Habitats Regulations Assessment
Screening Report

Local Transport Plan 4 (2015-2030)

Prepared for
Oxfordshire County Council

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SECTION 1

1 Introduction

1.1 Background

CH2M Hill has been commissioned by Oxfordshire City Council (OCC) to undertake a Habitats Regulations Assessment (HRA) 'screening' of their fourth Local Transport Plan (LTP4). The LTP4 will set the policy and strategy for Oxfordshire's transport requirements, and OCC's approach to addressing the challenges of the transport system in Oxfordshire, in the period from 2015 – 2030.

This HRA screening report is based on the Area and Supporting Strategies of the LTP4 and builds upon the HRA Screening Report (Halcrow, 2010) produced in 2010. A summary of the HRA process is provided in Section 1.3 of this report.

Several European or *Natura* 2000 sites (hereafter referred to as European sites) designated under the EU Birds Directive and Habitats Directive, and sites designated under the Ramsar Convention on wetlands could be affected by the LTP4. A HRA has, therefore, been undertaken to comply with the requirements of Article 6(3) of the EU Birds Directive (2009/147/EC), implemented in England through the Conservation of Habitats and Species Regulations 2010 (as amended). In addition, it is UK government policy to extend this requirement to Ramsar sites (Department for Communities and Local Government 2005), and therefore the qualifying birds within relevant Ramsar sites have also been considered as part of this assessment.

The aims of this screening report are to present an assessment of whether:

- the LTP4 measures are directly connected with or necessary to the management of any European Sites; and
- the LTP4 has any potentially significant effects (either alone or in combination with other proposals) on a European site.

1.2 Study Area

The study area comprises the entire county of Oxfordshire (see Figure 1), which is located in the south east of England. The county comprises the districts of Oxford, Cherwell, Vale of White Horse, West Oxfordshire and South Oxfordshire.

Figure 1: Oxfordshire Study Area (OCC 2014a)

1.3 The HRA Process

1.3.1 Overview

The Report has been prepared in accordance with the:

- EU Habitats Directive (Council Directive 92/43/EEC), the EU Birds Directive (Council Directive 2009/147/EC) and the UK Habitats and Species Conservation Regulations 2010 (as amended in 2012);
- Methodological Guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC : Assessment of plans and projects significantly affecting Natura 2000 sites (EC 2001)
- The Habitats Regulations Assessment of Local Development Documents. Revised Draft guidance by David Tyldesley and Associates for Natural England, January 2009.
- Design Manual for Roads and Bridges (DMRB). Volume 11, Section 4, Part 1: Assessment of Implications (of Highways and/or Roads Projects) on European Sites (including Appropriate Assessment) (HD 44/09).

In addition to these generic guidance documents, Natural England has also produced guidance on the effect of LTPs on the environment, which is relevant to HRA. Natural England advocates five key priorities for transport plans;

- Protection and enhancement of the natural environment;
- Climate change mitigation and adaptation;
- Improving sustainable access to the natural environment;
- Integrating Rights of Way Improvement Plans (ROWIPs); and
- Delivering green infrastructure.

The most relevant priority on this list to a HRA of a transport plan is the protection and enhancement of the natural environment, in terms of the potential significant effects of the transport plan on European sites.

1.3.2 HRA Stages

The methodological stages described in European guidance for HRA (EC 2001) are defined in Table 1.1.

Table 1.1 HRA Stages (modified from EC2001 and DCLG 2006)

HRA Stage	Description of HRA Stage
Stage 1: Screening	Process which identifies the likely impacts upon a European site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.
Stage 2: Appropriate Assessment (AA)	The consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.
Stage 3: Assessment of Alternative Solutions	Assessment of alternative solutions — the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site
Stage 4: IROPI	Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest)

The results of this screening stage (Stage 1) will be used to establish whether a full appropriate assessment is needed (Stage 2) due to likely significant effects on any European site. This conclusion would need to be agreed with Natural England, the statutory consultee.

If an Appropriate Assessment (AA) is required (Stage 2), the implications of the project must then be assessed in view of the site's conservation objectives, so as to ascertain whether or not it will adversely affect the integrity of the site. Mitigation measures should also be applied during the AA process to the point where no adverse impacts on the site(s) remain. If the plan is likely to result in any adverse effects, then it will not taken forward in its current form.

If the Stage 2 assessment were to confirm adverse impacts on the European sites as a result of the Plan and no further practicable mitigation is possible, it would be necessary to seek less damaging alternative solutions (Stage 3).

In the exceptional circumstances that the plan is justified by establishing Imperative Reasons of Overriding Public Interest (IROPI), consideration can be given to proceeding the plan in the absence of alternative solutions. In this situation, suitable compensatory measures (Stage 4) are required to maintain the coherence of the Natura 2000 network.

1.4 Consultation with Natural England

1.4.1 HRA of Oxfordshire's Earlier LTP3

Previous consultation was undertaken with Natural England regarding the HRA screening of the earlier LTP3 in September 2010. Their comments are shown in Table 1.2, which have been taken into account in the preparation of this document.

