

Cherwell District Council

**Submission Cherwell Local Plan
incorporating Proposed Modifications
(October 2014)**

**Habitats Regulations Assessment: Stage
1 – Screening**

October 2014

ATKINS

Plan Design Enable

Cherwell District Council

Submission Cherwell Local Plan incorporating Proposed Modifications (August 2014)

Habitats Regulations Assessment: Stage 1 - Screening

Record of Assessment of Likely Significant Effect on a European Site Required by Regulation 21 of the Conservation of Habitats and Species Regulations 2010 (as amended)


August 2014

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Executive Summary

NOTE: Natural England confirmed in its response to the Proposed Modifications to the Submission Cherwell Local Plan (August 2014) that it concurs with the conclusions of the Habitat Regulations Assessment. No additional representations were received during the consultation period on the content of the HRA and therefore no revisions have been made to the document published in August 2014

In the UK, the European Habitats Directive (Directive 92/42/EEC) has been transposed into national legislation in the Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations). Regulation 21 implements the requirements of Article 6.3 of the Directive for Habitats Regulations Assessment (HRA) of a project or plan. Within the HRA, where a plan or project under consideration is likely to have a significant effect on a Special Area of Conservation (SAC) or Special Protection Area (SPA) an Appropriate Assessment is required. In HRAs, the National Planning Policy Framework (NPPF) states that consideration is also given to sites designated as Wetlands of International Importance (Ramsar sites), potential SPAs and candidate SACs. Hereafter, these sites are collectively referred to as 'international sites'

An HRA is required to determine if a document, such as a Local Plan, contains proposals that are likely to have a significant effect on international sites.

Submission Cherwell Local Plan incorporating Proposed Modifications

A HRA has been completed of Cherwell District Council's *Submission Cherwell Local Plan incorporating Proposed Modifications* (August 2014). This has included Stage 1 (Screening) of the Habitats Regulations Assessment process only. The Local Plan covers the whole district of Cherwell and is a high level strategic document that sets out broadly how the district will grow and change in the period up until 2031. The Local Plan sets out the long term spatial vision for Cherwell District and contains 76 policies that help deliver that vision.

The International Sites

There is one international site within the district of Cherwell: Oxford Meadows SAC. This site is located in the south-western corner of the district and is designated due to the lowland hay meadow habitats it supports. The site includes vegetation communities that are considered to be potentially unique in the world (due to the influence of long-term grazing and hay-cutting). The site has been traditionally managed for several centuries and so exhibits good conservation of structure and function. The site is also designated as it supports creeping marshwort. This is one of only two known sites in the UK that support this plant species.

In order to support this HRA Stage 1 (Screening), detailed traffic flow assessment and air quality assessments have been completed to determine if the development proposed in the Plan (and in combination with other planned development in Oxfordshire) will lead to a deterioration in air quality within the Oxford Meadows SAC.

There are four other international sites within 20 km of the district boundary. These are: Cothill Fen SAC, Little Wittenham SAC, Aston Rowant SAC and Chiltern Beechwoods SAC. However, these sites have been eliminated from the HRA process as it is extremely unlikely that there will be any likely significant effect on these sites as a result of the Local Plan.

Other Projects and Plans

In accordance with the Habitats Regulations, the potential for likely significant effects of the Plan 'in combination' with other projects and plans has also been considered. This has taken into account the combined effects of all projects and plans which individually may not have likely significant effects. No in combination effects have been identified as part of this assessment

Results of the HRA

The Plan puts forward fifteen strategic housing allocation sites (Policies Bicester 1, Bicester 2, Bicester 3, Bicester 12, Bicester 13, Banbury 1, Banbury 2, Banbury 3, Banbury 4, Banbury 5, Banbury 16, Banbury 17, Banbury 18, Banbury 19 and Villages 5), nine proposed strategic employment sites (Policies Bicester 1, Bicester 2, Bicester 4, Bicester 10, Bicester 11, Bicester 12, Banbury 6, Banbury 15 and Villages 5) and three proposed strategic town centre allocations (Policies Bicester 6, Banbury 8 and Banbury 9). All of these sites have been assessed in detail and have been found not to lead to likely significant effects on Oxford Meadows SAC (see Table B-1 in Appendix B for justifications of these conclusions).

A total of 28 policies in the Plan may lead to development in the long term (Policies PSD1, SLE1, SLE2, SLE3, SLE4, BSC5, BSC7, BSC8, BSC9, BSC10, BSC12, ESD5, ESD14, ESD17, Bicester 5, Bicester 7, Bicester 8, Bicester 9, Banbury 7, Banbury 10, Banbury 11, Banbury 13, Kidlington 1, Kidlington 2, Villages 1, Villages 3, Villages 4 and INF1). All of these policies have been assessed in detail and have been found not to lead to likely significant effects on Oxford Meadows SAC (see Table B-1 in Appendix B for justifications of these conclusions).

The remaining policies in the Plan will not lead directly to development and will not have any likely significant effects on the Oxford Meadows SAC.

Conclusions

This HRA Stage 1 (Screening) has identified that none of the 76 policies (or the proposals therein) present in the Cherwell District Council *Submission Cherwell Local Plan incorporating Proposed Modifications* (August 2014) will lead to likely significant effects on Oxford Meadows SAC, alone or in combination with other plans and projects.

1. Introduction and Background

1.1 Background to Habitat Regulations Assessment

A Habitats Regulations Assessment (HRA) is required by the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations), for all plans and projects which may have adverse effects on European sites. European sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). HRA is also required, as a matter of UK Government policy for potential SPAs (pSPA), candidate SACs (cSAC) and listed Wetlands of International Importance (Ramsar sites) for the purposes of considering plans and projects, which may affect them¹. Hereafter all of the above designated nature conservation sites are referred to as 'international sites'.

The stages of HRA process are:

- **Stage 1 – Screening:** To test whether a plan or project either alone or in combination with other plans and projects is likely to have a significant effect on an international site;
- **Stage 2 – Appropriate Assessment:** To determine whether, in view of an international site's conservation objectives, the plan (either alone or in combination with other projects and plans) would have an adverse effect (or risk of this) on the integrity of the site with respect to the site structure, function and conservation objectives. If adverse impacts are anticipated, potential mitigation measures to alleviate impacts should be proposed and assessed;
- **Stage 3 – Assessment of alternative solutions:** Where a plan is assessed as having an adverse impact (or risk of this) on the integrity of an international site, there should be an examination of alternatives (e.g. alternative locations and designs of development); and
- **Stage 4 – Assessment where no alternative solutions remain and where adverse impacts remain:** In exceptional circumstance (e.g. where there are imperative reasons of overriding public interest), compensatory measures to be put in place to offset negative impacts.

1.2 Background to this Assessment

A Habitat Regulations Assessment Stage 1 (Screening) was completed on the two previous iterations of the Local Plan :

- Cherwell District Council's *Options for Growth: Consultation on Directions of Growth and Strategic Sites – Core Strategy Development Plan Document* (September 2008). The HRA report, *Options for Growth - Consultation on Directions of Growth and Strategic Sites: Core Strategy Development Plan Document Habitats Regulations Assessment (Stage 1)*, was produced by Atkins in October 2009; and,
- Cherwell District Council's *Draft Core Strategy* (February 2010). The HRA report, *Draft Core Strategy (February 2010): Habitats Regulations Assessment, Stage 1 – Screening*, was produced by Atkins in February 2011.

¹ National Planning Policy Framework (Communities and Local Government, March 2012)

The Habitat Regulations Assessment (HRA) report produced in 2009 determined that it was not possible to conclude with certainty that there would not be significant effects on the Oxford Meadows Special Area of Conservation from the following: increased recreational usage of the SAC, decreased air quality, change in ground water flows or decreased water quality. As such the precautionary principle was employed (in accordance with the Habitat Regulations) and the Council committed to completing a HRA Stage 1 (Screening) on the next iteration of the Plan (the Draft Core Strategy).

A HRA report produced in 2011 included a thorough assessment of the four potential issues noted above and included a detailed air quality assessment. Following this assessment it was possible for the HRA to conclude that the policies within the *Draft Core Strategy* would have no likely significant effects on the Oxford Meadows SAC. Natural England (NE) agreed with the findings of this report².

A HRA of the Proposed Submission Cherwell Local Plan was undertaken in August 2012. Addendums to the HRA were published in March 2013 and October 2013 to address minor changes to the Plan. The Local Plan was submitted to the Secretary of State in January 2014. An examination into the Plan proposals commenced in June 2014 but proceedings were suspended by the Inspector to enable the Council to prepare modifications to the plan to increase the housing figures in line with those in the Oxfordshire Strategic Housing Market Assessment (SHMA) 2014. The HRA report has been updated accordingly to assess the impact of the proposed modifications to the Plan.

This HRA Stage 1 (Screening) has been carried out by Atkins Limited (Atkins) on behalf of Cherwell District Council for the *Submission Cherwell Local Plan incorporating Proposed Modifications* (August 2014). This information has been gathered on behalf of the Competent Authority (in this case Cherwell District Council) to allow them to make a decision on whether there will be likely significant effects on international sites as a result of the *Submission Cherwell Local Plan incorporating Proposed Modifications*.

The *Submission Cherwell Local Plan incorporating Proposed Modifications* is hereafter referred to as 'the Plan'. The Plan covers the whole district of Cherwell and is a high-level strategic document that sets out broadly how the district will grow and change in the period up until 2031. The Local Plan sets out the long term spatial vision for Cherwell District and contains 76 policies that help deliver that vision.

The findings of this Habitats Regulations Assessment (HRA) will be fed into the Sustainability Appraisal of the Local Plan.

1.3 Outline of this Report

Following this introduction:

- Section 2 outlines the methodology used for this HRA;
- Section 3 provides details relating to Oxford Meadows SAC (including its Conservation Objectives and site sensitivities);
- Section 4 outlines details of the *Submission Cherwell Local Plan incorporating Proposed Modifications*;

² E-mail confirmation of NE sign off received from Charlotte Frizzell (Lead Environmental Planning Officer at NE dated 22/03/2011)

- Section 5 details the other plans and projects identified which may lead to in combination effects on Oxford Meadows SAC;
- Section 6 details the results of the HRA for the Oxford Meadows SAC;
- Section 7 provides the conclusions of the HRA Stage 1 (Screening).

2. Methodology

The Plan

The first step of the HRA process is to gather all available information regarding the Plan. This information is pivotal for the analysis of the Plan and its impact on international sites. A summary of the Plan and its contents is given in Section 4.

Determination of the International Sites included in the HRA

The international sites that should be included in the HRA are then determined. An initial review of the Plan in light of the Habitats Regulations has been undertaken by Atkins as part of the HRA process. This initial review looked at the geographic extent or zone of influence of any impacts which could arise as a result of the Plan and considered which international sites should be included within the assessment.

As a starting point, all international sites within Cherwell and up to 20 km from its boundaries were identified³. There is one site within the district (Oxford Meadows SAC) located in the south-western corner of Cherwell.

There are also four other international sites within 20 km of the district boundary. These comprise:

- Cothill Fen SAC: Located approximately 8.75 km south-west of the district boundary;
- Little Wittenham SAC: Located approximately 17.5 km south of the district boundary;
- Aston Rowant SAC: Located approximately 18.1 km south of the district boundary; and
- Chiltern Beechwoods SAC: Located approximately 19.1 km south-east of the district boundary.

The locations of these international sites are shown on the *SPAs, SACs and Ramsar Sites within 20 km of Cherwell District* drawing (see Appendix A).

The Plan contains policies for housing and employment distribution within the district as well as outlining potential sites for where future strategic housing and employment development will take place. The Plan therefore focuses on regeneration and future development within the district. Adverse effects from the Plan are considered unlikely to extend far beyond the Plan boundary. There are unlikely to be significant emissions to air or water which could be generated through developments such as large scale power stations and quarry operations as these types of development are not included in the Plan. Little Wittenham SAC, Aston Rowant SAC and Chiltern Beechwoods SAC have been eliminated from the HRA process as it is extremely unlikely that there will be any significant effects on these sites given their distance to the Plan boundary.

³ The Environment Agency Integrated Pollution Control (IPC) and Pollution Prevention and Control (PPC) guidance notes that a proposal to construct a coal or oil fired power station should consider impacts on European sites up to 15 km away (Page 4 of the *Habitats Directive – Work Instruction: Appendix 7 Technical and Procedural Issues Specific to IPC and PPC* produced by the Environment Agency in July 2004). The most recent England Leisure Visits report states that people will travel up to 17.3 km to a countryside destination (*England Leisure Visits: Summary of the 2005 Leisure Visits Survey*, Natural England, 2005). These distances have been rounded up to 20 km on a precautionary basis to ensure that all sites that may be impacted by a new development are considered as part of the HRA process.

The inclusion of Cothill Fen SAC within this HRA was considered. This was due to possible impacts to the site and its designated features from increased water abstraction associated with an increased number of houses in Cherwell district. However, consultation with Thames Water and the Environment Agency⁴ determined that the Review of Consents process carried out by these two organisations confirmed that there are currently no significant adverse effects on this international site as a result of water abstraction in this area.

Furthermore, given the distance of this site from the District it is considered highly unlikely that an increased number of dwellings in Cherwell will lead to increased recreational pressure at this SAC (the majority of development will be centred in Banbury and Bicester approximately 37 km and 23 km north of this international site respectively). Following consultation with Natural England it is noted that Cothill Fen SAC is not a well known site for recreational use. Although the site is within 17.3 km of the Plan boundary, it considered extremely unlikely that residents from Cherwell will visit this site over and above the green space within the district⁵.

Therefore this HRA is a record of the assessment of 'likely significant effects' from the Plan on one international site only: Oxford Meadows SAC. Further details of this international site including its location, designation details and conservation objectives are provided in Section 3.

Obtaining Information on International Sites with the Potential to be Affected

The next step is to gather the information on the international sites to be included in the HRA. This includes contacting Natural England for the Conservation Objectives and Favourable Conditions Tables for each European Site.

The Conservation Objectives⁶ and Favourable Conditions Tables⁷ for Oxford Meadows SAC have been obtained from Natural England for the purpose of this assessment.

Obtaining Information on Other Projects and Plans

In accordance with the Habitats Regulations, there is a need to consider the potential for likely significant effects of the Plan 'in combination' with other projects and plans.

Statutory bodies surrounding, or in close proximity to, the Oxford Meadows SAC were contacted for details of any projects or plans that have been subject to HRA to assess effects on the Oxford Meadows SAC (in order to determine if there is a cumulative impact on this international site).

The following organisations have been contacted for details of other plans and projects which have the potential for adverse effects upon the Oxford Meadows SAC.

County Councils

- Buckinghamshire County Council; and,

⁴ Pers Comms. with Steve Puck (Water Resources Manager at Thames Water) and Paul St Pierre (Area Habitats Directive Officer at the Environment Agency) on 06/04/2009. Confirmed in *Supporting Guidance: Habitats Directive: (Appendix 21) Proforma for Stage 3 Assessment of Adverse Effect on Site Integrity – Review of Consents* (Environment Agency, 11/07/05).

⁵ This conclusion has been confirmed by Alison Muldal at Natural England (Pers. Comms. 16/04/09).

⁶ Conservation Objectives for the Oxford Meadows SAC were contained within the *European Site Conservation Objectives for Oxford Meadows Special Area of Conservation Site code: UK0012845* document supplied by Natural England on 12/06/2012 (Document Ref: UK0012845-Oxford-Meadows-SAC_tcm6-31850.pdf)

⁷ Favourable Conditions Tables for the Oxford Meadows SAC were contained in the following documents: *Cassington Meadows SSSI* (December 2011, Version 2.1), *Pixey and Yarnton Meads SSSI* (July 2008, Version 1.5), *Port Meadow with Wolvercote Common and Green SSSI* (November 2007, Version 1.5) and *Wolvercote Meadows SSSI* (November 2006, Version 1.5).

- Oxfordshire County Council.

Local Planning Authorities

- Aylesbury Vale District Council;
- Chiltern District Council;
- Dacorum Borough Council;
- Oxford City Council;
- Reading Borough Council;
- South Oxfordshire District Council;
- Vale of White Horse District Council;
- West Berkshire Council;
- West Oxfordshire District Council;
- Windsor and Maidenhead Council;
- Woking Borough Council;
- Wycombe District Council; and,
- Wokingham Borough Council.

Other Statutory Bodies

- Environment Agency;
- Natural England; and,
- Thames Water.

Assessing the Impacts of the Plan ‘Alone’ and ‘In Combination’

Following the gathering of information on the Plan and the international sites, an assessment was undertaken to predict the likely significant effects of the Plan on the international sites ‘alone’. In order to inform this process, all parts of the Local Plan were assessed to see if they could result in likely significant effects on the Oxford Meadows SAC. This HRA assesses the 76 policies contained in the Plan and also takes into account the supporting text.

The findings of this assessment are given in Table B-1 in Appendix B. In order to support this assessment of likely significant effects on Oxford Meadows SAC from the Plan, traffic modelling and an air quality assessment was completed (see Appendix C). An Atkins Senior Hydrogeologist also completed an assessment of the effects of development associated with Policies relating to development in Bicester and Banbury on groundwater flows. The outcome of the assessment of these policies is included in Table B–1 in Appendix B.

Section 5 summarises the findings of the HRA in relation to Oxford Meadow SAC. Where possible, policies that have been found to have no likely significant effect on an international site have been categorised into one of five different types. This has been based on *The Habitats Regulations Assessment of Local Development Documents (Revised Draft Guidance)* produced by Natural England in February 2009:

- **Policy Type A1:** Policies that will not themselves lead to development (e.g. because they relate to design or other qualitative criteria for development, or they are not a land use planning policy);
- **Policy Type A2:** Policies intended to protect the natural environment, including biodiversity;
- **Policy Type A3:** Policies intended to conserve or enhance the natural, built or historic environment, where enhancement measures will not be likely to have any negative effect on an international site;
- **Policy Type A4:** Policies that positively steer development away from international sites and associated sensitive areas; and,
- **Policy Type A5:** Policies that would have no effect because no development could occur through the policy itself, the development being implemented through later policies in the same plan, which are more specific and therefore more appropriate to assess for their effects on international sites and associated sensitive areas.

The potential for likely significant effects of the Plan on the Oxford Meadows SAC 'in combination' with other projects and plans has also been considered in this HRA. Although impacts from an individual project or plan may have no likely significant effect on an international site, cumulative impacts from other plans and projects may result in an in combination effect on one or more interest features of the international site⁸. Likely significant effects by these means must also be considered. Details of plans and projects that have had HRAs completed due to potential to impact upon the Oxford Meadows SAC were reviewed in order to determine whether there is potential for in combination effects (see Section 5).

The assessment of likely significant effects is largely based on the qualifying features (interest features) of the international site. Any plan or project that causes the cited interest features of a site to fall into unfavourable condition can be considered to have a likely significant effect on the site. Stage 1 of the HRA process does not assess effects on the integrity of international sites (this forms Stage 2 of the HRA process). However the definition of integrity provided below has been taken into account during the assessment of likely significant effects:

“...the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.”⁹

Plans or projects can lead to significant effects on an international site by:

- Causing delays in progress towards achieving the conservation objectives of the site;
- Interrupting progress towards achieving the conservation objectives of the site;
- Disrupting those factors that help to maintain the favourable conditions of the site; and
- Interfering with the balance, distribution and density of key species that are the indicators of the favourable condition of the site.

HRA is an iterative process. Where necessary, suggestions can be made of how to amend the Plan to avoid likely significant effects on an international site. This iterative approach has been adopted as part of this assessment.

⁸ Habitat Regulations Guidance Note 4: Along or in combinations, English Nature, May 2001.

The precautionary principle (as enshrined in the Habitats Regulations) has been taken into account during this HRA. The precautionary principle is used when an HRA cannot objectively demonstrate that there will be no likely significant effects on the international sites. If this occurs the subsequent stages of HRA must be completed for the project or plan.

Consultation with Natural England

Natural England has been consulted throughout the HRA process, confirming the approach taken for the assessment¹⁰.

⁹ Part I, Section B, Paragraph 20 of *ODPM Circular 06/2005* accompanying *Planning Policy Statement 9: Biodiversity and Geological Conservation*

¹⁰ Pers. comms between Matthew Tooby (Senior Ecologist, Atkins) and Olivia Euesden (Natural England) on 03/08/2012; ongoing communications with Charles Routh (Natural England, August 2014).

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3. Oxford Meadows SAC

This section includes information about Oxford Meadows SAC, its designation status, the location of the site, a brief description of the site and its conservation objectives.

