421**	**2.60**			

Source: Barton Willmore's Demographic Report, produced for the NW Bicester Masterplan (2014)
Note: * Extrapolated population density based on assumptions regarding population densities derived from the modelling results presented in Barton Willmore's Demographic Report.

16.158. The completed Himley Village Development is estimated to generate 4,421 residents (including 975 children aged 0 to 15), or 4,449 residents (including 881 children aged 0 to 15) using a more accelerated development model. The breakdown of adult and child population yields for the Development, are provided in **Technical Appendix 16.2**.

16.159. This figure does not include the 100-unit retirement village, which assumes a conservative scenario of two persons per unit, equating to 200 residents.

16.160. A farm house and bungalow are located on the existing Site so the additional 4,621 to 4,649 residents from the completed Himley Village Development would represent a significant increase in the population on-Site. This additional population would represent around 10.6% increase to the population of the Wider Bicester Area and Fringford ward (based on the 2011 Census). These additional residents have the potential to place increased pressure upon local educational facilities,

healthcare facilities (covered in Chapter 17: Human Health) and open spaces (green spaces, play spaces and sports/ recreational facilities), as described below.

Demand for Local Education Facilities

16.161. The Himley Village Development would impact upon local educational facilities through the following:

- Contributing directly to local capacity through the provision of a private nursery (assumed to be completed at the end of Phase 1) and a new primary school with nursery (due for completion at the end of Phase 3); and
- Placing additional demands on school places from the additional children generated by the new housing development.

16.162. It is assumed that the primary school would be at the beginning of Phase 3. Prior to the completion of the primary school, the Himley Village Development would comprise circa 490 dwellings by the end of Phase 2. These 490 dwellings are estimated to generate approximately 177 to 180 children, between the ages of 0 and 10 (see Table 16.21).

Table 16.21: Projected Yield of Children aged 0 to 10, from 490 Dwellings, by the End of Phase 2 (baseline and upper trajectory results)

Model Scenario	Age Groups		
	0-10	0-3	4-10
Baseline Trajectory	**180**	95	85
Upper Trajectory	**177**	91	86

Source: Barton Willmore's Demographic Report, produced for the NW Bicester Masterplan (2014)
Note: * Extrapolated population density based on population modelling results from Barton Willmore's Demographic Report

16.163. Assuming all children require Early Years placements, it is estimated that the Himley Village Development would generate a requirement for up to 95 places, by the end of Phase 2 of the construction programme and prior to the Himley Village primary school opening (Phase 3). There are a range of Early Years educational facilities for under 5s, including 230 places for 3 to 4 year olds (2013/14) across 10 primary schools with nursery classes, 12 nurseries, daycare facilities, playgroups and preschools and four children's centres located within the Bicester Wider Area. This does not include additional capacity that could be developed by OCC to meet increasing demands. This figure also excludes the private nursery which would likely be completed by the end of Phase 1 and which would have small capacity (the exact figure is not yet known).

16.164. The private sector is a significant contributor to Early Years provision, especially for children aged 0 to 2. Increased demand could also stimulate further increased capacity within the private sector. It is assumed that future capacity of Early Years facilities would be sufficient to accommodate an increase in demand for Early Years placements attributable to the Himley Village Development, at the end of Phase 2.

16.165. It's estimated that there would be a requirement for up to 86 primary school places prior to the opening of the Himley Village Primary School. This figure does not account for children educated privately, or children who have relocated locally and are already placed in an existing school.

16.166. In 2013/14, there were 529 surplus primary school places across the 12 schools located within Bicester Town and the surrounding wards. Within the six primary schools closest to the Site, there were currently 258 surplus places. With the future expansion of St Edburg's CE School in SW Bicester local capacity would increase by a further 210 places. Other primary schools have been

identified by OCC as having potential for future expansion should it be required. Although the number of children of primary age are forecast to increase, the capacity of the existing local primary schools would be expected to accommodate the increased demand attributable to the Himley Village Development, at the end of Phase 2.

16.167. It is estimated that by the time the Himley Village Development is completed (by 2031), it would generate between 968 and 1,047 children aged 0 to 17, as presented in Table 16.22.

Table 16.22: Projected Child Yield aged 0 to 17, from 1,700 Dwellings (baseline and upper trajectory results)

Model Scenario	Age Groups				
	0-17	0-3	4-10	11-15	16-17
Baseline Trajectory	**1,047**	354	429	193	66
Upper Trajectory	**968**	366	333	182	87

Source: Barton Willmore's Demographic Report, produced for the NW Bicester Masterplan (2014)
Note: * Extrapolated population density based on population modelling results from Barton Willmore's Demographic Report

16.168. It is estimated that the completed Himley Village Development would generate a requirement for up to 366 Early Years placements. During Phase 3, a new primary school with nursery would be constructed, assumed to be a typical 2 form entry (FE) primary school (i.e., two classes for every year). Assuming each class would hold up to 30 children, the capacity of the nursery would be for 60 children aged 3 to 4 and 420 children aged 4 to 10.

16.169. As noted above, private sector capacity would be expected to adjust to increasing demand although for parents on low incomes private childcare could be prohibitively expensive. There are however children's centres and toddler groups which provide free services and government assistance for childcare for children aged 3 and above. Furthermore, there are primary schools within the Bicester Wider Area which have been identified as having potential for expansion. The NW Bicester Masterplan makes provision for additional nursery capacity; this is covered in Chapter 19: Cumulative Effects.

16.170. Taking account of the above, it is assumed that future capacity of the Early Years facilities including the addition of a private nursery and two nursery classes in the Himley Village primary school would be sufficient to accommodate an increase in demand for Early Years placements, attributable to the completed Himley Village Development.

16.171. It is estimated that the completed Himley Village Development would generate an estimated 333 to 429 children aged 4 to 10, requiring primary school places. This figure does not account for children educated privately, or children who have relocated locally and are already placed in an existing school.

16.172. Himley Village primary school has an assumed capacity of 420 children aged 4 to 11. In addition there are currently 529 surplus primary school places within Bicester Town and the surrounding wards and proposed future expansion of Heyford Park Free School. Furthermore, OCC has identified a need for increased primary school provision in Bicester, which includes for potential expansion of primary schools and new primary schools proposed in the NW Bicester Masterplan which is covered in Chapter 19: Cumulative Effects.

16.173. Even taking into consideration forecast increases in children of primary school age, it is expected that the future capacity of local primary schools would accommodate the increased demand attributable to the completed Himley Village Development.

Secondary Education

16.174. It is estimated that the completed Himley Village Development would generate up to 269 children aged 11 to 17, requiring secondary school places. This figure does not account for children educated privately, or children who have relocated locally and are already placed in an existing school.

16.175. Secondary school children typically travel further to access education, and so the capacity of secondary schools across the District is considered. Currently, there are 1,989 surplus secondary school places in CDC, including 107 surplus places across the three schools closest to the Site. Capacity at the recently opened Heyford Park Free School would have increased by the time the Himley Village Development is complete, to its full capacity of up to 840 children (aged 4 to 19). It is expected that secondary schools within CDC would be able to accommodate the increased demand attributable to the completed Himley Village Development.

16.176. Taking account of current and future capacity including the new Himley Primary and Nursery school, and even considering forecast increases in demands for education places, it is expected that educational facilities could accommodate the increased demand attributable to the Himley Village Development. The effect of the completed Himley Village Development on education provision is therefore expected to be **negligible** at the **local** level for Early Years and primary education, and **negligible** at the **district level** for secondary education.

Open space and Public Realm

16.177. A minimum of 36.1 ha of green infrastructure space would be provided within the Himley Village Development, equating to at least 40% of the Site, approximately half of the green space being publicly accessible. The Planning and Design for Outdoor Sport and Play guidance[63] recommends publicly accessible open space is 2.4 ha for every 1,000 population. Based on the upper limit for the estimated population of the Himley Village Development, 4,469 people would require approximately 10.7 ha of open space. The Himley Development would provide a minimum of 18ha.

16.178. It is envisaged that the open spaces to be provided as part of the Himley Village Development would be interconnected, with footpaths and cyclepaths as well as vehicle access where appropriate. Ancillary facilities (such as seating and litter bins) would be provided and landscaping would be designed to create spacious outlook and enhance the overall appearance of the local environment.

16.179. The Himley Village Development would provide pedestrian and cycle routes through the Site and along associated routes. Green infrastructure would be accessible to all residents of Bicester Town and designed to provide a wide variety of types of green infrastructure to meet different needs of local residents. The green infrastructure would be designed to encourage active use by local residents and a sense of community integration. The potential effects of the completed Himley Development on the provision of open space and public realm are anticipated to be **permanent, local** and of **moderate beneficial** significance.

16.180. Provision of open space in relation to potential effects on local health and wellbeing are further assessed in Chapter 17: Human Health.

Provision of Sports Facilities and Children's Play Space

16.181. The provision green spaces and infrastructure as outlined above are designed to also provide flexible playable spaces for children of all ages (0 to 12+ years), which are fully accessible, inclusive and integrated with the wider NW Bicester Masterplan and the existing Bicester Town. It is envisaged that the Himley Village Development would provide approximately 3.17 ha of flexible

playable space throughout the Site. This would include playing fields in the north of the Site. The playing fields are assumed to be completed by the end of Phase 1.

16.182. The construction of the Himley Village Development would result in playable space and outdoor sports space that are suited to the needs of children. CDC has identified immediate and future shortfalls for outdoor sports facilities, which would be addressed, in part, by the provisions proposed as part of the Himley Village Development. The potential effects of the completed Himley Development on the provision play space and outdoor sports facilities are therefore anticipated to be **permanent, local** and of **moderate beneficial** significance.

16.183. Provision of sports facilities and play space in relation to potential effects on local health and wellbeing are further assessed in Chapter 17: Human Health**.**

Crime

16.184. With increased populations, there is the potential for increases in criminal behaviour. Crime rates are relatively low in the Bicester Wider area, with anti-social behaviour the highest reported crime. The completed Himley Village Development has been designed to minimise opportunities for crime and the fear of crime through a more open layout which encourages safe and accessible neighbourhoods with pedestrian routes that are well used. Further, the potential to increase local employment as well as the provision of additional community facilities could have a positive impact on local crime rates. On balance, the effect of the completed Himley Village Development on crime and perceptions of public safety is expected to be **negligible** effect at the **local** level.

Community Cohesion

16.185. The design vision of the completed Himley Village Development is for a self-sustainable and inclusive community, which is also physically integrated with the existing Bicester Town settlement. The provision of fruit trees and orchards could also help encourage a wider sense of shared community spirit. The interconnectivity and more open arrangement of residential neighbourhoods also seeks to encourage greater integration and interaction between local residents.

16.186. It is proposed that a Himley Farm Land Trust (HFLT) would be established to oversee the management of the landscape and community assets. The overarching aim of the HFLT would be to facilitate community interaction and therefore a sense of ownership of the Himley Village Development. The HFLT would be established in the early phases of the construction to help manage the development of the landscape, as well as having a longer-term management function.

16.187. The provision of affordable housing on-Site helps to provide mixed neighbourhoods, which would also serve to encourage a greater sense of integration and inclusion regardless of income. It would provide the same access and opportunities to all families who would reside within the completed Himley Village Development.

16.188. Taking account of the above, the effect of the completed Himley Development on community cohesion is expected to be **permanent**, **local** and of **minor beneficial significance**.

Mitigation

Demolition and Construction

Loss of Existing Employment

16.189. No mitigation is required, for the loss of agricultural jobs at the existing Site. However, given the duration and scale of construction for the Himley Village Development, there are opportunities to

maximise local employment through the provision of apprenticeships and other training programmes, as recommend in the NW Bicester Masterplan Economic Development Strategy. Opportunities for existing agricultural workers to train in construction related activities would provide new career opportunities which could have semi-permanent/ permanent employment prospects, not only at the Himley Village Development but also as part of the development proposed throughout Bicester and the wider areas resulting in permanent employment. On this basis it is expected that the temporary nature of the construction related employment could result in some jobs of a semi-permanent or permanent basis

Temporary Employment Generation

16.190. No mitigation is required as the demolition and construction of the Himley Village Development would generate temporary employment opportunities. However, given the duration of the construction phase, some of these job opportunities could be considered to be of a semi-permanent or even permanent nature. As noted above, the Himley Village Development could provide opportunities for training and retraining of local residents, thereby maximising the local employment opportunities available and providing skills that would be in demand and would fit with the longer term economic goals for the area. Although the Applicant cannot guarantee the specific proportion of local construction hire, it is recommended that training and apprenticeship programmes are developed and implemented throughout the demolition and construction phase, including links with local Further Education and vocational training institutes, as well as local job brokerage companies through CDC. Specific attention could be directed towards those who are long-term unemployed. It is recommended that these opportunities are discussed with the LPA. Benefit enhancement measures could be secured as part of the s.106 agreement for the Site.

Local Expenditure

16.191. Although no mitigation is required, since the demolition and construction phase will generate additional revenue within the local and wider economics, there are opportunities to maximise local and regional procurement through the implementation of a local procurement plan or a local trade agreement when letting construction contracts. Initiatives such as, 'Meet the Buyer' type event would also enable local firms to gain a better understanding of the construction project and resultant contact opportunities. It is recommended that these opportunities are discussed with the LPA. Benefit enhancement measures could be secured as part of the s.106 agreement for the Site.

Completed Development

16.192. All the completed development effects have been assessed as either negligible or beneficial and therefore no mitigation is required.

Residual Effects

Demolition and Construction

16.193. The residual effect of the loss of agricultural employment is anticipated to be of **negligible significance** at the district level.

16.194. Assuming the implementation of local labour market initiatives, the likely residual effects of Development on the employment are anticipated to be **medium-term** to **permanent, local** to **regional** and of **minor beneficial significance** at the **regional** level.

16.195. Assuming the implementation of local labour market initiatives, the likely residual effects on local expenditure as a result of construction employment and procurement are anticipated to be **medium-term** to **permanent, local** to **regional** and of **minor beneficial significance** at the **regional** level.

Completed Development

16.196. As all the potential effects were assessed as either beneficial or negligible, no mitigation measures are required. The residual effects therefore remain as presented in the potential effects section of this chapter.

Summary and Conclusion

Table 16.23: Summary of Potential and Residual Socio-economic Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Loss of agricultural employment	**Negligible** at **district** level	Implementation of local employment and local labour market initiatives	**Negligible** at **district** level
Temporary employment generation and associated GVA during the construction period	**Medium-term, regional,** and of **minor beneficial** significance	Implementation of local employment and local labour market initiatives	**Medium-term - permanent**, **local - regional**, and of **minor beneficial** significance
Local expenditure by construction workers and procurement opportunities	**Medium term, regional** and of **minor beneficial** significance.	Implementation of local employment and local labour market initiatives	**Medium-term - permanent**, **local - regional**, and of **minor beneficial** significance
Completed Development			
Gross and net additional employment generated as a result of employment generating floorspace	**Permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the **regional** level	None required	**Permanent** and of **moderate significance** at the **local** level**,** and of **minor beneficial significance** at the **regional** level
Provision of 1,700 private residential units (including 852 family sized units, and 509 affordable housing units)	**Permanent, district,** and of **moderate beneficial significance.**	None required	**Permanent, district,** and of **moderate beneficial significance**
Provision of 100-bed retirement village	**Permanent, district,** and of **minor beneficial significance.**	None required	**Permanent, district,** and of **minor beneficial significance**
Local household expenditure	**Permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the district level	None required	**Permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the district level
Increased demand on Early Years and primary education facilities from	**Negligible** at the **local** level.	None required	**Negligible** at the **local** level.

Description of Effect	Potential Effect	Mitigation	Residual Effect
residential population, during Phases 1 and 2 of construction schedule.			
Provision of a private nursery, and a new primary and nursery school on local educational facilities from the start of Phase 3 of construction schedule.	**Negligible** at the **local** level.	None required	**Negligible** at the **local** level.
Increased demand on Early Years, primary and secondary education facilities from residential population once Himley Development is completed	**Negligible** at the **local** level.	None required	**Negligible** at the **local** level.
Increased pressure on open space and public realm from additional residential population.	**Permanent, local,** and of **moderate beneficial significance.**	None required	**Permanent, local,** and of **moderate beneficial significance**
Increased pressure on play space and outdoor sports recreation provision from additional residential population.	**Permanent, local,** and of **minor beneficial significance.**	None required	**Permanent, local,** and of **minor beneficial significance**
Crime Opportunities and Perceptions of safety and wellbeing	**Permanent, local,** and of **moderate beneficial significance.**	None required	**Permanent, local,** and of **moderate beneficial significance**
Community Cohesion	**Permanent, local,** and of **minor beneficial significance.**	None required	**Permanent, local,** and of **minor beneficial significance.**

References

1 Department for Communities and Local Government (DCLG). (2012). *National Planning Policy Framework (NPPF).*
2 DCLG. (2009) *Planning Policy Statement: Eco Towns. A Supplement to Planning Policy Statement 1. The Stationery Office*.
3 Cherwell District Council. (2014) *Local Plan Development Framework.* http://www.cherwell.gov.uk/index.cfm?articleid=1730
4 Cherwell District Council. (1996) *Cherwell Local Plan.*
5 Cherwell District Council. (2014) *Interactive Local Plan.* http://npa.cherwell.gov.uk/LocalPlan/Plan_index.htm
6 Cherwell District Council. (2014) *Non-Statutory Cherwell Local Plan 2011.* http://www.cherwell.gov.uk/index.cfm?articleid=9633
7 Cherwell District Council. (2014) *Interactive Local Plan.* http://npa.cherwell.gov.uk/LocalPlan/written/cpt0.htm#1
8 Cherwell District Council. (2014) *The Cherwell Local Plan.*
9 Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
10 Barton Willmore. (2014) *NW Bicester Masterplan Social and Community Facilities and Services Strategy*.
11 SQW. (2013) *NW Bicester Economic Baseline Report.*
12 Barton Willmore. (2014) *NW Bicester Masterplan Social and Community Facilities and Services Strategy.*
13 Department of Business Innovation and Skills. (2009) *Research to Improve the Assessment of Additionality.*
14 Homes and Communities Agency. (2010) *Employment Densities Guide.* 2nd Edition.
15 Department of Business Innovation and Skills. (2009). *Research to Improve the Assessment of Additionality*
16 Department of Business Innovation and Skills. (2009). *Research to Improve the Assessment of Additionality*
17 Department of Business Innovation and Skills. (2009). Research to Improve the Assessment of Additionality
18 Barton Willmore. (2014) *NW Bicester Masterplan Social and Community Facilities and Services Strategy.*
19 Office for National Statistics (ONS). (2001) *Key Figures for 2001 Census: Key Statistics.* http://www.neighbourhood.statistics.gov.uk/dissemination/LeadKeyFigures.do?a=7&b=13689139&c=bryanston&d=14&e=15&g=6340098&i=1001x1003x1032x1004&o=1&m=0&r=1&s=1410167271153&enc=1
20 ONS. (2011) *Population Density, 2001 (UV02).* [http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=13689139&c=bryanston&d=14&e=16&g=6340098&i=1001x1003x1032x1004&o=1&m=0&r=1&s=1410168831585&enc=1&dsFamilyId=789
21 ONS. (2011) *Rooms, Amenities, Central Heating and Lowest Floor Level, 2001 (KS19).* http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=13689139&c=bryanston&d=14&e=15&g=6340098&i=1001x1003x1032x1004&o=1&m=0&r=1&s=1410169166710&enc=1&dsFamilyId=285
22 ONS. (2011) *Key Figures for 2011 Census: Key Statistics.* http://www.neighbourhood.statistics.gov.uk/dissemination/LeadKeyFigures.do?a=7&b=13689139&c=bryanston&d=14&e=62&g=6340098&i=1001x1003x1032x1004&o=1&m=0&r=1&s=1407938323148&enc=1
23 ONS. (2011) *Population Density, 2011 (QS102EW).* http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=13689139&c=bryanston&d=14&e=61&g=6340098&i=1001x1003x1032x1004&o=1&m=0&r=1&s=1407938507835&enc=1&dsFamilyId=2491
24 ONS. (2011*) Key Figures for 2011 Census: Key Statistics.* http://www.neighbourhood.statistics.gov.uk/
25 ONS. (2001) *Age Structure, 2001 (KS02)*. http://www.neighbourhood.statistics.gov.uk/
26 Cherwell District Council. (2010*) Cherwell's Housing Strategy for Older People 2010 – 2014*
27 ONS. (2011) *Ethnic Group, 2011 (KS201EW).* http://www.neighbourhood.statistics.gov.uk/
28 Cherwell District Council. (2014) *Cherwell Local Plan.*
29 SQW. (2013) *NW Bicester Economic Baseline Report.*
30 Cherwell District Council. (2014) *Cherwell Local Plan.*
31 SQW. (2013) *NW Bicester Economic Baseline Report.*
32 SQW. (2013) *NW Bicester Economic Baseline Report.*
33 Cherwell District Council. (2014) *Cherwell Local Plan.*
34 Cherwell District Council. (2014) *Cherwell Local Plan.*
35 SQW. (2013) *NW Bicester Economic Baseline Report.*

[36] SQW. (2013) *NW Bicester Economic Baseline Report.*
[37] Cherwell District Council. (2011) *Economic Development Strategy 2011 – 2016.*
[38] ONS. (2011) *Tenure, 2011 (KS402EW).* http://www.neighbourhood.statistics.gov.uk/
[39] ONS. (2011) *Tenure, 2011 (KS402EW).* http://www.neighbourhood.statistics.gov.uk/
[40] Hearn Ltd. (2014) *Oxfordshire Strategic Housing Market Assessment. Summary – Key Findings on Housing Need.*
[41] Cherwell District Council. (2014) *Cherwell Local Plan 2006 – 2031.*
[42] Cherwell District Council. (2010) *Cherwell's Housing Strategy for Older People 2010 – 2014.*
[43] Barton Willmore. (2014) *NW Bicester Masterplan Social and Community Facilities and Services Strategy*.
[44] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[45] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[46] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[47] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[48] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[49] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[50] Cherwell District Council. (2008) *Cherwell Green Spaces Strategy 2008 – 2016*
[51] Cherwell District Council. (2008) *Cherwell's Playing Pitch Strategy Background Document*.
[52] PMP. (2006) *Open Space, Sport and Recreational Facilities Needs Assessment Audit and Strategy.* Cherwell District Council.
[53] PMP. (2006) *Open Space, Sport and Recreational Facilities Needs Assessment Audit and Strategy.* Cherwell District Council.
[54] Barton Willmore LLP. (2014) *NW Masterplan Social and Community facilities and Services Strategy*.
[55] Barton Willmore. (2014) *NW Bicester Masterplan Social and Community Facilities and Services Strategy*.
[56] Department for Communities and Local Government (2011). *English Indices of Deprivation 2010.* https://www.gov.uk/government/publications/english-indices-of-deprivation-2010
[57] Open Data Communities. (2014) *Index of Multiple Deprivation 2010.* http://opendatacommunities.org/data/societal-wellbeing/deprivation/imd-rank-la-2010
[58] ONS. (2011) Business Register and Employment Survey. http://www.ons.gov.uk/ons/about-ons/get-involved/taking-part-in-a-survey/information-for-businesses/a-to-z-of-business-surveys/business-register-and-employment-survey--bres-/index.html
[59] SQW (2013) *Economic Development Strategy for the NW Bicester Masterplan.*
[60] A2Dominion (2014) *Masterplan vision and objectives.* http://www.ecobicester.org.uk/cms/content/north-west-bicester-eco-town-draft-masterplan-submitted
[61] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[62] Oxfordshire County Council. (2014) *Pupil Place Plan 2014 – 2018.*
[63] Fields in trust. (2008) *Planning and Design for Outdoor Sport and Play guidance.* http://www.medway.gov.uk/pdf/Planning-and-Design-for-Outdoor-Sport-and-Play-2008.pdf

17. Human Health

Introduction

17.1. This Chapter, written by Waterman, Energy, Environment & Design (Waterman EED), presents an assessment of the likely significant health effects of the Himley Village Development on the communities within the local area.

17.2. Health is more than just the presence or absence of illness and disease. Human health is influenced by a range of biological, environmental, social/ cultural, and individual lifestyle factors[1]. It is generally accepted that these 'broader determinants of health' are more important than just the provision of health care in ensuring a healthy population[2]. Individual choices have an impact on a person's health but policies and programmes also provide individuals and communities with opportunities for making healthier choices.

17.3. In undertaking this assessment, a broader view of health has been taken, which includes physical, mental and social wellbeing. Consideration was given to relevant national and local planning policies and guidance that address the reduction of health inequalities and promotion of good health. The health profile of the local communities living closest to the Site in Bicester Town and the wider District area is also presented. The assessment considered a range of factors that influence health and used those factors in the identification and assessment of likely significant effects of the Himley Village Development during the demolition and construction period, and once completed and operational. The results from other Environmental Statement (ES) chapters were integrated into this assessment where they had the potential to affect people's health status. These included the assessment for air quality; noise transport; waste, and socio-economic and community. Finally, the nature and significance of likely residual health effects, taking into account any relevant mitigation or enhancement measures described in other ES chapters, are presented.

Legislation, Planning Policy & Guidance

17.4. Legislation relating to air quality, noise, transport, socio-economics and community, and waste are all relevant to the consideration of a development's effects upon human health. Summaries of applicable discipline specific legalisation are provided in the relevant chapters within this ES, and are not duplicated in this chapter.

17.5. This section looks at the wider planning policies and guidance in relation to planning for healthy communities, to maximise health benefits and minimise adverse health effects from development.

National Planning Policy

National Planning Policy Framework, 2012

17.6. The National Planning Policy Framework[1] (NPPF) presents planning policies for England and how they are to be applied. The NPPF includes core planning principles to proactively identify and meet housing, business, infrastructure, local and other development needs to drive economic development and encourage thriving local communities across the country (Paragraph 17). The NPPF has a presumption in favour of sustainable development. All local plans produced by Local Authorities are influenced by the strategic policies for development and growth that are laid out in the NPPF.

17.7. Policy 4. *Promoting sustainable transport* highlights the importance of transport policies in facilitating sustainable development and also in contributing to wider sustainability and health objectives.

17.8. Policy 6. *Delivering a wide choice of high quality homes* demonstrates the importance of delivering a wide choice of high quality homes, widening the opportunities for home ownership and creating sustainable, inclusive and mixed communities.

17.9. Policy 7. *Requiring Good Design* highlights the importance of quality design in the creation of sustainable communities.

17.10. Policy 8. *Promoting Healthy Communities* highlights the importance of the planning system in facilitating social interaction and creating healthy, inclusive communities. To ensure sufficient high quality open space, sports and recreational facilities are provided, the needs of the local communities must be understood. Accessibility to new recreational and community facilities through walking and cycling should be considered.

Supplement to Planning Policy Statement 1: eco-towns, 2009

17.11. The Planning Policy Statement (PPS) 1[3] Supplement identifies that the built and natural environments are important components in improving people's health and well-being. A well designed development and good urban planning can also contribute to promoting and supporting healthier and more active living and reduce health inequalities. Eco-towns should be designed and planned to support healthy and sustainable environments and enable residents to make healthy choices easily.

UK Government Sustainable Development Strategy, 2005

17.12. Health and sustainable development are inextricably linked. Good health is vital for sustainable development and sustainable development is vital for good health. The Sustainable Development Strategy[4] aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. To achieve this the strategy contains a new integrated vision, building on the previous 1999 Strategy.

17.13. The Sustainable Development Strategy outlines five main principles for delivering sustainable development, which include ensuring a strong, healthy and just society. It presents four agreed priorities: sustainable consumption and production, climate change, natural resource protection, and sustainable communities.

17.14. Healthy Lives, Healthy People: Update and Way Forward, 2011

17.15. This White Paper[5] outlines the commitment to reform the public health system in England. The strategy involves reaching out to local communities and putting them at the heart of public health provision. Means to achieve this include giving local authorities new responsibilities for public health and implementing a public health outcomes framework, so that public health becomes a clear priority. The White Paper also included a commitment to reduce health inequalities.

17.16. Fair Society, Healthy Lives: The Marmot Review, 2010.

17.17. The purpose of the Marmot Review[6] was to contribute to the development of a post 2010 health inequalities strategy for England. The report highlighted the connection between health inequalities and social inequalities – generally the worse a person's position was, the worse their health status was. There were societal-wide benefits to reducing health inequalities, with particular emphasis placed on targeting those people considered to be more disadvantaged. To achieve this, six policy objectives were outlined:

- Give each child the best possible start in life;
- Help children, young people and adults to have control over their lives and maximise their capabilities;

- Create fair employment and good work;
- Provide a healthy standard of living for all;
- Create healthy and sustainable places and communities; and
- Strengthen the role of impact of ill health prevention.

17.18. Healthy Lives, Healthy People: Improving outcomes and supporting transparency, 2012.

17.19. This document sets out a new Public Health Outcomes Framework for England[7]. The framework focusses on two high level outcomes: increasing healthy life expectancy and reducing differences in life expectancy between communities. The framework develops a set of public health indicators to help understand how regions and districts compare.

17.20. Health and Social Care Act, 2012

17.21. This Act[8] includes a requirement for local authorities to take steps to improve the health of local people in their area, where considered appropriate. Measures could include provision of information and advice, providing incentives for people to adopt healthier lifestyles or assistance for individuals to minimise risks to their health from their accommodation or environment.

Local Planning Policy

Adopted Cherwell Local Plan, 1996

17.22. The Adopted Cherwell Local Plan[9] has a presumption in favour of development, including the creation of sustainable, inclusive, healthy individuals and communities. It identified the need to increase provision of doctors' surgeries and associated health facilities to serve increasing local populations.

17.23. It would normally resist proposals that would build on open space including designed sports and recreation space. It would seek to protect, enhance and increase (where possible) formal open space provision across the District, including within Bicester.