Table 1.2 Natural England Comments on HRA Baseline Report (Halcrow 2010)

Relevant section in HRA Baseline Report	Natural England comment
Sections 3.3, 3.4, 3.8 Basic Site Information for Oxford Meadows SAC, Little Wittenham SAC and Aston Rowant SAC	'Oxford Meadows component SSSI's are Port Meadow with Wolvercote Common and Green SSSI, Cassington Meadow SSSI, Pixey and Yarnton Meads SSSI and Wolvercote Meadows SSSI. Little Wittenham's component SSSI is Little Wittenham SSSI. Aston Rowant's component SSSI is Aston Rowant SSSI.'
Section 3.3.2: Vulnerability (of Oxford Meadows SAC)	'Oxford Meadows is also potentially sensitive to increased recreational pressure, due to the risk of trampling of the creeping marshwort.'
Chapter 5: Possible in- combination effects	Cherwell DC are also carrying out an AA of their core strategy Although an AA is not being carried out the current TWA Order for Bicester to Oxford (Chiltern Railways) is increasing trains on the line next to Oxford Meadows SAC and also changing the use of the Oxford-Bicester train line including providing a new station at Water Eaton and so may be relevant.

1.4.2 SEA Scoping of LTP4

Natural England was consulted on the Strategic Environmental Assessment (SEA) Scoping Report produced for the LTP4, which was formally issued to the statutory SEA consultees to request a scoping opinion in April 2014. Natural England's comments in relation to the European sites were that '*the LTP4 should identify the threats/opportunities that the plan presents to biodiversity, and seek to minimise the former and maximise the latter. The principle ones we see are:*

> *1. Impacts on Oxford Meadows Special Area of Conservation due to changes in air quality resulting from changing traffic flows and volumes.*
>
> *2. Direct impacts on biodiversity features due to infrastructure improvements.*
>
> *3. Opportunities for biodiversity enhancement from land use change within the highway estate (e.g. roadside tree planting, different mowing regimes, management to ensure pollutants in run-off from roads are intercepted or otherwise reduced).*

1.4.3 HRA of Oxfordshire's draft LTP4

A new HRA Screening Report has now been prepared to assess the effects of Oxfordshire's fourth LTP4, taking into consideration Natural England's comments received in 2010 on the LTP3. This document will be used to consult Natural England on the environmental acceptability of the plan in January 2015.

2 Oxfordshire's Local Transport Plan LTP4

2.1 Introduction

The LTP4 is being developed by OCC. OCC has responsibility for all adopted roads in the County except for the motorways and trunk roads, which are the responsibility of the Highways Agency; plus Public Rights of Way. OCC works with Network Rail and private sector public transport operators in respect of public transport services.

Building on the earlier LTP3, Oxfordshire's LTP4 has now been prepared to set the policy and strategy for Oxfordshire's transport requirements, and OCC's approach to addressing the challenges of the transport system in Oxfordshire, in the period from 2015 – 2030. The LTP4 takes account of changes in housing and economic growth forecasts, new and emerging spatial planning, and places an increased focus on reducing demand for travel.

The LTP4 considers the demand and need for transport provision and management in Oxfordshire and the roles of individual transport modes and potential interventions. The LTP4 has been developed to help meet the following priority national goals, which are set out in the Department for Transport's 'Delivering a Sustainable Transport System.'

2.2 LTP4 Policies and Area Strategies

LTP4 policies (see Appendix A) were developed by OCC and will be applied across the county through:

- OCC's key role in integrated strategic land use and transport planning for the county
- Involvement in the development of Local Plans and Neighbourhood Plans
- OCC's response to strategic infrastructure and development proposals
- OCC's response to planning applications
- The development of Area Strategies for areas planned for growth
- The development of Supporting Strategies
- OCC's work with partners to develop transport solutions; and
- OCC's decision making process for all aspects of transport for which they have control.

Area Strategies have also been developed by OCC as part of the LTP4, for those parts of the county that are due to experience significant housing and/or employment growth, and to reflect the emerging Local Plans. The Area Strategies describe how these different localities or key centres to Oxfordshire, will meet local transport needs in the county. These Area Strategies comprise: -

- Oxford
- Science Vale (an area encompassing Wantage and Grove, Abingdon, Didcot, Culham Science Centre, Milton Park and Harwell Oxford Campus)
- Bicester
- Banbury
- Witney
- Carterton

These Area Strategies, which are presented in detail in LTP4, set a clear strategy for transport to guide decision-making and support future funding arrangements. Other strategies that have been developed to support the Area Strategies are: -

- Science Transit Strategy
- Bus Strategy
- Rail Strategy
- Cycling Strategy
- Freight Strategy

- A420 Strategy
- Highways Asset Management Plan
- Green Infrastructure Strategy – not available at the time of writing this report

3 European Sites

Table 3.1 and Figure 2 presents the European sites within or adjacent to the LTP4 study area that could potentially be affected by the plan.