Table 3.1: Information about the Oxford Meadows SAC

Site Designation Status	Oxford Meadows SAC
Location of European Site	<p>The site is located in the south-western corner of the district of Cherwell. The majority of the SAC falls within the Oxford City Council boundary although small sections are located within the districts of Cherwell and West Oxfordshire.</p> <p>The River Thames flows through the centre of the site.</p> <p>The nearest settlement to the SAC in Cherwell is Yarnton (located approximately 0.85 km north of the SAC).</p>
Brief Description of the European Site	<p>Oxford Meadows qualifies for European protection due to the lowland hay meadow habitats it supports (Annex I habitat which is a primary qualifying feature of the site). The site includes vegetation communities that are considered to be potentially unique in the world (due to the influence of long-term grazing and hay-cutting). The site has been traditionally managed for several centuries and so exhibits good conservation of structure and function.</p> <p>The site is also designated as a European important site as it supports creeping marshwort (<i>Apium repens</i>) (an Annex II species which is a primary qualifying feature of the site). This is one of only two known sites in the UK that support this plant species.</p>
Conservation Objectives of the European Site	<p>The Conservation Objectives for Oxford Meadows SAC are to avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.</p> <p>This includes, subject to natural change, to maintain or restore:</p> <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats and habitats of qualifying species; • The structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species; • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely;

	<ul style="list-style-type: none"> • The populations of qualifying species; and, • The distribution of qualifying species within the site. <p>Qualifying Features of Oxford Meadows SAC:</p> <ul style="list-style-type: none"> • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>); and, • Creeping marshwort (<i>Apium repens</i>).
<p>Sensitivities of the European Site</p>	<p>The following key environmental requirements are needed to support the integrity of the Oxford Meadows SAC¹¹. The SAC may be sensitive to any activities which affect these:</p> <ul style="list-style-type: none"> • Minimal air pollution; • Absence of excessive nutrient enrichment of waters/good water quality; • Balanced hydrological regime: alteration to adjacent rivers may alter flooding regime and reduce botanical diversity; • Maintenance of traditional hay cut and light aftermath grazing; and • Absence of direct fertilisation.

¹¹ Identified at an HRA screening workshop carried out for the South East Plan (as noted in the *Oxford Core Strategy Habitats Regulations Assessment*, produced by Oxford City Council in September 2008).

4. Plan Details

4.1 Proposed Plan

The Plan provides the strategic context that will guide the preparation of subsequent DPDs identified in the Council's Local Development Scheme.

None of the proposals within the Plan are directly connected with, or necessary to, the nature conservation management of the Oxford Meadows SAC.

4.2 Brief Description of Plan

The Plan includes a long term spatial vision for Cherwell District. The Plan has been structured to look at:

- A strategy for Development in Cherwell: including a vision for the district, a spatial strategy and key objectives for Cherwell as a whole;
- Policies for Development in Cherwell: including policies for developing a sustainable local economy, for building sustainable communities and for ensuring sustainable development;
- Policies for Cherwell's Places: including policies for Bicester, Banbury, Kidlington and villages and rural areas. Allocation sites of strategic importance are identified within a number of these policies;
- An Infrastructure Development Plan; and,
- Monitoring Delivery.

Within the Plan there are 76 policies. These are divided into the following sections:

- Strategy for Development in Cherwell
 - Includes Policy PSD 1
- Policies for Development in Cherwell:
 - Theme One - Policies for Developing a Sustainable Local Economy: Includes Policies SLE1 to SLE5;
 - Theme Two – Policies for Building Sustainable Communities: Includes Policies BSC1 to BCS12; and,
 - Theme Three – Policies for Ensuring Sustainable Development: Includes Policies ESD1 to ESD18.
- Policies for Cherwell's Places:
 - Bicester: Includes Policies Bicester 1 to Bicester 13;
 - Banbury: Includes Policies Banbury 1 to Banbury 19;
 - Kidlington: Includes Policies Kidlington 1 and Kidlington 2; and,
 - Villages and Rural Areas: Includes Policies Villages 1 to Villages 5.

- The Infrastructure Delivery Plan: Includes Policy INF1.

The additional housing and employment growth contained in the proposed modifications to the Plan continues the existing strategy of focussing growth at the two main towns of Banbury and Bicester, with limited development elsewhere. Focussing the majority of growth at the two towns were the preferred options for housing distribution in the district as assessed in the HRA undertaken in 2009.

4.3 Provisions within the Plan that protect the International Sites

When planning applications are determined, all of the relevant policies and supporting text in the Plan are taken into account and used as the basis for decision-making.

Within the Plan, there are a number of provisions which seek to protect the natural environment and international sites:

- **Strategic Objective 14:** This objective seeks to protect and enhance the natural environment and Cherwell's core assets, maximising opportunities for improving biodiversity and minimising pollution;
- **Protection and Enhancement of Biodiversity and the Natural Environment (Section B – Theme 3):** The supporting text of Policies ESD9 and ESD10 states:

“...Appropriate measures as recommended by the HRA have been incorporated to avoid or minimise the effect of the plan proposals on the SAC in relation to water quality, natural groundwater flow, air quality and recreational use. A revised HRA was undertaken (2012) to accompany the Proposed Submission Local Plan to ensure that the plan proposals will not result in adverse effects on the SAC. Addendums to the HRA were published to accompany the focused consultation on proposed changes to the Plan (March 2013) and the Submission Local Plan (October 2013) which confirmed that there would be no likely significant effects on any Natura 2000 Sites as a result of the proposals within the Plan. A further Addendum to the HRA re-affirming these conclusions accompanies the proposed modifications to the Plan.

...if Oxford is unable to accommodate the whole of its new housing requirement for the 2011-2031 period within its administrative boundary the Council will continue to work jointly with the other Oxfordshire local authorities to assess all reasonable spatial options of how any unmet need could be met. The consideration of all reasonable options would include undertaking a Habitats Regulations Assessment to assess the alone and in combination effects on sites of European importance.

However, as the proposals in the Local Plan are strategic by nature, any more detailed proposals that are identified in the Local Plan Part 2 will also be subject to a Habitats Regulations Assessment to determine if they are likely to have a significant impact. Similarly, if a proposed development submitted as a planning application could have a likely significant effect on Oxford Meadows SAC then consideration and assessment would need to be undertaken...”

- **Policy ESD9 – Protection of Oxford Meadows SAC:** This policy states that new development must not significantly alter ground water flows and must ensure that the hydrological regime of Oxford Meadows SAC is maintained in terms of water quantity and quality;

- **Policy ESD10 – Protection and Enhancement of Biodiversity and the Natural Environment:** This policy states that development which would result in damage or loss of a site of international value will be subject to the Habitats Regulations Assessment process and will not be permitted unless it can be demonstrated that there will be no likely significant effects on the international site or that effects can be mitigated;
- **Policy ESD18 – Green Infrastructure:** This policy seeks to maintain and enhance the green infrastructure network within Cherwell. This policy will help to protect Oxford Meadows SAC as it will lead to improvements in the green infrastructure within Cherwell (and accessibility to the green infrastructure network) meaning that people will be able to enjoy the green space in their local area rather than having to travel (e.g. to Oxford Meadows SAC for a day visit); and,
- **Policy BSC11 – Local Standards of Provision – Outdoor Recreation:** This policy seeks to increase the amount of open space, sport and recreation facilities in Cherwell and outlines the required levels to be provided by each new development (based on size). The requirement to provide areas of open space within proposed developments will help to protect the Oxford Meadows SAC. This is because these areas of natural green space which will be easily accessible to local residents will help to prevent people travelling further afield for recreation purposes (e.g. to Oxford Meadows SAC for a day visit).

4.4 Housing Trajectory

The Local Plan housing trajectory 2011-2031, (August 2014), represents the anticipated annual rate of housing delivery in the current housing market (2014). It does not preclude the earlier delivery of sites.

The trajectory indicates that half of the expected housing is likely to be delivered by 2020/2021, after which the rate of delivery decreases. This HRA has taken the rate of delivery of the housing trajectory into account through the air quality ecosystem assessment (Appendix C, section D). The analysis indicates that although the expected rate of delivery is higher at the start of the Plan period, due to the change in background NO_x concentration compared with the proposed development trajectory, the worst case scenario for air quality is the future year when all developments have been completed (2031) which results in the maximum change to traffic flows. Expected changes in air quality emissions in future years beyond 2020 appear to be limited within the SAC, confirming that the correct 'worst case scenario for air quality' was selected.

5. Other Projects and Plans

A total of 2 HRAs have been identified as part of the search for other projects and plans undertaken in support of the Stage 1 Screening of the Submission Cherwell Local Plan incorporating Proposed Modifications 2014. However, reviews and updates have been undertaken for each stage of the HRA to ensure the assessment of 'in combination' effects reflects the most up to date information. The details of HRAs reviewed during previous assessments have been included below in the tables below.

Table 5.1: HRAs carried out due to possible impacts on Oxford Meadows SAC identified in 2014

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Proposed Submission Cherwell Local Plan?
Oxford City Council	Northern Gateway Area Action Plan HRA	<p>Conclusion: This assessment concludes that the site can be developed without any impact on the balanced hydrological regime at the Oxford Meadows SAC. There are three small areas of land within the Northern Gateway boundary that are not within the Oxford Clay Formation.</p> <p>This HRA recommends that the AAP precludes development on those areas of land until the applicant is able to submit evidence (as part of a planning application) to demonstrate conclusively that there would be no adverse impact on the integrity of the Oxford Meadows SAC from built development on those parcels of land. The AAP has included text to this effect in the section on drainage and has a policy on the conditions under which planning permission will be granted on the site in relationship to the SAC.</p>	None
Vale of White Horse	Vale of White Horse District Council: Preferred Approach Local Plan 2029 Part 1 HRA	<p>Conclusion: Pending consultation with Natural England, this Habitat Regulations Assessment concludes that the development set out in the Vale of White Horse Local Plan 2029 Part 1 will not lead to likely significant effects on any European sites, either alone or in</p>	None

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Proposed Submission Cherwell Local Plan?
		combination with other projects or plans.	

Table 5.2: HRAs carried out due to possible impacts on Oxford Meadows SAC identified in 2012

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Proposed Submission Cherwell Local Plan?
West Oxfordshire District Council	East of Carterton, Oxfordshire: (Habitat Regulations Assessment – Stage 1 Screening (February 2012)	Conclusion: The HRA concluded that this project is unlikely to have likely significant effects upon Oxford Meadows SAC as a result of altered water quality, water quantity, decreased air quality and/increased recreational pressure.	None
South Oxfordshire District Council	Appropriate Assessment of South Oxfordshire District Council's Submission Core Strategy (February 2012)	Conclusion: The HRA concluded that the plans and policies within this Plan will not lead to likely significant effects on Oxford Meadows SAC, alone or in combination with other plans and projects.	None
Oxford City Council	Oxford Core Strategy - Habitats Regulations Assessment (April 2011)	Conclusion: The HRA concluded that none of the policies in the Plan are likely to have adverse effects on the integrity of Oxford Meadows SAC with regard to the following environmental requirements of the site: maintenance of traditional hay cut and light aftermath grazing, absence of direct fertilisation, minimal air pollution, absence of nutrient enrichment of waters, good water quality, balanced hydrological regime and recreational pressures.	None
Oxford City Council	Sites and Housing DPD: Habitats Regulations Assessment (February 2012)	Conclusion: The HRA concluded that this DPD is not likely to have any adverse impact on the Oxford Meadows SAC, either alone, or in combination with other plans or projects (with mitigation measures put in place)	None (with mitigation measures put in place)

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Proposed Submission Cherwell Local Plan?
Oxford City Council	Barton Area Action Plan DPD: Habitats Regulations Assessment – Screening (February 2012)	Conclusion: The HRA concluded that this DPD is not likely to have likely significant effects on the Oxford Meadows SAC (including effects from air pollution, water quality, changed hydrological regime, increased recreational pressure, changed maintenance of habitats and changes in fertilisation).	None
Oxfordshire County Council	Oxfordshire Minerals and Waste Plan - Minerals and Waste Core Strategy Habitats Regulations Assessment: Screening Report for mineral and waste preferred strategies (August 2011)	Conclusion: This HRA concluded that there may be likely significant effects on from potential impacts on groundwater and surface water flows at Oxford Meadows SAC from a number of mineral extraction sites. Further HRA assessment needed (see below).	None: Although the Minerals and Waste Plan may lead to adverse effects on the integrity of Oxford Meadows SAC these effects are in relation to changes in hydrology. The HRA of the Cherwell Local Plan has confirmed that there will be no changes to the hydrology of the Oxford Meadows SAC as a result of the policies and proposals within it. Therefore no in combination effects are likely to occur with this Plan.
	Habitats Regulations Assessment for Oxfordshire Minerals Planning Strategy - Technical Supplement (January 2012)	Conclusion: This Stage 1 Screening and preliminary Stage 2 – Appropriate Assessment has concluded that there are four sites within the plan which may lead to adverse impacts on the integrity of Oxford Meadows SAC (through hydrological changes such as water levels, water quality and nutrient enrichment). The HRA states that it is currently unclear if these impacts can be successfully mitigated. A series of recommendations for mitigation are put forward but more detailed assessment is required.	

It is also noted that the following plan is currently being subject to HRA:

- West Oxfordshire District Council – Local Plan:** This HRA is currently being completed. The two key issues identified are recreational pressure and pollution in relation to road traffic, in particular airborne nitrogen, on Oxford Meadows SAC. Verbal discussions with Natural England broadly agree with the finding of no likely significant effects. The level of growth within the local authority has not been established, but is likely to be within the South East Plan figures.

- The formal findings of this HRA were not available at the time of writing of this report and, as such, in combination effects could not be considered any further as part of the Stage 1 – Screening of the Cherwell District Council’s Local Plan.

Results of Previous Other Projects and Plans Assessments (2009 and 2010)

Two HRAs were identified due to the possibility of likely significant effects on Oxford Meadows SAC in February 2011 as part of the previous HRA Stage 1 (Screening) of the *Draft Core Strategy* (February 2010). The details of each HRA and a summary of their findings are given in Table 5.3 below.

Table 5.3 HRAs carried out due to possible impacts on Oxford Meadows SAC identified in 2010

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Proposed Submission Cherwell Local Plan?
Vale of White Horse District Council	Vale of White Horse LDF Core Strategy: Preferred Approaches Habitat Regulations Assessment (April 2010)	<p>Conclusion: Issues of recreational pressure, air quality and water quality have all been considered in relation to impacts of the Core Strategy on the Oxford Meadows SAC. The assessment concluded no likely significant effects on Oxford Meadows SAC.</p> <p>Natural England’s View: Natural England has objected to the findings of the HRA in relation to air quality (the baseline data relating to nitrogen oxides was not up to date and needed reviewing). Natural England has asked that the HRA is revised.</p> <p>A revised version of the HRA has not been produced to date¹².</p>	<p>There is the potential for in combination effects on the Oxford Meadows SAC resulting from in combination with effects from the Vale of White Horse Core Strategy.</p> <p>However, in order for the Local Development Framework documents to be adopted it will be necessary for the Plans to be subject to a repeat of Stage 1 or the HRA process (and potentially the completion of Stage 2). Depending on the findings of the assessment(s) the documents may need to be subject to the further stages of the HRA process: Stage 3 – Assessment of Alternative Solutions and Stage 4 - IROPI.</p> <p>Where necessary, appropriate mitigation measures for the documents will need to be agreed with Natural England (to ensure adverse effects on integrity</p>

¹² Consultation with Vale of White Horse District Council in June 2012 confirmed that an update is currently being commissioned

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Proposed Submission Cherwell Local Plan?
			<p>of Oxford Meadow SAC do not occur). Should the documents progress to Stage 4 of the HRA process it will be necessary for the Council to agree suitable compensatory measures to offset the negative effects with the Secretary of State and Natural England. Only once the mitigation measures or compensatory measures have been agreed with the relevant bodies will the plan(s) be adopted.</p> <p>The mitigation measures will ensure that there are no in combination effects on Oxford Meadow SAC.</p>
Oxford City Council	Oxford Core Strategy Habitats Regulations Assessment (updated version, July 2009)	<p>Conclusion: This Habitats Regulations Assessment has concluded that none of the policies in the Oxford 2026 Core Strategy Proposed Submission Document are likely to have significant effects on the Oxford Meadows SAC.</p> <p>Natural England's View: Natural England had concerns relating to the Northern Gateway project and thinks further assessment was required in relation to recreational pressure, air quality and hydrology. The Plan states that HRA will be undertaken of lower tier documents (e.g. the Area Action Plan). The Plan (and the Natural England comments) has been submitted to the Planning Inspector and the Plan has now been adopted.</p>	None

Seven HRA's were identified due to the possibility of likely significant effects on Oxford Meadows SAC in October 2009 as part of the previous HRA Stage 1 (Screening) of the *Options for Growth: Consultation on Direction of Growth and Strategic Sites – Core Strategy Development Plan Document* (September 2008). The details of each HRA and a summary of their findings are given in Table 5.4 below.

Table 5.4: HRAs carried out due to possible impacts on Oxford Meadows SAC identified in October 2009

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Submission Draft of Core Strategy?
Cherwell District Council	Appropriate Assessment of Draft Revised Comprehensive Planning Brief SPD for the Upper Heyford Airbase: Screening (September 2006)	<p>Possible impacts on the Oxford Meadows SAC from a possible decrease in air quality and a change in hydrological regime (HRA completed before the Environment Agency Review of Consents and Flood Risk Management Strategy – see below).</p> <p>The report suggests avoidance and mitigation measures to be incorporated into the final draft of the SPD.</p> <p>Conclusions: Potential for likely significant effects on Oxford Meadows SAC if no mitigation measures are put in place.</p>	None (with mitigation measures put in place)
Environment Agency	Oxford Flood Risk Management Strategy - Strategic Environmental Assessment - Environmental Report (June 2009)	<p>Possible impacts on Oxford Meadows SAC from flood risk management and water resource plans suggested within the report. There are some uncertainties regarding operation of a flood storage area and potential impacts on Oxford Meadows SAC. To address these uncertainties, the Environment Agency is recommending further research. If this work shows that there would be significant impacts to designated nature conservation sites which could not be mitigated or compensated for, then the flood storage area will not be implemented.</p> <p>However there are no likely significant impacts on the SAC from current water abstraction activities¹³.</p> <p>Conclusion: No likely significant effects on the Oxford Meadows SAC are anticipated.</p>	None
Oxford City Council	Oxford Core Strategy Habitats Regulations Assessment (September 2008)	Conclusion: No likely significant effects on the Oxford Meadows SAC are anticipated.	None
South East England Regional	Regional Spatial Strategy (RSS) for the South East	The HRA concludes that although the final RSS has not itself lowered housing allocations for those sub-regions or	None

¹³ Page 39 of report and confirmed in *Supporting Guidance: Habitats Directive:(Appendix 21) Proforma for Stage 3 Assessment of Adverse Effect on Site Integrity – Review of Consents* (Environment Agency, 11/07/05)

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Submission Draft of Core Strategy?
Assembly	- Sustainability Appraisal and Habitats Regulations Assessment/ Appropriate Assessment of the Secretary of State's Final Revisions (April 2009)	<p>districts in which the HRA/AA of the draft Proposed Changes identified a potential conflict with European sites it does provide (via the feedback loop) within Policy NRM5 a clear opportunity for this to occur if lower tier assessments and the further detail that will arise during implementation planning confirm that the required levels of housing cannot be delivered.</p> <p>Although the RSS does not provide detailed avoidance and mitigation strategies for all impacts and effects that may arise from the Plan upon every European site (both since the housing and employment etc allocations in the RSS generally lack sufficient spatial specificity to allow a detailed assessment and because it would require a policy for each European site which would make the Plan repetitive and unwieldy) it sets out a policy framework through which additional guidance of this nature to local authorities can and will be provided by the Secretary of State through Supplementary Planning Documents or similar.</p> <p>Conclusion: The final South East Regional Spatial Strategy has (within the constraints of mechanisms available to regional planning policy) made extensive changes to policy in order to ensure that adverse effects do not result on European sites. There is also acknowledgement within the RSS that the regional HRA/AA and mitigating policies are inevitably high-level, but this is recognised and allowed for through a policy framework to produce more detailed tailored guidance and for regional allocations to be revised in the light of new data coming forward from lower tier HRA/AA or other relevant studies (e.g. Water Cycle Studies). These measures thus ensure the greatest confidence possible within the confines of regional planning that development under the South East Plan will not result in adverse effects on European sites.</p>	

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Submission Draft of Core Strategy?
Vale of White Horse District Council	Habitat Regulations Assessment of the Vale of the White Horse LDF Core Strategy Issues and Options - Screening Report (Final) (November 2008)	<p>Possible impacts on Oxford Meadows SAC from policies in the Plan due to:</p> <ul style="list-style-type: none"> • Decreased water quality; and • Increased recreational usage of the site. <p>The report suggests avoidance and mitigation measures to be incorporated into the final draft of the Core Strategy.</p> <p>Conclusions: Potential for likely significant effects on Oxford Meadows SAC if no mitigation measures are put in place. Stage 2 and potentially Stage 3 of HRA required to determine impacts on the Oxford Meadows SAC from decreased water quality.</p> <p><i>N.B. Conclusions now superseded by information provided in the HRA of the Preferred Approaches Core Strategy produced by this Council in April 2010 (see Table 5.3 above).</i></p>	See Table 5.2 above
West Oxfordshire District Council	Sustainability Appraisal Scoping Report - Appendix 4 Appropriate Assessment – Scoping Statement (February 2008)	<p>Possible impacts on Oxford Meadows SAC from policies in the Plan due to:</p> <ul style="list-style-type: none"> • Alteration of hydrological regime (due to increased water abstraction); • Decreased water quality; • Increased air pollution; and, • Mineral extraction. <p>The report suggests avoidance and mitigation measures to be considered when site options are developed in West Oxfordshire and when Local Development Framework Plans are developed (which will be subject to the HRA screening and assessment process).</p> <p>Conclusions: Potential for likely significant effects on Oxford Meadows SAC if no mitigation measures are put in place.</p> <p>Natural England's View: Natural England has requested that the relevant stages of the HRA process are completed for the West Oxfordshire Local Development Framework Plans as they are developed.</p>	None (with mitigation measures put in place by West Oxfordshire District Council)
Department for Communities	Eco-towns Sustainability Appraisal and	Possible impacts on Oxford Meadows SAC from policies in the Plan due to increased recreational usage of the	None (with mitigation measures put in place by Eco-towns).