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

17.24. The Cherwell Submission Local Plan 2006 – 2031[10], sets out a revised plan to maximise sustainable development and growth within the District over the next twenty years. The plan broadly covers three interrelated themes: sustainable local economy, sustainable communities and ensuring sustainable development. The following policies are of relevance to the human health assessment:

- Policies BSC3 and BSC4: provision of high quality housing in Bicester, including affordable housing tenure and housing to meet the changing needs of home owners as they age;
- Policy BSC8: providing sufficient and appropriate resources and services to secure the health and well-being of people. This is to be achieved in partnership with health providers, NHS and other stakeholders. Specific to Bicester, more GP provision is needed, and the Community Hospital needs replacing;
- Policy BSC10: improving the quantity and quality of the provision of open space, outdoor sport and recreation provision to meet the needs of expanding local populations, within Bicester;
- Policy Bicester 1 North West Bicester Eco-town: job creation, high quality, adaptable home delivery, including affordable housing, allocation of 40% of the site for green infrastructure with half of that being publicly available, focus on integration and accessibility of community facilities and reduction of car dependency while encouraging more walking, cycling and public transport usage; and

- Policy Bicester 7: protection of existing green space networks and provision of new open space and linear route provision which link with public footpaths and cycleways around the town, and connect through the town to the countryside.

Cherwell District Council Local Development Framework Core Strategy Background Document Open Space Update 2011

17.25. The Open Space Update 2011[11], updated previous open space audits and strategies, including Cherwell Open Space, Sport and Recreational Facilities Need Assessment Audit and Strategy, 2006. It updated previously laid out local provision standards for the quantity and accessibility of different typologies of open space, updated current shortfalls and identified the strategic implications for Cherwell District Council (CDC)'s 2011 Green Spaces Strategy Action Plan.

Assessment Methodology and Significance Criteria

Assessment Methodology

17.26. There are a number of guidance documents that can be used to undertake a Health Impact Assessment (HIA). One of the most commonly used HIA approaches is the Merseyside Guidelines for Health Impact Assessment, which defines the aims of HIA as the assessment of the potential health impacts (positive and negative), of projects, programmes and policies. HIA is also intended to improve the quality of public policy decision making through recommendation to enhance predicted positive health impacts and minimise adverse ones[12].

17.27. This assessment is not intended to be a fully comprehensive HIA; instead it broadly follows the same process employed to assess health effects as that undertaken for interrelated assessments conducted for the Himley Village Development EIA. It has comprised the following steps:

a. Policy analysis: reviewed of related planning policies at national and local levels which influence health inequities and promote healthy communities;

b. Compilation of a local community profile of health taking into consideration a broader range of health determinants (factors which can influence human health);

c. Identification of the key health determinants which could be affected by the Himley Village Development;

d. Assessment of the likely significant human health effects (beneficial and adverse), arising from the Himley Village Development; and

e. Identification of appropriate mitigation or benefit enhancement measures, if necessary.

Compile Local Community Profile

17.28. A local community profile for the Bicester Wider Area[1] and the wider Cherwell District Council (CDC) area was developed, using socio-economic and health data from the sources referenced below. It considered a range of biological, lifestyle, environmental and social factors which can influence a person's health. Where available, data at the ward level was provided, as was comparative data at the Oxfordshire County Council (OCC) and national levels.

17.29. The following data sources were used:

a. 2001 / 2011 Census data;

[1] This encompasses the wards of Ambrosden and Chesterton, Bicester East, Bicester West, Bicester North, Bicester South, Bicester Town, Caversfield, Fringford and Launton

b. Joint Strategic Needs Assessment for Oxfordshire (2009)[13];

c. Department of Communities and Local Government Indices of Multiple Deprivation (2010);

d. NHS / PCT Health Statistics (2012/ 14);

e. Cherwell District Council Open Space Update 2011 [14];

f. Public Health Observatory (2014) [15]; and

g. Supporting documents produced as part of the NW Bicester Masterplan, in particular the Strategic Environmental Report (SEA) and the Social and Community facilities Services Strategy[16,17].

17.30. Since a broader definition of human health has been used, where applicable the community profile also includes baseline data from other chapters in the ES, in particular from the socio-economic and community and transport assessments.

Identification of Health Effects

17.31. The health assessment considered the following influences on health, as outlined by the Merseyside HIA Guidelines of relevance to the Himley Development:

- Biological factors: age, gender, ethnicity;
- Lifestyle factors: education, unemployment, physical activity, food production;
- Social environment: community facilities, community cohesion; and
- Physical environment: outdoor and indoor air quality and noise levels, housing conditions, public safety, transport and accessibility to facilities such as health, education, open space.

17.32. The assessment has considered the way in which the Himley Village Development would potentially interact with these health factors to determine the direction and likelihood of the health effect. Magnitude was not considered in the health assessment since it is difficult to quantify the degree of change which could reasonably be attributed to the Himley Village Development. Instead the degree of likelihood of a change to a health determinant (factor) was used, and is defined below. To ensure consistency of the results for the Himley Village Development, measured against the wider NW Bicester Masterplan, the assessment has used the same definition of health outcome probability as used in the SEA, which are reproduced below.

Significance Criteria

17.33. The complex nature of the pathways and determinants of health make quantification of effects difficult. The potential health effects are evaluated on a qualitative basis. The significance of each potential effect is determined on the basis of the expected results against the following criteria:

a. The **direction** of an effect which is deemed to be:

- Beneficial, resulting in a positive influence on health determinants, potentially resulting in long-term health gains or creates conditions that enable the pursuit of healthy lifestyles;
- Adverse, resulting in a negative effect on health determinants, through health losses or creating conditions that do not enable the pursuit of healthy lifestyles; or
- Neutral, where no change to health status is likely.

b. The **duration** of the activity that impacts upon a resource or receptor, which is considered either as follows:

- Short-term: those associated with the early phases of the demolition and construction period;

- Medium-term: those associated with the whole construction phase (assumed to last for a 15 year period); and
- Permanent: typically those associated with the completed Himley Village Development.

c. The **geographical extent**, which considers the policy / administrative boundary within which an effect occurs and is assessed at the following spatial scales:

- Local Area - Wider Bicester Area: this area comprises of Bicester Town, and the surrounding wards of Caversfield, Launton, and Ambrosden and Chesterton, and Fringford;
- District – within the administrative boundaries of CDC; or
- County – within the administrative boundaries of OCC.

17.34. The wards comprising the local study areas are illustrated on **Figure 16.1**.

17.35. The **likelihood** of an effect occurring is described as being[18]:

a. Speculative – considered unlikely to occur, with limited supporting evidence available;

b. Possible – likely to occur, on the basis of evidence from a range of sources;

c. Probable – very likely to occur, with strong evidence from a range of sources.

Assumptions and Limitations

17.36. Where information on local community health status was not available for the Bicester Wider Area, proxy data for CDC was used instead. The community profile draws largely on the wide range of health status data presented in the SEA of the NW Bicester Masterplan.

Baseline Conditions

17.37. The following section provides an overview of the existing health status of the population living in the Bicester Wider Area and Cherwell District. Where it is available, data is further disaggregated to the ward level.

Community Health

Cherwell Health Profile

17.38. Health profiles for local areas are published annually by the Public Health Observatory. According the latest Health Profile for Cherwell (September 2014)[19], CDC is comparatively healthy although there is variability with some areas experiencing higher levels of deprivation and associated health inequalities.

17.39. Key priorities for CDC include reducing obesity levels in children and adults, and reducing road traffic injuries and deaths.

Life Expectancy, at Birth

17.40. Life expectancy at birth is a summary indicator of the general health of a population. It is an estimate of the number of years a new born baby would be expected to live, provided the prevailing patterns of mortality at the time of birth remained constant throughout its life. It is specific to a particular area and so provides a useful indicator of general health for that location.

17.41. Looking at the trend for life expectancy at birth over a 10-year period (1998/00 to 2008/10) for CDC, OCC and England, all areas were shown to have increasing life expectancy for men and women.

However, the District was shown to have consistently higher life expectancy at birth, than the national average for all people. While women in Cherwell had slightly higher life expectancy when compared to OCC, men in Cherwell had slightly lower life expectancy when compared to other districts in OCC, with the expectation of Oxford[20].

17.42. The more recent life expectancy rates for men and women for Cherwell District and England are provided in Table 17.1.

Table 17.1 Life Expectancy at Birth (2007 – 2010)

Parameters		Areas	
		Cherwell District	England
Life Expectancy at Birth (Females)	2007-2009	83.7	82.3
	2008-2010	83.6	82.6
Life Expectancy at Birth (Males)	2007-2009	78.8	78.3
	2008-2010	78.9	78.6

17.43. Source: NW Bicester Masterplan, SEA

17.44. Overall, life expectancy at birth is higher for women when compared to men, for all areas. In CDC life expectancy is slightly higher than the national averages. However, there are discrepancies within the District, which are not reflected in the table above. Life expectancy is 8.9 years lower for men and 6.7 years lower for women in the most deprived areas of Cherwell District when compared to the least deprived areas of the District[21].

General Health Status

17.45. Self-reported good health status presents data about the percentage of adults that consider themselves to be in good health and is useful indicator of general health status, as too are the proportion of people who have a long term heath problem or disability. Table 17.2 summarises the percentage of the population in the Bicester Wider Area, that self-reported good health or who are considered to have a long term health problem/ disability.

Table 17.2 Self-Reported Good Health Status

Ward	Percentage of Population that considered themselves to be in Good Health and Very Good Health (2011)	Percentage of Population with a Long-Term Health Problem or Disability[2] (2011)
Caversfield	86.4	12.6
Ambrosden and Chesterton	91	8.7
Bicester East	86	13.29
Bicester North	90.7	8.2
Bicester West	84.3	14.5
Bicester South	92.5	6.2
Bicester Town	79.3	19.3
Launton	85	15.9

[2] Includes the sub-categories 'day-to-day activities limited to a lot' and 'day-to-day activities limited to a little'

Ward	Percentage of Population that considered themselves to be in Good Health and Very Good Health (2011)	Percentage of Population with a Long-Term Health Problem or Disability[2] (2011)
Fringford	87.8	12
Cherwell Average	**85**	**14.1**
England Average	**81.4**	**17.6**

17.46. Source: NW Bicester Masterplan, SEA.

17.47. Overall, health in CDC is better than the national average; most wards had high proportions of their population reporting good health and a smaller percentage of those with long term health issues, compared to England. However, Bicester Town has a lower proportion of its population reporting good health when compared to all other administrative areas. It also has the highest proportion of people with a long term health issue.

17.48. The self-reported health status in the wards of Ambrosden and Chesterton, and Caversfield, within which the Site falls, are above the district and England averages. The Bicester West ward which lies adjacent to the Site also has a higher proportion of its people with self-reported good health, than the England average, although lower than the Cherwell District average.

Diabetes

17.49. Obesity across England has been increasing over the last 15 years. Obesity has serious long term health implications and can reduce life expectancy. Obesity has been estimated to cost the NHS more than £5 billion a year[22]. Almost 5% of adults in Oxfordshire are diagnosed with diabetes, the majority of which suffer from Type 2 Diabetes[23]. The increase in Type 2 Diabetes has been directly linked to increasing obesity rates which are considered to be the main contributory factor.

17.50. Between 2011 and 2012, 5.1% of people who were registered with a GP in Cherwell were diagnosed with diabetes which is lower than the national average but shows an increasing trend within the district[24]. Increasing physical activity as well as eating a healthier diet have been shown to reduce obesity and so are important factors in addressing this trend.

Cancer

17.51. There has been a steady increase in the incidence of cancers in Oxfordshire between 2001 and 2011, however this could be due to better cancer diagnosis in the region combined with a better understanding and awareness of the signs of cancer amongst the local population rather than an absolute increase. In Cherwell District, the prevalence of cancer is second lowest of all the districts in Oxfordshire[25].

Circulatory Disease

17.52. Circulatory diseases include heart disease and stroke, as well as other cardiovascular diseases. In Oxfordshire, 1.6% of the population who were registered with a GP were recorded as having had a stroke and 2.6% had been diagnosed with heart disease (2012/13). These rates were significantly lower than the national average[26].

Mortality

17.53. The mortality rate in an area is another summary indicator for the general health of a population. The rate is expressed per 100,000 of the population.

17.54. The major cause of mortality in Cherwell District is from circulatory diseases and cancer. The mortality rate from circulatory diseases is considerably lower in CDC compared to the national average but higher than the Oxfordshire average. The mortality rates from cancer are slightly lower than the national averages. The mortality rate from all cancers is significantly lower in women than men, although the gap is closing as the incidence of cancers in men has overall, been decreasing at a more rapid rate[27].

17.55. Cancer is the biggest cause of mortality in males and females under the age of 75 in both Oxfordshire and England with approximately 700 deaths per year in Oxfordshire. The prevalence of cancer in Cherwell is the second lowest in the district (106.6) and slightly lower than the national average (108.1)[28].

17.56. Table 17.3 below summarises the mortality rate from circulatory diseases (heart disease and strokes) which are leading causes of death across England.

Table 17.3 Mortality Rates from Coronary Heart Disease and Stroke

Area	Mortality Rate from Coronary Heart Disease (2010)	Mortality Rate from Stroke (2010)
Cherwell	55.6	31.0
Oxford	67.3	30.0
South Oxford	46.4	36.3
Vale of White Horse	58.4	31.9
West Oxfordshire	54.1	34
Oxfordshire	55.5	32.5
England	74.2	40.9

17.57. Source: NW Bicester Masterplan, SEA.

17.58. In Oxfordshire, the mortality rates from circulatory diseases are notably lower, compared to the national rate. In Cherwell District, mortality from heart disease is lower than regional and national rates; however, it is higher than the South Oxford and West Oxfordshire districts. The mortality rate in CDC, from stroke, is the second lowest of all the districts in OCC.

Mental Health

17.59. 2011 mental health data collected by the Office for National Statistics estimated that one in five people in the age group of 16 and over showed symptoms of mild to moderate mental illness. The proportion is higher in women than in men and in the age groups between 49-60 and over 80[29].

17.60. A GP patient survey conducted in December 2013 in Oxfordshire demonstrated that the percentage of residents that consider themselves to have a long standing mental health condition was 4.4% which is slightly lower than the national rate of 4.6%. In Cherwell District, a similar trend is observed. Overall, there was a lower proportion of people with diagnosed mental health disorders in CDC, than in OCC or England[30].

Lifestyle

17.61. This section provides details about health issues related to lifestyle habits. Poor lifestyle choices can contribute to a lowered health status, this includes lack of physical activity, risky behaviour such as smoking and obesity due to poor diet and lack of exercise. The number of incidences of hospital

stays related to alcohol, and premature deaths due to smoking are indicators of risky behaviour that can adversely affect a person's health.

Obesity

17.62. Obesity is one of the most common problem to affect adults and children. Obesity is related to a number of serious and potentially life threatening conditions such as Type-2 Diabetes, circulatory diseases and cancer[31].

17.63. Although adult obesity levels in OCC are generally lower than the national average, obesity affects around 1 in 4 adults and 1 in 5 children in Oxfordshire. It is estimated that by 2020, obesity could lead to an additional 6,900 cases of diabetes in the County[32].

17.64. Around a quarter of the population (27.5%), are considered to be obese, in CDC. This rate is higher than the national average in 2014[33]. Although this has fluctuated slightly between 2006 and 2014, overall levels have increased[34].

17.65. Overall, childhood obesity levels are lower in CDC when compared to England, with 15.5% of children in Year 6 (age 11-12) classified as obese, in 2013[35]. Between 2010 and 2012, 7.2% of children aged 4 and 5 within Cherwell District were considered to be obese, compared to 7% in OCC and 9.5% in England. Obesity rates in Cherwell showed a small decline from 7.9%, in 2008-2009[36].

17.66. Increasing levels of physical activity and promoting healthy lifestyle and eating habits could help to reduce this issue in the long-term and are a health priority for CDC.

17.67. Risky behaviours.

17.68. The District, has a lower rate of alcohol related hospital stays compared to the national average, equating to 730 stays per year. Smoking related deaths in CDC were lower than the average for England, equating to 182 deaths per year[37].

Physical Activity Levels

17.69. Physical activity is essential for good health and contributes to overall wellbeing. Table 17.4 depicts the percentage of adults participating in a minimum of 30 minutes moderate intensity sports or active recreation activity, at least once a week.

Table 17.4 Physical Activity Levels (2013)

Area	2010/11 (Percentage)	2011/12 (Percentage)	2012/13 (Percentage)
Cherwell	36.7	37.3	33.7
South Oxfordshire	36.0	46.8	38.4
Oxfordshire	36.9	40.2	36.5
Vale of White Horse	41.2	36.9	36.4
West Oxfordshire	37.3	41.5	37.2
England	34.8	36.0	35.2

Source: NW Bicester Masterplan, SEA

17.70. Physical activity levels in CDC saw a slight decrease between 2010/11 and 2012/13 although this is not considered to be statistically relevant[38].

Primary Health Care facilities and Public Services

17.71. The Department for Transport Core Accessibility Indicators provide a number of measures of accessibility by public transport, walking and (where appropriate) cycling to different services types including GPs and hospitals. The data for Cherwell District (2011) demonstrated that CDC had good access to GPs. Within 15 minutes, individuals could access two GP practices or a health care centre by foot, four by bicycle and five by car.

17.72. There are four GP practices within a two mile (approximately 3.2km) radius of the Himley Village Site and all are currently accepting new patients. The closest GP practice is Dr S Brand and Partners which is located just over 2km east of the site. Table 17.5 provides summary data on local practices; their distance from the Site, GP and patient numbers.

Table 17.5: GP Practices within 2 miles (3.2km) of the Site

Surgery	Approximate Distance* and Direction from the Site	List Size (patients)	Number of GP's+	Patients per GP Based on List Size
Dr S Brand and Partners	2,070m east	12,412	7	1,773
Dr G C Moncrieff and Partners	2,075m east	12,272	10	1,227
North Bicester Surgery	2,800m north-east	4,334	2	2,167
Victoria House Surgery	3,100m north-east	7,359	4	1,840
Totals/ Average		**Total: 36,377**	**Total: 23**	**Average: 1,752**

Source: NHS Directory[39]
Note: * Measured in a straight line, from the nearest Site boundary
+ This is a headcount of GPs working at a practice. It does not necessarily equate to equivalent fulltime positions.

17.73. The average GP list size for the Oxfordshire Clinical Commissioning Group (OCCG) is 1,284 patients per GP. Table 17.5 shows that the aggregated average GP size list for these practices is above the OCCG average with the exception of one.

17.74. Dental practises, opticians and pharmacies are primarily located in Bicester Town centre.

17.75. The Bicester Community Hospital has only 12 beds and provides intermediate care and GP admissions. It also provides an out of hours service in a minor injuries unit. There is an ambulance station approximately 12km to the north in Brackley. A fire station and police station are both located in Bicester.

17.76. The nearest emergency services including GP practices, hospitals, fire station and police are shown in **Figure 17.1**.

Wider Determinants of Health and Health InequalitiesTraffic Safety / Accidents

17.77. In Cherwell District, the average rate of persons killed or seriously injured on roads was around 56.2 per 100,000 population in 2010-2012, equating to an average of 80 persons per year. These rates were higher than the national rates.[40].

17.78. As described in the Transport Assessment, over the last five years, accidents within the local area have been declining, with only two fatal accidents in that period. There have been a total of 14 pedestrian accidents and a total of 9 cycle accidents recorded over the five year study period.

Access to Open Spaces

17.79. A description of the open space provision within Bicester and the wider area is provided in Chapter 16: Socio-economic and Community. In summary, Bicester has a range of open space types including parks, semi natural green spaces, play spaces, outdoor sports facilities, and allotments. However, the Council has identified deficiencies in open space provision, especially for dedicated play space in parts of the town and outdoor sports and recreation facilities.

Levels of Deprivation

17.80. The Indices of Multiple Deprivation (IMD) are the Government's official measure of economic and social deprivation in England[41]. The overall IMD rating is produced using a combined analysis of a range of separate social and economic indicators to produce an overall IMD rating. Subsets of these indicators are also used to rank areas within what are known as 'domains' of deprivation. There are seven such domains comprising Income, Employment, Health Deprivation and Disability, Education, Skills and Training, Barriers to Housing and Services, Crime and Living Environment. The latest IMD statistics were published in 2010. These domains all have the potential to influence health status, directly and indirectly.

17.81. The IMD comprise a group of 38 statistical indicators, used to rank levels of deprivation in 2,482 neighbourhoods known as Lower Super Output Areas (LSOAs) in England.

17.82. The IMD results for Cherwell District demonstrate that overall, it is less deprived than other local authorities in England. Around 5% of the CDC population live within the 20% most deprived LSOAs in England, but around 40% of the CDC population live within the 20% least deprived LSOAs [42].

Potential Effects

Demolition and Construction

17.83. The effect of construction of the Himley Village Development on the following health determinants were assessed:

- Physical environmental factors: air quality, noise, waste, transport and accessibility, and public safety; and
- Lifestyle factors: employment, and physical activity levels.

Local Air Quality

17.84. During construction of the Himley Village Development, construction vehicles, and demolition / construction activities have the potential to cause changes to air quality through atmospheric emissions of NOx (from vehicles and machinery), and small particulate matter from vehicles, machinery and dust generating activities. Changes in air quality can cause or aggravate respiratory and cardiovascular problems in vulnerable people (i.e., children, elderly and those with chronic chest illness or heart disease). The generation of larger particles of dust can cause eye, nose or throat irritation. In severe cases, poor outdoor air quality can reduce lung function, exacerbate pre-existing asthma, and increase hospital admissions.

17.85. Overall, the air quality assessment found that the main potential adverse effects on local air quality during demolition and construction would be from fugitive dust emissions, although with the implementation of mitigation measures outlined in Chapter 9: Air Quality and to be detailed in a Construction Environmental Management Plan (CEMP), the effects of dust emissions would be reduced to temporary incidences of up to moderate significance, where air quality standards were exceeded within 100m of the Site. Emissions from equipment and machinery operating on the

construction site would not significantly affect local air quality. During the period of greatest vehicle movements, the effect of demolition and construction vehicles entering and egressing the Site would have a minor adverse effect on local background pollutant concentrations but during all other periods, this would reduce to a negligible effect. Sensitive receptors to changes in air quality are illustrated on **Figure 9.1.** Most of the identified receptors are not located within close proximity to atmospheric emission sources or would not be exposed for prolonged periods of time. See Chapter 9: Air Quality for the detailed assessment.

17.86. The incidence of respiratory diseases in CDC (and OCC), which could be aggravated by poor air quality, are lower than the national average. However, there are wards within the Bicester Wider Area with higher proportions of their population with long-term health problems or disability, which could include debilitating respiratory or cardiovascular illnesses.

17.87. On balance, assuming all mitigation measures are implemented as presented in the air quality assessment, an adverse change to health as a result of changes to air quality during the demolition and construction period are considered to be unlikely. This is due to the very limited number of receptors located within 100m of the emission sources (two residential properties), the short and temporary nature of any pollution incidents and the limited exposure expected and comparatively better respiratory health of the local population. Furthermore, should exceptional incidents of air pollution be recorded, action would be taken to resolve the situation. The effects on health status from residual air quality effects would therefore be **speculative adverse**, at the local level.

Noise

17.88. Increases in noise levels through construction activities and construction related traffic could disturb people in their homes, places of work or in community facilities (e.g., schools, health clinics, and open spaces). Increased noise levels can cause annoyance, disruption to communication, sleep disturbance and in the worst cases impair hearing.

17.89. Overall, the noise assessment found that with the implementation of mitigation measures outlined in Chapter 10: Noise and Vibration and to be detailed in a CEMP the likely residual demolition and construction vibration effects (effects to the human perception of vibration) would be insignificant for two of the four sensitive receptors identified in Table 10.11. Due to the proximity of Himley farm and Lovelynch House to the Site, residual noise levels are predicted to be of moderate adverse significance, although incidents would be of a temporary and short-term nature. Traffic related noise effects would be insignificant with the implementation of appropriate mitigation measures. See Chapter 10: Noise and Vibration for the detailed assessment.

17.90. On balance, assuming all mitigation measures are implemented as presented in the noise assessment, an adverse change to human health as a result of changes to noise and vibration levels during the demolition and construction period are considered to be unlikely. This is due to the very limited number of receptors located within 10m of plant emission sources (two residential properties), the short and temporary nature of the effect and the limited exposure. Furthermore, monitoring would be undertaken at sensitive receptors during the construction period, to make sure acceptable noise levels were maintained. The potential effects on health status from residual noise and vibration effects would therefore be **speculative adverse**, at the local level.

Transport and Accessibility

17.91. The construction of the Himley Village Development would be phased to minimise disruption and disturbance to local people. However, the increase in the number and size of vehicles on local roads during the demolition and construction period has the potential to directly and indirectly affect people's health as a result of increased risk of traffic accidents, making it harder for people to access

community facilities or reduce the journeys people take through fear and intimidation of heavy construction traffic.

17.92. The transport assessment found that overall residual adverse effects on delays to journeys, increases in construction traffic and fear or intimidation due to construction traffic would be temporary and of negligible significance at the local (district) level, subject to the adoption of a Construction Traffic Management Plan. See Chapter 8: Transport for the detailed assessment.

17.93. Assuming all mitigation measures are implemented, as outlined in the transport assessment, the potential effects on health status from residual transport effects would be **neutral** at the local level.

Waste

17.94. During the demolition and construction phase, waste would be generated which has the potential to affect people's health through the incorrect handling, storage and disposal of waste materials, especially hazardous wastes.

17.95. The waste assessment concluded that if predicted construction waste was managed and disposed of in accordance with legislation and best practice, which would be specified in the CEMP, the potential environmental effects of construction waste would be negligible. See **Chapter 18: Waste** for the detailed assessment.

17.96. Therefore, assuming all waste is managed and disposed of in a manner, the effects on health status from potential effects of construction waste would be **neutral** at the local level.

Public Safety

17.97. Road traffic and construction site accidents are an avoidable hazard to health. The Himley Village Development has the potential to affect health through the increased risk of road accidents from construction traffic, or from the risk of accidents within the construction site.

17.98. The transport assessment found that the risk of road traffic injuries during the demolition and construction phase would be temporary and of negligible significance at the local level.

17.99. It is assumed that with the implementation of appropriate health and safety legislation including provision for Personal Protective Equipment (PPE), physical barriers to stop people gaining access to the Site and proper traffic management procedures, the risk of injuries to local residents and visitors, as well as workers on the construction site would be minimised. The effects of the construction of Himley Village Development on public safety are anticipated to be **neutral** at the local level.

Employment Generation and Procurement

17.100. Employment is generally considered to be one of the most important determinants of health. Unemployment, especially long-term unemployment, is associated with premature mortality (especially coronary heart disease), and is linked to poverty (and associated unhealthy lifestyles or environments), depression, anxiety and suicide. The type of job a person has, or their working conditions, can also have detrimental effects on their health. Lack of education and training make it harder to secure well paid, permanent employment[43] [44].

17.101. The temporary employment and procurement opportunities generated by the construction of the Himley Village Development have the potential to influence people's health through the following:

- Provision of local employment opportunities;
- Provision of local training and apprenticeship opportunities; and

- Associated increases in incomes through local employment, expenditure by construction workers and through procurement of local materials, goods and services.

17.102. Unemployment levels in Bicester Town are 2.51% and in the Wider Bicester Area are 7.75%. The Socio-economic Assessment identified that construction of the Himley Village Development would result in 256 full time equivalent (FTE) jobs, with opportunities for apprenticeship programs to learn skills required for construction of the Himley Village Development. Training and skills development increases the likelihood of employment, as well as improving self-esteem. Opportunities for local residents to train in construction related activities would provide new career opportunities which could have semi-permanent/ permanent employment prospects, not only at the Himley Village Development but also as part of the other developments proposed throughout Bicester and the wider areas resulting in permanent employment.

17.103. Furthermore, an injection of an estimated £6 million per annum into the regional economy (over the 15 year construction period), would contribute to the further economic development of the region. It is expected that some economic benefits would accrue locally within the Bicester Wider Area.

17.104. Taking the above into consideration, it is anticipated that the generation of employment and training opportunities and the associated local expenditure attributable over the duration of the construction phase, would result in a **probable beneficial** effect on health status within CDC, especially given the commitment of the Applicant to training and local employment during the demolition and construction phase.

Completed Development

17.105. The effect of the completed Himley Village Development on the following health determinants were assessed:

- Biological factors: age, gender and ethnicity;
- Lifestyle factors: employment generation and physical activity levels;
- Physical environmental factors: air quality, noise, housing conditions, work conditions, transport and accessibility, and public safety; and
- Social environmental factors: community facilities and cohesion.

Population Change

17.106. Certain individual biological characteristics can have an influence on the health of an individual, such as age, gender and ethnicity. Adults tend to be healthier and have fewer health issues. Young children and the elderly tend to have greater health needs. Evidence also suggests that ethnic minorities can be more susceptible to ill health, although this is not uniform across all ethnic groups. Associated factors include deprivation in socio-economic status and poverty, or where people are less able / or likely to access timely health care. Men and women can each be more susceptible to certain illnesses or health status[45] [46].

17.107. The completed Himley Village Development would result in 4,621 to 4,649 new residents. It is assumed that the new resident population would comprise a similar mix to the existing community, which would equate to approximately 5% ethnic minority groups. The demographic modelling for the NW Bicester Masterplan indicates that the initial population would tend to be younger families, although over time the residential population would age.

17.108. The completed Himley Village Development would provide facilities which would be suitable for the needs of the new resident population, such as a health facility, primary school with nursery, and approximately 40% green infrastructure including play space. The aim for Himley Village

Development and the wider NW Bicester Masterplan Area as a whole, is for a healthy, inclusive community that is flexible enough to meet the needs of all residents over time. Details regarding the aims and provision of the Himley Village Development are discussed in more detail below.

Employment Generation

17.109. As noted above, there are positive physical and mental health benefits to being in paid employment and having job security.

17.110. The total employment likely to be generated by the completed and fully occupied Himley Village Development is estimated to be in the region of 601 gross FTE jobs and 544 net FTE additional jobs. Given the unemployment rates within the Bicester Wider Area it is likely that some jobs would be taken up locally by existing residents. Furthermore, the estimated annual Gross Value Added (GVA) injection of around £24.4million per annum into the regional economy is also expected to stimulate further inward investment, some of which would be expected to accrue locally within the Wider Bicester Area.

17.111. Taking the above into consideration, it is anticipated that the generation of employment, and the associated local expenditure which would stimulate inward investment, would result in a **probable beneficial** effect on health status within CDC.

Air Quality

17.112. The completed Himley Village Development has the potential to impact upon health through deteriorations in local air quality resulting from emissions from the heating plant, and increases in local traffic emissions due to the increases in vehicle journeys (local residents, workers, visitors).