Figure 2 European Sites within Oxfordshire

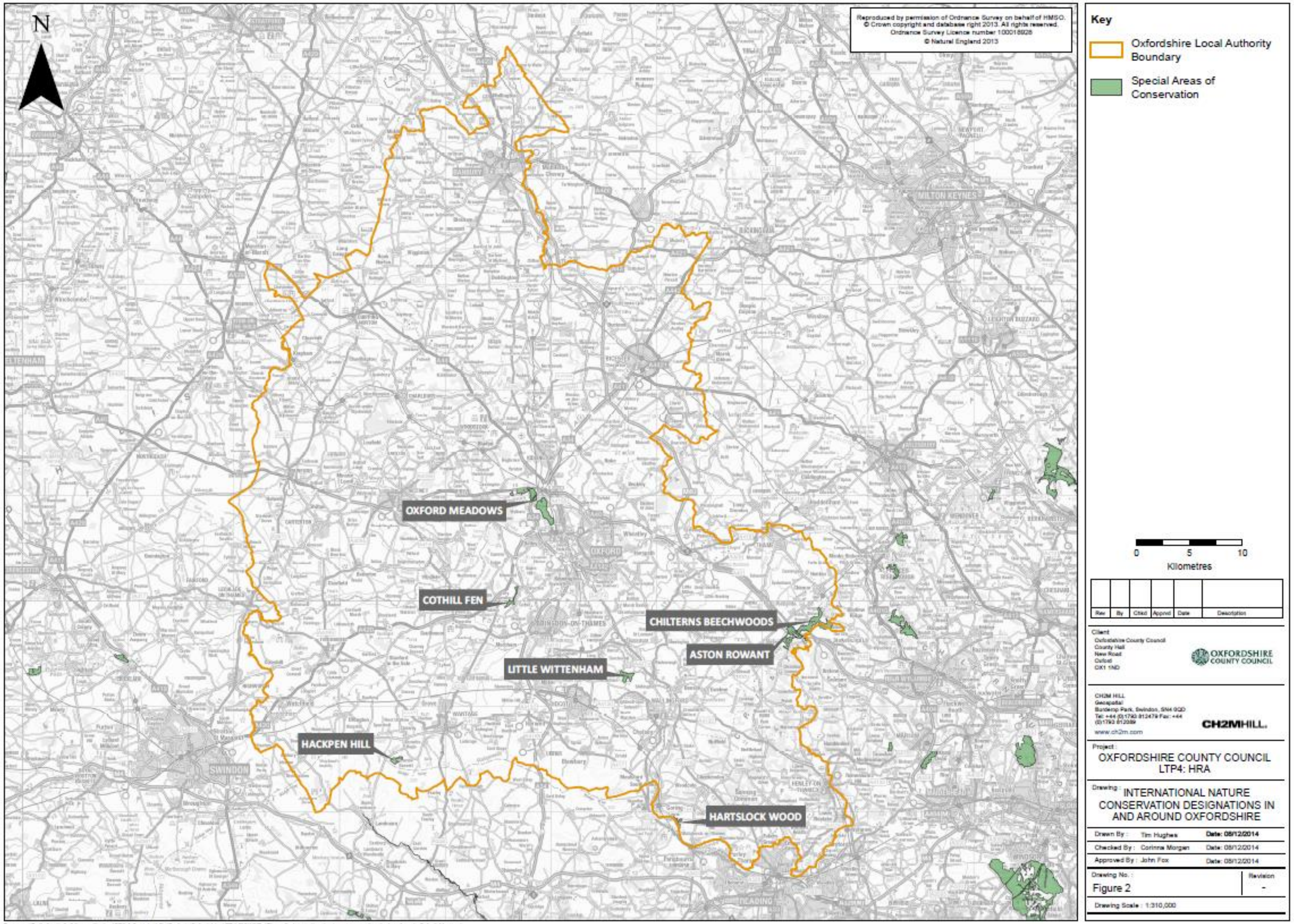

Table 3.1 European Sites within and in close proximity to Oxfordshire

European Site	Unitary Authority	Qualifying Features
Aston Rowant SAC	Oxfordshire	5130 *Juniperus communis* formations on heaths or calcareous grasslands 9130 *Asperulo-Fagetum* beech forests
Chilterns Beechwoods SAC	Oxfordshire	9130 *Asperulo-Fagetum* beech forests 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates *Festuco-Brometalia*
Cothill Fen SAC	Oxfordshire	7230 Alkaline fens 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)
Kennet Valley Alderwoods SAC	West Berkshire	91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)
Hackpen Hill SAC	Oxfordshire	6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates *Festuco-Brometalia* 1654 Early gentian *Gentianella anglica*
Hartslock Wood SAC	Oxfordshire	6211 Semi-natural dry grasslands and scrubland facies: on calcareous substrates *Festuco-Brometalia* (important orchid sites) 91J0 *Taxus baccata* woods of the British Isles
Kennet and Lambourn Floodplain SAC	West Berkshire; Wiltshire	1016 Desmoulin's whorl snail *Vertigo moulinsiana*
Little Wittenham SAC	Oxfordshire	1166 Great crested newt *Triturus cristatus*
Oxford Meadows SAC	Oxfordshire	6510 Lowland hay meadows *Alopecurus pratensis, Sanguisorba officinalis* 1614 Creeping marshwort *Apium repens*
River Lambourn SAC	West Berkshire	3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho- Batrachion* vegetation 1163 Bullhead *Cottus gobio* 1096 Brook lamprey *Lampetra planeri*

SECTION 4

4 Screening Assessment

4.1 Introduction

The methodology steps to be used for the HRA screening is shown in Table 4.1.

Table 4.1: HRA screening methodology for LTP4 (modified from EC, 2001)

Task	Description
1	List any European sites within, adjacent to or associated with the area that the plan covers. Review the site(s)' qualifying interest features, conservation objectives and Favourable Condition Tables. Analyse any underlying trends.
2	Determine whether the plan is directly connected with or necessary to the management of the European site(s). If it is, then no further assessment is necessary.
3	Identify and discount all policies and proposals that will have no significant impact on the European site(s) (including direct, indirect and secondary impacts).
4	Identify any 'in combination' effects of the plan with other plans and projects (including direct indirect and secondary impacts) i.e. the cumulative effect of influences of all the plans and projects on the site(s)' conditions required to maintain integrity.
5	Identify policies and proposals that may have a significant impact (including direct, indirect and secondary impacts) to take through to the AA (Task 2) phase if AA is considered necessary.

4.2 Identifying European Sites (Task 1)

Chapter 3 of this HRA Screening Report identifies the relevant European sites and their qualifying interest features.