Statutory Body	Title of HRA	Findings of HRA	In Combination Effects With Submission Draft of Core Strategy?
and Local Government	Habitats Regulations Assessment of the Eco-towns Programme Weston Otmoor and Cherwell (November 2008).	<p>site.</p> <p>The report suggests avoidance and mitigation measures to be incorporated into the Eco-Towns Planning Policy Statement.</p> <p>Conclusions: Potential for likely significant effects on Oxford Meadows SAC if no mitigation measures are put in place.</p>	

6. HRA Stage 1 Screening Results

Site Designation Status	Oxford Meadows Special Area of Conservation (SAC)
Describe the individual elements of the Plan likely to give rise to impacts on the International Site	<p>None of the 76 policies (or the proposals therein) present in the Cherwell Local Plan Submission Local Plan incorporating Proposed Modifications will lead to likely significant effects on Oxford Meadows SAC.</p> <p>The Plan puts forward fifteen strategic housing allocation sites (Policies Bicester 1, Bicester 2, Bicester 3, Bicester 12, Bicester 13, Banbury 1, Banbury 2, Banbury 3, Banbury 4, Banbury 5, Banbury 16, Banbury 17, Banbury 18, Banbury 19 and Villages 5), nine proposed strategic employment sites (Policies Bicester 1, Bicester 2, Bicester 4, Bicester 10, Bicester 11, Bicester 12, Banbury 6, Banbury 15 and Villages 5) and three proposed strategic town centre allocations (Policies Bicester 6, Banbury 8 and Banbury 9). All of these sites have been assessed in detail and have been found not to lead to likely significant effects on Oxford Meadows SAC (see Table B-1 in Appendix B for justifications of these conclusions).</p> <p>A total of 28 policies in the Plan may lead to development in the long term (Policies PSD1, SLE1, SLE2, SLE3, SLE4, BSC5, BSC7, BSC8, BSC9, BSC10, BSC12, ESD5, ESD14, ESD17, Bicester 5, Bicester 7, Bicester 8, Bicester 9, Banbury 7, Banbury 10, Banbury 11, Banbury 13, Kidlington 1, Kidlington 2, Villages 1, Villages 3, Villages 4 and INF1). However, these policies do not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of these policies, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have any likely significant or adverse effects on the integrity Oxford Meadows SAC (or that effects can be adequately mitigated). If it cannot be proven that there will no likely significant or adverse effects on the integrity of this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed. As no locations or quanta of development are provided</p>

	<p>within these policies, this approach to the HRA process will not affect the deliverability of the plan. Therefore, these policies are predicted not to lead to likely significant effects on Oxford Meadows SAC.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from the Plan alone.</p>
<p>Describe any likely direct, indirect or secondary impacts of the Plan on the International Site by virtue of:</p> <ul style="list-style-type: none"> • Size and scale; • Land take; • Resource requirements (i.e. water extraction etc); • Emissions (disposal to land, water or air); • Excavation requirements; • Duration of construction, operation, decommissioning etc.; and • Other. 	<p>There are no likely direct, indirect or secondary impacts on the qualifying features of Oxford Meadows SAC from any of the policies in the Plan (see Table B-1 in Appendix B below).</p>
<p>Describe any likely changes to the international site arising as a result of:</p> <ul style="list-style-type: none"> • Reduction of habitat area; • Disturbance to key species; • Habitat or species fragmentation; • Reduction in species density; • Changes in key indicators of conservation value (e.g. water quality); and • Climate change 	<p>There are no likely changes to the qualifying features of Oxford Meadows SAC from any of the policies in the Plan (see Table B-1 in Appendix B below).</p>
<p>Describe whether the Plan will lead to likely significant effects on the international site alone or in combination</p>	<p>There are no likely significant effects on the Oxford Meadows SAC from the Plan alone (see above)</p> <p>In combination effects have been considered as part of this assessment. None of the other projects and plans identified in Section 5 (see above) will lead to significant effects on Oxford Meadows (providing mitigation measures are put in place).</p> <p>The assessment identified the possibility of development in Cherwell, in combination with planned development in the rest of Oxfordshire,</p>

leading to a deterioration of air quality within the Oxford Meadows SAC. Traffic and air quality assessments have been completed (see Appendix C) and it has been determined that there are no likely significant effects on Oxford Meadows SAC from the development proposed in the Local Plan alone, or in combination with development to be provided in Central Oxfordshire by 2031 (see Table B-1 in Appendix B).

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7. Conclusions

Is the Submission Cherwell Local Plan incorporating Proposed Modifications 2014 likely to have a significant effect 'alone or in combination' on Oxford Meadows SAC?

Atkins has completed Stage 1 of the Habitats Regulations Assessment process for the Cherwell District Council's Submission Cherwell Local Plan incorporating Proposed Modifications (August 2014).

HRA is required by Regulation 21 of the Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations) for all plans and projects which may have adverse effects on international sites. One international site is considered in this HRA: Oxford Meadows SAC. This HRA has assessed whether the 76 policies included in the Plan are likely to lead to significant effects on Oxford Meadows SAC and what these likely impacts are.

The Plan puts forward fifteen strategic housing allocation sites (Policies Bicester 1, Bicester 2, Bicester 3, Bicester 12, Bicester 13, Banbury 1, Banbury 2, Banbury 3, Banbury 4, Banbury 5, Banbury 16, Banbury 17, Banbury 18, Banbury 19 and Villages 5), nine proposed strategic employment sites (Policies Bicester 1, Bicester 2, Bicester 4, Bicester 10, Bicester 11, Bicester 12, Banbury 6, Banbury 15 and Villages 5) and three proposed strategic town centre allocations (Policies Bicester 6, Banbury 8 and Banbury 9). All of these sites have been assessed in detail and have been found not to lead to likely significant effects on Oxford Meadows SAC (see Table B-1 in Appendix B for justifications of these conclusions).

A total of 28 policies in the Plan may lead to development in the long term (Policies PSD1, SLE1, SLE2, SLE3, SLE4, BSC5, BSC7, BSC8, BSC9, BSC10, BSC12, ESD5, ESD14, ESD17, Bicester 5, Bicester 7, Bicester 8, Bicester 9, Banbury 7, Banbury 10, Banbury 11, Banbury 13, Kidlington 1, Kidlington 2, Villages 1, Villages 3, Villages 4 and INF1). However, these policies do not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of these policies, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have any likely significant or adverse effects on the integrity of Oxford Meadows SAC (or that effects can be adequately mitigated). If it cannot be proven that there will no likely significant or adverse effects on the integrity of this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed. As no locations or quanta of development are provided within these policies, this approach to the HRA process will not affect the deliverability of the plan. Therefore, these policies alone have been found not to lead to likely significant effects on Oxford Meadows SAC.

The remaining policies in the Plan will not lead directly to development and will not have any likely significant effects on the Oxford Meadows SAC.

Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from any of the 76 policies (or proposals therein) contained in the Cherwell Local Plan: Submission Cherwell Local Plan incorporating Proposed Changes (August 2014) alone.

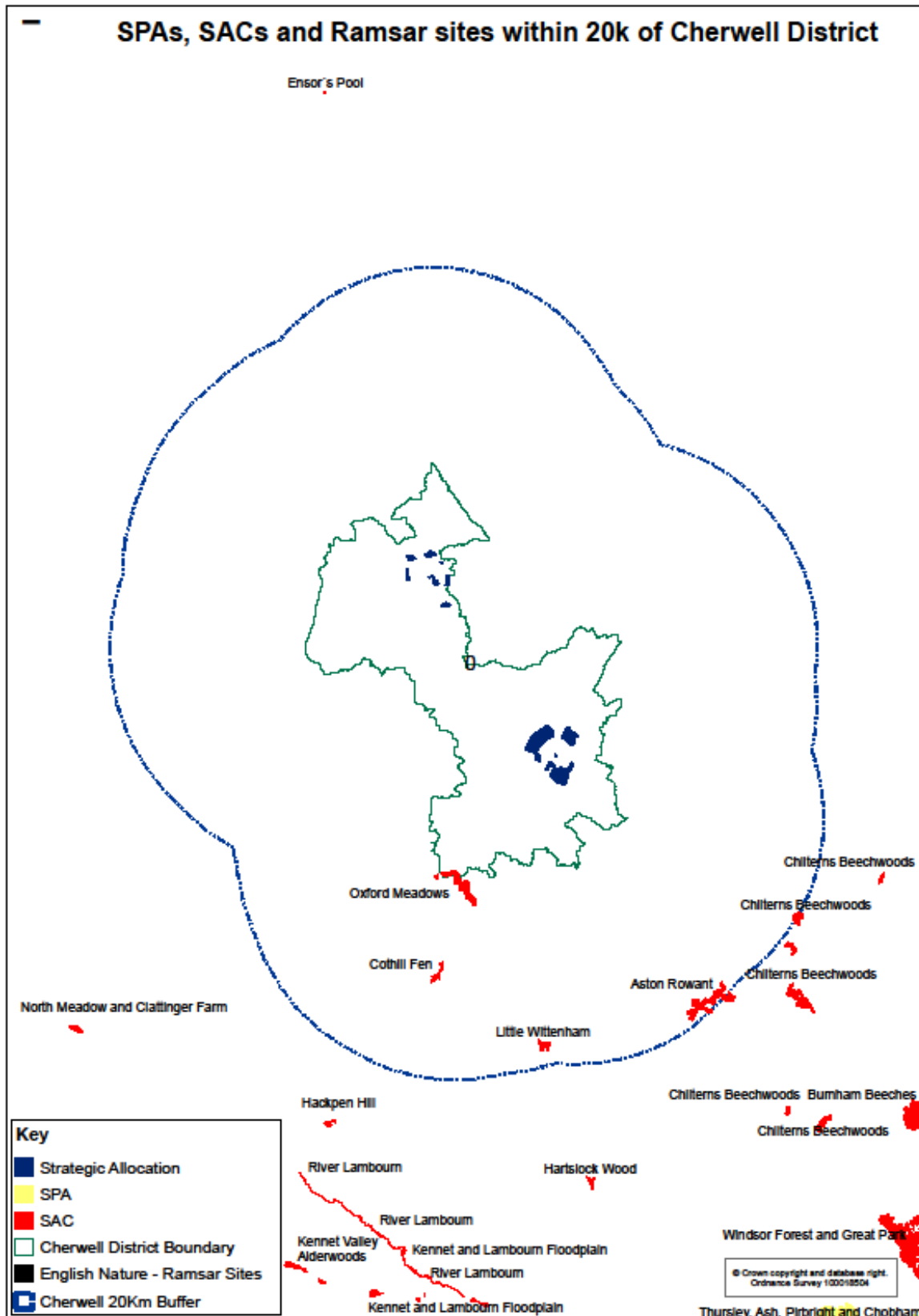
In accordance with the Habitats Regulations, this Stage 1 of the Habitats Regulations Assessment has also completed an in combination assessment. None of the other projects and plans identified (see Section 5) will lead to significant effects on Oxford Meadows in combination with the Policies contained in the Local Plan (providing mitigation measures are put in place). The HRA identified the possibility of development in Cherwell, in combination with planned development in the rest of Oxfordshire, leading to a deterioration of air quality within the Oxford Meadows SAC. Traffic and air quality assessments have been completed (see Appendix C) and it has been determined that there are no likely significant effects on Oxford Meadows SAC from the development proposed in the Local Plan alone, or in combination with other planned development to be provided in Oxfordshire by 2031 (see Table B-1 in Appendix B).

In conclusion, the Stage 1 (Screening) assessment has determined that the Cherwell District Council Submission Cherwell Local Plan incorporating Proposed Modifications (August 2014) will not lead to likely significant effects, either alone or in combination, on the qualifying features of Oxford Meadows SAC.

Appendix A

Drawings

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Appendix B

Results of the HRA on Each Policy in the Submission Cherwell Local Plan incorporating Proposed Modifications August 2014

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B.1 HRA Results Tables

This Appendix contains Table B-1 (see below) which summarises the features of each of the proposed policies within the Plan and whether each policy is considered to have a likely significant effect on the Oxford Meadows SAC.

The likely significant effects take into account the measures in the Plan which seek to protect international sites.

Where possible, policies that have been found to have no likely significant effect on an international site have been categorised into one of five different types:

- **Policy Type A1:** Options/policies that will not themselves lead to development (e.g. because they relate to design or other qualitative criteria for development, or they are not a land use planning policy);
- **Policy Type A2:** Options/policies intended to protect the natural environment, including biodiversity;
- **Policy Type A3:** Options/policies intended to conserve or enhance the natural, built or historic environment, where enhancement measures will not be likely to have any negative effect on an international site;
- **Policy Type A4:** Options/policies that positively steer development away from international sites and associated sensitive areas; and,
- **Policy Type A5:** Options/policies that would have no effect because no development would occur through the policy itself, the development being implemented through later policies in the same plan (which are more specific and therefore more appropriate to assess for their effects on international sites and associated sensitive areas)

This has been taken from *The Habitats Regulations Assessment of Local Development Documents (Revised Draft Guidance)* produced by Natural England in February 2009.

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Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
Policies for Development in Cherwell: Theme One – Policies for Developing a Sustainable Local Economy				
PSD1	Presumption in Favour of Sustainable Development	<p>When considering development proposals the Council will take a proactive approach to reflect the presumption in favour of sustainable development contained in the National Planning Policy Framework.</p> <p>Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision then the Council will grant permission unless material considerations indicate otherwise taking into account whether:</p> <ul style="list-style-type: none"> any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the National Planning Policy Framework taken as a whole; or specific policies in the Framework indicate that development should be restricted. 		<p>The principles of this policy will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policies ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will be no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
SLE1	Employment Development	<p>This policy outlines the criteria developers will have to meet if they wish to :</p> <ul style="list-style-type: none"> change the use of an employment site (or develop it for non-employment use); Put forward employment proposals at Banbury or Bicester on new, non-allocated sites; Put forward new employment proposals within rural areas. 	No	<p>This policy may lead to development (e.g. employment development proposals). However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents.</p> <p>Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policies ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will be no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
SLE2	Securing Dynamic Town Centres	<p>This policy states that retail and other town centre uses will be directed towards the three urban centres of Banbury, Bicester and Kidlington.</p> <p>The policy also outlines the criteria that proposals for such uses outside these centres will have to meet in order to be considered for planning permission (e.g. there is a proven need for the development).</p>	No	As for SLE1 – Employment Development (see above).
SLE3	Supporting Tourism Growth	This policy states that the Council will support proposals for new or improved tourist facilities.	No	As for SLE1 – Employment Development (see above).
SLE4	Improved Transport and Connections	<p>This policy states that the Council will support key transport proposals including:</p> <ul style="list-style-type: none"> Transport improvements at Banbury and Bicester in accordance with the County Council's Local Transport Plans and Movement Studies 	No	<p>This policy will lead to development in the long term. However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and/or will be detailed in lower tier planning documents. None of these proposals are committed to by this Plan and will be expected to adhere to the policies outlined in the Local Plan as and when they arise.</p> <p>The County Council's Local Transport Plan will need to be subject to a Habitats Regulations Assessment. The Bicester and Banbury Movement Studies consider the strategic allocations sites detailed in Policies</p>

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
		<ul style="list-style-type: none"> Projects associated with East-West rail; Rail freight associated with development Graven Hill, Bicester; and Improvements to M40 junctions 		<p>Bicester 1, Bicester 2, Bicester 3, Bicester 4, Bicester 6, Bicester 8, Bicester 10, Bicester 11, Bicester 12, Bicester 13, Banbury 1, Banbury 2, Banbury 3, Banbury 4, Banbury 5, Banbury 6, Banbury 8, Banbury 9 Banbury 16, Banbury17, Banbury 18, Banbury 19, and Villages 5) below. The traffic generated by these allocations and subsequent air quality effects on Oxford Meadows SAC have been assessed as part of this HRA and no likely significant effects have been identified (see below). As such, it is considered that the construction of these new roads will not lead to significant effects on Oxford Meadows SAC. Furthermore, these proposals will be presented in detail in the Banbury Masterplan and the Bicester Masterplan (to be progressed following adoption of the Local Plan). If necessary, these plans will be subject to the HRA process and any requirement for mitigation will be identified as part of these assessments.</p> <p>The East-West Rail projects are under way and have been/are undergoing Environmental Impact Assessments. The Council is not responsible for funding or delivering these schemes. Should any planning applications arise in relation to these projects, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policies ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will be no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not give permission for the development to be constructed.</p> <p>Rail freight associated with Graven Hill is also outlined in this policy. There is a current outline planning application for development at Graven Hill (planning reference: 11/01494/OUT). The Masterplan that accompanies this application refers to the potential for rail freight. However, the Masterplan is indicative only and does not form part of the application. Therefore any rail freight proposal would need to be subject to a separate planning application. An Environmental Impact Assessment (EIA) has been prepared to support the application and this includes reference to the potential for rail freight to be used to serve an area of employment development which forms part of the proposals. The potential for rail freight is not assessed as part of the EIA but the employment development is. The transport assessment that forms part of the EIA indicates that discussions have been held with Network Rail regarding the potential for rail freight. However, this has not been assessed at this stage as more details of the users/occupiers of the employment land and whether they are likely to use a rail freight facility would need to be known before this could be undertaken. The Council is not responsible for funding or delivering these schemes. Should any planning application arise in relation to rail freight at this location all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policies ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will be no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
SLE5	High Speed Rail 2 – London to Birmingham	<p>This policy states that the design and construction of the High Speed 2 Rail Link (HS2) must minimise adverse effects on the environment, economy and local communities in Cherwell.</p> <p>It also sets out criteria that HS2 will be expected to meet (e.g. high quality design to protect the environment from noise and visual intrusion).</p>	No	<p>Policy Type A1: This policy will not lead to directly development. It provides criteria for development only.</p>

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Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
Policies for Development in Cherwell: Theme Two – Policies for Building Sustainable Communities				
BSC1	District Wide Housing Distribution	This policy outlines the distribution of housing within the District. The policy states that 22,840 additional homes are to be provided between 1 st April 2011 and 31 st March 2031.	No	Policy Type A5: This policy identifies that a total of 22,840 additional homes will be provided in Cherwell district by 2031. However, this policy will have no effect on Oxford Meadows SAC as no development will occur through the policy itself. Development will be implemented through Policies Bicester 1, Bicester 2, Bicester 3, Bicester 12, Bicester 13, Banbury 1, Banbury 2, Banbury 3, Banbury 4, Banbury 5, Banbury 8, Banbury 16, Banbury 17, Banbury 18, Banbury 19 and Villages 5). None of these seventeen policies have been found to have a likely significant effect on the qualifying features of Oxford Meadows SAC.
BSC2	The Effective and Efficient Use of Land – Brownfield land and Housing Density	This policy states that development must make efficient and sustainable use of land and encourage the re-use of previously developed land in sustainable locations.	No	Policy Type A1: This policy will not lead to directly development. It provides criteria for development only.
BSC3	Affordable Housing	This policy sets out the affordable housing requirements for all proposed developments (e.g. at Banbury and Bicester all developments that include 10 or more dwellings will be expected to provide at least 30% affordable homes on site).	No	Policy Type A1: This policy will not lead to directly development. It provides criteria for development only.
BSC4	Housing Mix	This policy states that new residential development will be required to provide a mix of homes to meet current and expected future requirements in the interests of meeting housing need and creating socially mixed and inclusive communities.	No	Policy Type A1: This policy will not lead to directly development. It provides criteria for development only.
BSC5	Area Renewal	This policy states that the Council will support renewal proposals that improve the physical and community fabric of a defined area, improve social outcomes, improve health and wellbeing, educational attainment and employment outcomes.	No	This policy may lead to development. However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed. As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan. Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.
BSC6	Travelling Communities	This policy states that sites for travelling communities will be identified in the Local Neighbourhoods Development Plan Document (a lower tier plan document). The policy outlines the criteria which identifying sites suitable for Gypsies, Travellers and Travelling Showpeople should adhere to.	No	Policy Type A1: This policy will not lead directly to development. It provides the criteria that must be met for the locations of Gypsy and Traveller sites to be considered in the Local Neighbourhoods Development Plan Document.
BSC7	Meeting Education Needs	This policy states that the Council will work with partners to ensure the provision of pre-school, school, community learning and other facilities which provide for education and the development of skills.	No	As for Policy BSC5 – Area Renewal (see above).
BSC8	Securing Health and Wellbeing	This policy states that the Council will support the provision of	No	As for Policy BSC5 – Area Renewal (see above).