17.113. The air quality assessment found that changes in air quality would give rise to up to a minor adverse effect, at existing and future sensitive locations surrounding the Site. However, mitigation measures are not considered to be required. As noted in Chapter 8: Transport, a Travel Plan would be provided which aims to minimise the number of car trips taken.

17.114. The completed Himley Village Development is not expected to have an adverse effect on health as a result of changes to air quality from increases in road traffic attributable to the Development or from the heating plant. The potential changes to health status from residual air quality effects attributable to the completed Himley Village Development are therefore expected to be **neutral**, at the local level.

Noise

17.115. The completed Himley Village Development has the potential to impact upon health through increased noise levels from increased road traffic, and introduction of new sensitive receptors into areas where there is elevated noise from external sources.

17.116. The noise assessment found that with mitigation measures such as design of dwelling layout to position noise sensitive rooms such as bedrooms or living rooms away from sources of noise (such as busy road junctions), and providing an appropriate glazing and ventilation strategy, where necessary, an appropriate internal residential amenity would be achieved.

17.117. Significant adverse effects arising from elevated outdoor noise levels within local residential amenity areas (external living and amenity spaces), would be mitigated by careful positioning of these areas away from noise sources or the addition of other measures such as a 1.8m acoustic grade garden fence.

17.118. The implementation of a Travel Plan for the Himley Village Development would aim to reduce car trips. However, taking a worst case scenario and in the absence of further traffic reduction, likely residual noise effects as a result of changes in road traffic are predicted to be insignificant, with the exception of three road links which would experience from minor to substantial adverse residential noise effects. Given the proximity to the M40 to the most severely affected road link, the perceptible effect is likely to reduce. In addition, measures are proposed to reduce the likelihood of traffic using this link such as the introduction of traffic calming measures. However, taking a worst case scenario this is assumed to remain significant at peak traffic time.

17.119. Given the above, the potential changes to health status as a result of residual noise and vibration effects attributable the completed Himley Village Development and as a result of introduction of new sensitive receptors into the area are considered to be **speculative adverse** at the local level.

Housing

17.120. The relationship between housing and health is complicated and involves many interrelated factors. However, it has been estimated that poor housing conditions cost the NHS at least £600 million per year[47]. Evidence suggests that poor housing conditions such as damp, excessive heat or cold, structural defects or overcrowding can contribute to ill physical and mental health, and could have an impact on other health determinants such as educational underachievement. Poor housing conditions disproportionately affect more disadvantaged groups such as the poor and the elderly. Studies have shown that improvements to a person's home can also improve their quality of life[48].

17.121. The completed Himley Village Development would provide 1,700 homes, including family size housing and affordable housing. Homes would be designed to Lifetime Homes standards and constructed to achieve a minimum of Code for Sustainable Homes Level 5, and therefore would be adaptable and provide a range of housing tenures. These are all features that can contribute to thriving, stable neighbourhoods since they enable people to move into an area and adapt to their changing needs and circumstances without having to move out. The provision of a 100-bed retirement village also increases the options available to local people, especially given the forecast ageing of the population over the next 20 years, as presented in Chapter 16: Socio-economic and Community.

17.122. The completed Himley Village Development would have the potential to have a **probable local beneficial** effect on health status, through the provision of high quality, mixed and flexible housing stock.

Transport and Accessibility

17.123. Positive effects on health have been shown to derive from sufficient provision and access to good quality public services such as health, education and community facilities, as well as reasonable access to work. Increased delays to journeys can increase levels of stress and reduce time available for social interaction. Intimidation from increased road traffic can limit people's journeys. Overcrowding on public transport or delays to trains and buses can also contribute to stress levels. Problems with public transport disproportionately affects those on a lower incomes who are usually more reliant on it.

17.124. Due to an increased population, the completed Himley Village Development has the potential to result in increased congestion on roads. The transport assessment found that overall, pedestrian severance effects from increased traffic flows would be minimal with the implementation of mitigation measures, although at afternoon peak times in residential areas and where there are local schools there could be minor adverse effects on pedestrian severance and amenity. Largely the effects of driver and pedestrian delays on most links, with mitigation in place, was anticipated

to be a permanent effect of negligible significance at the local level. Following implementation of mitigation measures, the effects on fear and intimidation on local roads due to increased traffic were anticipated to be negligible with the exception of a few busy junctions at peak times.

17.125. Local access would be improved through the provision of a new pedestrian and cycleway along the northern side of Middleton Stoney Road. Local public transport provision would also be increased with the introduction of a bus service which would pass through the Himley Village Development.

17.126. Furthermore, the vision of the NW Bicester Masterplan is to reduce car dependency and increase walking and cycling. The layout of the Himley Village Development would be designed to encourage walking, through the strategic location of key community facilities such as the Himley Village primary and nursery school and the provision of a number of pedestrian routes and cycleways.

17.127. The completed Himley Village Development would have the potential to have a **possible local beneficial** effect on health, through improvements to accessibility which would have an extended benefit to existing residents as well as the future residents of Himley Village.

Public safety

17.128. Pedestrians and cyclists are more vulnerable to road accidents, especially on roads near homes and schools. The transport assessment found that with an increased volume of traffic generated by the NW Bicester Masterplan the potential risk of road traffic accidents would remain at worst, minor adverse on some links.

17.129. Given the relatively low existing local accident rates and the increase in road traffic from additional residents, workers and visitors, the completed Himley Village Development would have the potential to have a **possible adverse local** effect on health, through the increased risk of accidents brought about by the generation of additional road traffic.

17.130. Fear of crime or fear of accidents makes it less likely for people (especially older people over 65, ethnic minorities and women) to use open spaces[49]. Fear for personal safety can also limit the extent to which individuals may use public transport. Neighbourhoods which are perceived to be unsafe can limit physical activity levels, especially amongst women[50]. Streets with few pedestrians can contribute to an environment that is conducive to increased crime opportunities. Conversely secure or communal residential open spaces can reduce crime and increase community interaction, which are broader determinants of health[51]. Increased road traffic or fast moving traffic can disproportionately affect children, as parents react to an increased perceived threat to their childrens' safety. Children are therefore likely to become less active.

17.131. The layout of the Himley Village Development has been designed to increase the sense of safety and discourage crime through a more open layout and through encouraging permeability between neighbourhoods and increased pedestrian and cycle movement. The layout seeks to increase physical activity and therefore would increase visibility of people on the streets. Well lit streets, high visibility and good maintenance are all factors that would be encouraged in the Himley Village Development which could lead to safer neighbourhoods and encourage walking, cycling and use of public transport.

17.132. Given the proposed open layout and facilitation of increases physical activity, the built environment of Himley Village would have the potential to have a **probably beneficial local** effect on health through the provision of neighbourhoods that encourage physical activity, and discourage crime and car use.

Health Facilities

17.133. The additional population generated by the Himley Village Development could increase the demand on local primary health facilities. It is estimated that the completed Himley Village Development (1,700 homes and the 100-bed retirement village) would generate a resident population of between 4,621 residents (including 975 children aged 0 to 15), and 4,649 residents (including 881 children aged 0 to 15). The breakdown of adult and child population yields for the Himley Village Development, are provided in **Technical Appendix 16.2**.

17.134. Based on OCCG's average GP list size of 1,284 patients per GP, 4,649 new residents would require an additional 3.6 GPs. The closest existing medical practice to the Site would be more than a 15 minute walk away and has a current GP list size that exceeds the OCCG's average.

17.135. However, a health facility would form part of the completed Himley Village Development. Given the indicative construction phasing plan, it is assumed that the health facility would come forward by the end of Phase 1. A further assumption has been made regarding the capacity of the health facility, which is assumed to accommodate four GPs. Although the size of the proposed health facility could probably accommodate a larger number of GPs, the details of provision of primary health care at this location are not currently known. The additional demand generated by residents of the completed Himley Village Development would be accommodated by the provision of a minimum capacity four-GP practice, at the new health facility. However, it is intended that the health facility would have surplus capacity to accommodate increases in demand for GP services arising from other housing developments forming part of the NW Bicester Masterplan.

17.136. Having regard to the above, and assuming a minimum capacity of four GP's at the new Himley Village health facility, the effect of completed Himley Village Development on health status as a result of local health facility capacity and demand is considered to be **neutral**.

Provision of Green Infrastructure

17.137. The completed Himley Village Development has the potential to positively affect health through the provision of the following green infrastructure:

- open spaces, including land for growing food;
- cycleways and footpaths;
- playing fields; and
- dedicated and informal play spaces.

17.138. Access to green space increases physical activity. Lack of physical activity has been linked to obesity. Physical activity, especially within green spaces, has been shown to reduce stress over the long-term, as well as reducing fatigue, anger and depression[52].

17.139. Factors which can increase people's use of open spaces includes the availability and accessibility of space, the size, maintenance of the space, presence of street furniture (such as seating) and open views. The layout of the Himley Village Development has been designed to encourage physical activity e.g., though walking and cycling as a means of accessing community facilities (doctor, school, shop) as well as for recreational purposes.

17.140. The completed Himley Village Development would provide a minimum of 36.1 ha of green infrastructure space of which half would be publicly accessible. Based on the upper limit for the estimated population of the Himley Village Development, 4,469 people would require approximately 10.7 ha of open space, in accordance with standards set out by CDC in their open space strategy[53]. The Himley Village Development would therefore incorporate a significantly greater area of open space than CDC standards. The Himley Village Development would also provide flexible playable

space throughout the Site. This would include playing fields in the north of the Site. These would be suited to the needs of children and would help address shortfalls for outdoor sports facilities within Bicester.

17.141. The Himley Village Development would provide pedestrian and cycle routes through the Site and along associated routes. Green infrastructure would be accessible to all residents of Bicester Town and would be designed to provide a wide variety of types of green infrastructure to meet different needs of local residents. The green infrastructure would be designed to encourage active use by local residents and a sense of community integration. The socio-economic assessment concluded that the residual effects of the completed Himley Village Development on the provision of open space and play space would be permanent, local and of moderate beneficial significance.

17.142. The provision of green space which could be used for growing food, could increase people's access to healthy food as well as encouraging physical activity.

17.143. The completed Himley Village Development would have a **probable beneficial** effect of health status, through the provision and layout of local green infrastructure.

Community Cohesion

17.144. Isolation can lead to feelings of anxiety and depression, can exacerbate adverse health triggers, affect life expectancy and can be a risk factor for deteriorating mental health and suicide[54] [55]. Elderly people and those with existing physical and mental illnesses are more vulnerable to isolation or feeling isolated[56] [57]. There is evidence to suggest that deprivation factors such as poverty, unemployment and physical disability and can have a limiting influence on people's abilities' to access opportunities and can contribute to feelings of isolation[58]. People who feel isolated or alone are less likely to self-report good health or be engaged in physical activity.

17.145. The completed Himley Village Development could affect health through the following:

- Severance from physical barriers such as the creation of new roads or from heavy traffic flow which could isolate people from the neighbourhood through the disruption of usual travel routes;
- Increasing the provision of community facilities such as the Village Green and the pub, which could increase social interaction which can have a positive effect on health through civic engagement, stronger sense of local identity;
- Establishment of a Himley Farm Land Trust (HFLT) that would oversee the management of landscape and community assets; and
- The proposed layout of the Himley Village Development to encourage social interactions through location of open and communal spaces.

17.146. The transport assessment concluded that there would not be significant adverse residual effects from severance due to traffic flow. The layout of the Himley Village Development would take account of the location of key community facilities and avoid severance of neighbourhoods due to roads and other physical barriers.

17.147. The socio-economic and community assessment concluded that the Himley Village Development would have a positive effect on community cohesion through the intended layout of the village, including the provision of the Village Green which would act as a central focal point for the community. The establishment of the HFLT would facilitate community interaction and therefore a sense of ownership of the Himley Village Development, and the provision of mixed housing on-Site would provide the same access and opportunities to all households.

17.148. The completed Himley Village Development would have a **probable beneficial** effect on health status through the proposed layout of the Village, the provision of community facilities and the

HFLT, which would all serve to encourage a greater sense of inclusiveness, interaction and community identity.

Mitigation

Demolition and Construction

17.149. It is assumed that the design measures as part of the Himley Village Development and mitigation measures presented in the other ES chapters would be sufficient to address potential adverse effects on health. No further mitigation measures are required.

Completed Development

17.150. It is assumed that the design measures as part of the Himley Village Development and mitigation measures presented in the other ES chapters would be sufficient to address potential adverse effects on health. No further mitigation measures are required.

Summary and Conclusion

Table 17.6: Summary of Potential Effects on Health Outcomes

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
Demolition and Construction			
Air Quality	Dust and NOx emissions from demolition/ Construction activities and vehicles could adversely affect air quality which could aggravate or cause respiratory / cardiovascular problems in vulnerable people	Implementation of mitigation measures (contained in a CEMP) would largely mitigate adverse effects on air quality at the most sensitive receptors to negligible significance. Where residual adverse effects would occur, these would be of a temporary nature.	**Speculative adverse** outcome, at the **local** level
Noise	Increases in background noise levels from machinery and vehicles can be a stressor which triggers other health effects or in the worst case could impair hearing.	Implementation of mitigation measures (contained in a CEMP), would largely mitigate adverse effects on background noise levels at the most sensitive receptors to negligible. Where adverse effects would occur, these would be of a temporary nature.	**Speculative adverse** outcome, at the **local** level
Transport and Accessibility	Increased traffic could increase risks of accidents, or reduce number of trips people make through delays or fear and intimidation from increased vehicles, thereby	The phasing of the construction is designed to minimise disruption and disturbance. Implementation of a Construction Traffic Management Plan would	**Neutral** outcome, at the **local** level

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
	limiting access to community facilities.	mitigate adverse effects to negligible significance.	
Waste	Improper handling, storage or disposal of construction waste could affect people's health through direct contact with harmful substances or indirectly through environmental contamination.	Implementation of correct waste procedures in accordance legislation and the CEMP would mitigate potential adverse effects on people and the environment.	**Neutral** outcome, at the **local** level
Public Safety	There is an increased risk of road accidents from construction traffic or accidents on the construction site.	Implementation of health and safety legislation and best practice would reduce the risk of accidents.	**Neutral** outcome, at the **local** level
Employment	Unemployment is associated with adverse physical and mental health effects The unemployment rate in the wider Bicester Area is comparatively high.	Provision of employment, the Applicant's commitment to training/ apprenticeships, and associated additional local expenditure from construction employment and procurement would reduce local unemployment and increase incomes.	**Beneficial, probable** outcome at the **local** level
Completed Development			
Population change	Biological determinants of health include gender, age and ethnicity. The Himley Village Development would result in an increased population, which is assumed to have a similar low level of ethnic diversity. Health needs vary depending on age. Demographic modelling predicts that the initial population yield from the NW Bicester Masterplan would be relatively young although the majority would be adults who have fewer urgent health needs. The population is expected to age over time.	The Himley Village Development would provide a range of housing types and tenures to meet a wide range of needs, including retirement housing. The provision of community infrastructure meets the needs of the new residents, including a health facility, education facilities to accommodate younger children (0 to 11 years) and a wide range of green infrastructure.	**Not applicable**
Employment Generation	Unemployment is associated with adverse physical and mental health effects The unemployment rate in the wider Bicester Area is comparatively high.	Provision of employment and associated additional local expenditure from residents and workers would reduce local unemployment and increase incomes.	**Beneficial, probable** outcome at the **local** level

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
Air Quality	NOx emissions from the heating plant and vehicles could adversely affect air quality which could aggravate or cause respiratory / cardiovascular problems in vulnerable people	The heating plant would not result in significant residual adverse effects on air quality. No mitigation measures were deemed necessary for residential adverse effects from increased traffic which are predicted to be insignificant or minor adverse at worst.	**Neutral** outcome, at the **local** level
Noise	Increases in background noise levels from vehicles can be a stressor which triggers other health effects or in the worst case could impair hearing.	No significant residual adverse effects are predicted, with the exception of 3 road links where minor to substantial effects are predicted. Implementation of a Travel Plan for the Himley Village Development would aim to reduce car trips.	**Speculative adverse** outcome, at the **local** level
Transport and Accessibility	Increased traffic could increase risks of accidents, or reduce number of trips people make through delays or fear and intimidation from increased vehicles, thereby limiting access to community facilities.	Increased traffic from new residents and workers are not predicted to have a significant adverse effect on severance, fear and intimation, delays or accidents for most roads. However, during peak times are some busier junctions some adverse effects on pedestrian severance could be experienced. The layout of the Village, including provision of footpaths, cyclepaths and public transport would facilitate greater accessibility between neighbourhoods and help to minimise car trips.	**Possible local beneficial** outcome, at the **local** level
Housing	Poor housing conditions are associated with ill physical and mental health.	Provision of 1,700 high quality, adaptable homes and 100-bed retirement village would provide a range of housing options to meet the needs of residents over their lifetime. The inclusive layout including provision of affordable housing with market housing would facilitate integration of neighbourhoods.	**Beneficial, probable** outcome at the **local** level

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
Health Facilities	Additional population can result in additional pressure on existing health facilities. Access to health facilities is important so that people can seek treatment, advice and preventative action.	There is limited capacity for accommodating additional populations at the existing GP practices. The provision of a health facility is expected to address the increased demand from the Himley Village residents	**Neutral** outcome, at the **local** level
Green Infrastructure	Sedentary lifestyles are associated with increased ill health or triggers to ill health (e.g. obesity related illness, diabetes). Access to green spaces can increase physical activity, interaction, reduce stress and increase personal and community wellbeing.	Provision of 36.1ha of green space, including publicly accessible space and flexible play space, cycleways and footpaths, and playing fields. Layout of the Himley Village Development to encourage permeability between neighbourhoods and community integration.	**Beneficial, probable** outcome at the **local** level
Community Cohesion	Isolation can contribute to ill physical and mental life, decreased wellbeing, and reduced life expectancy.	Severance from physical barriers or from increase traffic has been minimised Provision of community facilities to increase social interaction Establishment of the HFLT to encourage community ownership Layout of the Himley Village Development to encourage permeability between neighbourhoods and community integration.	**Beneficial, probable** outcome at the **local** level

References

1 Scott-Samuel, A., Birley, M., Ardern, K., (2001). *The Merseyside Guidelines for Health Impact Assessment*. 2nd Edition. International Health Impact Assessment Consortium.

2 The King's Fund (2013). 'Broader Determinants of Health'. The King's Fund Website. Available at: www.kingsfund.org.uk/time-to-think-differently/trends/broaderdeterminants-health (accessed on 5 December 2014).

3 Communities and Local Government. (2009) *Planning Policy Statement: eco-towns, A supplement to Planning Policy Statement 1, Department for Communities and LOCAL Government.*

4 *Sustainable Development Strategy (2005).* http://www.sdcommission.org.uk/data/files/publications/SecFut_complete.pdf

5 Department of Health. (2011*) Healthy Lives, Healthy People: Update and Way Forward.* Public Health Development Unit.

6 Strategic Review of Health Inequalities. (2010) *Fair Society, Healthy Lives: The Marmot Review.*

7 Department of Health. (2012) *Improving Outcomes and Supporting Transparency: A Public Health Outcomes Framework for England, 2013-2016*.

8 Local Government Association. (2012) *Get in on the Act. Health and Social Care Act 2012*

9 Cherwell District Council. (1996) *Cherwell Local Plan.*

10 Cherwell District Council (2014) *Cherwell Local Plan.*

11 Cherwell District Council (2011) Local Development Framework Core Strategy Background Document Open Space Update. September 2011

12 Scott-Samuel, A., Birley, M., Ardern, K., (2001). *The Merseyside Guidelines for Health Impact Assessment*. 2nd Edition. International Health Impact Assessment Consortium.

13 Oxfordshire County Council. (2009) *Joint Strategic Needs Assessment for Oxfordshire.* http://insight.oxfordshire.gov.uk/cms/interactive-content

14 Cherwell District Council (2011) Local Development Framework Core Strategy Background Document Open Space Update. September 2011

15 Public Health England. (2014) *Health Profile for Cherwell.* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf

16 Hyder (2014) NW Bicester Masterplan Strategic Environment Report. March 2014

17 Barton Willmore (2014) NW Bicester Masterplan Social and Community Facilities and Services Strategy. May 2014

18 Hyder (2014) NW Bicester Masterplan Strategic Environment Report. March 2014

19 Public Health England. (2014) *Health Profile for Cherwell 2014.* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf

20 Cherwell District Council (2014) 'Proposed Submission Local Plan C.2 Bicester' Website. . http://consult.cherwell.gov.uk/portal/ldf/lp/proposedsubmission?pointId=1345805470822

21 Public Health England. (2014) *Health Profile for Cherwell 2014.* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf

22 Department of Health. (2011) Healthy Lives, Healthy People: A call to action on obesity in England.

23 Public Health England. (2014) *Health Profile for Cherwell 2014.* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf

24 Public Health England. (2014) *Health Profile for Cherwell 2014.* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf

25 Joint Strategic Needs Assessment Annual Report 2014: http://insight.oxfordshire.gov.uk/cms/system/files/documents/Final%20JSNA%20-%20Corrected%20%28Nov%202014%29%20to%20upload.pdf – Page 19

26 Joint Strategic Needs Assessment Annual Report 2014: http://insight.oxfordshire.gov.uk/cms/system/files/documents/Final%20JSNA%20-%20Corrected%20%28Nov%202014%29%20to%20upload.pdf – Page 19-20

27 Joint Strategic Needs Assessment Annual Report 2014: http://insight.oxfordshire.gov.uk/cms/system/files/documents/Final%20JSNA%20-%20Corrected%20%28Nov%202014%29%20to%20upload.pdf – Page 20-22

28 Joint Strategic Needs Assessment Annual Report 2014: http://insight.oxfordshire.gov.uk/cms/system/files/documents/Final%20JSNA%20-%20Corrected%20%28Nov%202014%29%20to%20upload.pdf – Page 20

29 Office for National Statistics. (2013) *Measuring National Wellbeing- Health 2013*. http://www.ons.gov.uk/ons/dcp171766_310300.pdf

30 Joint Strategic Needs Assessment Annual Report 2014: http://insight.oxfordshire.gov.uk/cms/system/files/documents/Final%20JSNA%20-%20Corrected%20%28Nov%202014%29%20to%20upload.pdf – Page 11-12

[31] Department of Health. (2011) Healthy Lives, Healthy People: A call to action on obesity in England.
[32] Hyder Consulting (UK) Limited. (2014) : Bicester NW Bicester Development: Masterplan Strategic Environmental Report
[33] Public Health Observatory (2014) *Cherwell District Health Profile 2014.* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf
[34] *Cherwell District Health Profile 2014:* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf
[35] *Cherwell District Health Profile 2014:* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf
[36] Hyder Consulting (UK) Limited. (2012) Bicester Eco Development Application 1 North of Railway: Environmental Statement.
[37] *Cherwell District Health Profile 2014:* http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf
[38] Hyder Consulting (UK) Limited. (2014) : Bicester NW Bicester Development: masterplan strategic environmental report
[39] NHS. (2014) *NHS Online Services Directory.* http://www.nhs.uk/Service-Search
[40] Cherwell District Health Profile 2014: http://www.oxford.gov.uk/Library/District%20Data/HealthProfile2014Cherwell38UB.pdf
[41] Department for Communities and Local Government. (2011) *English Indices of Deprivation 2010.* https://www.gov.uk/government/publications/english-indices-of-deprivation-2010
[42] Hyder Consulting (UK) Limited. (2014) : Bicester NW Bicester Development: masterplan strategic environmental report
[43] Doyle, C *et al* (2005) Health Impacts of Employment. A Review. The Institute of Public Health in Ireland
[44] Fitzpatrick, J and Jacobson, B (date not known) Indications of Public Health in the English Regions 4: Ethnicity and Health. Association of Public Health Observatories.
[45] World Health Organisation (2014). Website. The Determinants of Health. Online. Available at: http://www.who.int/hia/evidence/doh/en/
[46] Fitzpatrick, J and Jacobson, B (date not known) Indications of Public Health in the English Regions 4: Ethnicity and Health. Association of Public Health Observatories.
[47] Houses of Parliament Parliamentary Office of Science and Technology (2011) PostNote Housing and Health. No 371 January 2011.
[48] *Ibid*
[49] CABE Space (date not known) The Value of Public Space
[50] Loukaitou-Sideris, A. (2005) Transport, Land Use and Physical Activity. Safety and Security Considerations. Paper prepared for the Transportation Research Board and the Institute of Medicine Committee on Physical Activity, Health, Transportation, and Land Use
[51] CABE Space (date not known) The Value of Public Space
[52] CABE Space (date not known) The Value of Public Space
[53] Cherwell District Council (2011) Local Development Framework Core Strategy Background Document Open Space Update. September 2011
[54] The King's Fund (2013). 'Broader Determinants of Health'. The King's Fund Website. Available at: www.kingsfund.org.uk/time-to-think-differently/trends/broaderdeterminants-health (accessed on 5 December 2014).
[55] Social Exclusion Unit 92004) Mental Health and Social Exclusion: Social Exclusion Unit Report. Office of the Deputy Prime Minister:
[56] NHS 'social Isolation increased death risk in older people'. NHS Choices Website. Accessed on 12 December 2014. http://www.nhs.uk/news/2013/03march/pages/social-isolation-increases-death-risk-in-older-people.aspx
[57] Social Exclusion Unit 92004) Mental Health and Social Exclusion: Social Exclusion Unit Report. Office of the Deputy Prime Minister:
[58] Kawachi, I et al (1997) 'Social Capital, income Inequality and Mortality'. American Journal of Public Health. 87(9): 1491 – 1498. Accessed on 10 December 2014: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1380975/

18. Waste

Introduction

18.1. This chapter has been prepared by Waterman Energy, Environment & Design Ltd (Waterman EED) and describes the likely nature and quantities of demolition, construction and operational waste arising from the Himley Village Development. The requirement for management and treatment of waste is considered in the context of national and local waste policies and disposal infrastructure.

18.2. This chapter has been informed by the Sustainable Waste and Resources Plan prepared by Waterman EED (refer to **Technical Appendix 18.1**).

Legislation, Planning Policy & Guidance

18.3. This section of the report sets out the waste policy context and how this may impact on the range of potential options for the collection, treatment and disposal of each waste stream.

European Legislation

18.4. Government policy on waste is primarily driven by a number of European Directives. Those of particular reference are outlined below.

Waste Framework Directive (2008/12/EC)

18.5. The revised Waste Framework Directive (WFD) (2008/98/EC)[1] consolidates and updates the framework of European Union (EU) law on all aspects of waste, and merges the hazardous and non-hazardous regimes into a single Directive. The Directive sets out more stringent waste reduction and management targets than previous legislation, together with a Waste Hierarchy ('priority order') for the reduction of waste: waste prevention, re-use, recycling, recovery including energy recovery, and disposal. The Directive was transposed into English legislation by the Waste (England and Wales) Regulations 2011[2] outlined below.

The Landfill Directive, 1999

18.6. The Landfill Directive 99/31/EC[3] aims to harmonize the standards and use of landfills across Europe, and sets stringent requirements with regards to land-filling practices including the end of co-disposal of hazardous and non-hazardous waste, targets for landfill reduction, and a new system of landfill classification. The Directive is transposed into English law by the Environmental Permitting (England & Wales) Regulations 2007[4]. Consequently, any soil excavated from the Himley Village Site would require Waste Acceptance Criteria (WAC) testing, followed by appropriate treatment and disposal.

Key National Legislation

Environmental Protection (Duty of Care) Regulations 1991, as amended, 2003

18.7. The Duty of Care Regulations[5] implemented under section 34(5) of the Environmental Protection Act[6], apply to all businesses that produce, import, carry, keep, treat or dispose of controlled waste from business or industry or act as a waste broker in this respect. The purpose of the Duty of Care Regulations in relation to waste is to ensure that all parties in the waste handling chain take all reasonable steps to ensure that the waste is handled legally and safely when being passed along the links in the chain between the waste producer and the site of final disposal or recovery.

18.8. Under these regulations all businesses are responsible for the safe and proper disposal of waste, even once it has been passed to a third party. This Duty of Care extends until the waste has either been satisfactorily disposed of, or fully recovered.

18.9. The Duty of Care Regulations stipulate that:

- All waste is stored and disposed of responsibly;
- Waste is only handled or dealt with by individuals or businesses that are authorised to deal with it, who must have a waste management licence, be a registered carrier of controlled waste, a waste collection authority or be exempt; and
- A record is kept of all waste received or transferred through the use of waste transfer notes (WTN).

18.10. The failure of a person who produces, treats or passes on waste to comply with the Duty of Care is a criminal offence under section 34 of the Environmental Protection Act 1990, regardless of whether environmental harm has occurred. The offence is punishable by a fine up to £5,000 on summary conviction or an unlimited fine on conviction of indictment.

The Waste (England and Wales) Regulations 2011

18.11. The Waste Regulations, which transpose the Waste Framework Directive 2008 into national law and came into force from 29 March 2011, require waste producers or those handling waste to comply with the WFD waste hierarchy (prevention, prepare for re-use, recycling, recovery, disposal) unless it can be justified on environmental or technical grounds that this is not appropriate.

18.12. From 1 January 2014, any business that carries their own waste will need to be registered as a waste carrier. However, once registered, they will not need to register again unlike other waste carriers, who will still need to register every three years.

18.13. From 1 January 2015, any business collecting waste containing waste paper, glass, metal or plastic must "take all such measures to ensure separate collection of that waste", to promote recycling.

18.14. Transfer notes will require additional information including the 2007 Standard Industry Classification (SIC). SIC is a method of grouping businesses by the type of economic activity they are involved in and provides confirmation that businesses have applied the WFD waste hierarchy.

National Planning Policy, Guidance and Standards

National Planning Policy Framework, 2012

18.15. The National Planning Policy Framework[7] (NPPF) does not contain any specific waste policies. A separate national waste planning policy was published in October 2014 alongside a National Waste Management Plan (NWMP) for England.