4.3 Connection with Management of European Sites (Task 2)

The preparation and implementation of the Oxfordshire LTP4 is not necessary for the management of any European sites within Oxfordshire or adjoining areas.

4.4 Assessment of effects of LTP4 on European Sites (Task 3)

This section reports the results of the screening assessment, identifying whether the preferred LTP4 options are likely to have a significant effect, alone, on the European sites within the area affected by the plan. The potential in-combination effects, with other plans and strategies, are considered in Section 5.2.

During this screening assessment, where there is uncertainty about the likelihood of an option having a significant effect on a site or where causes of change are uncertain, but where a risk exists, the precautionary principle is applied so that the element of the plan must proceed to Stage 2: AA.

The results of the assessment carried out to determine whether the LTP4 is likely to significantly affect the relevant European sites, alone, or in-combination with other plans or projects, is documented in Chapter 5.

4.4.1 Potential effects of Local Transport Plans on European Sites

The principal pressures that may act on the European sites from the proposed LTP4 options and which are considered in this assessment, are identified in Table 4.2.

Table 4.2 Principal pressures/effects from Local Transport Plans

Effect	Source of Effect
Loss, physical disturbance and/or fragmentation of habitat and species	Direct losses from land-take Indirect habitat losses from changes in water quality/hydrology/air pollution Recreation – trampling from increased visitor numbers
Noise & vibration disturbance	Transport infrastructure construction Changes in traffic patterns, flows and volumes Recreational disturbance and changes in human presence Redevelopment of sites to be closed e.g. park & ride sites in Oxford
Visual disturbance	New or extended infrastructure Presence of construction works Changes in lighting
Changes in Hydrology and/ or Water Quality – Water table level changes & Road drainage impacts on water quality	Changes in run-off regimes, spray and water drainage. Increased sediment loads from works. Contamination of water from road traffic accidents
Obstructions and barrier effects to protected species/migrating birds and birds commuting between breeding sites and feeding areas	New structures causing hindrance to movement of species
Mortality or wounding of species (collision)	Direct bird strikes from vehicles/bicycles Increased road traffic or introduction of traffic into new area
Soil changes	Road spray, construction dust, use of salt
Air/dust pollution	Road transport infrastructure construction Changes in traffic flows and volumes causing excess nitrogen deposition Greenhouse gas emissions Dust emissions from operating machinery Redevelopment of sites to be closed e.g. park & ride sites in Oxford
Spread of invasive species	Inadvertent movement of species by materials/construction works

It should be noted that LTPs can also have significant beneficial impacts on European sites including the enhancement of habitats, strategic biodiversity net gains and contribution to green infrastructure, to help deliver the Biodiversity 2020 Strategy and meet government commitments in the Natural Environment White Paper.

4.4.2 Connectivity between LTP4 (and Area Strategies) and European Sites

Table 4.3 shows the connectivity between the European sites and Area Strategies, including those screened out of further assessment.

Table 4.3 Connectivity between European Sites and LTP4

Designated Site	Approximate Minimum Distance of European Site from LTP4	Connectivity between European Sites and LTP4 Area Strategies	Relevant Area Strategy	Screening In or Out
Aston Rowant SAC	18km	SAC is over 18km from any transport schemes proposed in the LTP4's Area Strategies. The qualifying features of the SAC would not be vulnerable to any impacts over this distance.	N/A	Out
Chilterns Beechwoods SAC	16km	SAC is over 16km from any transport schemes proposed in the LTP4's Area Strategies. The qualifying features of the SAC would not be vulnerable to any impacts over this distance.	N/A	Out
Cothill Fen SAC	2km	Elements of the Oxford Transport Strategy (e.g. new park and ride facilities) and Science Vale (e.g. upgraded roundabout at Lodge Hill Slips) will be delivered at a distance where potential indirect impacts could occur.	Oxford Science Vale	In
Hartslock Wood SAC	12km	SAC is over 12km from any transport schemes proposed in the LTP4's Area Strategies. The qualifying features of the SAC would not be vulnerable to any impacts over this distance.	N/A	Out
Hackpen Hill SAC	5km	Nearest scheme would be the Wantage Eastern Link Road as part of the Science Vale Strategy, which is approximately 5km from SAC (on the opposite side of Wantage to SAC) and does not directly affect road passing near SAC (B4001).	N/A	Out
Kennet Valley Alderwoods SAC	20km	SAC is over 20km from nearest Area Strategy (Science Vale). The qualifying features of the SAC would not be vulnerable to any impacts over this distance.	N/A	Out
Kennet and Lambourn Floodplain SAC	20km	SAC is over 20km from nearest Area Strategy (Science Vale). The qualifying features of the SAC would not be vulnerable to any impacts over this distance.	N/A	Out
Little Wittenham SAC	1.7km	Elements of the Science Vale Strategy (e.g. A4130 realignment) will be delivered at a distance of 1.7km from the European site and have the potential to affect habitats supporting Great crested newts (a qualifying interest feature of the SAC).	Science Vale	In
Oxford Meadows SAC	300m	Elements of the Oxford Transport Strategy (e.g. A40 link and junction enhancements) will be delivered at a distance where potential direct and indirect impacts could occur. Other Area Strategies have potential to indirectly affect this site.	Oxford	In

Designated Site	Approximate Minimum Distance of European Site from LTP4	Connectivity between European Sites and LTP4 Area Strategies	Relevant Area Strategy	Screening In or Out
River Lambourn SAC	15km	SAC is over 15km from nearest Area Strategy (Science Vale). The qualifying features of the SAC would not be vulnerable to any impacts over this distance.	N/A	Out