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
		health facilities in sustainable locations.		
BSC9	Public Services and Utilities	This policy states that the Council will support proposals which involve new or improvements to public services/utilities.	No	As for Policy BSC5 – Area Renewal (see above).
BS10	Open Space, Outdoor Sport and Recreation Provision	This policy outlines the criteria that the Council will follow in order to ensure that an appropriate quantity and quality of open space, sport and recreation provision is secured in the District (e.g. protecting sites of existing value).	No	As for Policy BSC5 – Area Renewal (see above).
BSC11	Local Standards of Provision – Outdoor Recreation	This policy states that all development proposals are required to contribute towards the provision of open space, sport and recreation. The policy outlines the amount, type and form of open space to be provided by each development (based on the nature and size of the development proposed).	No	Policy Type A1: This policy will not lead directly to development. It provides criteria for development only. Furthermore, the requirement to provide areas of open space within proposed developments will help to protect the Oxford Meadows SAC. This is because these areas of natural green space which will be easily accessible to local residents will help to prevent people travelling further afield for recreation purposes (e.g. to Oxford Meadows SAC for a day visit).
BSC12	Indoor Sport, Recreation and Community Facilities	This policy outlines the criteria that the Council will follow in order to ensure that built sports provision is maintained (e.g. by protecting and enhancing the quality of existing facilities and ensuring new development contributes towards new or improved facilities).	No	As for Policy BSC5 – Area Renewal (see above).
Policies for Development in Cherwell: Theme Three – Policies for Ensuring Sustainable Development				
ESD1	Mitigating and Adapting to Climate Change	This policy details the measures the Council will take to reduce the impact of development in the district on climate change (e.g. delivering development that seeks to reduce the need to travel). The policy also describes how development will adapt to climate change (e.g. use of passive solar design approaches for heating and cooling).	No	Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.
ESD2	Energy Hierarchy	This policy states that the Council aims to contribute to the regional targets for carbon emission reductions. It also states how the Council will promote an energy hierarchy.	No	Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.
ESD3	Sustainable Construction	This policy outlines the criteria that new developments will have to meet to ensure sustainable construction (e.g. incorporating design and construction technology to achieve zero carbon development).	No	Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.
ESD4	Decentralised Energy Systems	This policy outlines the Council's requirements for Combined Heat and Power (SHp) and District Heating (DH) for all new developments (e.g. all residential developments in off-gas areas for 50 dwellings or more).	No	Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.
ESD5	Renewable Energy	This policy states that the Council supports renewable and low carbon energy proposals where appropriate. It also outlines the criteria that the Council will assess against when planning applications are submitted (including impacts on biodiversity designations).	No	This policy may lead to development (e.g. renewable energy schemes). However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
				<p>proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta of development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
ESD6	Sustainable Flood Risk Management	This policy states that the Council will manage and reduce flood risk in the district following a sequential approach to siting development and through undertaking site specific flood risk assessments.	No	Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.
ESD7	Sustainable Drainage Systems (SuDS)	This policy states that the use of SuDS to manage surface water run-off generated by all developments will be required. It also states that Flood Risk Assessments should be used to inform how SuDS should be used at a site.	No	Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.
ESD8	Water Resources	This policy states that the Council will seek to maintain water quality and to enhance it by avoiding adverse effects of development on the water environment. The policy states that development that would have an adverse effect on water quality would not be permitted.	No	Policy Type A2: Policy intended to protect the natural environment.
ESD9	Protection of Oxford Meadows SAC	This policy states that developers will be required to demonstrate that there will be no adverse impacts on groundwater flows and water quality as a result of development. The supporting text of this policy outlines the sensitivities of the SAC to changes in hydrology.	No	Policy Type A2: Policy intended to protect the natural environment (specifically Oxford Meadows SAC).
ESD10	Protection and Enhancement of Biodiversity and the Natural Environment	This policy outlines how the Council will protect and enhance biodiversity and the natural environment through the provision of a set of criteria. This includes the need to complete a HRA of any development likely to affect internationally important sites. The criteria provided include biodiversity surveys being required to support planning applications and development proposals being expected to incorporate features to encourage biodiversity.	No	Policy Type A2 and A3: Policy intended to protect and enhance biodiversity and the natural environment.
ESD11	Conservation Target Areas	This policy states that development within or adjacent to a Conservation Target Area would be required to carry out a survey and produce a report outlining the constraints and the opportunities for enhancement. It also states that development that would prevent the aims of a Conservation Target Area being achieved will not be permitted. The Conservation Target Areas are shown on the Proposals Map in the Local Plan (which includes the Oxford Meadows SAC).	No	Policy Type A2: Policy intended to protect biodiversity and the natural environment.
ESD12	Cotswold Area of Outstanding Natural Beauty (AONB)	The policy states that the Council will seek to protect the Cotswolds AONB from damaging and inappropriate development.	No	Policy Type A3: Policy intended to protect the natural environment (specifically the Cotswolds AONB).

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Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
ESD13	Local Landscape Protection and Enhancement	<p>This policy aims to protect and enhance the character and appearance of landscape within the District.</p> <p>The policy outlines the reasons for which planning applications would be refused (e.g. causes undue visual intrusion into the open countryside).</p>	No	<p>Policy Type A3: Policy intended to protect the natural environment (specifically landscape).</p>
ESD14	Oxford Green Belt	<p>This policy states that the Oxford Green Belt boundaries will be maintained and that development proposals within the Green Belt will be assessed in accordance with the National Planning Policy Framework and will only be permitted if it maintains the Green Belt's openness, does not conflict with its purpose or harm its visual amenities.</p>	No	<p>This policy may lead to development (e.g. development proposals in the Green Belt). However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents.</p> <p>Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta of development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
ESD15	The Urban-Rural Fringe	<p>This policy states the proposals for development on the edge of built up areas must be carefully designed. It also identifies a number of green buffers which will be kept free of development.</p>	No	<p>Policy Type A1: This policy will not lead to development. It relates to design and other qualitative criteria for development only.</p>
ESD16	The Character of the Built Environment	<p>This policy seeks to protect and enhance the character of the District's built environment and outlines the criteria that new development have to meet in order to achieve this (e.g. new development should preserve and enhance designated historic assets, features, areas and their settings and ensure that it is sensitively sited and integrated).</p>	No	<p>Policy Type A3: Policy intended to protect the built and historic environment.</p>
ESD17	The Oxford Canal	<p>This policy states that the Oxford Canal will be protected as a green transport route, an industrial heritage tourist attraction and major leisure facility and will be designated a Conservation Area.</p> <p>The policy also states that the Council will support proposals to promote leisure and tourism related uses of the canal (including improved access through enhancing towpaths and small scale car parks).</p>	No	<p>The most southerly part of the Oxford Canal in Cherwell passes alongside the edge of the Oxford Meadows SAC (to the east). However, the Canal is separated from the SAC by a railway. As such any improvements to access along the Canal (or increased numbers of visitors due to new tourism and leisure facilities that may arise as a result of this policy will not lead to adverse effects on the SAC from an increase in recreational pressure.</p> <p>Furthermore, this policy may lead to development (e.g. car parks). However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents.</p> <p>Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will be no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow</p>

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Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
ESD18	Green Infrastructure	This policy outlines the measures to be implemented to ensure the green infrastructure network in the District will be maintained and enhanced, whilst protecting sites of importance for nature conservation.	No	<p>the development to be constructed.</p> <p>As no locations or quanta of development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p> <p>Policy Type A3: Policy intended to protect and enhance the natural environment. This policy will also help to protect Oxford Meadows SAC as it will lead to improvements in the green infrastructure within Cherwell (and accessibility to the green infrastructure network) meaning that people will be able to enjoy the green space in their local area rather than having to travel (e.g. to Oxford Meadows SAC).</p>
Policies for Cherwell's Places: Bicester				
Bicester 1	North-West Bicester Eco-Town	<p>This policy states that an eco-development of 6,000 homes and 6,000 jobs will be developed on land identified at North-West Bicester.</p> <p>The policy sets out the infrastructure needs and key site specific design and place shaping principles</p> <p>The policy states that 3,000 new homes and 3,000 new jobs will be delivered within the Plan period.</p>	No	<p>Water Quality</p> <p>There are no anticipated impacts on the Oxford Meadows SAC due to decreased water quality at the site. This is because this Eco-Town is not located next to watercourses that flow into the River Thames upstream of the SAC.</p> <p>Furthermore, as added protection for the Oxford Meadows SAC and all other watercourses in the District, Policy ESD9 requires developers to demonstrate that during construction and operation of any new development that there will be no adverse effects on water quality of any adjacent or nearby watercourses.</p> <p>Water Abstraction</p> <p>There are no anticipated impacts on the Oxford Meadows SAC due to increased water abstraction. Thames Water and the Environment Agency have determined that the current levels of abstraction and licence activities are not having a significant effect on the Oxford Meadows SAC¹⁴. However, Thames Water have identified that there is a planning deficit in water resources for the Swindon and Oxford Resource Zone from 2016 onwards (within which Cherwell District is located). The Thames Water Final Water Resources Management Plan has a number of provisions put in place to address this deficit. An HRA of this study has been carried out and no likely significant effects were concluded.</p> <p>Water Final Water Resources Management Plan was approved by the Secretary of State in June 2012.</p> <p>Recreation</p> <p>The Eco-Town is located approximately 16 km north-east of Oxford Meadows SAC. Bicester is surrounded by large areas of green space and it is likely that recreation levels would mostly increase in these areas (e.g. due to regular visits from dog walkers). A high quality environment will be provided at this site (as part of the Eco-Town concept) which will encourage people to stay within the Eco-Town for recreation purposes.</p> <p>Furthermore, Policy BCS11 – Local Standards of Provision outlines the required amount of open space, sport and recreation facilities to be provided by each new development (based on size). The requirement to provide areas of open space within proposed developments will help to protect the Oxford Meadows SAC. This is because these areas of natural green space which will be easily accessible to local residents will help to prevent people travelling further afield for recreation purposes (e.g. to Oxford Meadows SAC for a day visit).</p> <p>It is considered that there will be no likely significant effects on the qualifying features of Oxford Meadows SAC as a result of increased recreation from this Policy.</p> <p>Groundwater Flow</p> <p>The proposed North West Bicester Eco Town development is located overlying the sandstones, limestone and argillaceous rocks of the Great Oolite Group, while the Oxford Meadows SAC is present overlying Oxford Clay and superficial deposits (Alluvium and River Terrace Gravels) approximately 16 km to the south-west of the strategic allocation site. The Oxford Clay is considered unproductive strata where the low permeability rock layers or drift deposits have negligible significance for water supply or river base flow, therefore the superficial</p>

¹⁴ Supporting Guidance: Habitats Directive:(Appendix 21) Proforma for Stage 3 Assessment of Adverse Effect on Site Integrity – Review of Consents (Environment Agency, 11/07/05)

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
				<p>deposits are the likely groundwater supply for the SAC.</p> <p>The hydrogeological assessment shows no connectivity between the solid and drift deposits in the vicinity of the SAC. As the extent of the superficial deposits are confined to the band along the River Thames no hydrological connectivity has been determined with the sandstones, limestone and argillaceous rocks of the Great Oolite Group present underlying the development site approximately 16 km away. Therefore it is determined that the proposed residential development would not impact the groundwater flow conditions at Oxford Meadows SAC.</p> <p>Air Quality</p> <p>It is unlikely that this development 'alone' will lead to a deterioration in air quality on the roads surrounding Oxford Meadows SAC. This is mainly due to distance of the allocation site from the SAC (over 16 km).</p> <p>However, it is possible that there may be a deterioration in air quality on the roads surrounding Oxford Meadows SAC when this allocation site is considered 'in combination' with all of the other developments to be provided in the District (a total of 22,840 houses) as a result of the Plan.</p> <p>The traffic flows assessment and the subsequent air quality assessment are included in Appendix C respectively. The air quality assessment examined whether the changes in traffic flows resulting from the total of new development in Cherwell by 2031 (the end of the Plan period) would result in the critical threshold for nitrogen deposition for low and medium altitude hay meadow habitat being exceeded (critical load being between 20-30 kg N/ha/yr). The nitrogen deposition rates were modelled for the three roads that pass through the Oxford Meadows SAC: A40, A34 and Godstow Road.</p> <p>The assessment of annual mean NOx concentrations finds that the critical level is likely to be exceeded in the 2013 base scenario at all locations in transects 1 (A40) and 2 (A34) which run through the SSSI units 2 and 3 of Pixey and Yarnton Meads. The condition of these two units was reported as favourable in December 2012, therefore the expected reduction in NOx concentrations over the next 18 years up to 2031 is unlikely to cause a change to the overall condition.</p> <p>The increase in NOx concentrations as a result of including the SHMA housing and employment allocation to the existing Cherwell local plan provision is below 2 µg/m³ at all locations (the largest change was 0.5 µg/m³ at Godstow Road, and only under superseded vehicle emissions data). There were some locations where the critical level is exceeded. However, under the most recent information on future NOx emissions and background concentrations, represented by the adjusted annual mean concentrations presented in Table C.2, there is only one location, at the boundary of the SAC near to the A34 south of the A40, where the critical level is expected to be exceeded with the Cherwell growth scenario and the result of the SHMA is to increase this concentration by just 0.1 µg/m³, well below the 2 µg/m³ criteria requiring assessment of the sensitivity of relevant species within the designated site.</p> <p>The nitrogen deposition rate was determined based on background deposition rates plus the increment from the road within 200 metres for each scenario. The change in deposition rate due to the change in traffic data was noted and the total deposition rate compared with the UNECE critical load for low and medium altitude hay meadow habitat (20-30 kg N/ha/yr).</p> <p>The total deposition rate at locations in transect 1(A40), transect 2(A34) and transect 3 (Godstow Road) were all estimated to be below the lower threshold of the critical load at all locations and for both 2031 scenarios.</p> <p>The change in road increment as a result of the scenarios is less than 0.1 kg N/ha/yr for all transects locations for all scenarios. Including the additional housing and employment included with the SHMA makes no measurable change to the nitrogen deposition rates found with the Cherwell local plan.</p> <p>The results of the additional sensitivity tests for nitrogen deposition are presented in Appendix C Table C.5. The results indicated that even if the background nitrogen deposition rate reduces by 1% instead of 2% per annum between 2013 and 2031, the resulting nitrogen deposition rates are expected to be below the lower limit of the critical load for the SAC in 2031 and changes in deposition rates as a result of implementing the additional housing and employment provision in the SHMA are still less than 0.1 kg N/ha/yr.</p> <p>It is therefore concluded that the number of houses/employment sites to be provided in Bicester and Banbury in the Local Plan, in combination with the planned development in the rest of Oxfordshire by 2031, will not lead to any likely significant effects on the qualifying features of Oxford Meadows SAC.</p>

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
Bicester 2	Graven Hill	<p>This policy allocates a total of 2100 homes and 2000 new jobs at this site. It also specifies the need for associated education, health, open space and community facilities.</p> <p>It also outlines the key site specific design and place shaping principles to be put in place as part of this development.</p>	No	<p>Water Quality</p> <p>There are no anticipated impacts on the Oxford Meadows SAC due to decreased water quality at the site. This is because the allocation is not located next to watercourses that flow into the River Thames upstream of the SAC.</p> <p>Furthermore, as added protection for the Oxford Meadows SAC and all other watercourses in the District, Policy ESD9 requires developers to demonstrate that during construction and operation of any new development that there will be no adverse effects on water quality of any adjacent or nearby watercourses.</p> <p>Water Abstraction</p> <p>There are no anticipated impacts on the Oxford Meadows SAC due to increased water abstraction. Thames Water and the Environment Agency have determined that the current levels of abstraction and licence activities are not having a significant effect on the Oxford Meadows SAC¹⁵. However, Thames Water have identified that there is a planning deficit in water resources for the Swindon and Oxford Resource Zone from 2016 onwards (within which Cherwell District is located). The Thames Water Final Water Resources Management Plan has a number of provisions put in place to address this deficit. An HRA of this study has been carried out and no likely significant effects were concluded.</p> <p>The Water Final Water Resources Management Plan was approved by the Secretary of State in June 2012.</p> <p>Recreation</p> <p>Bicester is located approximately 16 km north-east of Oxford Meadows SAC. Bicester is surrounded by large areas of green space and it is likely that recreation levels would mostly increase in these areas (e.g. due to regular visits from dog walkers).</p> <p>Furthermore, Policy BCS11 – Local Standards of Provision outlines the required amount of open space, sport and recreation facilities to be provided by each new development (based on size). The requirement to provide areas of open space within proposed developments will help to protect the Oxford Meadows SAC. This is because these areas of natural green space which will be easily accessible to local residents will help to prevent people travelling further afield for recreation purposes (e.g. to Oxford Meadows SAC for a day visit).</p> <p>It is considered that there will be no likely significant effects on the qualifying features of Oxford Meadows SAC as a result of increased recreation from this Policy.</p> <p>Groundwater Flow</p> <p>The Oxford Meadows SAC is present overlying Oxford Clay and superficial deposits (Alluvium and River Terrace Gravels) approximately 16 km to the south-west of Bicester. The Oxford Clay is considered unproductive strata where the low permeability rock layers or drift deposits have negligible significance for water supply or river base flow, therefore the superficial deposits are the likely groundwater supply for the SAC.</p> <p>The hydrogeological assessment shows no connectivity between the solid and drift deposits in the vicinity of the SAC. As the extent of the superficial deposits are confined to the band along the River Thames no hydrological connectivity has been determined with the sandstones, limestone and argillaceous rocks of the Great Oolite Group present underlying the development site approximately 16 km away. Therefore it is determined that the proposed residential development would not impact the groundwater flow conditions at Oxford Meadows SAC.</p> <p>It is unlikely that the development proposed under this policy ‘alone’ will lead to a deterioration in air quality on the roads surrounding Oxford Meadows SAC. This is due to the relatively small number of houses to be provided (and thus a small increase in car usage on the roads) and the distance of the allocation site from the SAC (over 16 km).</p> <p>However, it is possible that there may be a deterioration in air quality on the roads surrounding Oxford Meadows SAC when this allocation site is considered ‘in combination’ with all of the other developments to be provided in the District (a total of 22,840 houses) as a result of the Plan.</p> <p>The traffic flows assessment and the subsequent air quality assessment are included in Appendix C</p>

¹⁵ Supporting Guidance: Habitats Directive:(Appendix 21) Proforma for Stage 3 Assessment of Adverse Effect on Site Integrity – Review of Consents (Environment Agency, 11/07/05)

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Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
				<p>respectively. The air quality assessment examined whether the changes in traffic flows resulting from the total of new development in Cherwell by 2031 (the end of the Plan period) would result in the critical threshold for nitrogen deposition for low and medium altitude hay meadow habitat being exceeded (critical load being between 20-30 kg N/ha/yr). The nitrogen deposition rates were modelled for the three roads that pass through the Oxford Meadows SAC: A40, A34 and Godstow Road.</p> <p>The assessment of annual mean NOx concentrations finds that the critical level is likely to be exceeded in the 2013 base scenario at all locations in transects 1 (A40) and 2 (A34) which run through the SSSI units 2 and 3 of Pixey and Yarnton Meads. The condition of these two units was reported as favourable in December 2012, therefore the expected reduction in NOx concentrations over the next 18 years up to 2031 is unlikely to cause a change to the overall condition.</p> <p>The increase in NOx concentrations as a result of including the SHMA housing and employment allocation to the existing Cherwell local plan provision is below 2 µg/m3 at all locations (the largest change was 0.5 µg/m3 at Godstow Road, and only under superseded vehicle emissions data). There were some locations where the critical level is exceeded, however under the most recent information on future NOx emissions and background concentrations, represented by the adjusted annual mean concentrations presented in Table C.2, there is only one location, at the boundary of the SAC near to the A34 south of the A40, where the critical level is expected to be exceeded with the Cherwell growth scenario and the result of the SHMA is to increase this concentration by just 0.1 µg/m3, well below the 2 µg/m3 criteria requiring assessment of the sensitivity of relevant species within the designated site.</p> <p>The nitrogen deposition rate was determined based on background deposition rates plus the increment from the road within 200 metres for each scenario. The change in deposition rate due to the change in traffic data was noted and the total deposition rate compared with the UNECE critical load for low and medium altitude hay meadow habitat (20-30 kg N/ha/yr).</p> <p>The total deposition rate at locations in transect 1(A40), transect 2(A34) and transect 3 (Godstow Road) were all estimated to be below the lower threshold of the critical load at all locations and for both 2031 scenarios.</p> <p>The change in road increment as a result of the scenarios is less than 0.1 kg N/ha/yr for all transects locations for all scenarios. Including the additional housing and employment included with the SHMA makes no measurable change to the nitrogen deposition rates found with the Cherwell local plan.</p> <p>The results of the additional sensitivity tests for nitrogen deposition are presented in Appendix C Table C.5. The results indicated that even if the background nitrogen deposition rate reduces by 1% instead of 2% per annum between 2013 and 2031, the resulting nitrogen deposition rates are expected to be below the lower limit of the critical load for the SAC in 2031 and changes in deposition rates as a result of implementing the additional housing and employment provision in the SHMA are still less than 0.1 kg N/ha/yr.</p> <p>It is therefore concluded that the number of houses/employment sites to be provided in Bicester and Banbury in the Local Plan, in combination with the planned development in the rest of Oxfordshire by 2031, will not lead to any likely significant effects on the qualifying features of Oxford Meadows SAC.</p>
Bicester 3	South-West Bicester Phase 2	This policy allocates a total of 726 homes and associated services, facilities and other infrastructure. The site would form an extension to the permitted urban extension at South West Bicester.	No	As for Policy Bicester 2 – Graven Hill (see above)
Bicester 4	Bicester Business Park	This policy states that up to 6000 jobs will be created at this site, exact numbers are to be confirmed. The development has already received planning permission.	No	The proposed development at this site has already been granted planning permission (subject to departure procedures and the need to complete legal agreements with Oxfordshire County Council). This proposal has been through the necessary planning and environmental assessments and has been approved by both the Competent Authority (Cherwell District Council) and Natural England.
Bicester 5	Strengthening Bicester Town Centre	This policy states that shopping, leisure and other town centre uses will be supported within Bicester town centre (see Bicester Proposals Map).	No	This policy may lead to development. However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning

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				<p>application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
Bicester 6	Bure Place Town Centre Redevelopment Phase 2	This policy states that the Council will work with the County Council and other partners to deliver new civic buildings as a second stage to the Bicester Town Centre development.	No	T The policy indicates that proposals will be considered against all other relevant policies in the Plan.
Bicester 7	Meeting the Need for Open Space, Sport and Recreation	This policy outlines how the Council will address current and future deficiencies in open space, sport and recreation provision within Bicester (e.g. establishing an urban park around the outskirts of the town).	No	As for Policy BSC10 – Open Space, Outdoor Sport and Recreation Provision (see above).
Bicester 8	RAF Bicester	This policy states that the Council will encourage conservation led proposals for heritage tourism, leisure, employment and community uses and/or the development of hotel and conference facilities.	No	As for Policy Bicester 5 – Strengthening Bicester Town Centre (see above).
Bicester 9	Burial Site in Bicester	This policy states that a new cemetery is required to meet the future development in the town and that developer contributions will be sought from new development to help towards the establishment of the facility.	No	As for Policy Bicester 5 – Strengthening Bicester Town Centre (see above).
Bicester 10	Bicester Gateway	This policy states that employment land (in the form of knowledge economy employment development) will be put in place at this site (generating approximately 3,500 jobs). It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Bicester 2 – Graven Hill (see above).
Bicester 11	North-East Bicester Business Park	This policy states that a business park for employment development will be put in place at this site (generating approximately 1000 jobs). It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Bicester 2 – Graven Hill (see above).
Bicester 12	South East Bicester	This policy states that a total of 1,500 houses and 3,000 jobs be provided at this site. It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Bicester 2 – Graven Hill (see above).
Bicester 13	Gavray Drive	This policy states that a total of 300 houses be provided at this site. It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Bicester 2 – Graven Hill (see above).

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Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
Policies for Cherwell's Places: Banbury				
Banbury 1	Banbury Canalside	<p>This policy allocates a strategic site for 700 new home, retail, office and leisure uses at Banbury Canalside.</p> <p>It also outlines the key site specific design and place shaping principles to be put in place as part of this development.</p>	No	<p>Recreation</p> <p>This allocation site is located over 29 km from the Oxford Meadows SAC. Given this distance it is considered highly unlikely that this development will lead to increased recreational pressure on this site (e.g. the most recent England Leisure Visits report states that people will travel up to 17.3 km to a countryside destination for a leisure visit¹⁶). Furthermore, Banbury is surrounded by large areas of green space that residents from the town are likely to visit for recreation purposes.</p> <p>Water Quality</p> <p>There are no anticipated impacts on the Oxford Meadows SAC due to decreased water quality. This is because this allocation site is not located next to any watercourses that flow into the River Thames upstream of the SAC.</p> <p>Furthermore, as added protection for the Oxford Meadows SAC and all other watercourses in the District, Policy ESD9 requires developers to demonstrate that during construction and operation of any new development that there will be no adverse effects on water quality of any adjacent or nearby watercourses.</p> <p>Water Abstraction</p> <p>There are no anticipated impacts on the Oxford Meadows SAC due to increased water abstraction. Thames Water and the Environment Agency have determined that the current levels of abstraction and licence activities are not having a significant effect on the Oxford Meadows SAC¹⁷. However, Thames Water have identified that there is a planning deficit in water resources for the Swindon and Oxford Resource Zone from 2016 onwards (within which Cherwell District is located). The Thames Water Final Water Resources Management Plan has a number of provisions put in place to address this deficit. An HRA of this study has been carried out and no likely significant effects were concluded.</p> <p>Water Final Water Resources Management Plan was approved by the Secretary of State in June 2012.</p> <p>Groundwater Flow</p> <p>This allocation site is located over 29 km from the Oxford Meadows SAC. Given this distance it is considered highly unlikely that this development will obstruct the natural groundwater flow to the Oxford Meadows SAC.</p> <p>Furthermore, as added protection for the Oxford Meadows SAC, Policy ESD9 requires developers to demonstrate that the groundwater flows and the hydrological regime of the Oxford Meadows SAC will not be significantly altered by a new development.</p> <p>Air Quality</p> <p>It is unlikely that the development proposed under this policy 'alone' will lead to a deterioration in air quality on the roads surrounding Oxford Meadows SAC. This is due to the relatively small number of houses to be provided (and thus a small increase in car usage on the roads) and the distance of the allocation site from the SAC (over 30 km).</p> <p>However, it is possible that there may be a deterioration in air quality on the roads surrounding Oxford Meadows SAC when this allocation site is considered 'in combination' with all of the other developments to be provided in the District (a total of 22,840 houses) as a result of the Plan.</p> <p>The traffic flows assessment and the subsequent air quality assessment respectively are included in Appendix C. The air quality assessment examined whether the changes in traffic flows resulting from the total of new development in Cherwell by 2031 (the end of the Plan period) would result in the critical threshold for nitrogen deposition for low and medium altitude hay meadow habitat being exceeded (critical load being between 20-30 kg N/ha/yr). The nitrogen deposition rates were modelled for the three roads that pass through the Oxford Meadows SAC: A40, A34 and Godstow Road.</p>

¹⁶ Page 8 of *England Leisure Visits: Summary of the 2005 Leisure Visits Survey* (Natural England, 2005)

¹⁷ *Supporting Guidance: Habitats Directive:(Appendix 21) Proforma for Stage 3 Assessment of Adverse Effect on Site Integrity – Review of Consents* (Environment Agency, 11/07/05)

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				<p>The assessment of annual mean NOx concentrations finds that the critical level is likely to be exceeded in the 2013 base scenario at all locations in transects 1 (A40) and 2 (A34) which run through the SSSI units 2 and 3 of Pixey and Yarnton Meads. The condition of these two units was reported as favourable in December 2012, therefore the expected reduction in NOx concentrations over the next 18 years up to 2031 is unlikely to cause a change to the overall condition.</p> <p>The increase in NOx concentrations as a result of including the SHMA housing and employment allocation to the existing Cherwell local plan provision is below 2 µg/m³ at all locations (the largest change was 0.5 µg/m³ at Godstow Road, and only under superseded vehicle emissions data). There were some locations where the critical level is exceeded, however under the most recent information on future NOx emissions and background concentrations, represented by the adjusted annual mean concentrations presented in Table C.2, there is only one location, at the boundary of the SAC near to the A34 south of the A40, where the critical level is expected to be exceeded with the Cherwell growth scenario and the result of the SHMA is to increase this concentration by just 0.1 µg/m³, well below the 2 µg/m³ criteria requiring assessment of the sensitivity of relevant species within the designated site.</p> <p>The nitrogen deposition rate was determined based on background deposition rates plus the increment from the road within 200 metres for each scenario. The change in deposition rate due to the change in traffic data was noted and the total deposition rate compared with the UNECE critical load for low and medium altitude hay meadow habitat (20-30 kg N/ha/yr).</p> <p>The total deposition rate at locations in transect 1(A40), transect 2(A34) and transect 3 (Godstow Road) were all estimated to be below the lower threshold of the critical load at all locations and for both 2031 scenarios.</p> <p>The change in road increment as a result of the scenarios is less than 0.1 kg N/ha/yr for all transects locations for all scenarios. Including the additional housing and employment included with the SHMA makes no measurable change to the nitrogen deposition rates found with the Cherwell local plan.</p> <p>The results of the additional sensitivity tests for nitrogen deposition are presented in Appendix C Table C.5. The results indicated that even if the background nitrogen deposition rate reduces by 1% instead of 2% per annum between 2013 and 2031, the resulting nitrogen deposition rates are expected to be below the lower limit of the critical load for the SAC in 2031 and changes in deposition rates as a result of implementing the additional housing and employment provision in the SHMA are still less than 0.1 kg N/ha/yr.</p> <p>It is therefore concluded that the number of houses/employment sites to be provided in Bicester and Banbury in the Local Plan, in combination with the planned development in the rest of Oxfordshire by 2031, will not lead to any likely significant effects on the qualifying features of Oxford Meadows SAC.</p>
Banbury 2	Hardwick Farm, Southam Road (East and West)	This policy allocates a strategic site for up to 600 new homes and new open space, education and health provisions. It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 3	West of Bretch Hill	This policy allocates a strategic site for 400 new homes to provide an integrated extension to the Bretch Hill area. The development will include the provision of strategic public open space and green infrastructure. It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 4	Bankside Phase 2	This policy allocates a strategic site for 600 new homes and strategic sports facilities with public open space. It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 5	North of Hanwell Fields	This policy allocates 544 homes and associated services, facilities and other infrastructure.	No	As for Policy Banbury 1 – Banbury Canalside (see above).

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		It also outlines the key site specific design and place shaping principles to be put in place as part of this development.		
Banbury 6	Employment Land West of M40	<p>This policy allocates a strategic site for employment generating development on land to the south of Overthorpe Road and to the west of the M40.</p> <p>The supporting text of this policy confirms that part of the site has received planning permission and is currently being developed.</p>	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 7	Strengthening Banbury Town Centre	This policy states that shopping, leisure and other town centre uses will be supported within Banbury town centre.	No	<p>This policy may lead to development in the long term. However the policy does not provide any information about when or where development may take place within the Banbury. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents.</p> <p>Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
Banbury 8	Bolton Road Development Area	<p>This policy allocates a strategic site at Bolton Road to be developed to provide new shopping and other town centre uses, as well as a provision for 200 homes.</p> <p>It also outlines the key site specific design and place shaping principles to be put in place as part of this development.</p>	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 9	Spiceball Development Area	<p>This policy states that this strategic site will be developed for a mixture of town centre uses (including new retail and leisure facilities).</p> <p>It also outlines the key site specific design and place shaping principles to be put in place as part of this development.</p>	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 10	Bretch Hill Regeneration Area	<p>This policy states that development proposals will be permitted for small scale redevelopment/renewal that would result in improvements to the existing housing stock, retail and community facilities and services, and provide local employment.</p> <p>An outline of what development proposals should include (e.g. criteria for housing, employment, infrastructure needs and key site specific design and place shaping principles) is also provided.</p>	No	As for Banbury 7 – Strengthening Banbury Town Centre (see above).
Banbury 11	Meeting the Need for Open Space, Sport and Recreation	This policy outlines how the Council will address current and future deficiencies in open space, sport and recreation provision within Banbury (e.g. establishing a series of linked open green spaces based on the Oxford Canal and River	No	As for Policy BSC10 – Open Space, Outdoor Sport and Recreation Provision (see above).

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Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
		Cherwell).		
Banbury 12	Land for Relocation of Banbury United FC	This policy states that an area of land to the east of Oxford Road and adjacent to Banbury Rugby Club will be secured for sport and recreation use and the relocated Banbury United Football Club.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 13	Burial Site Provision in Banbury	This policy states that an extension to the existing cemetery is required to meet the future development in the town and that developer contributions will be sought from new development to help towards the establishment of the facility. The supporting text of the policy states that this will be taken forward as part of the Local Neighbourhoods Development Plan Document.	No	As for Banbury 7 – Strengthening Banbury Town Centre (see above).
Banbury 14	Banbury Country Park	This policy states that a new Country Park, approximately 26.86 ha in size, will be created on the outskirts of Banbury.	No	Policy Type A3: Policy intended to protect and enhance the natural environment. This policy will also help to protect Oxford Meadows SAC as it will lead to improvements in the green space within Banbury meaning that people will be able to enjoy the green space in their local area rather than having to travel (e.g. to Oxford Meadows SAC).
Banbury 15	Employment Land North East of Junction 11	This strategic employment site in this highly prominent location adjoining the M40 motorway and close to Junction 11 is allocated for employment.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 16	South Salt Way - East	Development of land at South of Salt Way – west will deliver up to 150 dwellings with associated facilities and infrastructure.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 17	South Salt Way - West	Development of land at South of Salt Way – west will deliver anew neighbourhood of up to 1,345 dwellings with associated facilities and infrastructure as part of SW Banbury	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 18	Land at Drayton Lodge Farm	This residential strategic development site will provide approximately 250 dwellings with associated facilities and infrastructure	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Banbury 19	Land at Higham Way	Re-development would bring about environmental benefits in terms of using previously developed and vacant land within the town. Provision of 150 dwellings.	No	As for Policy Banbury 1 – Banbury Canalside (see above).
Policies for Cherwell’s Places: Kidlington				
Kidlington 1	Langford Lane Technology Park	This policy states that the Council will undertake a small scale local review of the Green Belt to accommodate identified employment needs at Kidlington. The policy outlines the design and place shaping principles that will be applied to any future development.	No	This policy may lead to development. However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed. As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
				Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.
Kidlington 2	Strengthening Kidlington Village Centre	This policy states that shopping, leisure and other town centre uses will be supported within the boundary of Kidlington Village centre.	No	As for Kidlington 1 – Langford Lane Technology Park (see above).
Policies for Cherwell’s Places: Villages and Rural Areas				
Policy for Villages 1	Village Categorisation	<p>This policy categorises villages into the following categories:</p> <ul style="list-style-type: none"> A: Minor development, infilling and conversions (including villages such as Adderbury and Launton); B: Minor development, infilling and conversions in satellite villages (including villages such as Clifton and Mollington); and, C: Infilling and conversions (including all other villages within the District that are not listed in Category A or B) <p>These categories will be used to assess residential proposals that come forward within villages.</p>	No	<p>This policy may lead to development. However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents.</p> <p>Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed.</p> <p>As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan.</p> <p>Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.</p>
Policy for Villages 2	Distributing Growth across the Rural Areas	This policy indicates that 750 homes will be delivered in category A villages. Sites will be identified in Local Plan Part 2 or Neighbourhood Plans (lower tier plans following from the Local Plan)	No	<p>This Option will lead to development. However, no details are provided of where development will be distributed in each group of villages and how many houses will be provided in each village.</p> <p>Due to provisions within the Plan that seek to protect international sites it is possible to screen out likely significant effects on Oxford Meadows SAC from any development that may arise from this policy due to:</p> <p>Recreation</p> <p>Policy ESD18 outlines how improvements are to be made to Cherwell’s green infrastructure network, Policy BSC10 outlines how new community and recreation facilities will be provided and Policy BSC11 outlines how new development will provide areas of green space. These policies will help to protect the Oxford Meadows SAC as they will help to retain people in the local area rather than having to travel further afield for recreation purposes. Furthermore, these villages are all located over 1.5 km from Oxford Meadows SAC and most are surrounded by Green Belt land. People are likely to use these areas of land for recreation purposes. The SAC is also separated from these villages (and the surrounding Green Belt land) by the A40, a major dual carriageway road.</p> <p>Water Quality</p> <p>Policy ESD9 states that all developers must demonstrate that there will be no adverse effects on water quality of any adjacent or nearby watercourses during construction or operation. Therefore should any development arise from this policy, the content of Policy ESD9 will ensure that the water quality within Oxford Meadows SAC is protected.</p> <p>Groundwater Flows</p> <p>Policy ESD9 states that all developers must demonstrate that the development will not significantly alter groundwater flows and that the hydrological regime of the Oxford Meadows SAC is maintained in terms of water quantity. Therefore should any development arise from Policy RA2, the content of Policy ESD9 will ensure that the water quality within Oxford Meadows SAC is protected;</p>

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
Policy for Villages 3	Rural Exception Sites	This policy states that the Council will support suitable opportunities for small scale affordable housing schemes within or immediately adjacent to villages to meet specific local housing needs that cannot be met through the development of sites allocated for housing development.	No	<p>Air Quality</p> <p>It is unlikely that the development proposed under this policy 'alone' will lead to a deterioration in air quality on the roads surrounding Oxford Meadows SAC. This is due to the relatively small number of houses to be provided (and thus a small increase in car usage on the roads) and the distance of many of the individual villages from the SAC.</p> <p>However, it is possible that there may be a deterioration in air quality on the roads surrounding Oxford Meadows SAC when this allocation site is considered 'in combination' with all of the other developments to be provided in the District (a total of 22,840 houses) as a result of the Plan.</p> <p>The traffic flows assessment and the subsequent air quality assessment respectively are included in Appendix C. The air quality assessment examined whether the changes in traffic flows resulting from the total of new development in Cherwell by 2031 (the end of the Plan period) would result in the critical threshold for nitrogen deposition for low and medium altitude hay meadow habitat being exceeded (critical load being between 20-30 kg N/ha/yr). The nitrogen deposition rates were modelled for the three roads that pass through the Oxford Meadows SAC: A40, A34 and Godstow Road.</p> <p>The assessment of annual mean NOx concentrations finds that the critical level is likely to be exceeded in the 2013 base scenario at all locations in transects 1 (A40) and 2 (A34) which run through the SSSI units 2 and 3 of Pixey and Yarnton Meads. The condition of these two units was reported as favourable in December 2012, therefore the expected reduction in NOx concentrations over the next 18 years up to 2031 is unlikely to cause a change to the overall condition.</p> <p>The increase in NOx concentrations as a result of including the SHMA housing and employment allocation to the existing Cherwell local plan provision is below 2 µg/m3 at all locations (the largest change was 0.5 µg/m3 at Godstow Road, and only under superseded vehicle emissions data). There were some locations where the critical level is exceeded, however under the most recent information on future NOx emissions and background concentrations, represented by the adjusted annual mean concentrations presented in Table C.2, there is only one location, at the boundary of the SAC near to the A34 south of the A40, where the critical level is expected to be exceeded with the Cherwell growth scenario and the result of the SHMA is to increase this concentration by just 0.1 µg/m3, well below the 2 µg/m3 criteria requiring assessment of the sensitivity of relevant species within the designated site.</p> <p>The nitrogen deposition rate was determined based on background deposition rates plus the increment from the road within 200 metres for each scenario. The change in deposition rate due to the change in traffic data was noted and the total deposition rate compared with the UNECE critical load for low and medium altitude hay meadow habitat (20-30 kg N/ha/yr).</p> <p>The total deposition rate at locations in transect 1(A40), transect 2(A34) and transect 3 (Godstow Road) were all estimated to be below the lower threshold of the critical load at all locations and for both 2031 scenarios.</p> <p>The change in road increment as a result of the scenarios is less than 0.1 kg N/ha/yr for all transects locations for all scenarios. Including the additional housing and employment included with the SHMA makes no measurable change to the nitrogen deposition rates found with the Cherwell local plan.</p> <p>The results of the additional sensitivity tests for nitrogen deposition are presented in Appendix C Table C.5. The results indicated that even if the background nitrogen deposition rate reduces by 1% instead of 2% per annum between 2013 and 2031, the resulting nitrogen deposition rates are expected to be below the lower limit of the critical load for the SAC in 2031 and changes in deposition rates as a result of implementing the additional housing and employment provision in the SHMA are still less than 0.1 kg N/ha/yr.</p> <p>It is therefore concluded that the number of houses/employment sites to be provided in Bicester and Banbury in the Local Plan, in combination with the planned development in the rest of Oxfordshire by 2031, will not lead to any likely significant effects on the qualifying features of Oxford Meadows SAC.</p> <p>As for Policy for Villages 1 – Village Categorisation (see above).</p>

Table B-1: HRA Screening Results for Each of the Policies in the Proposed Submission Cherwell Local Plan 2012

Policy Number	Policy Title	Policy Details	Likely Significant Effects on Oxford Meadows SAC?	Justification of Findings
Policy for Villages 4	Meeting the Need for Open Space, Sport and Recreation	This policy outlines how the Council will address current and future deficiencies in open space, sport and recreation provision within rural areas (e.g. cricket pitches, amenity open space, tennis courts and natural/semi-natural green space).	No	As for Policy BSC10 – Open Space, Outdoor Sport and Recreation Provision (see above).
Policy for Villages 5	Former RAF Upper Heyford	This policy allocates a strategic site for approximately 1,600 dwellings in addition to the 761 new homes with planning permission and employment land on the former air base. It also outlines the key site specific design and place shaping principles to be put in place as part of this development.	No	A previous HRA (see Table 5.2) indicated that potential significant effects of the initial 761 houses could be avoided through the incorporation of avoidance and mitigation measures. This application has since been granted planning permission. For the additional provision of 1,600 houses, please refer to Policy for Villages 2 (above). Note that this allocation is approximately 15km from the Oxford Meadows SAC and, as such, it is considered that this will not lead to likely significant effects on the qualifying features of Oxford Meadows SAC.
Infrastructure Delivery Plan				
INF1	Infrastructure	This policy outlines the criteria that the Council will follow in order to ensure that adequate infrastructure is delivered within the District. It states that development proposals will be required to demonstrate that infrastructure requirements can be met (e.g. the provision of transport and community facilities).	No	This policy may lead to development (e.g. infrastructure improvements). However, the policy does not state exact details of development nor when it may take place. Development is likely to come forward on a case by case basis and will not be detailed in any lower tier planning documents. Should any planning applications arise as a result of this policy, all other policies within the Plan will be taken into account and used as the basis for decision making to determine the application. Therefore, any planning application would also have to take into account the possibility of likely significant effects on the qualifying features of the Oxford Meadow SAC resulting from the proposed works, through consideration of Policy ESD9 and ESD10 (which seek to safeguard and protect biodiversity and the natural environment). The Plan also commits to an HRA at the development control stage (as in accordance with the Protection and Enhancement of Biodiversity and the Natural Environment text supporting Policies ESD9 and ESD10). The HRA of any proposed development will have to prove that the work will not have adverse effects on the Oxford Meadows SAC (or that adverse effects can be adequately mitigated). If it cannot be proven that there will no adverse effects on this international site and/or it is not possible to mitigate for these effects the Council will not allow the development to be constructed. As no locations or quanta for development are provided within the policy, this approach to the HRA process will not affect the deliverability of the plan. Therefore, there are no likely significant effects on the qualifying features of the Oxford Meadows SAC from this Policy.