National Planning Policy for Waste

18.16. In October 2014, the National Planning Policy for Waste[8] was published, replacing the National Planning Policy Statement 10 (PPS10): Planning for Sustainable Waste Management 2011. This document provides largely strategic guidance to guide the development of Minerals and Waste Plans, and for consideration in special planning. However Section 8 provides the following guidance for the consideration when determining non waste planning applications:

- '*New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development and, in less developed areas, with the local landscape. This includes providing*

adequate storage facilities at residential premises, for example by ensuring that there is sufficient and discrete provision for bins, to facilitate a high quality, comprehensive and frequent household collection service;

- *The handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities, and minimises off-site disposal.'*

The Waste Management Plan for England, 2013

18.17. The Waste Management Plan for England[9] builds on existing waste policy, including that set out within the Waste Strategy for England, 2007[10] which in turn replaced the Waste Strategy 2000. The Waste Management Plan also builds on the findings of the Government Review of Waste Policy in England 2011[11], which recommended regional self-sufficiency for waste, founded on the concept of the proximity principle and the Best Practicable Environmental Option.

18.18. The Waste Management Plan for England aims to set out the Government's ambition to work towards a more sustainable and efficient approach to resource use and management. It aims to set a planning framework to appropriately consider waste management as a component part of the planning process, and in particular:

- The provision of modern waste infrastructure;
- Ensuring that waste management is considered alongside other spatial planning concerns as part of developing sustainable communities;
- Ensuring the design and layout of new development complements sustainable waste management, including the provision of appropriate storage and segregation facilities to facilitate high quality collections of waste;
- Providing a framework in which communities and businesses are engaged with and take more responsibility for their own waste;
- Developing the circular economy to bring local employment opportunities and wider climate change benefits, by driving waste management up the waste hierarchy; and
- Enabling waste to be disposed of in line with the proximity principle.

Waste Strategy for England 2007

18.19. Whilst now superseded by The Waste Management Plan for England, 2013, several key objectives of the Strategy remain valid, in particular:

- Reduce the link between economic growth and waste growth and put more emphasis on waste prevention and re-use;
- Meet and exceed the Landfill Directive diversion targets for biodegradable municipal waste;
- Increase diversion of non-municipal waste from landfill;
- Invest in infrastructure required to divert waste from landfill and for the management of hazardous waste; and
- Maximise the environmental benefit from that investment, through increased recycling of resources and recovery of energy from residual waste. Recovering energy from waste (EfW) which cannot sensibly be recycled is an essential component of a well-balanced energy policy.

18.20. The Strategy also sets out a number of new and amended targets including:

- Recycle or compost at least 40% of household waste by 2010, 45% by 2015, and 50% by 2020; and

- Recover 53% of municipal waste by 2010, 67% by 2015, and 75% by 2020.

Commercial and Industrial Waste in England - Statement of Aims and Actions, 2009

18.21. This Statement[12] sets out aims and actions to manage commercial and industrial (C&I) waste (excluding construction and demolition waste). The Department for Environment, Food & Rural Affair's (Defra) aims for C&I waste are to:

- Reduce the amount of waste that arises in the first place by more sustainable design, production, purchasing and use as well as reuse of products and materials in the economy;
- Increase the proportion of the waste that does arise which is productively re-used, recycled or recovered;
- Reduce significantly the amount of waste that is sent to landfill or incinerated without recovering energy;
- Manage any remaining residual waste responsibly; and
- Maximise the investment opportunities for business from commercial and industrial waste management.

British Standard (BS) 5906: 2005 - Waste Management in buildings - Code of Practice, 2005

18.22. This BS 5906:2005[13] sets out a Code of Practice for the storage and collection, segregation and treatment of waste from residential and non-residential buildings. It suggests minimum storage requirements by land use, and sets out the maximum distances for bins to be sited from dwellings.

Planning Policy Statement: Eco-towns A supplement to Planning Policy Statement 1, 2009

18.23. Policy ET 19 'Waste' of Planning Policy Statement: Eco-towns A supplement to Planning Policy Statement 1[14] states that planning applications should include a sustainable waste and resources plan, covering both domestic and non-domestic waste, which:

- *'Sets targets for residual waste levels, recycling levels and landfill diversion, all of which should be substantially more ambitious that the 2007 national Waste Strategy targets for 2020; it should be demonstrated how these targets will be achieved, monitored and maintained*
- *Establishes how all development will be designed so as to facilitate the achievement of these targets, including the provision of waste storage arrangements which allow for the separate collection of each of the seven priority waste materials identified in the Waste Strategy for England 2007*
- *Provides evidence that consideration has been given to the use of locally generated waste as a fuel source for combined heat and power (CHP) generation for the eco-town, and*
- *Sets out how developers will ensure that no construction, demolition and excavation waste is sent to landfill, except for those types of waste where landfill is the least environmentally damaging option.'*

Local Planning Policy

Oxfordshire Joint Municipal Waste Management Strategy[15]

18.24. Oxfordshire Waste Partnership (OWP), formed of OCC and the District and City councils within Oxfordshire, agreed a Joint Municipal Waste Management Strategy in January 2007. In April 2013, this was reviewed and updated, before being adopted by all members of the Partnership, to set out plans for dealing with Oxfordshire's municipal waste through to 2030. The OWP ceased in the

summer of 2014, with a new body Recycle Oxfordshire taking over some of the coordinating remit. However, CDC is now responsible, along with OCC for the delivery of the Strategy within the District.

18.25. Key relevant policies of the Strategy are as follows:

- Reduce consumption and generation of waste to ensure zero growth in waste collected;
- Ensuring suitable recycling facilities are easily accessible to all residents;
- Provide education, information and knowledge to assist householders and businesses to minimise the wastes generated and maximise the amount of recyclables collected;
- Develop the circular economy to stimulate a vibrant local market for recovered materials;
- Work with OCC to ensure waste facilities can be brought forward to support the needs of the District and Oxfordshire as a whole; and
- Provide an integrated waste and recyclables collection service with the aim of achieving 65% recovery, reuse or composting of municipal wastes by 2020 and 70% by 2025, with a maximum of 5% of all wastes being disposed of to landfill.

Oxfordshire Minerals and Waste Local Plan: Consultation Draft

18.26. OCC are currently preparing a new Minerals and Waste Local Plan for Oxfordshire, which will replace the existing Minerals and Waste Local Plan[16] which was adopted in 1996. The 1996 Plan covers the period up to 2006, and whilst there are a number of saved policies these are not considered to be relevant to the Himley Village Development, and more material weight should be given to the Minerals and Waste Local Plan: Core Strategy Consultation Draft (February 2014)[17]. The Minerals and Waste Local Plan will provide up to date minerals and waste planning polices and proposals for the period to 2031.

18.27. Of particular relevance is Policy W1 'Management of Oxfordshire Waste' which states '*Provision will be made for waste management facilities that allow Oxfordshire to be net self-sufficient in the management of its municipal waste, commercial and industrial waste, construction, demolition and excavation waste and agricultural waste over the period to 2030'* and Policy W3, which sets targets for the diversion of waste from landfill in order that sufficient capacity (or shortfalls in provision) may be identified.

Cherwell Local Plan, 1996

18.28. OCC is largely responsible for waste disposal within Cherwell District, therefore the Cherwell Local Plan[18] does not consider waste and recycling at any length. It is noted that CDC are required to develop a recycling plan to identify how CDC may meet their recycling targets.

Cherwell Submission Local Plan, 2006-2031, submitted in January 2014

18.29. As noted above OCC is responsible for waste planning within Oxfordshire. The submission draft of the Cherwell Local Plan[19] sets this out in Policy BSC 9: Public Services and Utilities which states '*Waste management and disposal is the responsibility of Oxfordshire County Council and the District Council will continue to consider the emerging Minerals and Waste Development Framework in the preparation of the Local Plan*.'

18.30. In addition the Policy Bicester 1 – North West Eco-Town provides further guidance with respect to the anticipated level of waste provision: *'Waste Infrastructure – The provision of facilities to reduce waste to include at least 1 bring site per 1,000 population positioned in accessible locations. Provision for sustainable management of waste both during construction and in occupation shall be*

provided. A waste strategy with targets above national standards and which facilitates waste reduction.'

Other Regulations and Guidance

The Building Regulations, 2010

18.31. The Building Regulations 2010[20] require the following:

"Solid waste storage

H6. (1) Adequate provision shall be made for the storage of solid waste.

(2) Adequate means of access shall be provided:

a) For people in the building to the place of storage; and,

b) From the place of storage to a collection point.

18.32. The requirements of H6 (above) will be met if the solid waste storage area is:

a) Designed and sited so as not to prejudicial to health;

b) Of sufficient area having regard to the requirements of the waste collection authority for the number and size of receptacles under Sections 46 and 47 of the Environmental Protection Act 1990;

c) Sited so as to be accessible for use by people in the building and of ready access for removal to the collection point specified by the waste collection authority under Sections 46 and 47 of the Environmental Protection Act 1990."

18.33. Section H6 sets out the general requirements for solid waste storage for domestic and non-domestic developments.

Eco-Bicester – One Shared Vision, December, 2010

18.34. The Eco Bicester Strategic Board sets out the shared vision of Cherwell District Council, Bicester Town Council and Oxfordshire County Council on the future of Bicester with the One Shared Vision for Eco Bicester document[21]. The document reiterates the objectives for waste set out in PPS1 Eco Towns and also provides the following vision for waste within proposed developments on site:

- Explore sewerage and waste options providing bio gas for energy production;
- Provide storage for recyclable materials including in new buildings; and
- Provide measures to reduce all waste including that from construction.

Assessment Methodology and Significance Criteria

Assessment Methodology

18.35. The Chapter of the Environmental Statement assesses the likely potential effects resulting from the generation of wastes (and recyclables) associated with the construction and operation of Himley Village. Construction waste is considered separately from operational waste. Very limited demolition would take place to facilitate the Himley Village Development, therefore, the focus of this Chapter is on wastes generated by the construction works.

18.36. The significance criteria set out below have been developed following a review of relevant national and local policies and strategies combines with professional consideration and judgement.

18.37. The study area is typically Cherwell District and Oxfordshire. With respect to this Chapter a local impact is one at a County scale, in this case Oxfordshire, regional being the South East and national being England.

18.38. In order to identify and describe the baseline conditions a desk study has been undertaken in relation to waste generation and disposal facilities within Oxfordshire, and where applicable surrounding areas. With particular regard to operational wastes a review of the existing waste management processes within Cherwell District have been reviewed, including current performance.

18.39. An assessment has been made of the amount and types of waste to be generated during the construction works, with particular reference to benchmark data provided within the Building Research Establishment's SmartWaste[22]. During the operational phase an assessment has been made based on existing levels of municipal wastes generated per person or per household within Cherwell District.

18.40. The significance criteria set out below enable a qualitative assessment to be made, based on the available information and knowledge of the likely waste generation and sensitivity of the receiving environment to change.

Significance Criteria

18.41. Given the nature of the Proposals it is not considered that it is possible for beneficial effects to result. Therefore, beneficial effects are not considered further in this Chapter.

Table 18.1: Magnitude of Change Criteria - Construction

Magnitude of Change	Criteria
High	Levels of waste generation considerably above best practice benchmark levels for volume and below benchmark levels for % recovered, reused and recycled with a regional significance
Medium	Levels of waste generation above best practice benchmark levels for volume and below benchmark levels for % recovered, reused and recycled with a local significance
Low	Waste generation in line with best practice benchmark levels for volume and for % recovered, reused and recycled
Negligible	Exemplar levels of waste generation, significantly below best practice benchmark levels for volume and above benchmark levels for % recovered, reused and recycled

Table 18.2: Magnitude of Change Criteria - Operation

Magnitude of Change	Criteria
High	Considerable increase in volume of waste or change in types of waste generated, significantly exceeding forecast waste generation levels, with regional significance
Medium	Increase in volume or change in types of waste generated, exceeding forecast waste generation levels with local significance.
Low	Slight increase in volume of waste or change in type generated of no more than local significance, in line with anticipated future waste generation levels
Negligible	No increases in type or volume of wastes generated

Table 18.3: Sensitivity to Change

Sensitivity to Change	Criteria
Very High	Insufficient waste management and recovery facilities to accommodate anticipated wastes are available in the region
High	Sufficient waste management and recovery facilities to accommodate anticipated wastes are available in the region
Medium	Sufficient waste management and recovery facilities to accommodate anticipated wastes are available in the local area.
Low	Sufficient waste management and recovery facilities to accommodate anticipated wastes are available in the near local area.

Table 18.4: Significance of Effect Matrix

Sensitivity to Change	Magnitude of Change			
	High	Medium	Low	Negligible
Very High	Substantial adverse	Moderate Adverse	Moderate Adverse	Minor Adverse
High	Moderate Adverse	Moderate Adverse	Minor Adverse	Negligible
Medium	Minor Adverse	Minor Adverse	Negligible	Negligible
Low	Minor Adverse	Negligible	Negligible	Negligible

Baseline Conditions

18.42. The Himley Village Site is currently in use as agricultural land, with a small number of buildings, as described in Chapter 3: Existing Land Uses.

Demolition and Construction Baseline

18.43. Various studies have been undertaken in recent years with the aim of quantifying the waste generated from construction, demolition and excavation (CDE) in Oxfordshire, and to determine the final disposal route. There is, as would be expected some variance between these figures. Further uncertainty results from the reduction of house completions and other construction activity within Oxfordshire from 2009 onwards. The most current data is within the Oxfordshire Minerals and Waste Development Framework Waste Needs Assessment of May 2012[23]. This suggests that CDE waste generated in Oxfordshire per annum is in the order of 650,000 tonnes, excluding materials that were managed on the originating site or used on exempt sites. However, for the years 2015 – 2030 (the extent of the forecasts within the document) 1,430,000 tonnes of CDE waste are anticipated per annum, due to a predicted increase in construction activities.

18.44. Of the 650,000 tonnes of CDE waste that is generated and taken off-site each year, the Oxfordshire Minerals and Waste Local Plan: Core Strategy Consultation Draft 2014 currently anticipates that 50% is reused or recycled, with the remaining 50% being landfilled or used for reclamation at landfill sites. Policy W3 sets a target for 70% of CDE wastes to be recycled by 2030, with interim targets of 50% by 2015, 60% by 2020 and 65% by 2025.

18.45. The Oxfordshire Minerals and Waste Local Plan: Core Strategy Consultation Draft states that 90% of all waste generated in Oxfordshire are dealt with within the County, with a target of all wastes generated in the County to be treated within the County by 2030.

Operational Waste Baseline

18.46. Cherwell District Council (CDC) currently collects waste and recyclables across the District. Householders are provided with three bins as follows:

- A blue bin for recycling;
- A brown food and garden waste bin, kitchen caddy; and
- A green bin for residual waste.

18.47. Collections are weekly, alternating between a 'green bin' collection week and a week where the blue and brown bins are collected. Recyclables that can be put out for collection in the blue bin are currently:

- Paper;
- Tins and cans;
- Cardboard;
- Drinks cartons;
- Tin foil and foil trays;
- Magazines and newspapers;
- Aerosols; and
- Plastic bottles and containers (any hard plastic packaging, including pots, tubs and trays).

18.48. Other recyclables, including glass, need to be taken to a suitable 'bring' site.

18.49. Residents of flats are provided with similar coloured communal bins as householders, along with a kitchen caddy within which to store and transport kitchen waste. Collections are also undertaken on an alternate week basis. At some developments a black wheeled bin is provided for the collection of glass bottles and jars.

18.50. Other collections such as for bulky items or white goods are provided at cost.

18.51. The dry recyclables collected in the blue bins are taken to one of two nearby facilities, located in Cassington Oxfordshire and Helmdon in Northamptonshire for sorting, prior to dispatch to UPM's (company) facility in Cheshire for recycling and further processing. Food and garden wastes are sent to Ardley anaerobic digester which recovers biogas and generates a chemical free fertiliser with the residual waste.

18.52. Residual waste is transferred to the Energy Recovery Facility at Ardley for disposal, with no municipal wastes disposed of in landfill by CDC.

18.53. The most recent full data set for CDC held on WasteDataFlow[24] is for the period April 2013 to March 2014, which shows that 53.90% of wastes are sent for reuse, recycling or composting, and a total residual waste of 442.26kg is collected per household. This equates to a total collection of 959.32 kg per household. These rates compare favourably with other local authorities in England, using Waste Data Flow information for the same period (excluding those where returns have not been made), where average recycling rates are 42.48%, residual wastes collected are 509.31 kg per head and total municipal waste collected is 885.45 kg per head.

18.54. Business waste collections within CDC are contracted to companies to provide the required level of service. Each company will have its own requirement for waste and recyclable storage bins and skips to be provided.

Potential Effects

Demolition and Construction

18.55. Due to the limited extent of demolition required to facilitate the Himley Village Development, demolition wastes are considered to be insignificant with respect to the scale of the overall Development. At this stage of the design, it is anticipated that net zero excavation materials will be generated as a result of the Himley Village Development. Accordingly these elements have not been considered further, and this section focuses on construction waste generation.

18.56. Using benchmark data compiled by the Building Research Establishment (BRE) in June 2012[25] an initial forecast of wastes arising as a result of the construction of the Himley Village Development is provided in Table 18.5 below. This forecast is based on maximum proposed floor area, which results in a worst case assessment.

Table 18.5: Forecast Waste Arisings per Building Type

Land Use	GIA m2	m^3 /100m^2 Waste (BRE Benchmark)	Forecast Arising (m^3)	Forecast Arising (tonnes)
Residential Units	156,395	18.1	28,308	42,461
Hotel	2,600	17.4	452	679
Veterinary Surgery	2,000	17.4	479	718
School	2,750	20.7	569	854
Retirement Home	9,000	18.1	1,629	2,444
Pub / Community use	400	14.4	58	86
Retail	700	20.9	146	219
Health Facility	1,500	19.1	287	430
Office	1,000	17.4	174	261
Nursery	100	20.7	21	31

18.57. Also using the aforementioned BRE benchmark data an approximation of the forecast waste arising per waste type can be calculated; these are set out in Table 18.6. For simplicity the data in Table 18.6 has been calculated for residential new buildings only, as this building type makes up the significant majority of the Himley Village Development

Table 18.6: Waste Arisings by Waste Type

Waste Type	% of total	Forecast Arising (m^3)	Forecast Arising (tonnes)
General	11.32	3,637	5,455
Bricks / Ceramics	9.42	3,027	4,541
Concrete	12.43	3,994	5,992
Electrical Equipment	0.98	315	473
Furniture	0.52	168	252
Hazardous	0.39	126	189

Waste Type	% of total	Forecast Arising (m^3)	Forecast Arising (tonnes)
Inert	4.38	1,409	2,113
Insulation	7.13	2,291	3,437
Liquids & Oils	0.33	105	158
Metals	3.86	1,240	1,861
Packaging	17.74	5,697	8,546
Cement / Plaster	12.24	3,931	5,897
Plastics	6.87	2207	3,311
Timber	12.37	3,973	5,960

18.58. Based on the above data, and considering the requirements policy ET19 of PPS1 Supplement which sets out that no construction, demolition and excavation waste should be sent to landfill, except for those types of waste where landfill is the least environmentally damaging option, only 126 m^3 (approximately 189 tonnes) of hazardous wastes would be likely to be disposed of by landfill, whilst all over wastes would be reused, recycled, composted or sent for energy recovery.

18.59. In order to achieve benchmark levels of waste generation during construction, or ideally an improvement on benchmark levels, a Sustainable Waste and Resources Plan (SWRP) has been developed for the Himley Village Development and is included as **Technical Appendix 18.1**. The SWRP provides an overarching strategy demonstrating the actions to be implemented to minimise waste generation and maximise recovery of wastes.

18.60. As set out in the SWRP, it is anticipated that at reserved matters, Site Waste Management Plans (SWMPs) will be required and shall be delivered by a suitably worded planning condition. The SWMPs will be developed by the main contractors and will, as a minimum set out the following:

- waste and recycling targets for each development plot;
- procedures for minimising wastes generated;
- waste segregation and storage procedures; and
- monitoring and reporting procedures

18.61. Given that within existing and emerging policy documents, facilities with a capacity for recovering or treating 90% of wastes within Oxfordshire are identified, with the aim of increasing this to 100% by 2030, the sensitivity to change is considered to be medium. Assuming a worst case that the Himley Village Development will generate, during construction, levels of waste that as a minimum are in line with benchmark best practice guidance the magnitude of change is considered to be low. The overall effect is therefore considered to be **negligible**.

Completed Development

18.62. Without allowing for any reduction in waste generated per household to 2031 when the Himley Village Development is anticipated to be fully operational, it is predicted that the Development would generate some 1,631 tonnes of municipal waste per annum. Of this, again assuming no increase in recycling rate, some 879 tonnes (46.1%) would be residual waste that would be disposed of at the nearby Ardley Energy Recovery Facility. This volume would represents less than 0.3% of the overall capacity at Ardley. However, as set out within the SWRP a target has been set to recycle, reuse or compost 70% of the total waste, and through reduction generate only 150kg per person

per annum residual waste. This would serve to reduce the mass of residual municipal waste to 667 tonnes per annum, below 0.25% of Ardley ERF's annual capacity.

18.63. The SWRP also sets targets for non-residential buildings where waste and recyclables are not collected by CDC. The SWRP requires businesses and organisations to achieve the diversion of 95% waste from landfill and a recycling / reuse / composting rate of 70% from 2025 onwards. It is envisaged that this would be enforced by a suitably worded planning condition that would require all occupiers to develop a waste management plan, and provide monitoring detail for the first five years from the commencement of occupation.

18.64. The remaining collected wastes would be reused, recycled, sorted or composted at facilities within Oxfordshire, although ultimately transferred onwards for processing at specialist plants. Given that existing and emerging planning policy and strategy has accounted for a growth in wastes due to population growth through until 2030, with primary treatment facilities within Oxfordshire providing capacity for 100% of all wastes generated in 2030 (an increase above the 90% provided currently) the sensitivity is Medium, and the magnitude of change is Low. As a result, the overall effect is considered to be **negligible**.

Mitigation

Demolition and Construction

18.65. As the potential effects were found to be negligible, no mitigation is required over and above that set out in the SWRP including a requirement for the Principal Contractor to develop a SWMP.

Completed Development

18.66. As the potential effects were found to be negligible, no mitigation is required.

Residual Effects

Demolition and Construction

18.67. Construction waste generation is predicted to be, at worst, in line with best practice benchmarks, and where practicable lower levels. All wastes will be diverted from landfill unless this is the least environmentally damaging option. Of the wastes diverted from landfill a minimum of 90% will be recycled, recovered, reused, sorted or composted within Oxfordshire, with the aim of increasing this to 100% by 2030. The potential environmental effect of construction waste is predicted to be **negligible**.

Completed Development

18.68. The waste and recyclables generated by the Himley Village Development have been accounted for in existing and emerging planning policy, therefore it is considered that sufficient local waste management and treatment facilities will be available to serve the requirements of the Himley Village Development in combination with the existing requirements within Oxfordshire. A **negligible** effect is predicted.

Summary and Conclusion

Table 18.7: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Generation of construction waste	**Temporary** effect of **negligible** significance.	None required	**Temporary** effect of **negligible** significance.
Completed Development			
Increased level of development resulting in additional wastes and recyclables to be managed.	**Permanent** effect of **negligible** significance	None required	**Permanent** effect of **negligible** significance.

References

1 Official Journal of the European Communities. (2008) *Waste Framework Directive (WFD): 2008/98/EC.*

2 *The Waste (England and Wales) Regulations 2011: SI 2011 No. 988.*

3 Official Journal of the European Communities. (1999) *Council Directive 1999/31/EC Landfill of Waste.*

4 *Environmental Permitting (England & Wales) Regulations (2007).*

5 *Environmental Protection (Duty of Care) Regulations (2003).*

6 *Environmental Protection Act (1990).*

7 Department for Communities and Local Government (DCLG) (2012) *National Planning Policy Framework.*

8 DCLG. (2014) *National Planning Policy for Waste.*

9 Department for Environment, Food and Rural Affairs (DEFRA). (2013*) National Waste Management Plan for England.*

10 DEFRA. (2007) *The Waste Strategy for England.*

11 DEFRA. (2011) *Government Review of Waste Policy in England.*

12 DEFRA. (2009) *Commercial and Industrial Waste in England – Statement of Aims and Actions.*

13 British Standard (BS) 5906. (2005) *Waste Management in buildings: Code of Practice.*

14 Department for Communities and Local Government (DCLG). (2009*) Planning Policy Statement: Eco-towns A supplement to Planning Policy Statement 1.*

15 Oxfordshire Waste Partnership. (2013) *Joint Municipal Waste Management Strategy.*

16 Oxfordshire County Council. (1996) *Oxfordshire Minerals and Waste Plan.*

17 Oxfordshire County Council. (2014) *Oxfordshire Minerals and Waste Local Plan: Consultation Draft.*

18 Cherwell District Council. (1996) *Cherwell Local Plan.*

19 Cherwell District Council (2014) *Cherwell Local Plan.*

20 UK Government. (2010) *The Building Regulations.*

21 Cherwell District Council, Bicester Town Council and Oxfordshire County Council (2010) *Eco Bicester – One Shared* Vision. http://www.cherwell.gov.uk/index.cfm?articleid=5952

22 Building Research Establishment. (2014) SmartWaste. http://www.smartwaste.co.uk/swmp/login.jsp.

23 Oxfordshire County Council. (2012) *Oxford Minerals and Waste Development Framework: Waste Needs Assessment.*

24 Wastedataflow. (2012) *Dataset for Cherwell District Council.* www.wastedataflow.org

25 Building Research Establishment. (2012) *SmartWaste benchmark data*.

19. Cumulative Effects

Introduction

19.1. This Chapter assesses the cumulative effects of the Himley Village Development; that is the interactions between the individual environmental effects of Himley Village and the combination of effects with other consented or reasonably foreseeable schemes. This Chapter is supported by **Technical Appendix 19.1** which describes the cumulative schemes considered as part of this assessment and **Technical Appendix 19.2** which describes the assumptions made in the cumulative transport assessment. The Chapter is also supported by **Figure 19.1** which shows the locations of the cumulative schemes considered.

Assessment Methodology

19.2. This Chapter considers two types of cumulative effects:

- **Type 1 Effects:** The combination of individual effects (for example noise, dust and visual effects) from one development on a particular receptor; and
- **Type 2 Effects:** Effects from several developments, which individually might be insignificant, but when considered together could create a significant cumulative effect.

Type 1 Effects

19.3. Effect interactions on particular receptors (listed in Table 19.1) were considered for the identified adverse residual effects of the Himley Village Development.

Demolition and Construction

19.4. The main effect interactions during the construction works are considered likely to result from:

- Temporary local, negligible to moderate adverse effects on air quality due to dust;
- Temporary, local, minor to moderate adverse effects on noise and vibration levels; and
- Temporary, local minor to moderate adverse effects on visual amenity.

19.5. The potential Type 1 effects for various relevant sensitive receptors (identified within **Chapter 3: Existing Land Uses** and illustrated within **Figure 3.2**) are shown in Table 19.1 below. The criteria for identifying those which are considered to be potentially sensitive included the type of receptors, proximity to Himley Village, and extent of current exposure to effects and effect interactions.

Table 19.1: Potential Effect Interactions during Construction

Sensitive Receptors	Effect Interactions
Residents at Himley Farm	D, N, V, Vis
Residents at Gowell Farm	(D), (N), (Vis)
Residents at Lovelynch House	D, N, V, Vis
Residents at Aldershot Farm	(D), (N), (Vis)
Residents at Linkslade	X
Listed barns at Himley Farm	D, V, Vis
Pedestrians, Cyclists and Road Users	D, N, V, Vis
The local landscape	N, Vis
Existing hedgerows and other habitats on and adjacent to Himley Village and protected species that they support.	D, N, V
Bat roosts on and adjacent to Himley Village	D, N, V
Badger setts in the areas adjacent to Himley Village	(N), (V)

Key: D = Adverse dust effects
N = Adverse noise effects
V = Adverse vibration effects
Vis = Adverse visual effects
× = No effects likely
( ) = Very minor effects anticipated

19.6. Table 19.1 shows that there is the potential for some effect interactions to take place during the construction works. Such impacts would be temporary, and due to the nature of the proposed Himley Village these are likely to be short term impacts, rather than for the entire duration of the construction programme.

19.7. As set out in **Chapter 5: The Proposed Development**, a Construction Environmental Management Plan (CEMP) would be implemented during construction to provide a mechanism for monitoring and minimising the effects of construction works to reduce the potential effects on surrounding receptors.

Completed Development

19.8. Although some adverse effects have been identified up to moderate adverse, with the exception of noise, this is partly a function of the location of the Himley Village Site (for example, located partly on best and most versatile agricultural land) and partly as a result of introducing built development and occupiers into an area which is currently agricultural fields. These effect generally relate to different receptors within each particular technical chapter, although there is some limited potential for a combination of minor adverse traffic and air quality effects and moderate adverse noise effects for residential receptors in proximity to the Himley Village Site.

Type 2 Effects

19.9. In order to identify the schemes that should be considered in the cumulative assessment, a review of the cumulative schemes that had been assessed in the NW Bicester Application 1 and Application 2 was undertaken together with those that formed part of the wider NW Bicester Masterplan Access and Travel Strategy. These schemes were identified in consultation with CDC, and are considered appropriate for inclusion within this cumulative assessment. Following a review

of the current status of the cumulative schemes, the following schemes were assessed, divided into three groups based on project status as follows:

- Cumulative Schemes – Under Construction
  - Bicester Eco Town Exemplar Site Calversfield Oxfordshire (Part of NW Bicester EcoTown);
  - Kingsmere Phase 1; and
  - Calversfield (RAF Bicester).
- Cumulative Schemes - Consented (Not yet under construction)
  - Bicester Business Park;
  - Tesco at Bicester Business Park;
  - Bicester (Shopping) Village – Phase 4;
  - Bicester 2 – Graven Hill;
  - Kingsmere Phase 2 (South West Bicester);
  - North East Bicester Business Park;
  - Land Between Birmingham/London Rail Line And Gavray Drive Bicester Oxon; and
  - Land on the North East Side of Gavray Drive Bicester.
- Cumulative Schemes - Reasonably foreseeable schemes
  - NW Bicester EcoTown Application 1 (North of Railway);
  - NW Bicester EcoTown Application 2 (South of Railway);
  - NW Bicester Ecotown Business Park;
  - A4095 NW Strategic Link Road;
  - Kingsmere Phase 1 (South West Bicester) (additional development);
  - Town Centre redevelopment Phase 2 at Franklins Yard, St Johns Street, Bicester;
  - Former RAF Bicester;
  - Bicester Gateway; and
  - South East Bicester.

19.10. Further details of cumulative schemes and the assumptions made with regard to the extent of development at each is provided in **Technical Appendix 19.1 and 19.2**, with **Figure 19.1** illustrating the location of these developments.