The following European Sites have been screened out of further assessment as there is no potential connectivity to the LTP4 –

- Aston Rowant SAC
- Chilterns Beechwoods SAC
- Hartslock Wood SAC
- Hackpen Hill SAC
- Kennet Valley Alderwoods SAC
- Kennet and Lambourn Floodplain SAC
- River Lambourn SAC

5 Potential effects of the LTP4 on European sites

5.1 Introduction

The following European Sites have been identified for further assessment as there is potential connectivity between the SACs and the LTP4; -

- Cothill Fen SAC (Oxford and Science Vale)
- Little Wittenham SAC (Science Vale)
- Oxford Meadows SAC (Oxford)

It should be noted that at the time of writing this HRA Screening Report, it is not known exactly how and when the Area Strategies assessed will be implemented due to funding constraints. There is therefore some uncertainty in the assessment of potential significance and the precautionary approach has been applied.

5.2 Plans and projects with potential in-combination impacts with LTP3 (Task 4)

5.2.1 Overview

The Conservation of Habitats and Species Regulations 2010 requires the likely significant effect of a plan or programme on a European site to be assessed in combination with other plans or projects (i.e. additive and synergistic effects). An 'in-combination' assessment refers to the total effect of all influences acting on a feature from all plans and projects in the context of prevailing environmental conditions.

The LTP4 was undertaken in such a way as to ensure it was fully integrated with the plans, programmes and schemes shown in Table 5.1.

Table 5.1 Other plans, programmes and projects

West Oxfordshire Draft Local Plan 2012 and emerging LDF
South Oxfordshire Local Plan 2011 and LDF
Adopted Cherwell Local Plan 1996, Non-Statutory Cherwell Plan 2011, Cherwell Local Plan 2011 – 2031 (including modifications to reflect the 2014 SHMA and LDS
Vale of White Horse Local Plan 2011 and New Local Plan 2031 – Part 1, and LDF
Oxford City Local Plan 2001 – 2016 (Adopted 2005) and LDF
Town Masterplans
MOD Proposals
Proposals of Rail Operators
Strategic Housing Market Assessment 2014
Draft Green Infrastructure Framework for Oxfordshire (OCC).

5.2.2 Local Development Framework (LDF)

The Local Development Frameworks (LDF) for the five Local Planning Authorities (LPAs) (West Oxfordshire, South Oxfordshire, Cherwell, Vale of White Horse and Oxford City) within Oxfordshire contain planning policies that seek to protect and enhance biodiversity. Their future planning documents should therefore ensure that there are no significant effects on European sites within the LTP4 area. The LTP4 was also developed to avoid potential in-combination effects with other plans and strategies. Therefore, there are unlikely to be any significant in-combination effects although the individual plans are considered further below.

Relevant LDFs of LPA Plans include: -

- **West Oxfordshire District Council**
  The West Oxfordshire Draft Local Plan 2012 replaces the plan adopted in June 2006. This Local Plan sets out an overall strategy for the District over the next 17 years. The Draft West Oxfordshire Local Plan was published for public consultation from 7th November until 19th December 2012

  HRA work has been carried out to date in relation to the draft Core Strategy published in January 2011 and the proposals contained therein. Since the publication of the draft Core Strategy, a number of changes have been made to the Draft Local Plan to accommodate increases in housing numbers and a subsequent Position Statement was prepared in 2012 in relation to a HRA.

  An initial (Stage 1) HRA Screening Report identified potential impacts on Cothill Fen (an increase in water abstraction, a reduction in water quality and an increase in recreational pressure) and Oxford Meadows SAC (a reduction in air and water quality and an increase in recreational pressure), which were considered further through a Stage 2 Report. The Stage 2 report narrowed down the potential impacts to recreational pressure on both Cothill Fen and Oxford Meadows and air quality at Oxford Meadows, which were eventually highlighted as not being significant.

- **South Oxfordshire District Council**
  The South Oxfordshire Local Plan 2011 was adopted on 20 January 2006, setting out policies and proposals for development, such as housing and employment, in the district, against which planning applications were to be assessed. The Local Plan identified 'protecting and enhancing the natural and built environment' as one of its six objectives.

  An HRA screening of South Oxfordshire's District Council's submission Core Strategy (2012) was undertaken, which identified potentially significant negative effects, as a result of increased visitor pressure on Little Wittenham, Oxford Meadows, Cothill Fen and Hartslock Woods, Chiltern Beechwoods and Aston Rowant SACs. The subsequent Appropriate Assessment concluded that that none of the six European Sites assessed would be adversely impacted by the plans and policies contained in the Core Strategy alone, or in combination with other plans and policies.

- **Cherwell District Council**
  Cherwell District Council have prepared the revised 2011 - 2031 Cherwell Local Plan and a number of additional supporting guidance on particular issues and places. No HRA was available to review at the time of writing this report and therefore without details of the potential biodiversity impacts of the Local Plan, there is difficulty in identifying if issues on the European sites will arise.

- **Vale of White Horse District Council**
  The Vale of White Horse District Council has now developed Part One of their new Local Plan which will run until 2031.

A HRA of the Vale of White Horse LDF Core Strategy was produced in 2008 and identified potentially uncertain impacts on Little Wittenham SAC, Oxford Meadows SAC, Hackpen Hill SAC; and Cothill Fen SAC, mainly as a result of recreational pressure but in some cases also as a result of possible deteriorations in water quality.