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Appendix C

Air Quality Assessment Report

**Proposed Modifications to the
Submission Cherwell Local Plan August
2014 – Habitats Regulations
Assessment Screening**

**Air Quality Ecosystem Assessment
Update 2014**

August 2014

Notice

This document and its contents have been prepared and are intended solely for *Cherwell District Council's* information and use in relation to *Proposed Modifications to the Submission- Cherwell Local Plan August 2014 – Habitats Regulations Assessment Screening 2014 update*

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Update 2012		MLM	JAG	SR	GMB	01/08/12
V1		RJK	SR	SR	GMB	07/09/10

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1. Introduction

- 1.1. This report describes the assessment of air quality effects on the ecosystems within Oxford Meadows Special Area of Conservation (SAC), for the purposes of the Submission Cherwell Local Plan (August 2014) Habitat Regulations Assessment : Stage 1 - Screening as required under the Habitats Directive (92/43/EEC), implemented in the UK by the Conservation of Habitats and Species Regulation 2010 (SI 2010/490).
- 1.2. Cherwell District Council (Cherwell) completed a Strategic Housing Market Assessment (SHMA) resulting in a change to the total housing and employment provision accommodated in the Local Plan. The changes have been accounted for in a revision of the Oxfordshire County Council (OCC) traffic model.
- 1.3. In June and July 2014, Defra updated the Local Air Quality Management guidance LAQM.TG(09), and associated tools relating to background concentrations, pollutant emission factors and pollutant adjustment factors. These tools must now be used with new air quality assessment work.
- 1.4. This report presents the amended air quality assessment to determine the change in emissions within the Oxford Meadows SAC as a result of additional housing and employment provision detailed in the SHMA and incorporates revised air quality assessment tools, and a change of future assessment year from 2030 to 2031.

Air pollutants

- 1.5. The focus of the assessment is the effect of oxides of nitrogen (NO_x) on vegetation. Oxides of nitrogen are produced in combustion processes with half of UK emissions attributable to motor vehicles. This report has focussed on the effect of additional vehicle emissions due to the future development scenarios within Cherwell on NO_x concentrations and nitrogen deposition within the Oxford Meadows SAC site.

Ecological limit values

- 1.6. The EU has set a critical level for annual mean NO_x concentrations for the protection of vegetation in zones other than agglomerations, based on the work of the United Nations Economic Commission for Europe (UNECE) and World Health Organisation (WHO). Directive 2008/50/EC identifies that:

“The risk posed by air pollution to vegetation and natural ecosystems is most important in places away from urban areas. The assessment of such risks and the compliance with critical levels for the protection of vegetation should therefore focus on places away from built-up areas.”
- 1.7. In England the critical levels have been incorporated into the Air Quality Standards Regulations 2010, Schedule 6 (SI 2010/1001). The critical level for NO_x for the protection of vegetation is 30 µg/m³, as an annual mean.
- 1.8. The policy of the Statutory Nature Conservation Agencies' in the UK (in England, Natural England) is to apply the 30 µg/m³ annual mean NO_x critical level, as a benchmark, in all internationally designated conservation sites and Sites of Special Scientific Interest (SSSI) on a precautionary basis.
- 1.9. In addition to the critical level for annual mean NO_x concentrations, Critical loads for nitrogen deposition have been set that represent (according to current knowledge) the exposure, below which there should be no significant harmful effects on sensitive elements of the ecosystem. These have been established for a number of habitats dependent on low nitrogen levels. Critical loads are expressed in deposition units of kilograms of nitrogen per hectare per year (kg N/ha/yr).

2. Methodology

Methodology for assessment of designated sites

- 2.1. Annex F to the DMRB¹ provides guidance on assessing the potential effect of oxides of nitrogen upon ecosystems. An assessment of concentrations of total oxides of nitrogen (NO_x) and nitrogen deposition is required where any of the following site designations are identified within 200 metres of roads affected by the proposals and where the designated features are sensitive to air pollution:
- Special Area of Conservation (SAC);
 - Special Protection Area (SPA);
 - proposed SPA (pSPA);
 - candidate SAC (cSAC);
 - sites listed under the Convention on Wetlands and Wildfowl (Ramsar sites); or
 - Sites of Special Scientific Interest (SSSI).
- 2.2. Oxford Meadows SAC, situated in the Thames Valley Distribution, demonstrates good conservation of structure and function of lowland hay meadows. For this reason it has been designated as a SAC. Additional, information is provided in Section 3 of the Submission Cherwell Local Plan (August 2014) Habitat Regulations Assessment : Stage 1 - Screening.
- 2.3. The DMRB air quality screening method version 1.03c and associated tools from DEFRA Technical Guidance TG(09)², were used to estimate concentrations of nitrogen oxides (NO_x) and nitrogen dioxide (NO₂) on transects through the SAC at intervals from the roadside up to a distance of 200 metres. NO₂ concentrations are used in the calculation of the road increment of nitrogen deposition.
- 2.4. The air quality screening method takes into account:
- annual average daily vehicle flows and speeds;
 - the proportion of heavy duty vehicles (HDVs)³;
 - changes in future exhaust emissions due to legislation;
 - road type; and
 - the distance between the receptor and the roads carrying the traffic.
- 2.5. Background concentrations from DEFRA datasets, updated in June 2014, and the DEFRA NO_x to NO₂ calculator tool v4.1 updated in June 2014 were used to convert the output from the air quality screening method to total NO_x to NO₂ concentrations.
- 2.6. The air quality screening method assumes no change in emission factors beyond 2025, as this is the limit of the projections incorporated into the air quality screening method.
- 2.7. Assessments were made on three transects through the SAC (Table 2.1 & Appendix A Figure A.1) at intervals from the roadside up to a distance of 200 metres.

¹ Highways Agency Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 1, Air Quality, revised May 2007 (Ref: HA 207/07).

² Defra, Local Air Quality Management, Technical Guidance, LAQM.TG(09). February 2009

³ Any vehicle with a gross weight greater than 3.5 tonnes, including heavy goods vehicles (HGVs), buses and coaches.

Table 2.1 - Identification of transects

Transect	Road
T1	Perpendicular to A40 West of A34 in a Southerly direction.
T2	Perpendicular to A34 South in a Westerly direction.
T3	Perpendicular to Godstow Road in a South easterly direction.

- 2.8. In addition to the Oxford Meadows SAC transects 1 and 2 also intersect the Pixie and Yarnton Meads SSSI and transect 3 intersects the Port Meadow with Wolvercote Common and Green SSSI.

Traffic data

- 2.9. Traffic flow data used in the assessment was provided by OCC from the Central Oxfordshire traffic model. A summary of traffic data for road links within 200 metres of the SAC is provided in Appendix B Table B.1 and the traffic data used in the 2012 air quality update is presented in Table B.2 for comparison.
- 2.10. The traffic scenarios assessed in this report are:-
- a) 2013 Baseline traffic data
 - b) 2031 Traffic model run 08, referred to as 'Cherwell growth', and includes all the planned and permitted housing and employment detailed in the Cherwell existing local plan and that of neighbouring local authorities.
 - c) 2031 Traffic model run 11, referred to as 'Cherwell growth plus SHMA', and includes traffic as per run 08 with the additional housing and employment sites identified in the SHMA in Cherwell only.
- 2.11. The additional allocation of housing and employment with the SHMA, compared with the Cherwell local plan growth, results in:
- 1% decrease (-200 AADT) on the A40, west of A34;
 - 2% increase (+1,900 AADT) on the A34, south of the A40; and
 - 11% increase (+700 AADT) in traffic on Godstow Road.
- 2.12. There are considerable differences between the traffic data representing the latest Cherwell Local Plan growth in 2031 compared with the Cherwell Local Plan growth in 2030 used in the July 2012 update. A summary of the changes are shown below:
- A decrease in traffic flow on the A40 by approximately 3,500 AADT but an increase in %HDV from 6% to 11% (+900 vehicles);
 - A decrease in traffic flow on the A34 by approximately 2,500 AADT and %HDV down from 13% to 9%; (-4,420 vehicles); and
 - An increase in traffic flow on Godstow Road by approximately 3,500 AADT and an increase in %HDV from 0% to 9% (+560 vehicles).
- 2.13. The traffic modelling completed in 2014, similar to 2012, estimates that the flows on the A40 and A34 are nearing maximum capacity in the peak periods, however the latest model also uses different underlying data, latest forecast growth factors and a different model platform. Interpeak as well as am and pm peak flows have been modelled so the adjustment to 24 hour AADT is based on modelled values for the whole of the daytime period, unlike 2012 data where the adjustment to 24 hour AADT was estimated based on am and pm peak flow only.

- 2.14. The percentage of HDV used in the assessment only includes Heavy Goods Vehicles (HGVs) and no buses or coaches. However, as the roads in question are fairly rural, it is assumed that few buses and coaches would use the routes and that percentage of HGV would be comparable to percentage of HDV.
- 2.15. Twenty-four hourly average speed and percentage HDV data were calculated from the modelled AM and PM peak and interpeak period data.

Background concentrations

- 2.16. Estimates of background concentrations were obtained for the study area from one-kilometre square resolution grid data provided by DEFRA⁴. This data provides total concentrations of NO_x and NO₂ for each grid square. In addition a set of source sectors are provided for NO_x to enable the individual emission sectors to be subtracted from the total concentrations when modelling of that sector has been carried out. This avoids double counting of sources.
- 2.17. Not all roads within the grid squares of interest have been modelled explicitly. On this basis no sectors have been subtracted for total grid square backgrounds for this assessment. The background concentrations for the one kilometre grid squares containing the transects are provided in Table 2. below. Assessment of the additional contribution of road traffic emissions follows in Section 3 to allow comparison of total pollutant concentrations with objective levels for NO_x and calculation of expected nitrogen deposition rates.
- For nitrogen deposition calculations total grid square backgrounds are required for a five kilometre grid square. This is calculated from the average of the one kilometre grid squares. The background concentrations for the five kilometre grid squares containing the transects are provided in
- 2.18. The background concentrations presented above indicate that for transects 1 and 2 the annual mean NO_x concentration already exceeds the critical level for the protection of vegetation of 30 µg/m³ in 2013, without additional modelled road contributions.
- 2.19. Table 2.3 below.
- 2.20. Background concentrations are only available up to 2030, beyond which it is assumed that these concentrations would not change. On this basis 2030 background concentrations are used for the 2031 scenarios.

Table 2.2 - Background concentrations for the 1km grid squares used in the air quality assessment

Transect	Grid Square	2013		2030 (2031)	
		NO _x (µg/m ³)	NO ₂ (µg/m ³)	NO _x (µg/m ³)	NO ₂ (µg/m ³)
T1 (A40) & T2 (A34)	448500,210500	30.8	20.7	21.3	14.9
T3 (Godstow Road)	449500,209500	22.8	15.8	16.4	11.8

- 2.21. The background concentrations presented above indicate that for transects 1 and 2 the annual mean NO_x concentration already exceeds the critical level for the protection of vegetation of 30 µg/m³ in 2013, without additional modelled road contributions.

⁴ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011> - July 2014 version download 16th July 2014

Table 2.3 - Background Concentrations for the 5km Grid Squares Used in the Air Quality Assessment

Transect	5km Grid Square	2013		2030 (2031)	
		NO _x (µg/m ³)	NO ₂ (µg/m ³)	NO _x (µg/m ³)	NO ₂ (µg/m ³)
T1 (A40) & T2 (A34)	445000,210000	21.1	14.8	15.0	10.9
T3 (Godstow Road)	449500,205000	20.6	14.4	14.5	10.5

- 2.22. It should be noted that the 30 µg/m³ annual mean NO_x critical level is only strictly applicable at monitoring locations more than 20 kilometres from towns with more than 250,000 inhabitants or more than five kilometres from other built-up areas, industrial installations or motorways (including major roads with over 50,000 vehicles). Although Oxford Meadows SAC is less than five kilometres from the built up areas of north Oxford, and the A34 which is classed as a major road, it is Natural England policy to use the critical level as a benchmark for assessing the potential effects of a development on a designated area.

Consideration of uncertainties in assessment method

- 2.23. The DMRB air quality screening method uses vehicle emission factors which have not been updated since its initial publication in 2007. However, there have been subsequent updates to the vehicle emission factors, given separately in DEFRA's emission factor toolkit (EFT), the most recent version (v6.0.1) of which was published in July 2014.
- 2.24. Research published by DEFRA examining trends in measured NO_x and NO₂ concentrations in ambient air indicated that concentrations may not be declining at the rates previously anticipated by the Government⁵. This means that future year NO_x emission factors and background estimates may be too low. With regard to assumed vehicle emissions, the DMRB air quality screening method emission factors may unintentionally address this to a degree in that there is no account of cleaner Euro 5 (V) and 6 (VI) vehicles, which are assumed in the latest emission factors; hence, the DMRB air quality screening method assumes comparatively worst-case NO_x emissions.
- 2.25. To address this potential limitation in the assessment methodology a sensitivity test was applied to the NO_x concentrations calculated using the DMRB screening method, which have been adjusted using specific factors. These factors were derived based on the ratio between the annual NO_x emissions calculated for each road using the screening method and those calculated using the EFT v6.0.1. The adjusted Road NO_x was then combined with the background NO_x to determine the adjusted NO_x concentration at each transect location, as shown in the equation below. The adjustment factors and adjusted annual mean NO_x concentrations are presented in Appendix C Tables C.1 and Table C.2.

$$\text{Adjusted NO}_x \text{ concentration} = \text{Background NO}_x + (\text{DMRB Road NO}_x \text{ component} * (\text{EFT v6.0.1 annual emission (factor kg / yr)} / \text{DMRB v1.03c annual emission factor kg / yr}))$$

- 2.26. In addition a second sensitivity test was undertaken, in accordance with the Highways Agency IAN 170/12. This addresses uncertainty in future projections of NO₂, known as the gap analysis. The gap analysis worksheets determine an individual adjustment factor at each location based on the comparison between the

⁵ http://uk-air.defra.gov.uk/reports/cat05/1108251149_110718_AQ0724_Final_report.pdf

emission factor and backgrounds in the base year compared with the future scenario year.

- 2.27. The adjusted annual mean NO_x concentrations derived using sensitivity test 1 were used as inputs as these are a realistic expectation of NO_x concentrations in 2031, given our current understanding of vehicle improvements and trends in traffic composition rather than the highly conservative results estimated using the air quality screening method alone.
- 2.28. NO_x concentrations in 2031 were adjusted using gap analysis factors. The gap analysis factors were derived based on the ratio between the base year and future year NO_x concentrations and a factor representing the long term trend in roadside NO_x concentrations between the base year and future year. The gap analysis factors are reported in Appendix C Table C.3 and the gap analysis adjusted annual mean NO_x concentrations are presented in Table C.4.
- 2.29. The gap analysis factors are higher at locations closer to the road, as although all emission factors are higher in the base year, compared with the future scenario, their contribution to annual mean NO_x concentrations diminishes with distance from the road. This ratio is combined with a constant value called the long term adjustment factor between 2013 and 2031 based on the long term NO₂ trends observed at roadside monitoring sites between 2006 and 2010. A revision of the future long term adjustment factors is in progress and the findings of this assessment may be overly pessimistic given recent emerging evidence associated with the performance of Euro 6/VI vehicles.
- 2.30. A third sensitivity test was applied to determine the change in future nitrogen deposition rates. If future background deposition rates reduce by only 1% per year from the values estimated for 2011 rather than the 2% reduction per year as described in Annex F of DMRB. This is described in the following section on nitrogen deposition and the results are presented in Appendix C, Table C.5.
- 2.31. The local plan housing trajectory between 2014 and 2031 was reviewed to confirm that the air quality assessment in 2031 examined the year likely to experience the largest change in pollutant concentrations as a result of implementing the Cherwell growth and SHMA detailed in the local plan. Further details are presented in Appendix D.

Nitrogen deposition

- 2.32. The UK's air pollution regulators and local planning authorities use an online tool called Air Pollution Information System (APIS⁶) to evaluate the effects of air pollution on ecological habitats as part of their consenting or permitting work. The APIS website provides modelled data on nitrogen and acid deposition across the whole of the UK with a 5 km square grid resolution and site specific data for UK Designated SSSIs, SACs and SPAs.
- 2.33. The Oxford Meadows SAC is described as *Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)* and is one of only two known sites in the UK where creeping meshwork (*Apium ripens*) is present, which are the primary reasons for the SAC designation. The critical load for nitrogen deposition in this meadow habitat is 20-30 kg N/ha/yr for low and medium altitude hay meadow. The effects of nitrogen deposition in excess of these ranges may lead to an increase in tall grasses and decreased diversity.
- 2.34. The APIS record for nitrogen deposition averaged across the entire area of the SAC (to be differentiated from the 5km grid square value) between 2009 and 2011 was 17.55 kilograms nitrogen per hectare per year (kg N/ha/yr), below the critical load range.

⁶ <http://www.apis.ac.uk/>

- 2.35. To estimate the change in total nitrogen deposition rate as a result of predicted traffic changes in the vicinity of the SAC, total average nitrogen deposition rates were determined for the five-kilometre square within which each transect lies. The total average deposition rate data for 2009-2012 (most recently available data representing 2011 values) were obtained from APIS, and adjusted for the opening year scenarios by reducing rates by 2% per year in accordance with the methodology given in Annex F to the DMRB.
- 2.36. For the sensitivity test, which accounts for future trends in NO_x not reducing as quickly as forecast, the total nitrogen deposition rate was adjusted for the opening year by reducing rates by 1% per year instead of 2% and this deposition rate is used in calculating the total nitrogen deposition rates presented in Appendix C, Table C.5. The amended APIS average total nitrogen deposition rates are also presented in Table 2-4. This is the same approach as agreed with Natural England in the 2012 assessment work.
- 2.37. Average total nitrogen deposition rates obtained for 2011 and the 2031 future scenarios are shown in Table 2.4.