19.11. The following paragraphs provide a discussion of the likely cumulative effects anticipated to result for each of the environmental topics assessed within Chapters 6 to 18 of this ES. In some cases, cumulative effects are not anticipated. Where this is the case, justification is provided. The significance of the cumulative effects has been determined in line with the criteria set out in each technical chapter. Where possible, these have used the generic criteria set out in Chapter 2: EIA Methodology; adverse, negligible or beneficial effects have been identified of minor, moderate or substantial significance.

19.12. Only residual Type 2 effects were considered. In all cases, it is assumed that all cumulative schemes would have their own site-specific CEMPs or appropriate environmental method statements in order to minimise the potential adverse environmental effects of their construction works.

Landscape and Visual Amenity

19.13. Cumulative landscape and visual effects are defined by the Guidelines for Landscape and Visual Impact Assessment (GLVIA3)[1] as those that "*result from changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future*."

19.14. The GLVIA3 emphasises that the approach should be appropriate and proportionate to the scheme and information available with an emphasis on *likely significant effects* rather than cataloguing every conceivable effect that may occur.

19.15. GVLIA 3 paragraph 7.14 also notes "*schemes that are at the pre-planning or scoping stage are not generally considered in the assessment because firm information on which to base the assessment is not available and because of uncertainty about what will actually occur*."

19.16. There is limited information available for cumulative schemes within the context of the Site. In view of this, and the guidance outlined by GLVIA3 above, this assessment has made an assumption on potential likely '*additional significant effects of the main project under consideration (Himley Village), assuming all schemes that sit within the context of the Site are ultimately developed.'* It is not be possible to validate these assumptions, for example with the use of verified views, however this could be undertaken at a later date as more information on each scheme emerges.

19.17. The consented schemes and planned developments that sit within the context of the Site are illustrated on **Figure 19.1**. The schemes that could result in a cumulative landscape and visual amenity effect are:

Consented Schemes

- Southwest Bicester (Kingsmere).

Planned Developments

- North West Bicester Business Park (also known as Network Bicester or Albion Land);
- A4095 NW Strategic Link Road (Boulevard);
- NW Bicester Application 2 (South of Railway); and
- Southwest Bicester Phase 2.

19.18. Bicester Eco Development Exemplar, once completed will partly define the character of Caversfield Valleys and Ridges local character area, located north of the railway. It is anticipated that the Exemplar Development will not affect the views described in the above visual assessment.

19.19. The study areas, baseline conditions and identified receptors for the cumulative landscape and visual effects are as for the main assessment. The sources of potential effects are described for each cumulative scheme, where relevant, in the summary tables below.

Demolition and Construction

19.20. Demolition and construction phase cumulative effects may include:

- Visual intrusion from construction traffic and working machinery, movement and activity of HGVs, cranes, excavators and dumpers;
- Site storage units, material stockpiles;
- Visual intrusion from construction traffic and working machinery;

- Noise and visual intrusion from demolition of existing buildings and breaking up of existing ground;
- Loss of existing trees and vegetation;
- Temporary lighting of contractors compound and working area; and
- Noise and visual intrusion from excavation for utilities, roads, drainage and building foundations.

19.21. During demolition and construction, cumulative effects will only occur if the construction works of other nearby projects coincide. In the absence of a construction programme and timetable of works for each cumulative development it is difficult to predict the degree of effect.

19.22. Any potential effects, such as those outlined above, would be **temporary** and **adverse** and are a common consequence of building activity. A phased or staggered approach to construction, as proposed for the development of Himley Village would help to minimise the cumulative effects and, as described for the main assessment, the implementation of a CEMP would also reduce effects where possible.

Completed Development

19.23. The cumulative landscape and viewpoint assessments are summarised in Table 19.2 and 19.3 below.

Table 19.2 Summary Cumulative Landscape Assessment

Receptors	Sensitivity	Potential Source of Cumulative Effect	Magnitude of Cumulative Change	Significance of Effects: Operational
The landscape character of the area	**Low** The landscape is undesignated and the character areas are typically of low importance on a local scale.	**Southwest Bicester (Kingsmere)** Proposals form an extension of Bicester's residential urban edge in keeping with the local character area. **NW Business Park (Albion Land)** Proposals are based on a structured landscape of existing hedgerows and field boundaries in keeping with the wider landscape character. **Strategic Link Road (Boulevard)** Proposals for the new 'boulevard' as part of the overall Masterplan indicate that the new road would be tree lined and provide substantial green, open space **NW Bicester Application 2 (South of Railway)** Masterplan proposals are based on a network of green infrastructure that relates to the wider landscape character. **SW Bicester Phase 2** Proposals form an extension of Bicester's residential urban edge in keeping with the local character area.	***Minor beneficial*** Size or scale of change: there will be a change to the existing landscape character through the introduction of built form and green infrastructure. However, the proposals endeavour to retain and enhance valued landscape elements. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor beneficial*** ***Permanent at local level*** The proposals will alter the existing landscape through introduction of built form. Careful layout of buildings and proposals for green infrastructure would integrate development with the wider landscape. Taking into account the low landscape sensitivity and low magnitude of change, the effect is considered to be negligible to minor beneficial.
Aesthetic and perceptual aspects of the landscape (Inc scale, complexity, patterns and openness)	**Low** The aesthetic and perceptual aspects of the landscape are considered to have low sensitivity to change. The sloping, enclosed landscape, offers limited views across the area.	**Southwest Bicester (Kingsmere)** The Kingsmere design code outlines a mixed building density and heights. The rural edge responds to the surroundings and lower densities are used. **NW Business Park (Albion Land)** Large employment plot off Middleton Stoney Road. Predominant scale of residential zones will be two stores and varying eaves/ridge heights. Lowers density development to periphery of the site and 40% landscaping provision provides a contrast in scale. **Strategic Link Road (Boulevard)** Proposals for the new 'boulevard' as part of the overall Masterplan indicate that the new road would be tree lined and provide substantial green, open space. **NW Bicester Application 2 (South of Railway)** Masterplan proposals indicate medium to low housing character scale and density to the west of the site. Higher buildings (such as the school) are located along the boulevard where there is a relationship with the urban edge of Bicester. **SW Bicester Phase 2**	***Negligible beneficial*** Size or scale of change: there will be a change to landscape aesthetic through the introduction of built form. There will be some localised, minor loss to perceptual landscape elements, such as hedgerow pattern. However, overall these elements are retained and enhanced. The buildings within the cumulative schemes have been set out with reference to the context of periphery landscape at an appropriate height and density defined in order to establish a suitable sense of scale. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor beneficial*** ***Permanent at local level*** The proposals will alter the existing landscape aesthetic through introduction of built form. Careful layout of buildings and proposals for green infrastructure retain substantial amounts of key landscape elements and provide improvement through enhancement planting. Taking into account the low landscape sensitivity and low magnitude of change, the effect is considered to be negligible to minor beneficial.

Receptors	Sensitivity	Potential Source of Cumulative Effect	Magnitude of Cumulative Change	Significance of Effects: Operational
		The proposals indicate mixed building density and heights. The rural edge responds to the surroundings and lower densities are used.		
The network of existing hedgerows and hedgerow trees	**Medium** The existing hedgerows are considered to have medium sensitivity to change. They are a key characteristic forming the landscape character of Himley Village on both a national and local level.	**Southwest Bicester (Kingsmere)** Proposals retain hedgerows where possible in particular hedgerows along the periphery of the site. **NW Business Park (Albion Land)** Proposals are based on a structured landscape of existing hedgerows and field boundaries in keeping with the wider landscape character. **Strategic Link Road (Boulevard)** Proposals for the new 'boulevard' as part of the overall Masterplan indicate that the new road would be tree lined and provide substantial green, open space. **NW Bicester Application 2 (South of Railway)** Proposals retain hedgerows where possible. Some localised breaks in hedgerows to accommodate secondary roads, footpaths and cycle ways. **SW Bicester Phase 2** Proposals retain hedgerows here possible in particular hedgerows along the periphery of the site.	***Minor beneficial*** Size or scale of change: All cumulative schemes indicate that hedgerows are to be retained and enhanced wherever possible. There will be some localised, minor loss to hedgerows to allow for construction of access routes. Overall, the enhancement planting and the introduction of new hedgerows would improve the quality of this landscape attribute. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Minor beneficial*** ***Permanent at local level*** The proposals will alter the existing network of hedgerows due to minor, localised loss to accommodate new access routes. Overall new and enhancement planting would reinstate and improve the baseline condition. Taking into account the medium landscape sensitivity and low magnitude of change, the effect is considered to be minor beneficial.
Existing woodland shelterbelts	**Medium** The existing woodland shelterbelts are considered to have medium sensitivity to change. They are valued for their contribution to local landscape character.	**Southwest Bicester (Kingsmere)** Proposals include for woodland blocks to be retained and enhanced where possible. **NW Business Park (Albion Land)** Landscape buffers surround the entire periphery of the development with significant woodland planting along the Howes Lane side of the site providing screening to the future link road. **Strategic Link Road (Boulevard)** Proposals for the new 'boulevard' as part of the overall Masterplan indicate that the new road would be tree lined and provide substantial green, open space including woodland buffer zones. **NW Bicester Application 2 (South of Railway)** Proposals include for retained existing woodland blocks to be enhanced with a 10m planting buffer to either side. **SW Bicester Phase 2** Planned provision of internal and perimeter green corridors and linear structural planting although proposals do not defined this specifically as woodland belts.	***Minor beneficial*** Size or scale of change: All cumulative schemes indicate that woodland planting zones are to be retained and enhanced wherever possible. There will be some localised, minor loss to woodlands to allow for construction of access routes. Overall, new and enhancement planting would improve the quality of this landscape attribute. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Minor beneficial*** ***Permanent at local level*** The proposals will alter the existing network of woodland shelterbelts due to minor, localised loss to accommodate new access routes. Overall new and enhancement planting would reinstate and improve the baseline condition. Taking into account the medium landscape sensitivity and low magnitude of change, the effect is considered to be minor beneficial.

Receptors	Sensitivity	Potential Source of Cumulative Effect	Magnitude of Cumulative Change	Significance of Effects: Operational
The setting of residential areas	**Low** Proposals respect the existing character type of residential areas to the western urban fringe of Bicester. Changes are likely to be tolerated with appropriate mitigation.	**Southwest Bicester (Kingsmere)** The Kingsmere design code responds to the rural edge through lower density dwelling types. There is a relationship with the residential edge of Bicester. **NW Business Park (Albion Land)** Dwellings are set back from roads and existing residential areas using landscape buffers to screen views, create privacy and provide a semi-rural setting. **Strategic Link Road (Boulevard)** The Masterplan indicates that the boulevard respects the setting of existing and proposed residential areas through green infrastructure and planted areas. **NW Bicester Application 2 (South of Railway)** Dwellings are set back from roads and existing residential areas. Provisions of landscape buffers to screen views create privacy and provide a semi-rural setting. **SW Bicester Phase 2** The proposed building layout responds to the rural edge through lower scale and density dwelling types. There is a relationship with the residential edge of Bicester.	***Minor beneficial*** Size or scale of change: The network of open space and landscape zones provides an appropriate semi-rural residential setting within the NW Bicester Application site. The proposals become suitably more urban moving towards Howes Lane creating a transition to Bicester's residential edge and the Southwest Bicester developments. Development proposed along the Strategic Link Road (Boulevard) will integrate Bicester's residential edge with the provision of new and accessible, high quality public realm. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor beneficial*** ***Permanent at local level*** The proposals provide a new and improved setting to Bicester's residential edge with access to new amenities, recreational areas and natural spaces. Taking into account the low landscape sensitivity and low magnitude of change, the effect is considered to be negligible to minor beneficial.
The setting of the bridleway	**Medium** The bridleway runs through the NW Bicester Application 2 site, there will be a change in the character setting of the bridleway. It is likely that, with appropriate retention of existing landscape features, the landscape will tolerate changes with appropriate mitigation.	**Southwest Bicester (Kingsmere)** Not applicable **NW Business Park (Albion Land)** Not applicable **Strategic Link Road (Boulevard)** The boulevard crosses the bridleway close to Avonbury Business Park, potential for localised reduction in tranquillity. **NW Bicester Application 2 (South of Railway)** Proposals retain the bridleway as a key route for walking to the local centre and primary school. It is proposed that the existing hedgerows along the route are retained and a 10m planting buffer zone provided to either side. This contributes to ecology, establishment of sustainable green infrastructure and provision of informal, outdoor recreation. **SW Bicester Phase 2** Not applicable	***Negligible adverse*** Size or scale of change: The proposals of NW Bicester Application 2 (South of Railway) alter the setting of the bridleway. The immediate setting of the bridleway through enhancement planting and creation of substantial buffer zones. There will be an intrusion on tranquillity there the Strategic Link Road (Boulevard) crosses the route, however, the Boulevard also includes the provision of green infrastructure, buffer zones and planting that screens sensitive views. The wider pastoral setting of the bridleway would be altered by the introduction of built form. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor adverse*** ***Permanent at local level*** The proposals retain the immediate setting including hedgerows, a key landscape element, which would be substantially enhanced. The wider setting would be altered through the introduction of built form. This change is partly offset through the careful layout of buildings and proposals for green infrastructure that would integrate the setting of the bridleway with the wider landscape. Taking into account medium landscape sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.
The setting of Middleton Stoney Road	**Low** The linear landscape of Middleton Stoney Road is of low value on a	**Southwest Bicester (Kingsmere)** The Kingsmere development aims to retain the existing hedgerows to the periphery of the site, along Middleton Stoney	***Negligible adverse*** Size or scale of change: The proposals introduce breaks in the existing hedgerows along Middleton	***Negligible to minor adverse*** ***Permanent at local level***

Receptors	Sensitivity	Potential Source of Cumulative Effect	Magnitude of Cumulative Change	Significance of Effects: Operational
	local scale, likely to tolerate change with appropriate mitigation.	Road where possible. Localised loss of hedgerows to accommodate entrance junctions. **NW Business Park (Albion Land)** Dwellings are set back from roads and existing residential areas using landscape buffers to screen view, create privacy and provide a semi-rural setting. Existing hedgerow will require removal to facilitate the new 'gateway' entrance off Middleton Stoney Road, however substantial replacement landscape buffer planting is proposed in this location. **Strategic Link Road (Boulevard)** The proposals include realigning Howes Lane off Howes Lane roundabout. The road will pass through the site of NW Business Park (Albion Land). Some change in setting of Middleton Stoney Road in approach to the roundabout. **NW Bicester Application 2 (South of Railway)** Not applicable. **SW Bicester Phase 2** Proposals aim to retain the existing hedgerows to the periphery of the site, along Middleton Stoney Road where possible. Localised loss of hedgerows to accommodate entrance junctions.	Stoney Road centred on new access junctions. Retained hedgerows are enhanced with additional planting buffers. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	The proposals largely retain the existing hedgerows that form the immediate setting along Middleton Stoney Road. There would be localised loss of hedgerow associated with new access routes to proposed developments. This is partly offset with the provision of substantial enhancement planting to retained hedgerows. Taking into account low landscape sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.

Table 19.3 Summary Cumulative Viewpoint Assessment

Ref	Viewpoint Location	Receptors	Sensitivity	Potential Source of Cumulative Effect / Change in View	Magnitude of Cumulative Change	Significance of Effects: Operational
1	**Middleton Stoney Road to SW corner of the Himley Village Site on roadside verge opposite side of road**	Users of Middleton Stoney Road, people living in nearby areas	**Low** Road users are typically considered less susceptible to change due to reduce awareness of views when driving.	**Southwest Bicester (Kingsmere)** Not applicable. **NW Business Park (Albion Land)** Not applicable. **Strategic Link Road (Boulevard)** Not applicable. **NW Bicester Application 2 (South of Railway)** Buildings associated with the upper extents of maximum building heights between 4-20m (schools, retail buildings) could potentially be visible. **SW Bicester Phase 2** Not applicable.	***Negligible adverse*** Size or scale of change: A combined view of Himley Village and NW Bicester Application 2. Only a very small part of NW Bicester Application 2 is likely to be discernible above the Himley Village development. Long distance view partially filtered by trees and vegetation in the foreground. Overall a small change in the wider view for road users who typically have a reduced awareness when travelling past. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor adverse*** ***Permanent at local level*** A small cumulative change is likely to be visible but would not cause a significant change to the view. Taking into account low sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.
2	**Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road**	Users of Middleton Stoney Road, people living in nearby areas	**Low** Road users are typically considered less susceptible to change due to reduced awareness of views when driving	**Southwest Bicester (Kingsmere)** Not applicable due to the orientation of the view. **NW Business Park (Albion Land)** Not applicable. Himley Village maximum building parameters heights would be likely to block views. **Strategic Link Road (Boulevard)** Himley Village maximum building parameters heights would be likely to block views. **NW Bicester Application 2 (South of Railway)** Not applicable. Himley Village maximum building parameters heights would be likely to block views. **SW Bicester Phase 2** Not applicable due to the orientation of the view.	***No change*** Size or scale of change: There is likely to be no loss or alteration of view as a result of cumulative schemes. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Neutral*** ***Permanent at local level*** No discernible deterioration or improvement in view.

3	**Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road**	Users of Middleton Stoney Road, people living in nearby areas	**Low** Road users are typically considered less susceptible to change due to reduce awareness of views when driving	**Southwest Bicester (Kingsmere)** Not applicable due to the orientation of the view. **NW Business Park (Albion Land)** Not applicable due to the orientation of the view. **Strategic Link Road (Boulevard)** Not applicable. Himley Village maximum building parameters heights would be likely to block views. **NW Bicester Application 2 (South of Railway)** Not applicable due to the orientation of the view. **SW Bicester Phase 2** Not applicable due to the orientation of the view.	***No change*** Size or scale of change: There is likely to be no loss or alteration of view as a result of cumulative schemes. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Neutral*** ***Permanent at local level*** No discernible deterioration or improvement in view.
4	**Middleton Road on roadside verge to gated entrance of the field**	Users of Middleton Road, people living in nearby areas	**Low** Road users are typically considered less susceptible to change due to reduce awareness of the landscape when driving	**Southwest Bicester (Kingsmere)** Not applicable due to the orientation of the view. **NW Business Park (Albion Land)** Not applicable. Himley Village maximum building parameters heights would be likely to block views **Strategic Link Road (Boulevard)** The Boulevard is unlikely to be visible from this vantage point due to changing topography and existing vegetation screening the view. **NW Bicester Application 2 (South of Railway)** Some residential development potentially visible to the centre backdrop of this view. **SW Bicester Phase 2** Not applicable due to the orientation of the view.	***Negligible adverse*** Size or scale of change: Only a very small part of NW Bicester Application 2 (South of Railway) is likely to be discernible, at long distance. Combined view with Himley Farm but not likely to change the overall composition of the view. Existing trees and vegetation would largely filter this view; the capacity for vegetation to screen the view would be more prevalent in summer months Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor adverse*** ***Permanent at local level*** A small cumulative change is likely to be visible, partially screened by the existing vegetation, it would not cause a significant change to the view. Taking into account low sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.
5	**Middleton Road on roadside verge to gated entrance to bridle path**	Recreational users of bridleway	**High** People engaged in outdoor recreation have an increased susceptibility to change as they are more likely to be	**Southwest Bicester (Kingsmere)** Not applicable. Himley Village maximum building parameters heights would be likely to block views. **NW Business Park (Albion Land)** The upper extents of the large employment plot (approximately 14m AOD) could potentially be visible in parts to the east backdrop of this view.	***Negligible adverse*** Size or scale of change: The upper extents of building heights of NW Bicester Business Park and NW Bicester Application 2 could be visible behind the Himley Farm development. Combined long-range view, partial change to the background view. Duration: long term.	***Negligible to minor adverse*** ***Permanent at local level*** A small cumulative change is likely to be visible within the background but not

			focused on the landscape	**Strategic Link Road (Boulevard)** The Boulevard is unlikely to be visible from this vantage point due to changing topography and existing vegetation screening the view. **NW Bicester Application 2 (South of Railway)** Buildings associated with the upper extents of maximum building heights between 4-20m (schools, retail buildings) could potentially be visible. **SW Bicester Phase 2** Not applicable. Himley Village maximum building parameters heights would be likely to block views.	Geographical influence: at the scale of character areas within which the proposal lies.	likely to cause a significant change to the view. Taking into account high sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.
6	**From bridleway south of Crowmarsh Farm**	Recreational users of bridleway	**High** People engaged in outdoor recreation have an increased susceptibility to change as they are more likely to be focused on the landscape	**Southwest Bicester (Kingsmere)** Not applicable. Himley Village maximum building parameters heights would be block any view. **NW Business Park (Albion Land)** Not applicable. Himley Village maximum building parameters heights would be block any view. **Strategic Link Road (Boulevard)** Not applicable. **NW Bicester Application 2 (South of Railway)** Buildings associated with the upper extents of maximum building heights between 4-20m (schools, retail buildings) could potentially be visible. **SW Bicester Phase 2** Not applicable. Himley Village maximum building parameters heights would be block any view.	***Negligible adverse*** The upper extents of building heights of NW Bicester Application 2 (South of Railway) could be visible behind the Himley Farm development. Combined long-range view, partial change to the background view. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies. Change to the foreground and background view.	***Negligible to minor adverse*** ***Permanent at local level*** A small cumulative change is likely to be visible within the background but not likely to cause a significant change to the view. Taking into account high sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.

7	**From bridleway/ Aldershot Farm track to gated entrance of the field**	Recreational users of bridleway	**High** People engaged in outdoor recreation have an increased susceptibility to change as they are more likely to be focused on the landscape	**Southwest Bicester (Kingsmere)** Not applicable due to the orientation of the view. **NW Business Park (Albion Land)** Not applicable. NW Bicester Application 2 (South of Railway) maximum building parameters heights would likely block any view. **Strategic Link Road (Boulevard)** There is likely to be glimpsed views of the Boulevard to the east of this view, largely screened by the bridleway buffer zone described below. **NW Bicester Application 2 (South of Railway)** The immediate setting of this viewpoint would form part of the enhanced bridleway that includes ten meter planting buffer zones to both sides. There are breaks in the landscape to connect to adjacent residential and natural play areas. Within these glimpsed views, users are likely to see the adjacent residential and school playing fields in the foreground and upper extents of the where users may experience glimpsed views of buildings up to 20m (schools, retail buildings) within the background view. **SW Bicester Phase 2** Not applicable due to the orientation of the view.	***Negligible adverse*** Size or scale of change: There are likely to be glimpsed sequential, combined views of Himley Farm, Strategic Link Road and NW Bicester Application 2 (South of Railway) developments. They would be substantially screened by the landscape buffer zone proposals to the bridleway. Duration: long term. Geographical influence: at the scale of character areas within which the proposal lies.	***Negligible to minor adverse*** ***Permanent at local level*** Glimpsed, sequential views predominantly of NW Bicester Application 2 (South of Railway) are likely to be visible when travelling along the bridleway. Overall the bridleway landscape buffer is likely to screen the view. Taking into account high sensitivity and low magnitude of change, the effect is considered to be negligible to minor adverse.

Conclusion: Landscape

19.24. The potential cumulative effects on the landscape would not be adversely significant. The cumulative schemes considered are largely unified in their approach to landscape including the retention and enhancement of existing landscape features and elements. The Cumulative schemes, within the NW Bicester Masterplan, have been designed in line with the principles set out in the Supplement to PPS1; at least forty per cent of the land is designated as green infrastructure.

19.25. Other cumulative schemes respond directly to the local landscape character areas through inherent design mitigation, for example hedgerow retention and enhancement. As a result, the existing landscape has the potential to tolerate the changes related to cumulative proposals.

Landscape Character

19.26. There would be some minor, localised loss of landscape features to facilitate the proposals however they would not be of significant proportion. Partly offset by the careful layout of buildings and extensive network of green infrastructure, this enables the restoration and addition of landscape elements that reflect the local landscape character and provide an improvement upon the baseline condition.

19.27. The gradual establishment and maintenance of green infrastructure would provide a long term, permanent landscape benefit on the landscape fabric and aesthetic aspects of the landscape including improved and enhanced hedgerow pattern, new and enhanced woodland shelterbelts and increased sense of naturalness and tranquillity within natural, open landscape spaces. These changes would provide a positive effect on the overall landscape character of the local area.

Conclusion: Visual Amenity

19.28. The potential cumulative effects on visual amenity would not be adversely significant. The visual changes identified are potential change in *addition* to the Himley Village Development. A number of the views assessed are likely to experience no visual change, assessed as neutral. This is due to the orientation of the viewpoints studied or because the Himley Village Development is likely to block views of additional schemes.

Road Users

19.29. There are likely to be combined views of the Himley Village Development and the upper extents of maximum building heights of NW Bicester Business Park (Albion Land) and NW Bicester Application 2 (South of Railway) along Middleton Stoney Road and Middleton Road. These changes would account for a small addition to the overall view and are not considered to cause any significant deterioration.

Bridleway Users

19.30. There are combined long-range views along the bridleway, again changes would account for a small addition to the overall view and are not considered to cause any significant deterioration. Viewpoint 7 would be located within the NW Bicester Application 2 (South of Railway); there would be glimpsed sequential views when travelling along the bridleway. Overall the proposed bridleway landscape buffer contributes to offsetting the visual change. The enhanced landscape of the bridleway will partially screen views and improve the recreational quality of this route.

Ecology

Demolition and Construction

19.31. **Airborne pollutants:** Following mitigation measures the magnitude of the effect is unlikely to be significant; therefore the cumulative effect is **negligible.**

19.32. **Contamination of ground water/watercourses:** Following mitigation measures the magnitude of the effect is unlikely to be significant; therefore the cumulative effect is **negligible.**

19.33. **Introduction of invasive plants:** Following mitigation measures the magnitude of the effect is unlikely to be significant; therefore the cumulative effect is **negligible.**

19.34. **Changes to drainage and groundwater:** The wider NW Bicester Masterplan will include a Sustainable Drainage System, similar to that proposed for Himley Village. This will manage site-wide drainage and water quality. The cumulative effect on drainage and groundwater is predicated to be **negligible.**

19.35. **Light pollution:** The magnitude of the effect is unlikely to be significant; therefore the cumulative effect is **negligible.**

Demolition of buildings/removal of vegetation

19.36. **Protected species:** In common with all other projects, as required by law, ecological mitigation strategies will be followed for bats and great crested newt; good practice measures will be followed for all other species. The magnitude of the effect is unlikely to be significant; therefore the cumulative effect is predicted to be **negligible**.

19.37. **Hedgerows:** Following mitigation the total length of hedgerows will increase. The cumulative effect is **minor beneficial**.

19.38. **Restricted access:** The effect is unlikely to be significant; therefore the cumulative effect is **negligible.**

Completed Development

19.39. **Airborne pollutants:** Exceedances of the relevant Air Quality Limit Values are not predicted at any location and no mitigation measures are required. The magnitude of the effect is unlikely to be significant in combination with other projects and therefore the cumulative effect is **negligible.**

19.40. **Contamination of watercourses/ground water/hydrology**: The wider NW Bicester Masterplan will include a Sustainable Drainage System, similar to that proposed for Himley Village. This will manage site-wide drainage and water quality. The cumulative effect is predicted to be **negligible**.

19.41. **Introduction of invasive plants:** Measures will be taken to avoid the introduction and spread of invasive species and this will be repeated across the district. The magnitude of the effect is unlikely to be significant and therefore the cumulative effect is predicted to be **negligible.**

19.42. **Changes to drainage and groundwater:** Mitigation measures will ensure that the magnitude of the effect is unlikely to be significant and the cumulative effect is predicted to be **negligible.**

19.43. **Light pollution:** Following the mitigation measures the magnitude of the effect is unlikely to be significant. Assuming that similar abatement of light pollution will occur elsewhere in the District, the cumulative effect is predicted to be **negligible.**

19.44. **Restricted access:** Following mitigation measures, access for wildlife will improve as the green infrastructure network matures. The magnitude of the effect is unlikely to be significant however and therefore the cumulative effect is predicted to be **negligible.**

19.45. **Disturbance:** Following mitigation measures the magnitude of the effect is unlikely to be significant; therefore the cumulative effect is **negligible.**

19.46. **Pets:** Even with mitigation measures, the magnitude of the effect is likely to be significant with a similar pattern occurring throughout the district therefore the cumulative effect is predicted to be **moderately adverse.**

19.47. **Littering:** Assuming good management repeated across the district, the magnitude of the effect is unlikely to be significant and therefore the cumulative effect is predicted to be **negligible.**

Transport

Demolition and Construction

19.48. There are a number of other committed or reasonably foreseeable schemes within the vicinity of Himley Village that may come forward during the construction period, including other parts of the NW Bicester Masterplan. These developments in combination would result in increased traffic flows consisting of a high proportion of heavy goods vehicles. Mitigation measures would be put in place as part of the Himley Village Development to reduce the severity of the transport related effects of construction of Himley Village such as producing a Construction Traffic Management Plan which would identify lorry routes away from residential roads and schools. It is assumed that similar measures would be implemented on other developments within the vicinity in conjunction with Cherwell District Council and Oxfordshire County Council. Therefore, the overall construction related cumulative effects are anticipated to be of **negligible** significance.

Completed Development

19.49. The traffic and transportation assessment presented in Chapter 8: Transport includes an assessment of committed and reasonably foreseeable developments within Bicester. The effects in terms of pedestrian severance, amenity, delay and fear and intimidation together with driver delay and accidents and safety have been assessed. The assessment has identified that there are a number of locations where adverse impacts may arise and mitigation to reduce the significance of these effects has been suggested in Chapter 8 of this ES. Therefore, the overall completed development cumulative effects with mitigation in place are anticipated to be between **minor beneficial** and **minor adverse** significance.

Air Quality

Demolition and Construction

19.50. As noted within Chapter 9: Air Quality, the main effects to air quality as a result of demolition and construction works are in relation to dust nuisance. Owing to the typical dispersal and deposition rates of dust with distance from their source and assuming that all other cumulative schemes would also implement their own CEMPs in order to mitigate dust nuisance effects as far as practically possible, it is considered that Type 2 cumulative dust effects would only occur for those cumulative schemes within 100m of Himley Village, and only if they were to be constructed at the same time.