- **Oxford City**
  The Oxford Local Plan 2001-2016 was adopted on 11 November 2005, setting out the detailed framework for land use policies against which planning applications for development are judged. Since publication, many of the policies within this plan have either been superseded by more recent policies in other Local Development Framework documents or have expired having not been "saved".

  The HRA screening of the Oxford Core Strategy identified the potential for significant impacts on the Oxford Meadows SAC with regard to air pollution, water quality, balanced hydrological regime and increased recreational pressure, which has the potential for in-combination effects with the LTP4. However, the Appropriate Assessment concluded that none of the policies in the Oxford 2026 Core Strategy are likely to have adverse effects on the integrity of Oxford Meadows SAC.

As no impacts were identified on other European sites within or around Oxfordshire, no in-combination impacts are anticipated on other European sites with delivery of the LTP4.

5.2.3 Town Masterplans

The LTP4 has also been developed alongside town masterplans to ensure that the policies and Area/Supporting Strategies complement and do not conflict with those in the masterplans. For example, Oxfordshire County Council is working with Carterton Town Council as their masterplan for Carterton, which will seek transport infrastructure and services that avoids impacting on designated conservation sites.

5.2.4 MOD Proposals

The LTP4 has the potential for in-combination and cumulative impacts with future changes and new infrastructure provided by the MOD through the intensification of military operations at RAF Brize Norton, which will require further consideration when details of their plans including Programme GATEWAY become available. This is most relevant to the Carterton Area Strategy.

5.2.5 Rail Proposals

The Rail Strategy of the LTP4 is being developed alongside other Oxfordshire road strategies in partnership with Network Rail and other train operators to ensure that the policies do not conflict with the proposals of others. Further consideration will need to be given to the programming of such schemes to identify in-combination biodiversity impacts associated with construction and land-take.

5.2.6 Strategic Housing Market Assessment (SHMA) 2014

The LTP4 has been developed to support new development proposals in the county associated with economic growth. The in-combination impacts of these developments on the environment will require further consideration at project level, when the nature, design and location of other developments are available.

5.2.7 Draft Green Infrastructure Framework for Oxfordshire (OCC)

The Green Infrastructure Strategy seeks to maintain critical ecological links between town and country while supporting sustainable development that protects nature conservation sites. One of

the objectives of the framework is '*to protect and enhance biodiversity levels across and beyond the county, ensuring that development and farming affects wildlife positively, by means of restoration and creation of sustainable semi-natural habitats*.' There are not anticipated to be any in-combination impacts between this framework and the LTP4 on European sites.

5.3 Identification of Likely Significant Effects (Task 5)

Tables 5.2a - c summarise the results of the HRA screening assessment for the three European sites, screened into the assessment. Where uncertain effects have been identified, these have been considered as requiring further assessment, in line with the Precautionary Principle.

Tables 5.2a - c lists only potentially significant impacts, rather than all potential impacts.

Table 5.2a LTP4 Screening Assessment: Cothill Fen SAC

Relevant elements of Area Strategies from LTP4	Qualifying Interest Features	Potential Impacts	LSE from LTP4 alone, before mitigation? ✓/✗	Avoidance or Mitigation Measures	LSE predicted after avoidance or mitigation? ✓/✗	LSE in combination with other plans, programmes or projects? ✓/✗	Further Project Level HRA Screening needed[1]
Cothill Fen SAC							
Oxford: Development of a rapid transit route corridor, Reorganisation of Park & Ride sites e.g. Cumnor Park & Ride	7230 Alkaline fens - This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)	**Habitat loss/fragmentation through air pollution** on alkaline fens and alluvial forests. Air pollution is considered to be a potentially significant pressure to the structure and function of these habitats, in particular alkaline fens. Inputs of excess nitrogen from changes in traffic flows into conservation sites can cause nitrogen eutrophication. Nitrogen oxides and ammonia can also have direct harmful effects on sensitive lower plants such as lichens and bryophytes. The nitrogen critical load range for alkaline fens and alluvial forests is 10 – 15kg/N/ha/year (www.APIS.ac.co.uk).	✗ The proposed Cumnor Park and Ride site and the rapid transit route will be located over 2km from the European Site. The site therefore lies outwith the 200m boundary of roads likely to be affected by the LTP4. In accordance with the DMRB Volume 11 methodology guidance, as there are no roads within 200m of the SAC that are likely to experience traffic increases as a result of the LTP4, the impact of the closest LTP4 works (e.g. mass transit schemes, and park and ride sites at Oxford) can be considered to be neutral in terms of local air quality. The effects of traffic derived nitrogen oxide (NOx) deposition are unlikely to extend beyond 200m of the proposed transport measures, and therefore will not affect the SAC. No further air quality assessment work is needed. The P&R facilities will help to reduce car reliance (and associated vehicle emissions).	No avoidance or mitigation measures required.	✗	✗ No in-combination assessment required. .	Project level HRA may be required to assess in-combination effects of future LTP4 proposals in development (e.g. A40 strategy, Green Infrastructure Strategy and Highways England proposals for the A34).
		Habitat loss /fragmentation through recreational pressures on alkaline fens and alluvial forests. Recreation is considered to be a potentially significant pressure on the structure and function of these habitats.	✗ The mass transit schemes and Cumnor are located over 2km from the European Site and therefore no recreational pressures resulting from the LTP4 are anticipated.				