Table 2.4 - Deposition Rates from APIS

Transect	5km Grid Square	APIS Average Total Nitrogen Deposition Rate (kg N/ha/yr)		
		2011	2031	2031 with 1% decrease rate
T1 (A40) & T2 (A34)	445000,210000	17.4	10.4	13.9
T3 (Godstow Road)	445000,205000	17.1	10.2	13.7

- 2.38. To estimate the total nitrogen deposition rates for the 2031 scenarios, the total annual mean NO₂ concentration at each transect receptor has been converted using the procedure described in Annex F of DMRB. The road increment at each transect receptor is the remainder when the average background NO₂ values for the 5 kilometre grid square, presented in Table 2.3 are removed from the modelled total NO₂ concentration at the receptor and adjusted to the Dry NO₂ deposition rate by multiplying by 0.1. The average total nitrogen deposition rate is the background nitrogen deposition rate presented in Table 2-4 plus the road increment, as shown in the equation below. The calculated total nitrogen deposition rates can then be compared with the Critical Load of 20-30 kg N/ha/yr.

$$\begin{aligned}
 \text{Ndeposition rate at receptor} &= \text{background Ndeposition rate for 5km grid square} + (0.1 \\
 &\quad * (\text{NO}_2 \text{ concentration at receptor} \\
 &\quad - \text{5km grid square background NO}_2 \text{ concentration}))
 \end{aligned}$$

Assessment criteria

- 2.39. The air quality assessment procedure for designated sites detailed in DMRB HA207/07, advises in paragraph 3.29

“The NO_x concentrations at the Designated Site(s) should be compared with the vegetation criterion for NO_x and the change in concentration due to the project determined in the opening year. If the project is expected to cause an increase in concentrations of at least 2 µg/m³ and the predicted concentrations (including background) are very close to or exceed the criterion, then the sensitivity of that species to NO_x should be commented upon. Advice from an ecologist or the statutory body should be sought at this stage. The results of this assessment should also be passed to an ecologist for inclusion in the ecological impact assessment (Environmental Statement/environmental report; and or Appropriate Assessment). The ecologist should consider the potential cumulative effects of the

various impacts such as air pollution, water pollution and habitat loss and comment upon the effect of the project on the integrity of the Designated Site. If the designated features are at risk of being adversely affected by the project, mitigation measures should be considered to minimise the scale of impact.”

- 2.40. The assessment criteria for the N deposition assessment is detailed in Annex F of in DMRB HA207/07, as follows

“The change in deposition due to the project should be noted and discussed in relation to the critical load relevant to the interest features of the site, the background deposition and the extent of any exceedence. The results of this assessment should also be passed to an ecologist for inclusion in the ecological impact assessment (environmental impact assessment and/or Appropriate Assessment). The ecologist should consider the potential cumulative effects of all of the various impacts such as air pollution, water pollution and habitat loss and comment upon the effect of the project on the integrity of the Designated Site.”

3. Results

Assessment of NO_x concentrations

- 3.1. NO_x concentrations were estimated at the boundary of the SAC and 25, 50, 75, 125, 150, 175 and 200 metres from the road centreline on three transects identified in Table 2.1 through Oxford Meadows SAC to assess whether the critical level for NO_x for the protection of vegetation of 30 µg/m³ was exceeded. The results are presented in Table 3.1.
- 3.2. As identified in the methodology the background NO_x concentration of 30.8 µg/m³ in 2013 for the grid square containing transects 1 and 2, already exceeded the critical level without the additional modelled road contribution.
- 3.3. Estimated concentrations at transect 1 (A40) exceeded the 30 µg/m³ annual mean critical level in the 2013 base scenario up to 200 metres from the road. In 2031 estimated concentrations at transect 1 results were expected to exceed the 30 µg/m³ annual mean critical level up to 50 metres from the road. The 2031 Cherwell growth plus SHMA scenario were expected to result in an increase in NO_x concentrations of 0.1 µg/m³ only within 50 metres of the road.
- 3.4. Estimated concentrations at transect 2 (A34) exceeded the 30 µg/m³ annual mean critical level in the 2013 base scenario up to 200 metres from the road. In both 2031 scenarios the 30 µg/m³ annual mean critical level was exceeded up to 75 metres from the road. Estimated concentrations were below the 30 µg/m³ annual mean critical level at all other locations. The 2031 Cherwell growth plus SHMA scenario was estimated to result in increases in annual mean NO_x concentrations of less than 0.3 µg/m³, compared with the 2031 Cherwell growth scenario, as shown in Table 3.1.
- 3.5. For transect 3 (Godstow Road) concentrations of NO_x were estimated to be below the 30 µg/m³ annual mean critical level in all scenarios for all locations. The 2031 Cherwell growth plus SHMA scenario was estimated to result in increases in annual mean NO_x concentrations of 0.5 µg/m³ or less, when compared with the 2031 Cherwell growth scenario, as shown in Table 3.1.

Table 3.1 - Estimated annual mean NO_x concentrations (µg/m³)

Transect Name	2013 Base	2031 Cherwell growth	2031 Cherwell growth +SHMA	Change
Transect 1 (A40)				
T1-15m	42.2	37.2	37.3	0.1
T1-25m	39.5	33.4	33.5	0.1
T1-50m	35.5	27.8	27.8	<0.1
T1-75m	33.4	24.9	24.9	<0.1
T1-100m	32.2	23.2	23.2	<0.1
T1-125m	31.5	22.3	22.3	<0.1
T1-150m	31.2	21.9	21.9	<0.1
T1-175m	31.1	21.8	21.8	<0.1
T1-200m	31.0	21.6	21.6	<0.1
Transect Name	2013 Base	2031 Cherwell growth	2031 Cherwell growth +SHMA	Change
Transect 2 (A34)				
T2-15m	52.9	46.6	46.9	0.3
T2-25m	47.6	40.5	40.8	0.3
T2-50m	39.8	31.6	31.8	0.2
T2-75m	35.8	27.0	27.1	0.1
T2-100m	33.5	24.4	24.4	<0.1
T2-125m	32.2	23.0	23.0	<0.1
T2-150m	31.7	22.3	22.3	<0.1
T2-175m	31.5	22.1	22.1	<0.1
T2-200m	31.2	21.7	21.7	<0.1
Transect Name	2013 Base	2031 Cherwell growth	2031 Cherwell growth +SHMA	Change
Transect 3 (Godstow Road)				
T3-5m	24.1	21.9	22.4	0.5
T3-25m	23.6	19.7	20.0	0.3
T3-50m	23.2	18.2	18.3	0.1
T3-75m	23.0	17.4	17.5	0.1
T3-100m	22.9	17.0	17.0	<0.1
T3-125m	22.9	16.7	16.7	<0.1
T3-150m	22.8	16.6	16.6	<0.1
T3-175m	22.8	16.6	16.6	<0.1
T3-200m	22.8	16.5	16.5	<0.1

Sensitivity Tests

Sensitivity Test 1 – accounting for changes in emission factors since DMRB published

- 3.6. The annual emissions and adjustment factors presented in Table C1 demonstrate that the DMRB screening method is underestimating emissions in the base year and overestimating emissions in 2031 compared with the emissions calculated using EFT v6.0.1.
- 3.7. The adjusted annual mean NO_x concentrations at transect 1 (A40) were estimated to exceed the critical level up to 200 metres from the road in the 2013 base scenario. In all future scenarios, results were below the 30 µg/m³ annual mean.
- 3.8. At transect 2 (A34) adjusted annual mean NO_x concentrations exceeded the critical level at all locations in the 2013 base scenario and at the closest receptor only with both the Cherwell growth and with the growth plus SHMA scenarios. The difference between the results is an increase of 0.1 µg/m³ or less.
- 3.9. Results at transect 3 (Godstow Road) were below the critical level at all locations in all scenarios. The difference as a result of the SHMA housing and employment provisions was 0.3 µg/m³ or less. The results are presented in Appendix C Table C.2.

Sensitivity Test 2 – Gap Analysis accounting for smaller reduction in future NO_x emissions

- 3.10. The inputs into the gap analysis worksheet are reported in Table C.3 and the gap analysis adjusted NO_x results are presented in Appendix C, Table C.4.
- 3.11. The adjusted NO_x concentrations are reported at all transect locations for Cherwell growth and Cherwell growth plus SHMA scenarios in Table C.4.
- 3.12. At transect 1 (A40), the critical level was exceeded at the boundary of the SAC. At all other locations results were below the critical level of 30 µg/m³ annual mean. The change as a result of the SHMA scenario was less than 0.1 µg/m³.
- 3.13. At transect 2 (A34) the critical level was exceeded up to 50 metres from the road. The increase with the SHMA scenario was 0.2 µg/m³ or less.
- 3.14. At transect 3 (Godstow Road) all results were below the critical level with all scenarios. The increase with the SHMA scenario was 0.3 µg/m³ or less.

Conclusions of the NO_x assessment

- 3.15. The assessment of annual mean NO_x concentrations finds that the critical level is likely to be exceeded in the 2013 base scenario at all locations in transects 1 (A40) and 2 (A34) which run through the SSSI units 2 and 3 of Pixie and Yarnton Meads. The condition of these two units was reported as favourable in December 2012, therefore the expected reduction in NO_x concentrations over the next 18 years up to 2031 is unlikely to cause a change to the overall condition.
- 3.16. The increase in NO_x concentrations as a result of including the SHMA housing and employment allocation to the existing Cherwell local plan provision is below 2 µg/m³ at all locations (the largest change was 0.5 µg/m³ at Godstow Road, and only under superseded vehicle emissions data). There were some locations where the critical level is exceeded, however under the most recent information on future NO_x emissions and background concentrations, represented by the adjusted annual mean concentrations presented in Table C.2, there is only one location, at the boundary of the SAC near to the A34 south of the A40, where the critical level is expected to be exceeded with the Cherwell growth scenario and the result of the SHMA is to increase this concentration by just 0.1 µg/m³, **well below the 2 µg/m³ criteria** requiring assessment of the sensitivity of relevant species within the designated site.

Assessment of nitrogen deposition

- 3.17. The nitrogen deposition rate was determined based on background deposition rates plus the increment from the road within 200 metres for each scenario. The change in deposition rate due to the change in traffic data was noted and the total deposition rate compared with the UNECE critical load for low and medium altitude hay meadow habitat (20-30 kg N/ha/yr).
- 3.18. The total nitrogen deposition rate, the road increment and the comparison with the critical load on each transect are presented in Table 3.2.
- 3.19. The total deposition rate at locations in transect 1(A40), transect 2(A34) and transect 3 (Godstow Road) were all estimated to be below the lower threshold of the critical load at all locations and for both 2031 scenarios.
- 3.20. The change in road increment as a result of the scenarios is less than 0.1 kg N/ha/yr for all transects locations for all scenarios. Including the additional housing and employment included with the SHMA makes **no measurable change** to the nitrogen deposition rates found with the Cherwell local plan.
- 3.21. The results of the additional sensitivity tests for nitrogen deposition are presented in Appendix C Table C.5. The results indicated that even if the background nitrogen deposition rate reduces by 1% instead of 2% per annum between 2013 and 2031, the resulting nitrogen deposition rates are expected to be below the lower limit of the critical load for the SAC in 2031 and changes in deposition rates as a result of implementing the additional housing and employment provision in the SHMA are still less than 0.1 kg N/ha/yr.

Table 3.2 - Estimated annual mean nitrogen deposition rate (kg N/ha/yr)

Transect 1 (A40)											
Distance from road	Total N deposition rate (kg N/ha/yr)			Road increment (kg N/ha/yr)			Road increment as % of total N deposition rate		Critical Load Range	Critical Load Exceedance Range	
	without SHMA	with SHMA	change	without SHMA	with SHMA	change	without SHMA	with SHMA		without SHMA	with SHMA
T1-15m	11.6	11.6	<0.1	1.2	1.2	<0.1	10.3%	10.3%	20 - 30	Not Exceeded	Not Exceeded
T1-25m	11.4	11.4	<0.1	1.0	1.0	<0.1	8.8%	8.8%	20 - 30	Not Exceeded	Not Exceeded
T1-50m	11.1	11.1	<0.1	0.7	0.7	<0.1	6.3%	6.3%	20 - 30	Not Exceeded	Not Exceeded
T1-75m	11.0	11.0	<0.1	0.6	0.6	<0.1	5.5%	5.5%	20 - 30	Not Exceeded	Not Exceeded
T1-100m	10.9	10.9	<0.1	0.5	0.5	<0.1	4.6%	4.6%	20 - 30	Not Exceeded	Not Exceeded
T1-125m	10.9	10.9	<0.1	0.5	0.5	<0.1	4.6%	4.6%	20 - 30	Not Exceeded	Not Exceeded
T1-150m	10.8	10.8	<0.1	0.4	0.4	<0.1	3.7%	3.7%	20 - 30	Not Exceeded	Not Exceeded
T1-175m	10.8	10.8	<0.1	0.4	0.4	<0.1	3.7%	3.7%	20 - 30	Not Exceeded	Not Exceeded
T1-200m	10.8	10.8	<0.1	0.4	0.4	<0.1	3.7%	3.7%	20 - 30	Not Exceeded	Not Exceeded

Transect 2 (A34)											
Distance from road	Total N deposition rate (kg N/ha/yr)			Road increment (kg N/ha/yr)			Road increment as % of total N deposition rate		Critical Load Range	Critical Load Exceedance Range	
	without SHMA	with SHMA	change	without SHMA	with SHMA	change	without SHMA	with SHMA		without SHMA	with SHMA
T2-15m	12.0	12.0	<0.1	1.6	1.6	<0.1	13.3%	13.3%	20 - 30	Not Exceeded	Not Exceeded
T2-25m	11.7	11.7	<0.1	1.3	1.3	<0.1	11.1%	11.1%	20 - 30	Not Exceeded	Not Exceeded
T2-50m	11.3	11.3	<0.1	0.9	0.9	<0.1	8.0%	8.0%	20 - 30	Not Exceeded	Not Exceeded
T2-75m	11.1	11.1	<0.1	0.7	0.7	<0.1	6.3%	6.3%	20 - 30	Not Exceeded	Not Exceeded
T2-100m	11.0	11.0	<0.1	0.6	0.6	<0.1	5.5%	5.5%	20 - 30	Not Exceeded	Not Exceeded
T2-125m	10.9	10.9	<0.1	0.5	0.5	<0.1	4.6%	4.6%	20 - 30	Not Exceeded	Not Exceeded
T2-150m	10.9	10.9	<0.1	0.5	0.5	<0.1	4.6%	4.6%	20 - 30	Not Exceeded	Not Exceeded
T2-175m	10.9	10.9	<0.1	0.5	0.5	<0.1	4.6%	4.6%	20 - 30	Not Exceeded	Not Exceeded
T2-200m	10.8	10.8	<0.1	0.4	0.4	<0.1	3.7%	3.7%	20 - 30	Not Exceeded	Not Exceeded

Transect 3 (Godstow Road)											
Distance from road	Total N deposition rate (kg N/ha/yr)			Road increment (kg N/ha/yr)			Road increment as % of total N deposition rate		Critical Load Range	Critical Load Exceedance Range	
	without SHMA	with SHMA	change	without SHMA	with SHMA	change	without SHMA	with SHMA		without SHMA	with SHMA
T3-5m	10.6	10.6	<0.1	0.4	0.4	<0.1	3.8%	3.8%	20 - 30	Not Exceeded	Not Exceeded
T3-25m	10.5	10.5	<0.1	0.3	0.3	<0.1	2.9%	2.9%	20 - 30	Not Exceeded	Not Exceeded
T3-50m	10.4	10.4	<0.1	0.2	0.2	<0.1	1.9%	1.9%	20 - 30	Not Exceeded	Not Exceeded
T3-75m	10.4	10.4	<0.1	0.2	0.2	<0.1	<0.9%	<0.9%	20 - 30	Not Exceeded	Not Exceeded
T3-100m	10.4	10.4	<0.1	0.2	0.2	<0.1	<0.9%	<0.9%	20 - 30	Not Exceeded	Not Exceeded
T3-125m	10.3	10.3	<0.1	0.1	0.1	<0.1	<0.9%	<0.9%	20 - 30	Not Exceeded	Not Exceeded
T3-150m	10.3	10.3	<0.1	0.1	0.1	<0.1	<0.9%	<0.9%	20 - 30	Not Exceeded	Not Exceeded
T3-175m	10.3	10.3	<0.1	0.1	0.1	<0.1	<0.9%	<0.9%	20 - 30	Not Exceeded	Not Exceeded
T3-200m	10.3	10.3	<0.1	0.1	0.1	<0.1	<0.9%	<0.9%	20 - 30	Not Exceeded	Not Exceeded

4. Conclusion

NO_x concentrations

- 4.1. Concentrations of NO_x were estimated to be above the 30 µg/m³ annual mean critical level for the protection of vegetation at all locations for transect 1 (A40) and transect 2 (A34) in the 2013 base year. This is due to the latest revision of the UK background concentration maps, which estimated the background NO_x concentration for the grid square containing transects 1 and 2 as 30.8 µg/m³ in 2013. The annual mean critical level was not exceeded in the grid square for transect 3 (Godstow Road) in 2013.
- 4.2. With the DMRB air quality screening method, concentrations of NO_x were estimated to be below the 30 µg/m³ annual mean critical level for the protection of vegetation at most transect locations in the 2031 scenarios. The exceptions are transect 1 (A40) where the critical level was exceeded up to 50 metres from the road in the future scenarios and transect 2 (A34) where the critical level was exceeded up to 75 metres from the road centreline for all 2031 scenarios. The increase with the additional housing and employment identified in the SHMA was estimated to be 0.5 µg/m³ or less. According to the assessment criteria, detailed in 2.36, the Cherwell growth with SHMA scenario did not result in an increase in NO_x concentrations of at least 2 µg/m³ and therefore even though the critical level is exceeded, at some transect locations near to the road, further assessment is not justified on the basis of the estimated changes in air quality.
- 4.3. With sensitivity test 1, which accounts for the latest update to emission factors, all locations except for the boundary of the SAC near to transect 2 (A34) were expected to be below the 30 µg/m³ annual mean critical level. The maximum increase with the SHMA scenario was 0.3 µg/m³ at transect 3 (Godstow Road). Again using the assessment criteria, detailed in 2.36, the Cherwell growth with SHMA scenario did not result in an increase in NO_x concentrations of at least 2µg/m³ and therefore further assessment is not justified on the basis of the estimated changes in air quality.
- 4.4. With sensitivity test 2, the gap analysis adjusted annual mean NO_x concentrations, which accounts for future year trends in NO₂ and NO_x concentrations, all locations except for the boundary of the SAC near to transect 1 (A40) and up to 50 metres from the road centreline at transect 2 (A34) were expected to be below the 30 µg/m³ annual mean critical level. The maximum increase with the SHMA scenario was 0.3 µg/m³ at transect 3 (Godstow Road). Again using the assessment criteria, detailed in 2.36, the Cherwell growth with SHMA scenario did not result in an increase in NO_x concentrations of at least 2µg/m³ and therefore further assessment is not justified on the basis of the estimated changes in air quality.

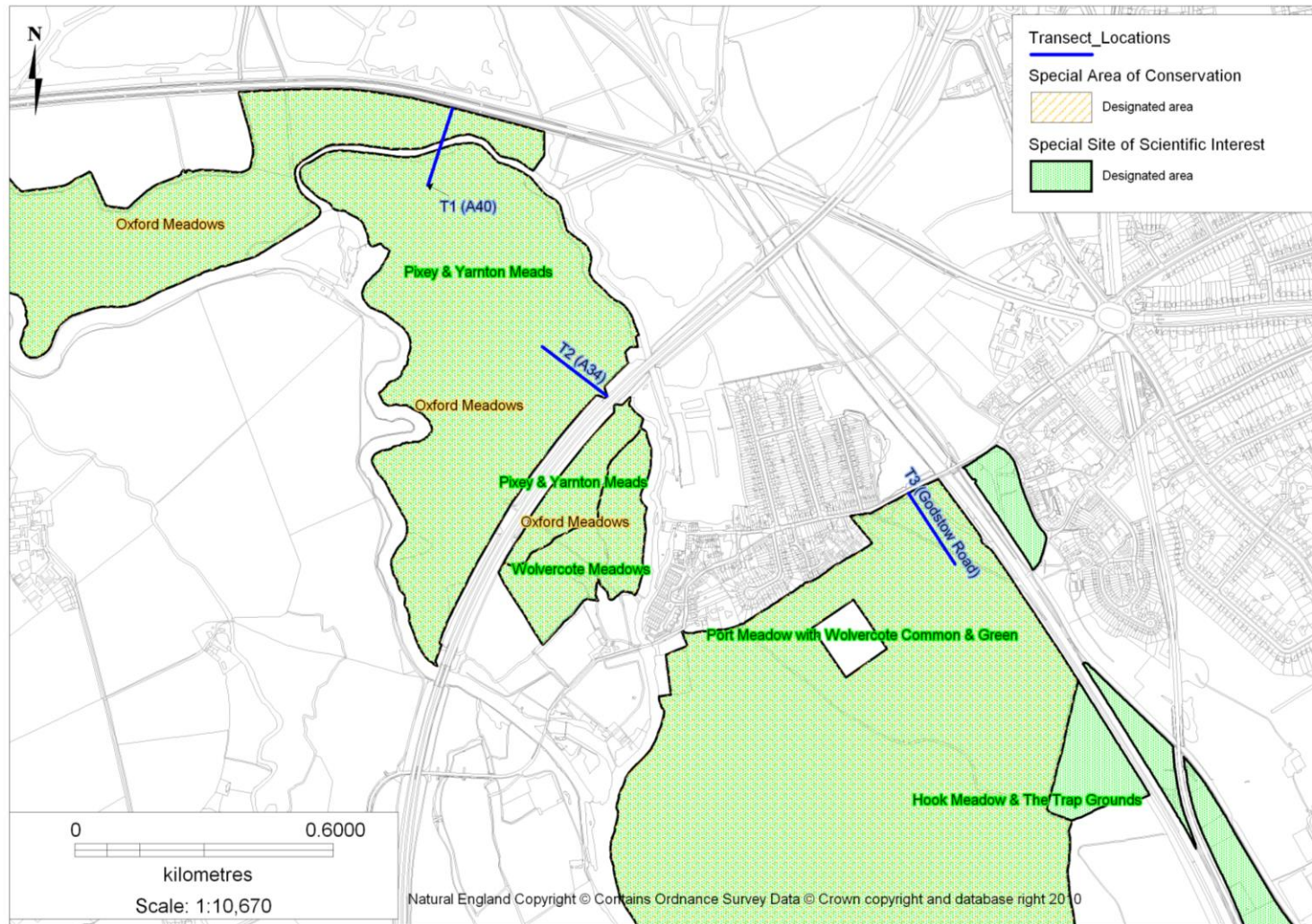
Nitrogen deposition

- 4.5. Nitrogen deposition rates for all transect locations were below the lower threshold of the critical load for Oxford Meadows for all 2031 scenarios within the boundary of the SAC. There was no measurable difference between the results determined for the Cherwell growth and Cherwell growth plus SHMA scenarios.
- 4.6. The sensitivity test to take account of trends in future N deposition rates reducing at a lower rate than detailed in the N deposition assessment also found that all N deposition rates were still below the lower threshold of the critical load for Oxford Meadows for all future scenarios. There was again no measurable difference as a result of implementing the additional housing and employment provisions of the SHMA.