19.51. Two of the cumulative schemes are located within 100m of Himley Village and theoretically could generate potential Type 2 cumulative dust effects at the nearest sensitive receptors to Himley Village. However, on the assumption that the cumulative schemes would have their own effective CEMP it is considered that the likely Type 2 cumulative residual effects of dust nuisance would remain as for the Development in isolation i.e. a **temporary, short-term, local effect** of **moderate adverse**

significance at receptors within 10m of the boundary, **minor adverse significance** at receptors within 100m of the boundary and **negligible** at receptors over 100m from the boundary.

19.52. Exhaust emissions from the combined demolition / construction traffic of the Himley Village Development and the cumulative schemes could give rise to Type 2 cumulative residual effects on local air quality. However, this would depend on overlap between construction phases for Himley Village and the cumulative schemes. Typically, demolition and construction traffic only slightly increase overall traffic on the local road network. In the worst-case scenario, whereby the demolition and construction of the cumulative schemes all overlap with Himley Village, and use the same haulage routes, the likely Type 2 residual effect is considered to be **temporary, short-term, local**, **adverse** of **minor to moderate** significance. As noted in Chapter 9, it is assumed that appropriate traffic management measures would be implemented to minimise traffic disruption as much as is practically possible.

19.53. With regard to exhaust emissions from plant operating on construction sites at Himley Village and on those of the cumulative schemes, it is considered that, even if occurring at the same time, these would be **negligible** in the context of the existing adjacent road traffic and exhaust emissions.

Completed Developments

19.54. Additional vehicle movements associated with the operation of other committed developments and Himley Village would increase emissions on the local road network. An assessment of the cumulative effects has been undertaken to quantify pollutant concentrations. The traffic data used in the modelled scenario includes all committed developments, Himley Village and the rest of the North West Bicester development. The North West Bicester development is due to be completed in 2046 and therefore this year has been modelled for the cumulative assessment. The results of the modelling are presented in **Table 19.4**.

Table 19.4: Results of the ADMS-Roads Modelling at Sensitive Receptors for 2046

Receptor	NO_2 Annual Mean ($\mu g/m^3$)			PM_{10} Annual Mean ($\mu g/m^3$)			PM_{10} - Number of Days >50 $\mu g/m^3$			$PM_{2.5}$ Annual Mean ($\mu g/m^3$)		
	Baseline	With Cumulative	Change	Baseline	With Cumulative	Change	Baseline	With Cumulative	Change	Baseline	With Cumulative	Change
Receptor 1	13.9	14.1	0.2	17.1	17.3	0.2	0	0	0	10.9	11.1	0.2
Receptor 2	13.9	14.3	0.4	17.1	17.4	0.3	0	0	0	10.9	11.1	0.2
Receptor 3	13.7	14.0	0.4	17.0	17.2	0.2	0	0	0	10.8	11.0	0.2
Receptor 4	14.7	14.9	0.2	17.6	18.0	0.4	1	1	0	11.1	11.5	0.4
Receptor 5	14.1	14.3	0.2	17.2	17.4	0.3	0	1	1	10.9	11.1	0.2
Receptor 6	14.9	15.2	0.3	17.6	18.0	0.4	1	1	0	11.1	11.5	0.4
Receptor 7	15.1	15.4	0.3	17.7	18.2	0.5	1	1	0	11.2	11.6	0.4
Receptor 8	13.6	13.7	0.1	16.9	17.0	0.1	0	0	0	10.8	10.9	0.1
Receptor 9	13.8	14.0	0.1	16.9	17.1	0.1	0	0	0	10.8	10.9	0.1
Receptor 10	15.2	15.5	0.4	17.8	18.3	0.5	1	1	0	11.2	11.7	0.4
Receptor 11	14.5	14.8	0.3	17.4	17.7	0.4	0	1	1	11.0	11.3	0.3
Receptor 12	15.9	16.4	0.5	17.5	18.1	0.5	1	1	0	11.1	11.6	0.5
Receptor 13	16.2	16.7	0.5	17.6	18.2	0.5	1	1	0	11.2	11.6	0.5
Receptor 14	14.9	15.2	0.3	17.3	17.6	0.3	0	1	1	11.0	11.2	0.3

Receptor	NO_2 Annual Mean ($\mu g/m^3$)			PM_{10} Annual Mean ($\mu g/m^3$)			PM_{10} - Number of Days >50 $\mu g/m^3$			$PM_{2.5}$ Annual Mean ($\mu g/m^3$)		
	Baseline	With Cumulative	Change	Baseline	With Cumulative	Change	Baseline	With Cumulative	Change	Baseline	With Cumulative	Change
Receptor 15	15.2	15.5	0.2	17.3	17.6	0.3	0	1	1	11.0	11.3	0.3
Receptor 16	15.6	16.0	0.4	17.3	17.7	0.4	0	1	1	11.0	11.3	0.3
Receptor 17	16.9	17.4	0.6	17.6	18.1	0.5	1	1	0	11.1	11.6	0.5
Receptor 18	13.9	14.1	0.2	16.9	17.0	0.1	0	0	0	10.8	10.9	0.1
Receptor 19	15.7	16.2	0.5	17.9	18.3	0.5	1	1	0	11.3	11.7	0.4
Receptor 20	15.3	15.8	0.5	17.6	18.0	0.5	1	1	0	11.1	11.5	0.4
Receptor 21	15.2	15.8	0.6	17.4	17.9	0.5	0	1	1	11.1	11.5	0.4
Receptor 22	14.7	15.1	0.4	17.5	18.0	0.4	1	1	0	11.1	11.5	0.4
Receptor 23	20.0	21.2	1.2	18.6	19.9	1.3	1	3	2	11.7	12.8	1.1
Receptor 24	13.8	14.0	0.2	16.9	17.1	0.2	0	0	0	10.8	10.9	0.2
Receptor 25	23.6	25.4	1.8	18.9	20.6	1.7	2	4	2	11.8	13.4	1.5
Receptor 26	14.1	14.3	0.2	17.1	17.3	0.2	0	0	0	10.9	11.1	0.2
Receptor 27	20.2	21.5	1.3	18.1	19.3	1.2	1	2	1	11.4	12.5	1.0
Receptor 28	18.2	19.1	0.9	18.1	19.0	0.9	1	2	1	11.4	12.2	0.8
Receptor 29	19.5	20.6	1.1	18.4	19.6	1.2	1	2	1	11.6	12.6	1.0
Receptor 30	17.0	17.7	0.7	17.9	18.7	0.8	1	1	0	11.3	12.0	0.6
Receptor 31	14.6	14.9	0.3	17.5	17.9	0.4	1	1	0	11.1	11.4	0.3
Receptor 32	14.5	14.7	0.3	17.4	17.7	0.4	0	1	1	11.0	11.3	0.3
Receptor 33	15.2	15.5	0.3	17.4	17.7	0.3	0	1	1	11.0	11.3	0.3
Receptor 34	13.8	14.9	0.2	17.1	17.3	0.2	0	0	0	10.9	11.1	0.2
Receptor 35	13.8	14.2	0.4	17.1	17.3	0.2	0	0	0	10.9	11.1	0.2

Note: For accuracy, the changes arising from the Cumulative Schemes have been calculated using the exact output from the ADMS-Road model (i.e. numbers to at least 10 decimal places) rather than the rounded numbers within **Table 19.4**.

19.55. As shown by the results in **Table 19.4,** the predicted NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant objectives in 2048. As such, it is considered that for the NO_2, PM_{10} and $PM_{2.5}$ objectives, the effect of the Cumulative Schemes is considered to be **negligible**.

Ecological Assessment

19.56. **Table 19.5** presents the modelled NOx concentration at the ecological receptors within the Ardley Cuttings Quarry SSSI and Bure Park LNR.

Table 19.5: Annual Mean NO_x results at the Ecological Receptors in 2048

	Baseline	With Cumulative	$\mu g/m^3$ Change	Predicted Change as % of Critical Level
Receptor 36	**30.0**	**30.2**	0.2	0.76
Receptor 37	**38.4**	**38.6**	0.2	0.73
Receptor 38	13.4	13.8	0.4	1.48

	Baseline	With Cumulative	µg/m³ Change	Predicted Change as % of Critical Level
Receptor 39	13.3	13.8	0.4	1.47
Receptor 40	16.1	16.6	0.4	1.48

Note: In bold, exceedence of the NO_x annual mean AQS objective of 30µg/m³
For accuracy, the changes arising from the Cumulative Schemes have been calculated using the exact output from the ADMS-Road model (i.e. numbers to at least 10 decimal places) rather than the rounded numbers within **Table 19.5**.

19.57. The annual average modelled concentration of NOx at two of the ecological receptors exceed the AQS objective and critical level of 30µg/m³ this is due to the receptors proximity to the M40. The AQS is met at the other three ecological receptors. The DMRB guidance states that increases in annual mean NOx concentrations of less than 2µg/m³ at ecological designations are not considered significant. It is therefore considered that the Cumulative Schemes will have a **negligible** effect in relation to air quality.

NO_2 Sensitivity Analysis

19.58. The results of the sensitivity analysis (i.e. considering the likely air quality effects of Himley Village against the current baseline, 2013 conditions, assuming no reduction in background concentrations or road traffic emission factors between 2013 and 2046) are presented in **Table 19.6**. The overall predicted concentrations are higher than those presented above for 2046 due to higher background concentrations and vehicle emissions rates in 2013 than 2046.

19.59. As shown in **Table 19.6** in 2046, 'without' the Cumulative Schemes, assuming no improvements in future NO_x and NO_2, the NO_2 annual mean objective is exceeded at four of the existing receptor locations and at five existing receptor locations 'with' the Cumulative Schemes. The maximum predicted concentration at Receptor 25 is 57.5µg/m³ in 2046 'with' the Cumulative Schemes.

Table 19.6: Results of the ADMS-Roads Modelling at Sensitive Receptors for 2046, Assuming No Improvement in NO_x and NO_2

Receptor	NO_2 Annual Mean (µg/m³)		
	Baseline	With Cumulative	Change
Receptor 1	24.5	24.7	0.3
Receptor 2	25.2	25.4	0.3
Receptor 3	24.5	24.6	0.1
Receptor 4	28.6	28.7	0.0
Receptor 5	25.0	25.3	0.3
Receptor 6	27.7	28.4	0.8
Receptor 7	28.3	29.2	1.0
Receptor 8	22.4	22.7	0.3
Receptor 9	22.9	23.2	0.3
Receptor 10	28.4	29.5	1.1
Receptor 11	26.0	26.8	0.8
Receptor 12	30.7	32.0	1.4
Receptor 13	31.2	32.6	1.4
Receptor 14	26.5	27.3	0.8
Receptor 15	26.5	27.1	0.7
Receptor 16	28.4	29.4	1.0

Receptor	NO_2 Annual Mean (µg/m^3)		
	Baseline	With Cumulative	Change
Receptor 17	32.1	33.5	1.4
Receptor 18	22.9	23.1	0.2
Receptor 19	29.4	30.5	1.1
Receptor 20	28.9	30.0	1.0
Receptor 21	29.2	30.2	1.1
Receptor 22	27.1	28.1	1.0
Receptor 23	**44.4**	47.4	3.0
Receptor 24	23.5	24.0	0.5
Receptor 25	**53.8**	57.5	3.7
Receptor 26	24.7	25.4	0.7
Receptor 27	**44.1**	47.0	2.9
Receptor 28	38.8	41.2	2.4
Receptor 29	**42.8**	45.7	2.8
Receptor 30	34.8	36.7	1.9
Receptor 31	26.6	27.5	0.9
Receptor 32	25.8	26.6	0.8
Receptor 33	26.5	27.1	0.7
Receptor 34	25.0	25.3	0.3
Receptor 35	24.4	24.7	0.2

Note: Figures highlighted in **bold** text are where Annual Mean NO_2 levels exceed the objective level.

19.60. In accordance with the magnitude of change as outlined in **Table 9.6** of Chapter 9 and the significance of effects criteria outlined in **Table 9.7**, assuming no improvements to NO_x and NO_2, the cumulative effect is predicted to be **negligible** at twenty seven existing receptors, **minor adverse** at one receptor location and **moderate adverse** at the remaining five locations. However, as described previously, this sensitivity analysis takes no account of future reductions in road traffic emission rates. However, the Euro 6 emission standards will take effect post 2015 which should result in improvements in road traffic emission rates.

19.61. The predicted annual mean NO_2 concentrations in 2013 and 2046 are predicted to be below 60µg/m^3 at all receptor locations and as such the 1-hour mean objective is likely to be met at these locations. Given this, it is considered that the Development would also have a **negligible** effect on 1-hour mean NO_2 concentrations.

Noise and Vibration

Demolition and Construction

Noise & Vibration

19.62. In the event that the cumulative schemes located within 200m of Himley Village were to be constructed concurrently with the Himley Village Development, Type 2 cumulative noise and vibration effects could occur. The following schemes are located within 200m of the boundary (refer to **Figure 19.1**):

- NW Bicester EcoTown Application 2 (South of Railway) (planning ref:14/01641/OUT);
- NW Bicester Ecotown Business Park (planning ref: 14/01675/OUT); and
- A4095 NW Strategic Link Road (planning ref: 14/01968/F).

19.63. The residual effects for the cumulative developments are reported as insignificant. Should works be undertaken concurrently, provided mitigation in the form of suitable CEMPs are implemented at each of the cumulative schemes, the likely Type 2 cumulative residual effects in relation to demolition and construction generated noise and vibration are expected to be no different from those reported within Chapter 10: Noise and Vibration of this ES, namely **insignificant** to **temporary**, **local**, **short term**, **adverse** and of **minor** to **moderate significance**.

19.64. All other committed developments are considered to be of sufficient distance from Himley Village, so that there would be no Type 2 cumulative residual effects with regards to noise and vibration from demolition and construction works.

Traffic

19.65. Cumulative effects resultant from construction traffic would have the potential to cause Type 2 cumulative residual effects, should the demolition and construction phases of each development overlap. However, each cumulative scheme (as per the Himley Village Development) would be required to implement its own Construction Traffic Management Plan, which would include consideration of concurrent construction schemes to minimise the combined effects of construction traffic. A combined management strategy shared by all developers may also be used, as far as reasonably practicable, to minimise cumulative adverse effects.

19.66. Consequently, the likely Type 2 cumulative residual effects from road traffic noise are likely to be of **negligible** to **temporary, local, short term minor adverse significance** at worst.

Completed Developments

19.67. It is considered that all of the cumulative schemes, with the exception of those identified above, are too distant from Sensitive Receptors (SR) specific to Himley Village to cause any significant Type 2 cumulative residual effects in terms of noise and vibration with the exception of traffic related noise effects.

19.68. An assessment of potential cumulative road traffic noise effects has been undertaken by calculating the change in noise level from the base year of 2031 with no Development with the Design Year of 2046. Calculation details together with the relevant significance criteria are presented in **Technical Appendix 10.4.** The predicted residual cumulative effect of traffic noise on all road links are **insignificant** (less than 3dB change), with the exception of Middleton Road west of Bucknell Road**. Moderate adverse** effects are predicted on Middleton Road west of Bucknell Road due to the predicted increase in traffic flows. However, this may be reduced as it is proposed to introduce traffic calming measures into Bucknell Village as part of the wider NW Bicester transport strategy to discourage people from using this link.

19.69. Noise from fixed plant associated with the adjacent developments would be subject to a standard planning condition issued by CDC based upon the guidance provided in BS 4142. Such a planning condition would limit noise generated by fixed mechanical plant and building services so as not to cause cumulative impacts (i.e. 5dB below prevailing background). As such, noise from fixed plant from all committed developments and Himley Village would be **negligible**.

19.70. Type 2 cumulative residual effects arising from deliveries and servicing noise would only have the potential to arise from those cumulative schemes in immediate proximity to the Himley Village (refer to **Figure 19.1**). Servicing and delivery noise for the Himley Village would be **negligible** following

the implementation of appropriate controls. It is reasonable to assume that as with Himley Village, noise associated with servicing and deliveries at adjacent developments will be controlled through planning controls, and will likely give rise to **negligible** adverse impacts.

Water Management

Demolition and Construction

19.71. No cumulative flood risk and drainage issues are considered likely to occur as a result of the cumulative developments in the vicinity given the low risk of flooding.

19.72. With regard to potable water use, should construction works for the other cumulative schemes be undertaken concurrently, there would be a greater demand for potable water. However, this demand would be less than that of the completed developments. Thames Water Utilities Ltd (TWUL) has confirmed that there is sufficient capacity in the system for the future cumulative developments within the Bicester area and therefore there would be sufficient capacity in the system for the construction works. However, the greater demand for potable water arising from the construction works in combination would result in a **minor to moderate adverse** effect. It is assumed that construction schemes within the vicinity would implement water efficiency measures to limit water consumption.

Completed Developments

19.73. There would be no cumulative effect on fluvial or groundwater flood risk. With regard to surface water drainage, it is assumed that the cumulative schemes in the vicinity would be required to restrict the rate of surface water discharge to the same as, or less than the current volumes. The cumulative effect on surface water drainage capacity would therefore be **negligible**.

19.74. TWUL is required to plan for future development schemes and set out how the needs of these future schemes will be met. TWUL has therefore considered the wider cumulative schemes and planned accordingly with regard to both waste water and potable water. However, foul water sewer network upgrades are likely to be required to serve the wider cumulative schemes as well as that of Himley Village. In addition, the increase in development will result in a significant increase in potable water demand in an area of water stress. The potential cumulative effect is therefore **moderate adverse**.

Ground Conditions and Contamination

Demolition and Construction

19.75. It is considered that the construction works could present a potential cumulative effect to groundwater and receiving surface waters as a result of the NW Bicester Masterplan Applications in combination. However, it is assumed that each development would undertake appropriate site investigation and remediation works to the satisfaction of the Regulatory Authorities resulting in a **negligible** cumulative effect.

19.76. A potential exists with regard to effects of the construction works on the occupied adjacent future residents within future phases of the NW Bicester Masterplan. However, it is assumed that each development would implement a Construction Environmental Management Plan to ensure potential effects such are considered and are appropriately mitigated against during the construction phase. The cumulative effect is therefore **negligible**.

Completed Developments

19.77. Surface water will be managed through Sustainable Urban Drainage Systems (SuDs) and discharges will be managed into the local watercourses. The management of the surface water drainage will ensure that cumulative effects will be **negligible**.

Agriculture and Soil

Demolition and Construction

19.78. During construction the Soil Management Plan seeks to make beneficial reuse of the soil resource within the development boundary. There would therefore be no cumulative effects with other schemes.

Completed Developments

19.79. The Defra/EA interactive mapping service Magic (magic.defra.gov.uk) shows the extent of ALC survey work held by the EA. Viewing Magic it can be seen that the ALC survey cover around Bicester that was undertaken on behalf of MAFF found predominantly Grade 3b with small pockets of Grade 3a. Looking at the whole of Cherwell District, extensive areas of best and most versatile land have been found by MAFF around the urban edge of Banbury, including large areas of Grade 2 land.

19.80. Extrapolating from the predominantly Grade 3b land found at Himley Village and NW Bicester Application 1 and 2 sites, along with the MAFF ALC survey shown on Magic, there is limited potential for the presence of best and most versatile agricultural at other greenfield sites around Bicester. The cumulative effect of the loss of additional small and fragmented areas of Grade 3a land as a result of other greenfield development proposals around Bicester will not increase the significance of the land resource loss from the permanent **moderate adverse** impact at the national level assessed within the Agriculture and Soils Chapter.

19.81. The development of other greenfield sites around Bicester will result in additional agricultural landowners seeking replacement agricultural land, potentially increasing the cost and reducing the availability of farm land locally. However, not all replacement land will be sought locally and developments will not be simultaneous, resulting in a phasing of farm businesses seeking replacement land. Therefore, the prospect of other farm businesses seeking land will not lessen the beneficial effect on the occupying farm businesses, from long term **moderate beneficial** significance at the local level as assessed in the Agriculture and Soils Chapter.

Heritage

19.82. Five of the cumulative schemes are considered to have a cumulative effect on the setting of the Grade II Listed Himley Farm Barns. These are; Bicester Eco Town Exemplar (under construction), the outline applications for NW Bicester Application 1 and 2 (North and South of the railway), the NW Bicester Business Park (Albion Land) application, and the NW Bicester Link Road application.

19.83. The five applications would represent a change to the setting of the listed buildings from rural agricultural to an increasingly suburban and urban landscape. These applications contribute as they are the lands historically associated with the barns, and therefore have an effect on their setting.

Demolition and Construction

19.84. There are would be no significant cumulative construction effects as construction of the adjacent schemes would be too far away to have a direct effect on the barns, or their setting. Construction traffic routing for the adjacent cumulative schemes would not pass near the Himley Barns.

Completed Developments

19.85. The operational cumulative effect on the barns amounts to a change of setting from rural landscape to suburban development. This area of farmland was allocated as appropriate for housing development in 2009, in order to achieve the increased provision of housing across the region. However, the operational cumulative effects of the Development on the setting of the barns are **moderate/minor adverse.**

Archaeology (Buried Heritage)

Demolition and Construction

19.86. It is assumed that all the cumulative schemes will have their own archaeological mitigation in place. As such there will be **no cumulative effect** on the heritage assets considered within the Archaeology Chapter.

Completed Development

19.87. There will be no further cumulative operational effects upon buried heritage, beyond those identified during the construction phase, because the development completed Himley Village Development is not expected to have significant effects on the buried historic environment. It is assumed that these will have been suitably mitigated by an appropriate archaeological strategy for each scheme.

Socio-Economics and Community

Demolition and Construction

19.88. Himley Village, plus all cumulative schemes, would bring about additional demolition and construction jobs and spending at the local to regional scale. These Type 2 cumulative effects cannot be readily quantified on the basis of the information available for each scheme. However, due to the nature of the construction industry, construction related employment is relatively mobile and therefore it is not considered appropriate to assess construction employment at the local level. Given the number of committed developments and the sizeable nature of many of the proposed developments, it is considered that the likely residual Type 2 cumulative effects on construction related employment and spending would result in a **beneficial effect** of **moderate significance** at the **regional** level.

Completed Development

19.89. Himley Village would give rise to a maximum of 1,700 new residential units including affordable housing, as well as a maximum 100-bed retirement village. Based on a consideration of the cumulative schemes listed in **Technical Appendix 19.1** which have sufficient details available, it is estimated that a minimum of 9,682 additional residential dwellings and 61 additional retirement units would be delivered. If all were realised, this would represent a substantial contribution to the provision of market and affordable housing within the Bicester Wider Area, and would equate to around 40% of the housing target identified in the Cherwell Submission Local Plan (2011 to 2031). These residential dwellings would provide a range of apartments, family homes and tenure types for new residents. This level of provision of new homes, retirement units and affordable housing would therefore result in a **beneficial effect** of **moderate significance** at the district level.

19.90. In isolation, Himley Village would generate 601 indicative gross Full Time Equivalent (FTE) and 544 indicative net FTE jobs. Based on a consideration of the cumulative schemes listed in **Technical Appendix 19.1** which have sufficient details available and assuming all are realised, it is estimated that a significant amount of employment floorspace could be delivered, estimated to be a minimum

of approximately 34.8 ha, including an eco-business centre, office accommodation, hotel, retail units and pubs. Community facilities such as community centres, health facilities and schools would also generate employment. It is envisaged that a proportion of residents would also work from home. Although it is not possible to quantify the level of employment, the indicative target for the NW Bicester Eco-town alone is for 3,000 jobs (Cherwell Submission Local Plan (2011 to 2031)). Employment generation from the completed and operational employment floorspace for the cumulative schemes and Himley Village would make a substantial contribution towards greater employment provision in the Bicester Wider Area, would support the employment targets for the NW Bicester Masterplan and the wider economic development objectives of the District. Considered alongside Himley Village, the cumulative effect on employment is assessed to be **beneficial** and of **moderate significance** at the **district level**.

19.91. The cumulative increases in local population resulting from Himley Village and cumulative schemes together would place increased demands on the need for social infrastructure including education and healthcare services, and open space and play space. Himley Village would provide a health facility and primary school with nursery together with a large area of publicly available open space. Other cumulative schemes would provide additional social infrastructure such as primary and secondary schools and new public realm. Of the cumulative schemes currently under construction or consented, there are provisions for a nursery, two community centres, pharmacy, primary school and secondary school. Although these facilities are required to meet the needs of the future residents, once competed they would also be of benefit to existing residents of the Wider Bicester Area. The cumulative effect on community facilities is therefore considered to be a **beneficial effect** of **moderate significance** at the **local level**.

19.92. The likely Type 2 cumulative residual effects of additional spending in the local area, and the wider district, would result from the new residents and employees generated by Himley Village together with all the cumulative schemes. The potential additional population could generate a significant expenditure spent locally. This would have a **beneficial effect** of **moderate significance** at the **local level**.

19.93. The cumulative schemes would make a positive contribution towards the quality of the public realm in the local area. Modern design principles aim to increase a sense of security and reduce opportunities for crime. The design principles for the NW Bicester Eco-town is to encourage a more active lifestyle and increase visibility of people. The increase in public realm and design layouts of residential-led schemes to integrate with the exiting Bicester Town (where applicable) would increase the number of people within the area, increasing footfall and levels of natural surveillance. Considered alongside Himley Village, the cumulative effect on the enhancement of public realm and crime and safety is assessed to be **beneficial** and of **minor significance.**

Human Health

Demolition and Construction

19.94. Himley Village would have a speculative adverse effect on the air quality, at the local level during the demolition and construction phases. The production of dust could be a nuisance in the short-term, but would not significantly affect sensitive receptors beyond 100m of Himley Village. The effect of construction vehicle emissions on air quality would be dependent on whether the cumulative schemes overlap. However, assuming the implementation of CEMPs and appropriate traffic management for all schemes, it is expected that Himley Village and the cumulative schemes would not have a greater adverse effect on health from air quality than the Himley Village Development would in isolation. The likely residual Type 2 cumulative effects on health from air quality would therefore remain **speculative adverse** at the **local** level.

19.95. Residual noise and vibration effects from the cumulative schemes are considered to be negligible. Therefore, no change to health status is expected. The likely residual Type 2 cumulative effects on health as a result of cumulative noise and vibration effects would be **neutral**.

19.96. Residual transport effects from cumulative schemes are considered to be negligible and therefore, no change to health status is expected. The likely residual Type 2 cumulative effects on health as a result of cumulative transport effects would be **neutral**. Assuming the implementation of CEMPs and traffic management measures as noted above, the cumulative effects on public safety from road or construction site accidents are also considered to be **neutral**.

19.97. Residual waste effects from cumulative schemes are considered to be negligible and therefore, no change to health status is expected. The likely residual Type 2 cumulative effects on health as a result of cumulative waste effects would be **neutral**.

Completed Development

19.98. Once completed, Himley Village and other cumulative schemes listed in **Technical Appendix 19.1** have the potential to create significant numbers of high quality housing units and commercial floorspace to meet different needs, and provide long-term employment opportunities. Associated expenditure from new households, businesses and employees would further accelerate the local and regional economies. Reduction in local unemployment rates, increase expenditure, improved housing conditions would all have the potential for **probable beneficial effects** on health status. The collective provision of local community infrastructure such as health, education, open spaces and social / community facilities would also have **probable beneficial** effects on health status, through the opportunities for physical activity, social interaction, community cohesion, as well as meeting the needs of additional residents for health care and education.

19.99. Increased road traffic associated with the completion of other committed developments together with Himley Village would not result in increases emissions above the relevant standards. There would be **negligible** effects on air quality. Consequently there would be no cumulative effects on health status as a result of residual effects on air quality. It is assessed as neutral.

19.100. There would be a small number of locations where residual cumulative noise and transport effects would be expected, with significance ranging from minor to moderately adverse. Similar mitigation measures to those suggested for Himley Village in isolation are recommended to minimise these effects. With mitigation in place some beneficial residual transport effects are expected. The benefits of improved public transport and other non-car alternatives for transportation could have direct and indirect health benefits for local people. Overall, the cumulative noise effects are predicted to be **speculative adverse** on health outcomes, since the likelihood of adverse effects on health status are low but cannot be ruled out entirely. On balance, the cumulative transport effects once all schemes are completed and operational would be **possible beneficial**.

Waste

Demolition and Construction

19.101. A significant number of developments are proposed for the Bicester area that, if consented, could be constructed on a similar programme to Himley Village. A number of these proposals also form part of the North West Bicester Masterplan and therefore, in accordance with current and emerging policy, the cumulative schemes would also be required to achieve zero waste to landfill and 90% of construction wastes to be reused, recycled or composted. On this basis and, given the proximity of the materials recycling and recovery centre at Ardley, it is anticipated that the likely cumulative effect with respect to construction waste will remain **negligible.**

Completed Developments

19.102. Given that both the Oxfordshire Joint Municipal Waste Management Strategy and Oxfordshire Mineral and Waste Local Plan: Consultation Draft have accounted for the growth in waste generated due to population growth in Oxfordshire and Cherwell District, and on the basis that all of the proposed developments accord with the relevant waste policies it is not anticipated that the cumulative impact will be greater than that predicted for Himley Village alone. As key infrastructure, notably Ardley ERF, has come on stream in 2014 and will be operation for a minimum of 25 years it is anticipated there is already sufficient capacity to deal with an increase in recyclables and residual waste generation in the District. A **negligible** cumulative effect is therefore predicted.

Summary and Conclusions

19.103. A summary of the potential Type 2 cumulative effects is set out in Table 19.7 below. The demolition and construction related effects range from moderate adverse to moderate beneficial. As noted above, for demolition and construction, it has been assumed in the assessment of effects that all cumulative schemes would have their own site-specific CEMPs or appropriate environmental method statements in order to minimise the potential adverse environmental effects of their construction works.

19.104. For the completed development, effects range from moderate adverse to moderate beneficial, with the majority of effects being unchanged from those assessed for Himley Village by itself or negligible change. As for Himely Village, it is anticipated that CDC will condition, where practicable, measures to minimise adverse effects, particularly those that may contribute to cumulative effects of a number of schemes in combination.