Relevant elements of Area Strategies from LTP4	Qualifying Interest Features	Potential Impacts	LSE from LTP4 alone, before mitigation? ✓/✗	Avoidance or Mitigation Measures	LSE predicted after avoidance or mitigation? ✓/✗	LSE in combination with other plans, programmes or projects? ✓/✗	Further Project Level HRA Screening needed[1]
Cothill Fen SAC							
Science Vale: Upgraded and new roundabouts at Lodge Hill Slips	7230 Alkaline fens - This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)	**Habitat loss/fragmentation through air pollution** on alkaline fens and alluvial forests. Air pollution is considered to be a potentially significant pressure to the structure and function of these habitats, in particular alkaline fens. Inputs of excess nitrogen from changes in traffic flows into conservation sites can cause a bloom of fast growing plants so that other plants are starved of nutrients and light and eventually die. Nitrogen oxides and ammonia can also have direct harmful effects on sensitive lower plants such as lichens and bryophytes. The nitrogen critical load range for alkaline fens and alluvial forests is 10 – 15kg/N/ha/year (www.APIS.ac.co.uk).	✗ The works lie at a minimum distance of 3.9km from the European site. The site therefore lies outwith the 200m boundary of roads likely to be affected by the LTP4. In accordance with the DMRB Volume 11, as the new roundabouts at Lodge Hill Slips are not within 200m of the SAC and there are no roads within 200m of the SAC that are likely to experience traffic increases as a result of the LTP4, the impacts of the closest LTP works can be considered to be neutral in terms of local air quality. The effects of traffic derived nitrogen oxide (NOx) deposition are unlikely to extend beyond 200m of the proposed transport measures, and therefore will not affect the SAC. No further air quality assessment work is needed. In fact the upgraded and new roundabouts may have a positive effect through improving free flow of traffic and reducing air pollution levels.	No avoidance or mitigation measures required.	✗	✗ No in-combination assessment required.	Project level HRA may be required to assess in-combination effects of future LTP4 proposals in development (e.g. A40 strategy, Green Infrastructure Strategy and Highways England proposals for the A34).
		Habitat loss /fragmentation through recreational pressures on alkaline fens and alluvial forests. Recreation is considered to be a potentially significant pressure on the structure and function of these habitats.	✗ The upgraded roundabouts are located over 3.9km from the European Site and therefore no recreational pressures resulting from the LTP4 are anticipated.				

Table 5.2b LTP4 Screening Assessment: Oxford Meadows SAC

Relevant elements of Area Strategies from LTP4	Qualifying Interest Features	Potential Impacts	LSE from LTP4 alone, before mitigation? ✓/✗	Avoidance or Mitigation Measures	LSE predicted after avoidance or mitigation? ✓/✗	LSE in combination with other plans, programmes or projects? ✓/✗	Further Project Level HRA Screening needed[2]
Oxford Meadows SAC							
Oxford: Managing traffic through ring road junction upgrades; notably A40 link and junction improvements Mass transit links including Bus rapid transit lines 1, 2 and 3, new Oxford Parkway railway station, city centre bus terminal and city centre bus tunnels). Construction of new walking and cycling routes.	6510 Lowland hay meadows *Alopecurus pratensis, Sanguisorba officinalis* - Oxford Meadows represents lowland meadows in the Thames Valley. This site includes vegetation communities that are relatively unique, reflecting the influence of long-term grazing and hay-cutting on lowland meadows. The site has benefitted from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function. 1614 Creeping marshwort *Apium repens* - Port Meadow is the larger of only two known sites in the UK supporting this species.	**Disruption to hydrological regime** from changes in run-off regimes, water pollution, spray and water drainage	? (✓) The A40 borders the northern edge of this SAC where a bus rapid transit route corridor is proposed. This will initially involve an eastbound bus lane on the A40 between Eynsham and Oxford. Although the LTP4 works will not directly impact on this site, there is potential for changes to hydrology and water quality.	Appropriate scheme design to avoid impacts on hydrology and water quality will be assessed and mitigated through a project level hydrological risk assessment, which will ensure no impacts on the SAC. The mitigation that will be implemented will include (but not be limited to) the following, which will be detailed further at project level: - - appropriate design of drainage, bunding and road geometry. - appropriate procedures for the storage and handling of materials used during any construction works - adherence to measures for the prevention of water pollution outlined in the DMRB Volume 11 Part 10, all legislation and the Environment Agency's pollution prevention guidelines.	✗	✗ No in-combination assessment required.	Project level HRA may be required to assess in-combination effects of future LTP4 proposals in development (e.g. A40 strategy, Green Infrastructure Strategy and Highways England proposals for the A34).
		Nutrient enrichment from NO_x deposition from road transport infrastructure construction & changes in traffic flows and volumes. The nitrogen critical load range for lowland hay meadows is 120 – 30kg/N/ha/year (www.APIS.ac.co.uk).	✗ The A40 borders the northern edge of this SAC where a rapid transit route corridor is proposed. The LTP4 works will therefore be carried out within 200m of the SAC. However, although the A40 is likely to experience traffic increases (possibly an increase of over 1,000 AADT) by 2031 in the absence of the LTP4, the A40 will not experience additional traffic as a result of the LTP4. In fact, it	No avoidance or mitigation measures required. The proposed zero emission zone proposals will help offset NOx emissions within the city centre resulting from transport changes.	✗	✗ No in-combination assessment required.	Project level HRA may be required to assess in-combination effects of future LTP4 proposals in development (e.g. A40 strategy, Green Infrastructure Strategy and Highways England proposals for the A34).

[2] HRA Screening at Project Level to determine 'likely significant effect' and an Appropriate Assessment, if required.