Appendix

A. Transect Locations

Figure A.1 Transect location map



B. Traffic Data

Table B 1 Traffic data used in the air quality assessment

Link Name	2013 (and 2031) Base			2031 Cherwell growth			2031 Cherwell growth with SHMA		
	AADT	%HGV	Speed (kph)	AADT	%HGV	Speed (kph)	AADT	%HGV	Speed (kph)
A40 (west of A34)	18,000	4.5	57.4	22,000	10.8	52.1	21,800	10.9	52.8
A34 (south of A40)	69,900	5.5	74.4	100,100	8.6	64.2	102,000	8.7	64.2
Godstow Rd in Wolvercote	1,300	6.3	34.7	6,200	9.1	39.2	6,900	8.5	39.3

Table B 2 Traffic data used in the 2012 air quality assessment

Link Name	2009 (and 2030) Base			2030 Cherwell Growth			2030 Ref		
	AADT	%HGV	Speed (kph)	AADT	%HGV	Speed (kph)	AADT	%HGV	Speed (kph)
A40 (west of A34)	21,629	14.3	56	25,436	5.8	53	25,033	6.3	54
A34 (south of A40)	84,899	13.5	78	102,593	12.7	68	102,593	12.7	68
Godstow Rd in Wolvercote	1,548	0	35	2,760	0	35	2,622	0	35

C. Future Trends in NO_x Sensitivity Test

Table C 1 Data used to derive adjustment factor for modelled road NO_x component (µg/m³)

Emission Factor Source	Scenario	T1 (A40)	T2 (A34)	T3 (Godstow Road)
DMRB v1.03c Annual NO _x Emissions kg/yr	Base 2013	2,595	11,338	206
EFT v6.0.1 Annual NO _x Emissions kg/yr		3,283	12,617	353
Ratio		1.27	1.11	1.71
DMRB v1.03c Annual NO _x Emissions kg/yr	Projected base 2031	2,172	9,427	162
EFT v6.0.1 Annual NO _x Emissions kg/yr		1,033	3,842	102
Ratio		0.48	0.41	0.63
DMRB v1.03c Annual NO _x Emissions kg/yr	2031 Cherwell growth	4,084	16,145	877
EFT v6.0.1 Annual NO _x Emissions kg/yr		1,398	5,646	467
Ratio		0.34	0.35	0.53
DMRB v1.03c Annual NO _x Emissions kg/yr	2031 Cherwell growth +SHMA	4,061	16,551	945
EFT v6.0.1 Annual NO _x Emissions kg/yr		1,375	5,757	515
Ratio		0.34	0.35	0.54

Table C 2 Adjusted estimated annual mean NOx concentrations ($\mu\text{g}/\text{m}^3$)

Transect Name	2013 Base	2031 Projected base	2031 Cherwell growth	2031 Cherwell growth +SHMA	Change
Transect 1 (A40)					
T1-15m	45.3	25.8	26.7	26.7	<0.1
T1-25m	41.8	24.8	25.4	25.4	<0.1
T1-50m	36.7	23.2	23.5	23.5	<0.1
T1-75m	34.0	22.3	22.5	22.5	<0.1
T1-100m	32.6	21.8	22.0	22.0	<0.1
T1-125m	31.7	21.6	21.6	21.6	<0.1
T1-150m	31.4	21.5	21.5	21.5	<0.1
T1-175m	31.2	21.4	21.5	21.5	<0.1
T1-200m	31.0	21.4	21.4	21.4	<0.1

Transect Name	2013 Base	2031 Projected base	2031 Cherwell growth	2031 Cherwell growth +SHMA	Change
Transect 2 (A34)					
T2-15m	55.4	28.8	30.1	30.2	0.1
T2-25m	49.5	27.0	28.0	28.1	0.1
T2-50m	40.8	24.3	24.9	24.9	<0.1
T2-75m	36.3	23.0	23.3	23.3	<0.1
T2-100m	33.8	22.2	22.4	22.4	<0.1
T2-125m	32.4	21.8	21.9	21.9	<0.1
T2-150m	31.8	21.6	21.6	21.6	<0.1
T2-175m	31.6	21.5	21.6	21.6	<0.1
T2-200m	31.2	21.4	21.4	21.4	<0.1

Transect Name	2013 Base	2031 Projected base	2031 Cherwell growth	2031 Cherwell growth +SHMA	Change
Transect 3 (Godstow Road)					
T3-5m	25.0	17.1	19.4	19.7	0.3
T3-25m	24.1	16.8	18.2	18.4	0.2
T3-50m	23.5	16.6	17.4	17.5	0.1
T3-75m	23.2	16.6	17.0	17.0	<0.1
T3-100m	23.0	16.5	16.7	16.8	0.1
T3-125m	22.9	16.5	16.6	16.6	<0.1
T3-150m	22.9	16.5	16.5	16.5	<0.1
T3-175m	22.8	16.5	16.5	16.5	<0.1
T3-200m	22.8	16.5	16.5	16.5	<0.1

Table C 3 Inputs from the Highways Agency long term gap analysis calculator (v1.0)

Receptor ID	Base 2013 NOx	Projected base NOx	Projected base NOx / base 2013 NOx (Ratio A)	2030 long term adjustment factor/ 2013 long term adjustment factor (Ratio B)*	Gap factor (Ratio B /Ratio A)
T1-15m	45.3	25.8	0.57	0.66	1.17
T1-25m	41.8	24.8	0.59	0.66	1.12
T1-50m	36.7	23.2	0.63	0.66	1.05
T1-75m	34.0	22.3	0.66	0.66	1.01
T1-100m	32.6	21.8	0.67	0.66	0.99
T1-125m	31.7	21.6	0.68	0.66	0.97
T1-150m	31.4	21.5	0.68	0.66	0.97
T1-175m	31.2	21.4	0.69	0.66	0.97
T1-200m	31.0	21.4	0.69	0.66	0.96
T2-15m	55.4	28.8	0.52	0.66	1.28
T2-25m	49.5	27.0	0.55	0.66	1.22
T2-50m	40.8	24.3	0.60	0.66	1.11
T2-75m	36.3	23.0	0.63	0.66	1.05
T2-100m	33.8	22.2	0.66	0.66	1.01
T2-125m	32.4	21.8	0.67	0.66	0.99
T2-150m	31.8	21.6	0.68	0.66	0.98
T2-175m	31.6	21.5	0.68	0.66	0.98
T2-200m	31.2	21.4	0.69	0.66	0.97
T3-15m	25.0	17.1	0.68	0.66	0.97
T3-25m	24.1	16.8	0.70	0.66	0.95
T3-50m	23.5	16.6	0.71	0.66	0.94
T3-75m	23.2	16.6	0.72	0.66	0.93
T3-100m	23.0	16.5	0.72	0.66	0.93
T3-125m	22.9	16.5	0.72	0.66	0.92
T3-150m	22.9	16.5	0.72	0.66	0.92
T3-175m	22.8	16.5	0.72	0.66	0.92
T3-200m	22.8	16.5	0.72	0.66	0.92

Table C 4 Gap analysis: Adjusted annual mean NOx concentrations ($\mu\text{g}/\text{m}^3$), 2031

Transect Name	Gap factor	Adjusted 2031 Cherwell growth	Adjusted 2031 Cherwell growth +SHMA	Change
Transect 1 (A40)				
T1-15m	1.17	31.1	31.1	<0.1
T1-25m	1.12	28.4	28.4	<0.1
T1-50m	1.05	24.7	24.7	<0.1
T1-75m	1.01	22.8	22.8	<0.1
T1-100m	0.99	21.8	21.8	<0.1
T1-125m	0.97	21.0	21.0	<0.1
T1-150m	0.97	20.8	20.8	<0.1
T1-175m	0.97	20.8	20.8	<0.1
T1-200m	0.96	20.6	20.6	<0.1
Transect Name	Gap factor	Adjusted 2031 Cherwell growth	Adjusted 2031 Cherwell growth +SHMA	Change
Transect 2 (A34)				
T2-15m	1.28	38.4	38.6	0.2
T2-25m	1.22	34.1	34.2	0.1
T2-50m	1.11	27.7	27.7	<0.1
T2-75m	1.05	24.4	24.4	<0.1
T2-100m	1.01	22.6	22.6	<0.1
T2-125m	0.99	21.6	21.6	<0.1
T2-150m	0.98	21.1	21.1	<0.1
T2-175m	0.98	21.1	21.1	<0.1
T2-200m	0.97	20.7	20.7	<0.1

Transect Name	Gap factor	Adjusted 2031 Cherwell growth	Adjusted 2031 Cherwell growth +SHMA	Change
Transect 3 (Godstow Road)				
T3-5m	0.97	18.8	19.1	0.3
T3-25m	0.95	17.3	17.5	0.2
T3-50m	0.94	16.3	16.4	0.1
T3-75m	0.93	15.8	15.8	<0.1
T3-100m	0.93	15.5	15.5	<0.1
T3-125m	0.92	15.3	15.3	<0.1
T3-150m	0.92	15.2	15.2	<0.1
T3-175m	0.92	15.1	15.1	<0.1
T3-200m	0.92	15.1	15.1	<0.1

Table C 5 Sensitivity test -estimated annual mean nitrogen deposition rate (kg N/ha/yr) at 1% reduction rate between 2013 and 2031

Transect 1 (A40)											
Distance from road	Total N deposition rate (kgN/ha/yr)			Road increment (kgN/ha/yr)			Road increment as % of total N deposition rate		Critical Load Range	Critical Load Exceedance Range	
	without SHMA	with SHMA	change	without SHMA	with SHMA	change	without SHMA	with SHMA		without SHMA	with SHMA
T1-15m	15.1	15.1	<0.1	1.2	1.2	<0.1	7.9%	7.9%	20 - 30	Not Exceeded	Not Exceeded
T1-25m	14.9	14.9	<0.1	1.0	1.0	<0.1	6.7%	6.7%	20 - 30	Not Exceeded	Not Exceeded
T1-50m	14.6	14.6	<0.1	0.7	0.7	<0.1	4.8%	4.8%	20 - 30	Not Exceeded	Not Exceeded
T1-75m	14.5	14.5	<0.1	0.6	0.6	<0.1	4.1%	4.1%	20 - 30	Not Exceeded	Not Exceeded
T1-100m	14.4	14.4	<0.1	0.5	0.5	<0.1	3.5%	3.5%	20 - 30	Not Exceeded	Not Exceeded
T1-125m	14.4	14.4	<0.1	0.5	0.5	<0.1	3.5%	3.5%	20 - 30	Not Exceeded	Not Exceeded
T1-150m	14.3	14.3	<0.1	0.4	0.4	<0.1	2.8%	2.8%	20 - 30	Not Exceeded	Not Exceeded
T1-175m	14.3	14.3	<0.1	0.4	0.4	<0.1	2.8%	2.8%	20 - 30	Not Exceeded	Not Exceeded
T1-200m	14.3	14.3	<0.1	0.4	0.4	<0.1	2.8%	2.8%	20 - 30	Not Exceeded	Not Exceeded

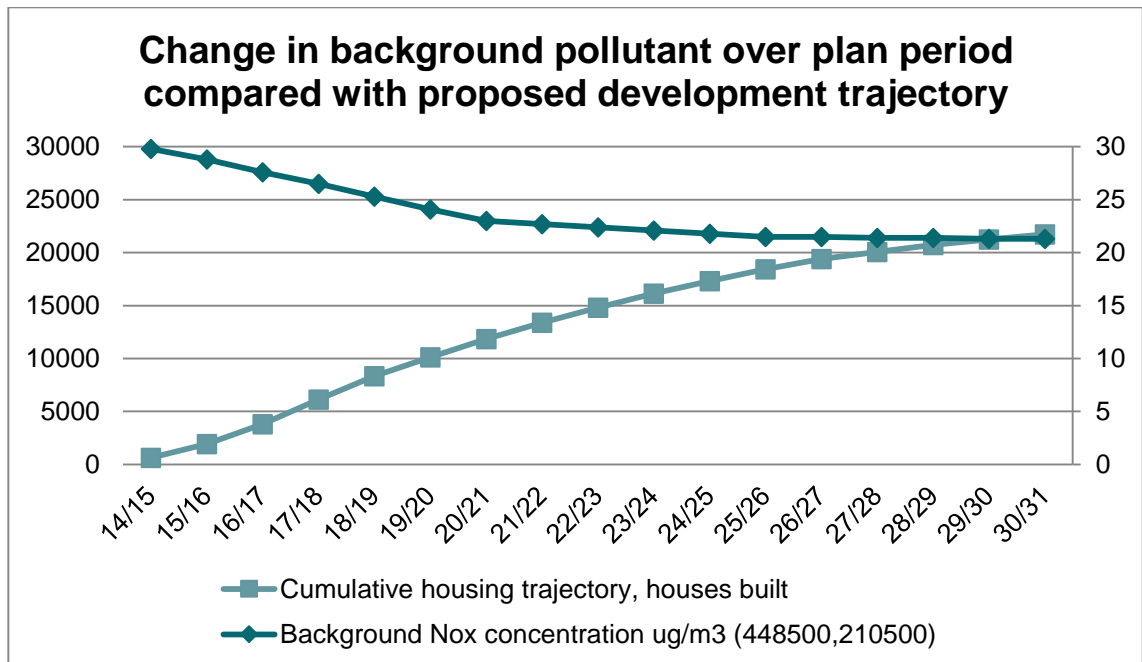
Transect 2 (A34)											
Distance from road	Total N deposition rate (kg N/ha/yr)			Road increment (kg N/ha/yr)			Road increment as % of total N deposition rate		Critical Load Range	Critical Load Exceedance Range	
	without SHMA	with SHMA	change	without SHMA	with SHMA	change	without SHMA	with SHMA		without SHMA	with SHMA
T2-15m	15.5	15.5	<0.1	1.6	1.6	<0.1	10.3%	10.3%	20 - 30	Not Exceeded	Not Exceeded
T2-25m	15.2	15.2	<0.1	1.3	1.3	<0.1	8.6%	8.6%	20 - 30	Not Exceeded	Not Exceeded
T2-50m	14.8	14.8	<0.1	0.9	0.9	<0.1	6.1%	6.1%	20 - 30	Not Exceeded	Not Exceeded
T2-75m	14.6	14.6	<0.1	0.7	0.7	<0.1	4.8%	4.8%	20 - 30	Not Exceeded	Not Exceeded
T2-100m	14.5	14.5	<0.1	0.6	0.6	<0.1	4.1%	4.1%	20 - 30	Not Exceeded	Not Exceeded
T2-125m	14.4	14.4	<0.1	0.5	0.5	<0.1	3.5%	3.5%	20 - 30	Not Exceeded	Not Exceeded
T2-150m	14.4	14.4	<0.1	0.5	0.5	<0.1	3.5%	3.5%	20 - 30	Not Exceeded	Not Exceeded
T2-175m	14.4	14.4	<0.1	0.5	0.5	<0.1	3.5%	3.5%	20 - 30	Not Exceeded	Not Exceeded
T2-200m	14.3	14.3	<0.1	0.4	0.4	<0.1	2.8%	2.8%	20 - 30	Not Exceeded	Not Exceeded

Transect 3 (Godstow Road)											
Distance from road	Total N deposition rate (kg N/ha/yr)			Road increment (kg N/ha/yr)			Road increment as % of total N deposition rate		Critical Load Range	Critical Load Exceedance Range	
	without SHMA	with SHMA	change	without SHMA	with SHMA	change	without SHMA	with SHMA		without SHMA	with SHMA
T3-5m	14.1	14.1	<0.1	0.4	0.4	<0.1	2.8%	2.8%	20 - 30	Not Exceeded	Not Exceeded
T3-25m	14.0	14.0	<0.1	0.3	0.3	<0.1	2.1%	2.1%	20 - 30	Not Exceeded	Not Exceeded
T3-50m	13.9	13.9	<0.1	0.2	0.2	<0.1	1.4%	1.4%	20 - 30	Not Exceeded	Not Exceeded
T3-75m	13.9	13.9	<0.1	0.2	0.2	<0.1	<0.7%	<0.7%	20 - 30	Not Exceeded	Not Exceeded
T3-100m	13.9	13.9	<0.1	0.2	0.2	<0.1	<0.7%	<0.7%	20 - 30	Not Exceeded	Not Exceeded
T3-125m	13.8	13.8	<0.1	0.1	0.1	<0.1	<0.7%	<0.7%	20 - 30	Not Exceeded	Not Exceeded
T3-150m	13.8	13.8	<0.1	0.1	0.1	<0.1	<0.7%	<0.7%	20 - 30	Not Exceeded	Not Exceeded
T3-175m	13.8	13.8	<0.1	0.1	0.1	<0.1	<0.7%	<0.7%	20 - 30	Not Exceeded	Not Exceeded
T3-200m	13.8	13.8	<0.1	0.1	0.1	<0.1	<0.7%	<0.7%	20 - 30	Not Exceeded	Not Exceeded

D. Cherwell Draft Local Plan Housing Trajectory

- D.1 The air quality assessment compares the effect on air quality following completion of the development with that expected at that time without the development. To confirm that the worst case scenario has been assessed for the draft local plan, the housing trajectory has been examined to ensure that the effect on air quality would not be worse at an earlier time than completion of all planned development in 2031.
- D.2 The draft local plan housing trajectory 2011-2031, published 6th August 2014 by Cherwell and shown in Figure 1, represents the anticipated annual rate of housing delivery in the current housing market (2014). It does not preclude the earlier delivery of sites. The rate of delivery over the plan period is shown on the left hand axis in Figure 1. The trajectory indicates that half of the expected housing is likely to be delivered by 2020/2021 at an average rate of 1,700 houses per year, after which the rate of delivery decreases to approximately 1,000 houses per year.
- D.3 The second axis of the chart on the right hand side presents the estimated annual mean background NOx concentrations for the 1km grid square which covers the main area of the SAC within Cherwell District Council boundary, which includes emissions from the A34 and A40. The background concentrations were obtained from DEFRA datasets, updated in June 2014, for each year of the plan period. The expected improvement in vehicle emissions over the period 2014 – 2020 is expected to result in background NOx concentrations reducing at a reasonably constant rate of 1.1 µg/m³ per year up to 2020. Beyond 2020, improvements in NOx emissions and the subsequent rate of decrease in background NOx concentrations were much smaller at a rate of 0.3 µg/m³ per year between 2020 and 2024 and 0.04 µg/m³ per year from 2024 to 2030.

Figure D.2 Draft local plan housing trajectory 2011-2031



- D.4 The chart indicates that background NOx concentrations in future years beyond 2020 are not expected to reduce substantially, due to smaller forecast reductions in emissions. Were the 2031 traffic data modelled with 2021 emission factors and backgrounds, there would be very little change from the reported modelled air quality concentrations in 2031. The housing trajectory confirms that although the housing supply rate is higher in the first seven years of the local plan period, under the 2014 housing market, the supply of housing continues at a reasonable rate throughout the plan period. Therefore the worst case scenario for air quality is the future year when all developments have been completed in 2031, which results in the maximum change to traffic flows as a result of the local plan.



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