Table 19.7: Summary of Residual Effects

ES Topic	Description of Effect	Cumulative Effect
Demolition and Construction		
Landscape and Visual Amenity	The presence of construction activity on Site and temporary loss of hedgerows	**Temporary adverse**
Ecology	Airborne pollutants impacting upon ecological receptors	**Negligible**
	Potential contamination of ground water/watercourses impacting upon ecological receptors	**Negligible**
	The introduction of invasive species impacting upon ecological receptors	**Negligible**
	Changes to drainage and groundwater impacting on ecological receptors	**Negligible**
	Light pollution impacting upon ecological receptors	**Negligible**
	Demolition of buildings/removal of vegetation impacting on protected species	**Negligible**
	Enhancement of hedgerows	**Minor beneficial**
	Reduction in access to forging sites impacting on wildlife	**Negligible**
Transport	Increased traffic flows including a high proportion of heavy goods vehicles	**Negligible due to implementation of Construction Traffic Management Plan**

ES Topic	Description of Effect	Cumulative Effect
Air Quality	Dust deposition at residential receptors	**Short term local** effects **of negligible to moderate adverse** significance
	Exhaust emissions from plant and construction vehicles	**Temporary, short-term adverse** effects of **minor to moderate** significance
	Exhaust emissions from site plant	**Negligible**
Noise and Vibration	Noise and vibration resulting from construction works	**Insignificant** to **temporary**, **local**, **short term**, **adverse** and of **minor** to **moderate significance**.
	Noise and vibration as a result of construction related vehicle movements	**Negligible** to **temporary, local, short term minor adverse significance**
Water Management	Increase demand in potable water use	**Minor** to **moderate adverse**
Ground Conditions	Groundworks impact upon ground and surface water quality	**Negligible assuming CEMP is operated at cumulative schemes**
Agriculture and Soils	Effect on the soil resource	**No cumulative effect**
Built Heritage	Impact on Himley Farm Barns	**No cumulative effects**
Archaeology (Built Heritage)	Impact on below ground heritage assets	**No cumulative effects**
Socio-Economics and Community	Employment generated during demolition and construction	**Moderate beneficial** at the **regional** level.
Human Health	Impact in human health as a result of dust and pollutant emissions	**Neutral to Speculative adverse impact at a local level**
Waste	Increased volume of construction waste generated	**Negligible**
Completed Development		
Landscape and visual Amenity	The landscape character of the area	**Negligible** to **minor beneficial** at a **Local Level**
	Aesthetic and perceptual aspects of the landscape	**Negligible** to **minor beneficial** at a **Local Level**
	The network of existing hedgerows and hedgerow trees	**Minor beneficial** at a **Local Level**
	Existing woodland shelterbelts	**Minor beneficial** at a **Local Level**
	The setting of residential areas	**Negligible** to **minor beneficial** at a **Local Level**
	The setting of the bridleway	**Negligible** to **minor adverse** at a **Local Level**
	The setting of Middleton Stoney Road	**Negligible** to **minor adverse** at a **Local Level**
	View from Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road	**Negligible** to **minor adverse** at a **Local Level**

ES Topic	Description of Effect	Cumulative Effect
	View from Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road	**Neutral**
	View from Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road	**Neutral**
	View from Middleton Road on roadside verge to gated entrance of the field	**Negligible** to **minor adverse** at a **local level**
	View from Middleton Road on roadside verge to gated entrance to bridle path	**Negligible** to **minor adverse** at a **local level**
	View from bridleway south of Crowmarsh Farm	**Negligible** to **minor adverse** at a **local level**
Ecology	Airborne pollutants impacting upon ecological receptors	**Negligible**
	Potential contamination of ground water/watercourses impacting upon ecological receptors	**Negligible**
	The introduction of invasive species impacting upon ecological receptors	**Negligible**
	Changes to drainage and groundwater impacting on ecological receptors	**Negligible**
	Light pollution impacting upon ecological receptors	**Negligible**
	Reduction in access to forging sites impacting on wildlife	**Negligible**
	Disturbance to wildlife	**Negligible**
	Pets disturbing fauna	**Moderate adverse**
	Littering	**Negligible**
Transport	Overall impact on pedestrians, cyclists and motorists	**Minor beneficial** to **minor adverse** significance Assuming all cumulative schemes implement suitable mitigation as proposed for Himley Village
Air Quality	Impacts of NO_2, PM_{10} and $PM_{2.5}$ emissions	**Negligible**
	Impact of NO_x emissions on ecological receptors	**Negligible**
	NOx sensitivity Test	**Minor adverse** to **negligible**
Noise and Vibration	Impact from traffic noise	**Insignificant** other than Middleton Stoney Road west of Bucknell Road where **moderate adverse** effects are predicted.
	Impacts of fixed plant	**Negligible**
	Impacts due to deliveries and servicing	**Negligible**
Water Management	Impact on surface water drainage capacity	**Negligible**
	Increase in potable water use	**Moderate adverse**
Ground Conditions	Effects arising from surface water	**Negligible**
	Loss of high grade agricultural land resource	**Moderate Adverse**

ES Topic	Description of Effect	Cumulative Effect
Agriculture and soils	Agricultural businesses seeking relocation increasing the viability of farm businesses locally	**Moderate Beneficial** significance for Himley Farm business resulting from the release of capital enabling substantial reinvestment
Built Heritage	Impact of the change in setting of Himley Barns	**Moderate to minor adverse**
Archaeology (Buried Heritage)	Impact on below ground heritage assets	**No cumulative effects**
Socio-Economics and Community	Provision of new homes, retirement units and affordable housing	**Moderate beneficial** at a **district level**
	Employment impacts	**Moderate beneficial** at a **district level**
	Availability and provision of community facilities	**Moderate beneficial** at a **local level**
	Generation of additional spend	**Moderate beneficial** at a **local level**
	Improvements to public realm	**Minor beneficial**
Human Health	Improved housing availability / quality, increased employment rates impact on health status	**Probable beneficial effect**
	Provision and availability of community facilities impact on health status	**Probable beneficial effect**
	Impact of air quality pollutants	**No cumulative effect**
	Impact of noise	**Speculative adverse**
	Cumulative transport effects	**Possible beneficial**
Waste	Generation of additional wastes	**Negligible**
	Impact on availability of waste / recyclable treatment facilities	**Negligible**

References

[1] Landscape Institute & IEMA. (2013) *Guidelines for Landscape and Visual Impact Assessment.*

20. Summary of Mitigation Measures and Residual Effects

20.1. The effects of the proposed Development has been assessed in the preceding chapters of this Environmental Statement. Each Chapter contains a detailed assessment of the residual effects. However, for ease of reference, Tables 20.1 to 20.13 below summarise the potential effects, mitigation measures and residual effects of the proposed Development. Table 20.14 summarises the residual cumulative effects. The significance criteria used are defined in Chapter 2: EIA Methodology. This EIA was undertaken in parallel with the design process. As a consequence, many measures to mitigate potential adverse environmental effects have been incorporated into the scheme design in order to avoid, reduce or offset such effects.

20.2. With respect to the management of the construction process, it is intended that a Construction Environmental Management Plan (CEMP) would be prepared and implemented. This is an established method of controlling and minimising environmental effects arising from demolition and construction activities, and would serve to reduce adverse environmental effects such as noise and vibration, dust and the risk of surface and groundwater pollution. The EMP would also control and manage hours of work, traffic routing and access, the protection of archaeological resources and protected species, and the generation and disposal of waste. In addition, the EMP would include monitoring and reporting requirements. It is anticipated that certain aspects of the EMP and other mitigation measures identified would be secured by appropriate planning obligations or conditions.

Table 20.1: Landscape and Visual Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
The landscape character of the area, Aesthetic and perceptual aspects of the landscape (Inc scale, complexity, patterns and openness), Existing woodland shelterbelts, The setting of residential areas & the setting of Middleton Stoney Road	Negligible to minor adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable retention and protection of existing vegetation, suitable working hours and traffic control to minimise intrusion on noise and public highways	Negligible to minor adverse; temporary; short to medium term at local level
The network of existing hedgerows and hedgerow trees	Minor to moderate adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable retention and protection of existing vegetation	Minor adverse; temporary; short to medium term at local level
The setting of the bridleway	Neutral; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable working hours to minimise intrusion on noise	Negligible; temporary; short to medium term at local level
The setting of Himley Farm	Moderate adverse; temporary; short to medium term at local level	Best practice construction methods including appropriate use of site hoarding, suitable working hours and traffic control to minimise intrusion on noise	Minor to moderate adverse; temporary; short to medium term at local level
Effect on key views	Negligible adverse on 1 view, negligible to minor adverse on 4 views minor to moderate adverse on 2 views.	Best practice construction methods including use of self erecting cranes and site hoarding.	Negligible adverse on 4 key views, negligible to minor adverse on 1 view and minor adverse on 2 views.

Description of Effect	Potential Effect	Mitigation	Residual Effect
Completed Development			
The landscape character of the area, Aesthetic and perceptual aspects of the landscape (Inc scale, complexity, patterns and openness)	Negligible to minor beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Minor beneficial; permanent at local level
The network of existing hedgerows and hedgerow trees	Moderate beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Moderate to substantial beneficial; permanent at local level
Existing woodland shelterbelts	Moderate beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Moderate beneficial; permanent at local level
The setting of residential areas	Negligible to minor beneficial; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible beneficial; permanent at local level
The setting of the bridleway	Negligible; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Neutral; permanent at local level
The setting of Middleton Stoney Road	Negligible to minor adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Negligible to minor beneficial; permanent at local level
The setting of Himley Farm	Minor to moderate adverse; permanent at local level	Scale and massing of built form. Long term establishment of green infrastructure	Minor adverse; permanent at local level
Effect on key views	Negligible to minor adverse on 5 key views, moderate to substantial adverse on 1 key view, minor to moderate adverse on 1 key view.	Scale and massing of built form. Long term establishment of green infrastructure	Negligible adverse on 4 views, negligible to minor adverse on 2 views and minor to moderate adverse on 1 view .

Table 20.2: Ecology Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition, Site Formation and Construction			
Effect of airborne pollutants on invertebrates and plants	Minor adverse, short-term local/borough effects	Construction Environmental Management Plan according to EA PPG06	Minor adverse short-term local effect
Contamination of watercourses, ground water and ponds – effects on wildlife and water quality	Negligible to minor adverse, short term. Local effects	Construction Environmental Management Plan according to EA PPG05	Negligible, short term localised
Introduction of invasive plants	Moderate adverse long term local effects	Avoidance measures as recommended by EA and DEFRA	Negligible, short term localised
Changes to drainage and groundwater	Negligible , short term and local effects	Sustainable Drainage System (early phase)	Negligible, short term localised

Description of Effect	Potential Effect	Mitigation	Residual Effect
Light pollution (on bats)	Minor adverse, short-term and local effects	Lighting chapter in Construction Environmental Management Plan	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Bats)	Moderate adverse, short-term local effects	Planting of more species-rich native hedgerows, trees.	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Birds)	Moderate adverse, short-term localised effects	Timing of vegetation clearance outside of nesting season. Planting of more hedgerows, trees	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Great crested newt)	Minor adverse, short-term within Site	Great Crested Newt Mitigation Strategy, includes new ponds, rough vegetation/swales	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Reptiles & amphibians)	Minor adverse, short-term	Capture and translocation. New ponds, rough vegetation/swales	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Badgers)	Minor adverse, short term local	Fencing and covering excavations. Green infrastructure network	Negligible, short term localised
Removal of vegetation/ fragmentation of hedgerows (Invertebrates)	Moderate adverse, short term and localised	Planting of more species-rich native hedgerows, trees, species-rich grassland/swales	Minor beneficial, long term localised
Restricted access for badgers/hedgehogs	Minor adverse, short term and local effects	Fencing and covering excavations	Negligible, short term localised
Completed Development			
Effect of airborne pollutants on invertebrates and plants	Negligible, long-term localised effects	None required	Negligible, short term localised
Contamination of watercourses, ground water and ponds – effects on wildlife and water quality	Negligible adverse, long term and local/borough effects	Sustainable Drainage System	Negligible long term, localised/borough effects
Introduction of invasive plants	Moderate adverse long term localised effects	Management company control programme	Negligible, long term localised
Light pollution (Bats)	Minor adverse long term localised	Management company lighting control	Negligible, long term localised
Restricted access (Badger/hedgehog)	Minor adverse, short term, Site and surrounds	Advice to residents on wildlife-friendly fencing	Negligible, long term localised
Disturbance to wildlife	Minor long term, Site and surrounds	Maturing site-wide biodiverse green infrastructure network including dense vegetation	Negligible long term and localised

Description of Effect	Potential Effect	Mitigation	Residual Effect
Pets (inc. free-ranging cats)	Moderate adverse long-term Site and surrounds	Advice to residents on reducing effects	Moderate adverse long term
Littering	Moderate adverse long term Site and surrounds	Management company collects litter	Negligible long term localised

Table 20.3: Transport Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Increase in driver and pedestrian delay due to additional traffic flows (HGVs)	**Temporary** effect of **minor adverse** significance at the **local** and **district** level.	Produce a Construction Traffic Management Plan.	**Temporary** effect of **negligible** significance at the **local** and **district** level.
Pedestrian amenity and fear and intimidation due to additional traffic flows (HGVs)	**Temporary** effect of **minor adverse** significance at the **local** and **district** level.	Produce a Construction Traffic Management Plan.	**Temporary** effect of **negligible** significance at the **local** and **district** level.
Accidents and safety due to additional traffic flows (HGVs)	**Temporary** effect of **minor adverse** significance at the **local** and **district** level.	Produce a Construction Traffic Management Plan.	**Temporary** effect of **negligible** significance at the **local** and **district** level.
Dust and dirt on the highways from construction vehicles	**Temporary** effect of **minor adverse significance at the local** level**.**	Produce a Construction Traffic Management Plan to include requirements for wheel washing and road sweeping.	**Temporary** effect of **negligible** significance at the **local** level**.**
Completed Development			
Pedestrian severance and amenity due to increased traffic flows	The effect of pedestrian severance on Middleton Stoney Road and Shakespeare Drive S of Howes Lane is anticipated to be of **minor adverse** significance at the **local** level. The effect of pedestrian severance and amenity on Middleton Road is anticipated to be of **substantial adverse** significance at the **local** level. The effects on the other links are expected to be of **negligible** significance at the local level.	Speed limit reductions Segregated footways and cycle paths including along Middleton Stoney Road north side Appropriate traffic calming measures	The majority of links are anticipated to have an effect of **negligible** significance at the **local** level. Pedestrian severance on Middleton Stoney Road is anticipated to be a **permanent** effect of **negligible** significance at the **local** level. Pedestrian amenity on Middleton Stoney Road is expected to be **minor beneficial** significance. On Middleton Road the effects are anticipated to be **permanent** and of **minor adverse** significance at the **local** level.

Description of Effect	Potential Effect	Mitigation	Residual Effect
			On Shakespeare Drive, south Howes Lane the effect of pedestrian severance is anticipated to be of **minor adverse** significance during PM peak hours and **negligible** at other times of the day.
Driver and pedestrian delay due to increased traffic flows	The effect of driver delay on Banbury Road south of A4095 and Shakespeare Drive links are expected to be of **substantial adverse** significance at the **local** level. The effect of driver delay on Middleton Stoney Road is anticipated to be of **minor adverse** significance at the **local** level. The other links are anticipated to be of **negligible** significance at the local level.	Promotion of alternative modes of transport through the Travel Plan Junction layout alterations on the Banbury Road south of A4095 link New ghost island junctions with protected right hand turn lanes and no direct access to commercial and residential units off Middleton Stoney Road Widened footways and new crossing points	Banbury Road south of A4095 and Shakespeare Drive links are expected to have a **permanent** effect of **minor adverse** significance at the **local** level. All other links are anticipated to be a **permanent** effect of **negligible** significance at the **local** level.
Fear and intimidation due to increased traffic flows	**Permanent** effect of **negligible** to **substantial adverse** significance at the **local** level.	Speed limit reductions Segregated footways and cycle paths with appropriate lighting Widened footways and crossing points	Middleton Stoney Road, Bucknell Road, Middleton Road, Ardley Road and Shakespeare Drive are anticipated to be a **permanent** effect of **minor adverse** significance at the **local** level. All other links are anticipated to be of **negligible** significance at the **local** level.
Accidents and safety due to increased traffic flows	**Permanent** effect of **negligible/ minor adverse** at the **local** level.	Junction improvements and the promotion of alternative modes of transport through the Travel Plan	The effect of the Development is considered to be **negligible** or **minor adverse** or across all links.
Public transport services due to increased demand and traffic flows	**Permanent** effect of **minor adverse** significance at the **local** level	New bus loop through the site and bus stops Junction improvements	**Permanent** effect of **minor beneficial** at the **local** and **district** level

Table 20.4: Air Quality Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Dust from construction activities	**Temporary, short – medium term**, local effect of **negligible** to **substantial adverse** significance	Routine environmental management control measures to prevent and control dust as specified in a CEMP.	**Temporary, short – medium term,** local effect of **negligible** to **moderate adverse** significance
Emissions from construction vehicles	**Temporary**, **short-medium term**, local effect of **moderate** to **minor adverse** significance.	Routine environmental management measures to control construction traffic as specified in a CTMP.	**Temporary**, **short-medium term**, local effect of **minor adverse** to **negligible** significance.
Emissions from construction plant	**Negligible**	None Required	**Negligible**
Completed Development			
Emissions from traffic and heating plant associated with the completed Development	**Minor adverse** to **negligible**	Travel Plan	**Minor adverse** to **negligible**
Introduction of residential receptors	**Negligible**	None Required	**Negligible**

Table 20.5: Noise and Vibration Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Demolition and Construction Noise	**Insignificant to temporary** effect of **substantial adverse** significance at the **local** level.	Implementation of a CEMP and best available techniques.	**Insignificant to temporary** effect of **moderate adverse** significance at the **local** level.
Construction Vibration	**Insignificant to temporary** effect of **minor adverse** significance at the **local** level.	Implementation of a Site specific CEMP and best available techniques.	**Insignificant** to **temporary, short-term, local** effect of **minor adverse** significance**.**
Construction Traffic	**Insignificant** to temporary effect of **minor adverse** significance at the local level.	Construction Traffic Management Plan.	**Insignificant**
Completed Development			
Residential Amenity	**Requirements of WHO and BS8233 predominantly satisfied.**	Appropriate glazing and ventilation strategy at southern site boundary, with consideration at eastern, western and northern site boundaries.	**Insignificant**
School Amenity	**Requirements of BB93 satisfied.**	None proposed	**Requirements of BB93 satisfied**

Description of Effect	Potential Effect	Mitigation	Residual Effect
Fixed Mechanical Plant & Building Services (including the Energy Centre)	**Insignificant**	Assumed mitigation inherent to design of buildings/structures housing fixed plant and mechanical services. Planning noise condition.	**Insignificant**
Playing Fields	**Insignificant** to **permanent** effect of **minor adverse** significance when in use at local level	None proposed	**Insignificant** to permanent effect of **minor adverse** significance when in use at local level
Road Traffic Noise	**Insignificant** to **permanent** effect of **minor adverse** at local level on 2 road links and **substantial adverse** on 1 road link	Travel Plan	I**nsignificant** to **permanent** effect at local level of **minor adverse** on 2 links and **substantial adverse** on 1 link.

Table 20.6: Water Management Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Fluvial Flooding	**Negligible**	None required	**Negligible**
Groundwater Flooding	**Negligible**	None required	**Negligible**
Surface Water Drainage and Foul Drainage Flooding	**Negligible**	None required	**Negligible**
Potable water use	**Temporary** effect of **moderate adverse** significance at the **local to regional** level.	Re-use of dewatering effluent and surface water run off for dust suppression and other construction uses	**Temporary** effect of **minor adverse** significance at the **local to regional** level.
Completed Development			
Fluvial Flooding	**Negligible**	None required.	**Negligible**
Groundwater flooding	**Negligible**	None required	**Negligible**
Surface Water Drainage and Foul Drainage Flooding	**Negligible**	None required	**Negligible**
Potable water use	**Temporary** effect of **moderate adverse** significance at the **local to regional** level.	Implementation of water efficiency measures and reclamation of water for non potable uses.	**Temporary** effect of **moderate adverse** significance at the **local to regional** level.

Table 20.7: Ground Conditions and Contamination Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Treatment and disposal of contaminated soils	**Permanent** effect of **minor beneficial** significance at the **local** level**.**	Implementation of a further environmental ground investigation, assessment of the requirement for remediation and implementation of remediation measures to ensure reduction in potential contamination levels prior to disposal.	**Permanent** effect of **minor beneficial** significance at the **local** level**.**
General construction practices	**Permanent** effect of **minor adverse** significance at the **local** level**.**	Appropriate working methods will minimise the potential risks associated with introduction of new contamination or mobilisation of existing contamination during construction.	**Negligible**
Treatment of potentially contaminated soils on-site to allow re-use during the construction project	**Negligible**	None required	**Negligible**
Contaminative risks to water resources posed by foundation activities	**Temporary effect** of **minor adverse** significance at the **local** level**.**	Implementation of a further intrusive ground investigation. Should significant contamination be recorded finalisation of foundation design with consultation with the Environmental Agency through a Foundation works Risk Assessment.	**Negligible**
Contaminative risks to water resources via leaching of soils	**Temporary, short to medium term, local and of minor adverse significance**	Implementation of a further environmental ground investigation, segregation and containment of contaminated soils to prevent uncontrolled release of runoff.	**Negligible**
Contaminative risks to ground and groundwater via accidental spillage of materials and fuels.	**Temporary, short term, local and of minor adverse significance**	Implementation of a CEMP which would stipulate the use of bunded fuel tanks and contingency planning and other Site management measures.	**Temporary, short term, local and of negligible to minor adverse significance**
Completed Development			
Contamination risks to future occupants of the proposed Development	**Minor Adverse**	Implementation of a further environmental ground investigation, assessment of the	**Negligible**

Description of Effect	Potential Effect	Mitigation	Residual Effect
		requirement for remediation and implementation of remediation measures and gas protection measures to buildings as necessary.	
Risks to future concrete and plastic pipework from residual contamination	**Minor adverse**	Implementation of a further environmental ground investigation. Completion of a Water Supply Pipeline Risk Assessment together with selection of an appropriate concrete classification.	**Negligible**
Contamination of the ground during operation	**Negligible**	Provision of petrol interceptors to external drainage as necessary. Appropriate storage of chemicals, fuel and waste.	**Negligible**
Ground gas / radon risk to future occupants of Development	**Negligible**	Implementation of suitable ground gas and radon protection measures in the affected areas if deemed necessary through ground investigation.	**Negligible**

Table 20.8: Agriculture and Soils Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Soil Resource	**Long Term** effect of **moderate adverse** significance at the **local** level**.**	Implementation of a Soils Management Plan.	**Long Term** effect of **minor adverse** significance at the **local** level.
Farming Circumstances	**Temporary** effect of **Minor Adverse** significance at the **local** level.	Construction traffic management and dust suppression.	**Temporary** effect of **Negligible** significance at the **local** level.
Completed Development			
Loss of best and most versatile agricultural land	**Permanent** effect of **moderate adverse** significance at the **national** level**.**	None.	**Permanent** effect of **moderate adverse** significance at the **national** level**.**
Soil resource	**Negligible**	None	**Negligible**
Release of Capital to Farm Business A and B	**Long Term** effect of Negligible to **Moderate Beneficial** significance at the **local** level.	None	**Long Term** effect of Negligible to **Moderate Beneficial** significance at the **local** level.

Table 20.9: Built Heritage Effects and Mitigation

Element	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Damage to the Grade II listed barns	Permanent, and of minor adverse significance	Construction management plan for the Site, monitoring of the barns, and appropriate protective hoardings	Negligible
Change in setting to the Grade II listed barns.	Short-term, temporary, and of moderate/minor adverse significance	Level 1-2 historic building record to be provided	Moderate/minor adverse
Completed Development			
Change in setting to the Grade II listed barns	Permanent effect of moderate/minor adverse significance	None	Moderate/minor adverse

Table 20.10: Archaeology Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Destruction of Iron Age, Romano-British and post medieval remains	**Permanent** effect of **moderate/substantial adverse** significance at the **local** level**.**	Archaeological watching brief of ground works secured through planning condition	**Permanent** effect of **moderate/substantial adverse** significance at the **local** level**.**
Completed Development			
None	**N/A**	None	**N/A**

Table 20.11: Socio Economics and Community Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Loss of agricultural employment	**Negligible** at **district** level	Implementation of local employment and local labour market initiatives	**Negligible** at **district** level
Temporary employment generation and associated GVA during the construction period	**Medium-term, regional,** and of **minor beneficial** significance	Implementation of local employment and local labour market initiatives	**Medium-term - permanent**, **local - regional**, and of **minor beneficial** significance
Local expenditure by construction workers and procurement opportunities	**Medium term, regional** and of **minor beneficial** significance.	Implementation of local employment and local labour market initiatives	**Medium-term - permanent**, **local - regional**, and of **minor beneficial** significance
Completed Development			
Gross and net additional employment generated as a result of employment generating floorspace	**Permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the **regional** level	None required	**Permanent** and of **moderate significance** at the **local** level**,** and of **minor beneficial significance** at the **regional** level

Description of Effect	Potential Effect	Mitigation	Residual Effect
Provision of 1,700 private residential units (including 852 family sized units, and 509 affordable housing units)	**Permanent, district,** and of **moderate beneficial significance.**	None required	**Permanent, district,** and of **moderate beneficial significance**
Provision of 100-bed retirement village	**Permanent, district,** and of **minor beneficial significance.**	None required	**Permanent, district,** and of **minor beneficial significance**
Local household expenditure	**Permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the district level	None required	**Permanent** and of **moderate beneficial** significance at the **local** level**,** and of **minor beneficial significance** at the district level
Increased demand on Early Years and primary education facilities from residential population, during Phases 1 and 2 of construction schedule.	**Negligible** at the **local** level.	None required	**Negligible** at the **local** level.
Provision of a private nursery, and a new primary and nursery school on local educational facilities from the start of Phase 3 of construction schedule.	**Negligible** at the **local** level.	None required	**Negligible** at the **local** level.
Increased demand on Early Years, primary and secondary education facilities from residential population once Himley Development is completed	**Negligible** at the **local** level.	None required	**Negligible** at the **local** level.
Increased pressure on open space and public realm from additional residential population.	**Permanent, local,** and of **moderate beneficial significance.**	None required	**Permanent, local,** and of **moderate beneficial significance**
Increased pressure on play space and outdoor sports recreation provision from additional residential population.	**Permanent, local,** and of **minor beneficial significance.**	None required	**Permanent, local,** and of **minor beneficial significance**
Crime Opportunities and Perceptions of safety and wellbeing	**Permanent, local,** and of **moderate beneficial significance.**	None required	**Permanent, local,** and of **moderate beneficial significance**
Community Cohesion	**Permanent, local,** and of **minor beneficial significance.**	None required	**Permanent, local,** and of **minor beneficial significance.**

Table 20.12: Health Effects and Mitigation

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
Demolition and Construction			
Air Quality	Dust and NOx emissions from demolition/ Construction activities and vehicles could adversely affect air quality which could aggravate or cause respiratory / cardiovascular problems in vulnerable people	Implementation of mitigation measures (contained in a CEMP) would largely mitigate adverse effects on air quality at the most sensitive receptors to negligible significance. Where residual adverse effects would occur, these would be of a temporary nature.	**Speculative adverse** outcome, at the **local** level
Noise	Increases in background noise levels from machinery and vehicles can be a stressor which triggers other health effects or in the worst case could impair hearing.	Implementation of mitigation measures (contained in a CEMP), would largely mitigate adverse effects on background noise levels at the most sensitive receptors to negligible. Where adverse effects would occur, these would be of a temporary nature.	**Speculative adverse** outcome, at the **local** level
Transport and Accessibility	Increased traffic could increase risks of accidents, or reduce number of trips people make through delays or fear and intimidation from increased vehicles, thereby limiting access to community facilities.	The phasing of the construction is designed to minimise disruption and disturbance. Implementation of a Construction Traffic Management Plan would mitigate adverse effects to negligible significance.	**Neutral** outcome, at the **local** level
Waste	Improper handling, storage or disposal of construction waste could affect people's health through direct contact with harmful substances or indirectly through environmental contamination.	Implementation of correct waste procedures in accordance legislation and the CEMP would mitigate potential adverse effects on people and the environment.	**Neutral** outcome, at the **local** level
Public Safety	There is an increased risk of road accidents from construction traffic or accidents on the construction site.	Implementation of health and safety legislation and best practice would reduce the risk of accidents.	**Neutral** outcome, at the **local** level
Employment	Unemployment is associated with adverse physical and mental health effects The unemployment rate in the wider Bicester Area is comparatively high.	Provision of employment, the Applicant's commitment to training/ apprenticeships, and associated additional local expenditure from construction employment and procurement would	**Beneficial, probable** outcome at the **local** level

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
		reduce local unemployment and increase incomes.	
Completed Development			
Population change	Biological determinants of health include gender, age and ethnicity. The Himley Village Development would result in an increased population, which is assumed to have a similar low level of ethnic diversity. Health needs vary depending on age. Demographic modelling predicts that the initial population yield from the NW Bicester Masterplan would be relatively young although the majority would be adults who have fewer urgent health needs. The population is expected to age over time.	The Himley Village Development would provide a range of housing types and tenures to meet a wide range of needs, including retirement housing. The provision of community infrastructure meets the needs of the new residents, including a health facility, education facilities to accommodate younger children (0 to 11 years) and a wide range of green infrastructure.	**Not applicable**
Employment Generation	Unemployment is associated with adverse physical and mental health effects The unemployment rate in the wider Bicester Area is comparatively high.	Provision of employment and associated additional local expenditure from residents and workers would reduce local unemployment and increase incomes.	**Beneficial, probable** outcome at the **local** level
Air Quality	NOx emissions from the heating plant and vehicles could adversely affect air quality which could aggravate or cause respiratory / cardiovascular problems in vulnerable people	The heating plant would not result in significant residual adverse effects on air quality. No mitigation measures were deemed necessary for residential adverse effects from increased traffic which are predicted to be insignificant or minor adverse at worst.	**Neutral** outcome, at the **local** level
Noise	Increases in background noise levels from vehicles can be a stressor which triggers other health effects or in the worst case could impair hearing.	No significant residual adverse effects are predicted, with the exception of 3 road links where minor to substantial effects are predicted. Implementation of a Travel Plan for the Himley Village Development would aim to reduce car trips.	**Speculative adverse** outcome, at the **local** level
Transport and Accessibility	Increased traffic could increase risks of accidents, or reduce number of trips people make through delays	Increased traffic from new residents and workers are not predicted to have a significant adverse effect on	**Possible local beneficial** outcome, at the **local** level

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
	or fear and intimidation from increased vehicles, thereby limiting access to community facilities.	severance, fear and intimation, delays or accidents for most roads. However, during peak times are some busier junctions some adverse effects on pedestrian severance could be experienced. The layout of the Village, including provision of footpaths, cyclepaths and public transport would facilitate greater accessibility between neighbourhoods and help to minimise car trips.	
Housing	Poor housing conditions are associated with ill physical and mental health.	Provision of 1,700 high quality, adaptable homes and 100-bed retirement village would provide a range of housing options to meet the needs of residents over their lifetime. The inclusive layout including provision of affordable housing with market housing would facilitate integration of neighbourhoods.	**Beneficial, probable** outcome at the **local** level
Health Facilities	Additional population can result in additional pressure on existing health facilities. Access to health facilities is important so that people can seek treatment, advice and preventative action.	There is limited capacity for accommodating additional populations at the existing GP practices. The provision of a health facility is expected to address the increased demand from the Himley Village residents	**Neutral** outcome, at the **local** level
Green Infrastructure	Sedentary lifestyles are associated with increased ill health or triggers to ill health (e.g. obesity related illness, diabetes). Access to green spaces can increase physical activity, interaction, reduce stress and increase personal and community wellbeing.	Provision of 36.1ha of green space, including publicly accessible space and flexible play space, cycleways and footpaths, and playing fields. Layout of the Himley Village Development to encourage permeability between neighbourhoods and community integration.	**Beneficial, probable** outcome at the **local** level
Community Cohesion	Isolation can contribute to ill physical and mental life, decreased wellbeing, and reduced life expectancy.	Severance from physical barriers or from increase traffic has been minimised Provision of community facilities to increase social interaction	**Beneficial, probable** outcome at the **local** level

Description of Effect	Potential Health Issue	Himley Village Development Response	Potential Health Outcome and Likelihood of Occurrence
		Establishment of the HFLT to encourage community ownership Layout of the Himley Village Development to encourage permeability between neighbourhoods and community integration.	

Table 20.13: Waste Effects and Mitigation

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
Generation of construction waste	**Temporary** effect of **negligible** significance.	None required	**Temporary** effect of **negligible** significance.
Completed Development			
Increased level of development resulting in additional wastes and recyclables to be managed.	**Permanent** effect of **negligible** significance	None required	**Permanent** effect of **negligible** significance.

Cumulative Effects

20.4. With regard to mitigation in the cumulative scenario, for demolition and construction, it has been assumed that all cumulative schemes would have their own site-specific Construction Environmental Management Plans (CEMPs) or appropriate environmental method statements in order to minimise the potential adverse environmental effects of their construction works. For the completed development, although some adverse cumulative effects have been identified up to moderate adverse, with the exception of noise, this is partly a function of the location of the Site (for example, located partly on best and most versatile agricultural land) and partly as a result of introducing built development and occupiers into an area which is currently agricultural fields. There is therefore no practical way of mitigating these effects and is a result of additional development in accordance with planning policy. With regard to noise, a moderate adverse effect has been identified. The NW Bicester transport strategy proposes introducing traffic calming measures into Bucknell Village in order to discourage people from using this link. However, the reduction in traffic flows cannot be quantified at this stage and therefore the residual effect remains moderate adverse.

Table 20.14: Cumulative Effects Summary

ES Topic	Description of Effect	Cumulative Effect
Demolition and Construction		
Landscape and Visual Amenity	The presence of construction activity on Site and temporary loss of hedgerows	**Temporary adverse**
Ecology	Airborne pollutants impacting upon ecological receptors	**Negligible**

ES Topic	Description of Effect	Cumulative Effect
	Potential contamination of ground water/watercourses impacting upon ecological receptors	**Negligible**
	The introduction of invasive species impacting upon ecological receptors	**Negligible**
	Changes to drainage and groundwater impacting on ecological receptors	**Negligible**
	Light pollution impacting upon ecological receptors	**Negligible**
	Demolition of buildings/removal of vegetation impacting on protected species	**Negligible**
	20.5. Enhancement of hedgerows	**Minor beneficial**
	Reduction in access to forging sites impacting on wildlife	**Negligible**
Transport	Increased traffic flows including a high proportion of heavy goods vehicles	**Negligible due to implementation of Construction Traffic Management Plan**
Air Quality	Dust deposition at residential receptors	**Short term local** effects **of negligible to moderate adverse** significance
	Exhaust emissions from plant and construction vehicles	**Temporary, short-term adverse** effects of **minor to moderate** significance
	Exhaust emissions from site plant	**Negligible**
Noise and Vibration	Noise and vibration resulting from construction works	**Insignificant** to **temporary**, **local**, **short term**, **adverse** and of **minor** to **moderate significance**.
	Noise and vibration as a result of construction related vehicle movements	**Negligible** to **temporary, local, short term minor adverse significance**
Water Management	Increase demand in potable water use	**Minor** to **moderate adverse**
Ground Conditions	Groundworks impact upon ground and surface water quality	**Negligible assuming CEMP is operated at cumulative schemes**
Agriculture and Soils	Effect on the soil resource	**No cumulative effect**
Built Heritage	Impact on Himley Farm Barns	**No cumulative effects**
Archaeology (Built Heritage)	Impact on below ground heritage assets	**No cumulative effects**
Socio-Economics and Community	Employment generated during demolition and construction	**Moderate beneficial** at the **regional** level.

ES Topic	Description of Effect	Cumulative Effect
Human Health	Impact in human health as a result of dust and pollutant emissions	**Neutral to Speculative adverse impact at a local level**
Waste	Increased volume of construction waste generated	**Negligible**
Completed Development		
Landscape and visual Amenity	The landscape character of the area	**Negligible** to **minor beneficial** at a **Local Level**
	Aesthetic and perceptual aspects of the landscape	**Negligible** to **minor beneficial** at a **Local Level**
	The network of existing hedgerows and hedgerow trees	**Minor beneficial** at a **Local Level**
	Existing woodland shelterbelts	**Minor beneficial** at a **Local Level**
	The setting of residential areas	**Negligible** to **minor beneficial** at a **Local Level**
	The setting of the bridleway	**Negligible** to **minor adverse** at a **Local Level**
	The setting of Middleton Stoney Road	**Negligible** to **minor adverse** at a **Local Level**
	View from Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road	**Negligible** to **minor adverse** at a **Local Level**
	View from Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road	**Neutral**
	View from Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road	**Neutral**
	View from Middleton Road on roadside verge to gated entrance of the field	**Negligible** to **minor adverse** at a **local level**
	View from Middleton Road on roadside verge to gated entrance to bridle path	**Negligible** to **minor adverse** at a **local level**
	View from bridleway south of Crowmarsh Farm	**Negligible** to **minor adverse** at a **local level**
Ecology	Airborne pollutants impacting upon ecological receptors	**Negligible**
	Potential contamination of ground water/watercourses impacting upon ecological receptors	**Negligible**
	The introduction of invasive species impacting upon ecological receptors	**Negligible**
	Changes to drainage and groundwater impacting on ecological receptors	**Negligible**
	Light pollution impacting upon ecological receptors	**Negligible**
	Reduction in access to forging sites impacting on wildlife	**Negligible**
	Disturbance to wildlife	**Negligible**
	Pets disturbing fauna	**Moderate adverse**
	Littering	**Negligible**

ES Topic	Description of Effect	Cumulative Effect
Transport	Overall impact on pedestrians, cyclists and motorists	**Minor beneficial** to **minor adverse** significance Assuming all cumulative schemes implement suitable mitigation as proposed for Himley Village
Air Quality	Impacts of NO_2, PM_{10} and $PM_{2.5}$ emissions	**Negligible**
	Impact of NO_x emissions on ecological receptors	**Negligible**
	NOx sensitivity Test	**Minor adverse** to **negligible**
Noise and Vibration	Impact from traffic noise	**Insignificant** other than Middleton Stoney Road west of Bucknell Road where **moderate adverse** effects are predicted.
	Impacts of fixed plant	**Negligible**
	Impacts due to deliveries and servicing	**Negligible**
Water Management	Impact on surface water drainage capacity	**Negligible**
	Increase in potable water use	**Moderate adverse**
Ground Conditions	Effects arising from surface water	**Negligible**
Agriculture and soils	Loss of high grade agricultural land resource	**Moderate Adverse**
	Agricultural businesses seeking relocation increasing the viability of farm businesses locally	**Negligible to Moderate Beneficial**
Built Heritage	Impact of the change in setting of Himley Barns	**Moderate to minor adverse**
Archaeology (Buried Heritage)	Impact on below ground heritage assets	**No cumulative effects**
Socio-Economics and Community	Provision of new homes, retirement units and affordable housing	**Moderate beneficial** at a **district level**
	Employment impacts	**Moderate beneficial** at a **district level**
	Availability and provision of community facilities	**Moderate beneficial** at a **local level**
	Generation of additional spend	**Moderate beneficial** at a **local level**
	Improvements to public realm	**Minor beneficial**
Human Health	Improved housing availability / quality, increased employment rates impact on health status	**Probable beneficial effect**
	Provision and availability of community facilities impact on health status	**Probable beneficial effect**
	Impact of air quality pollutants	**No cumulative effect**
	Impact of noise	**Speculative adverse**
	Cumulative transport effects	**Probable beneficial**
Waste	Generation of additional wastes	**Negligible**
	Impact on availability of waste / recyclable treatment facilities	**Negligible**

Conclusions

20.6. The EIA identified the potential for negative effects during the construction phase, for example the generation of dust, noise and vibration. Despite the implementation of best practice measures to

mitigate these effects, some unavoidable adverse effects could occur, up to moderate significance. Mitigation would be prescribed by a CEMP, which would likely be secured though a planning condition attached to any planning permission for the Himley Village Developmnet.

20.7. In the long term, following the implementation of the proposed mitigation measures, the Himley Village Development both in isolation and cumulatively with other developments, is predicted to have a moderate adverse to moderate beneficial effect.

Glossary of Terms

Above Ordnance Datum	The distance above the mean tides at Newlyn, Cornwall.
Accuracy	A measure of how well a set of data fits the true value.
Air Quality Management Area	An area identified by a Local Authority as being under the threat of exceeding stated air quality standards.
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Archaeological interest:	There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.
Asset Management Plan	OFWAT require each appointed water company in England to submit a business plan, which is known as an Asset Management plan at a price review, typically every five years. The Asset management Plan sets out: • the company's overall strategy and the implications for price limits and average bills; • its strategic objectives in terms of service performance, quality, environmental and other outputs; • the activities necessary in the period to meet these objectives (such as upgrades and improvements to infrastructure); and • the scope for improvements in efficiency.
Agricultural Land Classification	The systematic classification of soils into grades based on climate, characteristics of the site and characteristics of the soil.
Agricultural land/soil quality	The capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season

	between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
Aquatic macro-invertebrates	Animals that have no backbone, are visible with the naked eye and spend all or part of their life in water; a diverse group of animals that include worms, molluscs, arachnids, crustaceans and insects.
ARCADY	Traffic capacity modelling software for roundabouts
Archaeology	The scientific study of ancient or historic physical remains of human activity, both above and below ground.
Archaeological interest	There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.
Assessment period	The period in a day over which assessments are made.
A-weighting	A frequency weighting applied to measured or predicted sounds levels in order to compensate for the non-linearity of human hearing.
Background noise	Background noise is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L_{90} noise level (see below).
Bat Mitigation Strategy	Document to support licence application to Natural England. Forms part of the method statement. Also made available to planning authority. Demonstrates how the Development will avoid harm to bats, for example by undertaking work when bats are not present, or by changing the scheme's layout, put back any access points after the work; match the environmental conditions to how they were before; retain existing roosts if possible: replace roosts and foraging habitats. May include specific measures to mitigate or compensate for any negative effects to bats, through planning conditions or obligations, and enhancement measures.
Baseline	Existing environmental conditions present on, or near, a site against which future changes may be measured or predicted.
Baseline condition	Work done to determine and describe the environmental conditions against which any future changes can be measured, predicted or assessed.
Biodiversity	A term used to describe all aspects of biological diversity.
Best and Most Versatile land	Soils in ALC grades 1, 2 and subgrade 3a which are accorded a greater significance in the planning system.
Biodiversity	The totality of life including organisms in different ecosystems.
Biological resource	A feature or component of the natural environment that is of value in serving human needs, e.g. water, plant life, wildlife. Some resources have an economic value e.g. timber, carbon sequestration, tourism, agriculture (pollination) or a 'non-economic value' such as scenic beauty.
Characteristics	Elements, or combinations of elements, which make a contribution to distinctive landscape character.
Commuting route (bats)	Woodland edges, hedgerows, rivers and other linear features used by bats to commute between roosts and foraging habitats.

	These features act as landmarks and are navigated by echolocation.
Conservation (for heritage policy)	The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance.
Construction Environmental Management Plan	A plan that set out the main contractor's roles, responsibilities, requirements and operational procedures to effectively manage construction works with the aim of minimising, so far as is practicable the environmental impacts during the construction phase of the development.
Contamination	Contamination is the addition, or the result of addition, or presence of a material or materials to, or in, another substance to such a degree as to render it unfit for its intended purpose.
Cumulative Impacts	Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions.
Daily Flow/Total	A daily total traffic flow (24 hours), expressed as a mean daily flow across all 365 days of the year.
dB(A): A-weighted decibels	The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the 'A' filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. This instrument has been specifically developed to mimic the operation of the human ear. The human ear responds to minute pressure variations in the air. These pressure variations can be likened to the ripples on the surface of water but of course cannot be seen. The pressure variations in the air cause the eardrum to vibrate and this is heard as sound in the brain. The stronger the pressure variations, the louder the sound that is heard. The range of pressure variations associated with everyday living may span over a range of a million to one. On the top range may be the sound of a jet engine and on the bottom of the range may be the sound of a pin dropping. Instead of expressing pressure in units ranging from a million to one, it is found convenient to condense this range to a scale 0 to 120 and give it the units of decibels. The following are examples of the decibel readings of every day sounds; Four engine jet aircraft at 100m 120 dB Riveting of steel plate at 10m 105 dB Pneumatic drill at 10m 90 dB Circular wood saw at 10m 80 dB Heavy road traffic at 10m 75 dB Telephone bell at 10m 65 dB Male speech, average at 10m 50 dB Whisper at 10m 25 dB Threshold of hearing, 1000 Hz 0 dB

Designated heritage asset	A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.
Designated landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statue or identified in development plans or other documents.
Directive	European Commission (EC) Directives impose legal obligations on European Member States. They are binding as to the results to be achieved, but allow individual states the right to decide the form and methods used to achieve the results. An example of this is the EC Air Quality Framework Directive 96/62 that is brought into legal effect in the UK by the Air Quality (England) Regulations (2000).
Do-Minimum	Describes a scenario under which the road scheme that is under consideration does not proceed.
Droughtiness	The ability of a soil to hold water.
Dust	Fine particles of solid materials ranging in size from 1 to 75 µm diameter (see British Standard 3405) capable of being re-suspended in air and settling only slowly under the influence of gravity where it may cause nuisance.
Ecology	The study of living organisms in relation to their surroundings.
EcoTowns	The eco-town concept was promoted by the last government to facilitate the development of a series of new settlements within rural areas. A set of requirements has been drawn up to ensure that the eco-towns balance their impact against exemplary levels of environmental and sustainability performance.
Ecologically significant effects	A factor which has the potential to create a notable change in the integrity of a biological resource or process, measured by a change in e.g. population size, viability of population, distribution/location of population, change in breeding rate/timing of breeding/flowering/fruiting. Such effects have the potential to affect change in other biological resources.
Ecological survey report	An assessment of a site, the objective of which is to document the current status of a specific resource, such as a protected species or habitat. The assessment and reporting follows a well defined methodology/methodologies.
Elements	Individual parts which make up the landscape, such as, for example trees, hedges and buildings.
Emission rate	The quantity of a pollutant released from a source over a given period of time.
Enhance	To create a new benefit to biodiversity, unrelated to any negative effect. To improve the function of an existing biological resource e.g. increase the size/extent/quality of the population by planting more vegetation, adding more nesting boxes for birds; addition of hibernation features; beneficial changes to management.
Environmental impact	The total effect of any operation on the surrounding environment.
Environmental Impact Assessment (EIA)	A technique for ensuring that the likely effects of new development on the environment are fully understood and taken into account before the development is allowed to go ahead. It provides a focus for public scrutiny of the project and enables the importance of the predicted effects, and the scope for modifying

	or mitigating them, to be properly evaluated by the decision-making authority.
Environmental Statement (ES)	The outcome of the Environmental Assessment presented in a formal document or documents in accordance with EC Directive 85/337. Includes such information that is reasonably required to assess the environmental effects of a development.
European Protected Species	Species given legal protection under the European Union Habitats Directive 2007
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
Façade Noise Level	A noise level measured or predicted at the façade of a building, typically at a distance of 1m, containing a contribution made up of reflections from the façade itself (+3dB).
Farming circumstances	The particulars of the how the land is used economically.
Feature	Particularly prominent or eye catching elements in the landscape, such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
Field Capacity Days	Defines the period in days each year when the maximum water holding capacity of the soil is reached and drainage occurs. This period of field capacity is used as a first approximation for soil conditions unsuited to workability.
Fauna	Animal life
Features of nature conservation value / nature conservation resource	A biological resource with particular significance for important species/habitats.
Flora	Plant life
Foraging	Searching for wild food resources.
Gleying	The prolonged saturation of soil resulting in anaerobic conditions. Manifest by mottles and/or green blueish colouring
Great Crested Newt Mitigation Strategy	A document prepared to support a licence application to Natural England. Forms part of the method statement to submit to Natural England. Also made available to planning authority. The Strategy demonstrates how the Development will attempt to avoid harming great crested newts by: avoiding breeding sites and land habitats (or demonstrate why this is not possible); undertaking work to ponds during winter months when great crested newts are absent; providing more habitat (breeding ponds and suitable land) than will be removed – 2 ponds for every 1 lost; maintaining any links between habitats and connect fragmented habitats where possible. The Strategy may include specific measures to mitigate or compensate for any negative effects to great crested newts, through planning conditions or obligations and enhancement measures.
Green infrastructure	Green infrastructure refers to the network of natural areas that provide amenity, habitat, flood protection, cleaner air and cleaner water, at all scales.
Gross Domestic Product (GDP)	A measure of the total economic activity occurring in the UK.
Groundwater	Water that is contained in underground rocks or soils.
Habitats	A particular environment for a species or an association of species. In wider sense referring to major assemblages of plants and animals found together.

Habitat map	A plan indicating the main habitat types present at site; following the methodology within the *Handbook for Phase 1 habitat survey –a technique for environmental audit* (JNCC, 2010). The Phase 1 habitat classification and associated field survey technique provides a relatively rapid system to record semi-natural vegetation and other wildlife habitats. Each habitat type/feature is defined by way of a brief description and is allocated a specific name, an alpha-numeric code, and unique mapping colour.
Health Impact Assessment	Health Impact Assessment is a practical approach used to judge the potential health effects of a policy, programme or project on a population.
Heavy goods vehicles (HGV)	Assumed to be buses, rigid trucks and semi trailer trucks with a weight greater than 3 tonnes. Also heavy vehicles can be defined in terms of length as buses, or trucks with a length exceeding 5.25 metres.
Hedgerow	A planted mix of wild shrubs and occasional trees, usually bordering roads or fields. A typically linear feature often associated with a herb-rich ground flora.
Heritage asset	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).
Heritage site	A building, area or scene that makes a positive contribution of special architectural, historic or environmental interest.
Historic environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
Historic environment record	Information services that seek to provide access to comprehensive and dynamic resources relating to the historic environment of a defined geographic area for public benefit and use.
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues.
Invasive plants	A plant that is not native and has negative effects on the economy, environment, or human health. The second greatest threat to biodiversity after habitat loss.
Invertebrate	An animal lacking a backbone, such as an arthropod, mollusc, annelid, etc.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an areas its particularly distinctive sense of place.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Areas	These are single unique areas which are the discrete geographical areas of a particular landscape type.

Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscape distinctive. The process results in the production of a Landscape Character Assessment.
Landscape Character Types	There are distinct types of landscape that are relatively homogenous in character. They are generic in nature n that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.
Landscape effects	Effects on the landscape as a resource in its own right.
Landscape quality	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscaper receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
L_{Amax} noise level	This is the maximum noise level recorded over the measurement period.
L_{Amin} noise level	This is the lowest level during the measurement period.
$L_{Aeq,T}$ noise level	This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in British Standard 7445 as the 'value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time'. It is a unit commonly used to describe construction noise, noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise.
L_{A90} noise level	This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.
L_{A10} noise level	This is the noise level which is achieved for 10% of the monitoring period and is often used to describe road traffic noise
LIDAR	A remote sensing technology that measures distance by illuminating a target with a laser and analysing the reflected light. LIDAR is popularly used as a technology to make high-resolution maps of large areas and can provide accurate elevation Above Ordnance Datum (AOD).
Listed Building	A building included in a list produced by the Secretary of State for Culture, Media and Sport. It comprises buildings and other structures that are of special architectural or historic interest.
Local Biodiversity Action Plan	The Local Biodiversity Action Plan is a strategy and set of objectives, produced in consultation with a wide range of conservation experts, local organisations, and individuals.

Local ecological networks	An interconnected system providing opportunities for plants and animals to move between sites.
LNR	Local Nature Reserve. A site that has been designated by the local authority and Natural England under the National Parks and Access to the Countryside Act 1949, for local people to enjoy.
LWS	Local Wildlife Site. A 'non-statutory' site of nature conservation value that have been designated 'locally'; a designation made by the Local Authority, not statutory country conservation agencies.
MAFF	Ministry of Farming, Fisheries and Food which was disbanded in 2002 but whose methodologies are still valid in relation to ALC.
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Moisture Deficit	The difference between the amount of water that is in a soil and the amount needed for crops to grow successfully.
National Planning Policy Guidance	National Planning Policy Guidance (PPG) notes set out the Government's policies on different aspects of planning. Local planning authorities must take their content into account in preparing their development plans and the guidance may also be material to decisions on individual planning applications and appeals.
Newt fencing	Wildlife exclusion fencing that is installed to control the movement of great crested newts; also known as drift fencing or temporary amphibian fencing. Low plastic sheeting is part buried into the ground, supported by lightweight wooden/plastic posts. It keeps animals out of works areas, restricts them to safe habitat, and can be used with pitfall traps along the base of the fence, into which newts fall and are humanely trapped. Newts can then be moved from the traps into safe habitat.
Noise	Sound which a listener does not wish to hear.
Non-Technical Summary (NTS)	A summary of the Environmental Statement in non-technical language providing a concise, yet comprehensive summary of the likely effects of the project on the environment.
Offset	Interventions designed to provide biodiversity benefits that compensate for losses in order to ensure net gains
Parameters	A limit or boundary which defines the scope of a particular process or activity.
Phase 1 habitat survey	A site assessment following the methodology within the *Handbook for Phase 1 habitat survey –a technique for environmental audit* (JNCC, 2010). The Phase 1 habitat classification and associated field survey technique provides a relatively rapid system to record semi-natural vegetation and other wildlife habitats.
Planning Policy Statement (PPS)	Planning Policy Statements are being produced by the Government, and will eventually replace PPGs.
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.

Reptile fencing	Wildlife exclusion fencing which is installed to contain reptiles within a site or exclude reptiles from a site. Panels of plastic are partially buried into the ground supported by wooden stakes. Used for reptile translocation projects.
Residual ecological effects	Net impacts remaining following mitigation.
Residual impacts	Those impacts of the development that cannot be mitigated following implementation of mitigation proposals.
Roost (Bat)	A place where a bat lives; several categories exist: maternity/breeding, hibernation, solitary etc.
Scoping	An initial stage in determining the nature and potential scale of environmental impacts arising as a result of a development, and an assessment of what further studies are required to establish their significance.
Sensitive ecological receptor	Any ecological feature that is sensitive to or has the potential to be affected by an impact.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
Sett	The burrow of a badger, formed within earth.
Setting of a heritage asset	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.
Significant effect	An impact which has consequence, having regard to context, sensitivity and intensity
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Significance (for heritage policy)	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.
Soil	Upper layer of the earth's crust composed of mineral parts, organic substance, water, air and living matter. Note 1: In accordance with BS 10175:2001 the term soil has the meaning ascribed to it through general use in civil engineering and includes topsoil and subsoil; deposits such as clays, silt, sand, gravel, cobbles, boulders and organic deposits such as peat; and material of natural or human origin (e.g. fills and deposited wastes). The term embraces all components of soil, including mineral matter, organic matter, soil gas and moisture, and living organisms.
Soil wetness	The moisture content of the soil.
Species	A group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding.
SSSI	Sites of Special Scientific Interest: a site of nature conservation value that have been designated by a statutory country conservation agency.
Stepping stones	A series of small, non-connected habitats which are used by animals to find shelter, food, or to rest.

Susceptibility	The ability of a defined landscape or visual receptor to accommodate the specified proposed development without undue negative consequences.
Sustainable Drainage Systems	Systems that mimic natural drainage by intercepting rain via vegetation, storing runoff in the soil or water bodies and releasing it slowly (attenuation) and by promoting evapo-transpiration. Where ground conditions permit water may also soak into the ground (infiltration). Water may also be slowly transported on the surface through swales. In this way the risk of flood is reduced, pollution is reduced, biodiversity increased and amenity improved. This approach can involve the use of a wide range of components including green roofs, permeable paving, specially designed tree pits, rain gardens, swales and ponds.
Sward	Dense, grassy vegetation
Tranquillity	A state of calm and quietude associated with peace, considered to be a significance asset of landscape.
Translocation	In wildlife conservation is the capture, transport and release or introduction of species, habitats or other ecological material (such as reptiles or amphibians) from one location to another.
µg/m^3 micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1ug/m^3 means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.
Visual amenity:	The overall pleasantness of the view people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual effects:	Effects on specific view on the general visual amenity experienced by people.
Visual receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Wildlife corridor	A wildlife corridor is a link of wildlife habitat, generally native vegetation, which joins two or more larger areas of similar wildlife habitat. Corridors are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations.
Zone of Theoretical Visibility	A map, usually digitally produced, showing areas of land within which a development is theoretically visible.

Abbreviations

AAWT	Average Annual Weekday Traffic
ALC	Agricultural Land Classification
AMP	Asset Management Plan
AOD	Above Ordnance Datum
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ASTGWF	Areas Susceptible to Groundwater Flooding
ATC	Automatic Traffic Count
BAPs	Biodiversity Action Plans
BB93	Building Bulletin 93
BMV	Best and Most Versatile agricultural land
BNLs	Basic Noise Levels
BRE	Building Research Establishment
CB	Cornbrash Limestone
CDC	Cherwell District Council
CDE	Construction, demolition and excavation
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
CLEA	Contaminated Land Exposure Assessment
COPA	Control of Pollution Act 1974
COCP	Code of Construction Practice
CRTN	Calculation of Road Traffic
CTMP	Construction Transport Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
DFT	Department for Transport
DHN	District Heat Network
DLO	Defence Logistics Organisation
DMRB	Design Manual for Roads and Bridges
DSR	Distribution Service Reservoir
EA	Environment Agency
EC	European Community
EcIA	Ecological Impact Assessment
EH	English Heritage
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Act
EPS	European Protection Species
EPUK	Environmental Protection UK

ES	Environmental Statement
ESD	Policies for Ensuring Sustainable Development.
ET	Eco-Town
EU	European Union
FCD	Field Capacity Days
FMF	Forest Marble Formation
FTE	Full Time Equivalent
GLVIA3	Guidelines for Landscape and Visual Impact Assessment
GVA	Gross Value Added
Ha	Hectares
HA	Highways Agency
HER	Historic Environment Record
HFLT	Himley Farm Land Trust
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HSE	Heath and Safety Executive
Hz	Hertz
FRA	Flood Risk Assessment
IANL	Internal Ambient Noise Levels
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
IMD	Indices of Multiple Deprivation
LAQM	Local Air Quality Management
LAQM PG	Local Air Quality Management Policy Guidance
LDF	Local Development Framework
LIDAR	Light Detection and Ranging
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LSOA	Lower Super Output Area
LTP	Local Transport Plan
LVIA	Landscape and Visual Impact Assessment
MAFF	Ministry of Agriculture Fisheries and Food
MUGA	Multi-Use Games Area
NCA	National Character Area
NE	Natural England
NERC	Natural Environment and Rural Communities
NGT	New Generation Transport
NOEL	No Observed Effect Level
NO_x	Nitrogen Oxide
NPSE	Noise Policy Statement for England
NPPF	National Planning Policy Framework

NPPG	National Planning Practice Guidance
OCC	Oxfordshire County Council
OCCG	Oxfordshire Clinical Commissioning Group
ONS	Office of National Statistics
OS	Ordnance Survey
OWLS	Oxfordshire Wildlife and Landscape Study
PIA	Personal Injury Accident
PPG	Planning Practice Guidance
PPS	Planning Policy Statement
PPS25	Planning Policy Statement 25 Development and Flood Risk Practice Guide
PRoW	Public Rights of Way
PTC	Public Transport Corridor
RAF	Royal Air Force
SACs	Special Area of Conservation
SDB	Eco Bicester Strategic Delivery Board
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SFRM	Sustainable Flood Risk Management
SHMA	Strategic Housing Market Assessment
SOAEL	Significant Observed Adverse Effect Level
SoS	Secretary of State
SPAs	Special Protection Areas
SPD	Supplementary Planning Document
SPPS	Supplement to Planning Policy Statement
SPZ	Source Protection Zones
SMS	Soil Management Strategy
SR	Sensitive Receptors
SRN	Strategic Road Network
SSEW	Soil Survey of England and Wales
SSSI	Sites of Special Scientific Interest
SuDS	Sustainable Drainage System
SWMP	Site Waste Management Plan
TA	Traffic Assessment
TIN049	Natural England Technical Information Note 049
TWUL	Thames Water Utilities Ltd
UK	United Kingdom
USA	Updating and Screening Assessment
UXO	Unexploded Ordnance Risk
VDV	Vibration Dose Value
WCS	Water Cycle Study
WFD	Waste Framework Directive

WHO	World Health Organisation
WLF	White Limestone Formation
WRMP	Water Resources Management Plan
ZTV	Zone of Theoretical Visibility