Relevant elements of Area Strategies from LTP4	Qualifying Interest Features	Potential Impacts	LSE from LTP4 alone, before mitigation? ✓/✗	Avoidance or Mitigation Measures	LSE predicted after avoidance or mitigation? ✓/✗	LSE in combination with other plans, programmes or projects? ✓/✗	Further Project Level HRA Screening needed[2]
			is considered that the proposed traffic management measures (e.g. new park and ride at Eynsham, combined with new bus priority measures and a bus lane on the A40) will help to reduce air pollution, which is considered beneficial for the SAC. The impact of the A40 works at Oxford can therefore be considered to be neutral in terms of local air quality. In accordance with the DMRB Volume 11 assessment guidance, no further air quality assessment work is needed as the effects of traffic-derived NOx is unlikely to extend beyond 200m of the road edge.				

Table 5.2c LTP4 Screening Assessment: Little Wittenham SAC

Relevant elements of Area Strategies from LTP4	Qualifying Interest Features	Potential Impacts	LSE from LTP4 alone, before mitigation? ✓/×	Avoidance or mitigation measures	LSE predicted after avoidance or mitigation? ✓/×	LSE in combination with other plans, programmes or projects? ✓/×	Further HRA work needed
Little Wittenham SAC							
Science Vale: A4130 realignment New roads and upgraded/new roundabouts between Didcot and Abingdon	Great crested newt *Triturus cristatus* - comprises two main ponds set in a predominantly woodland context. Research has revealed that the great crested newts range several hundred metres into the woodland blocks (http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030184).	**Noise and vibration disturbance from highway improvements**	× The European site lies over 1km from any proposed road improvements and therefore great crested newts are unlikely to experience any noise disturbance, resulting from the LTP4.	None required	×	×	Project level HRA may be required to assess in-combination effects of future LTP4 proposals in development (e.g. A40 strategy, Green Infrastructure Strategy).
		Habitat loss or fragmentation (e.g. from road schemes or recreational pressures). Elements of the Science Vale Strategy (e.g. A4130 realignment) will be delivered at a distance of 1.7km from the European site.	× Although the research at the site indicates that Great crested newts range several metres, this species has been found to move up to 1.3km from breeding sites. However, as there will be no loss in extent nor distribution of habitat within the SAC lost as part of the scheme, which will be located over 1.3km from the European site, there is considered to be no potential for delivery of the LTP4 to affect this qualifying interest feature.	No avoidance or mitigation measures required. However, the scheme design will ensure that transport infrastructure is not sited on wetland habitat that is suitable to support Great crested newts. Similarly, the scheme design will seek to maintain habitat diversity including unshaded, medium sized ponds, to maintain water quality and to maintain a variety of terrestrial and wetland habitat to provide suitable resting, foraging and hibernation areas, and to support breeding.	×	×	Project level HRA may be required to assess in-combination effects of future LTP4 proposals in development (e.g. A40 strategy, Green Infrastructure Strategy).

6 Summary of Screening

This HRA Screening has found that no likely 'strategic' significant effects are predicted from elements of the LTP4's Area Strategies on any European sites, subject to appropriate design and mitigation. An Appropriate Assessment is therefore not considered to be required at this strategic level.

However, project level HRA Screenng of 'Likely Significant Effects' for Oxford Meadows SAC, Cothill Fen SAC and Little Wittenham SAC may be required (in consultation with Natural England) when further details of the delivery of transport schemes currently in development (and not published as part of the current LTP4) are available, together with the details of other plans, to ensure compliance with the Habitats Regulations.

7 References

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Oxfordshire County Council (2014): Joint Strategic Needs Assessment Annual Report 2014. Available at: http://insight.oxfordshire.gov.uk/cms/jsna-2014. Accessed on 14.03.14

[1] Natural England Guidance on Local Transport Plans and the Natural Environment (unpublished)

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8 Abbreviations

AA	Appropriate Assessment
DMRB	Design Manual for Roads and Bridges
EC	European Commission
HRA	Habitat Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
LSE	Likely Significant Effect
LTP	Local Transport Plan
OCC	Oxfordshire County Council
SAC	Special Area of Conservation
LTP	Local Transport Plan
TWA	Transport Works Act

9 Glossary

Appropriate Assessment (AA)	An assessment of the potential adverse impacts of a proposed plan on a European Site, either alone or in combination with other plans. Appropriate Assessment follows a preliminary screening phase to see if 'Appropriate Assessment' is necessary.
Habitats Regulations	These transpose the requirements of the European Union Habitats Directive into the Conservation of Habitats and Species Regulations 2010 (as amended).
Habitats Regulations Assessment (HRA)	Procedure of appraisal under the Habitats and Species Conservation Regulations 2010 (as amended) to determine whether a plan or programme may affect the integrity of a European Site. The HRA includes the 'screening' process for determining whether an Appropriate Assessment (AA) is required, and the AA stage itself, including consultation with Natural England.
Local Transport Plan 4	Local Transport Plan covering the period 2015 to 2030 (the fourth LTP to be prepared for the Oxfordshire area).
Natura 2000	A network of European-wide sites designated under the Habitats Directive (92/43/EEC) and the Birds Directive (79/409/EEC), comprising Special Areas of Conservation, Special Protection Areas and Ramsar sites. Only Special Areas of Conservation are relevant to this report.
Natural England	Natural England is the government agency responsible for nature conservation in England. It was previously part of two separate bodies, the Nature Conservancy Council, and the Countryside Commission, which merged in 1991. Natural England is in charge of designating SSSIs and NNRs, and other functions, including advising the government and undertaking research.
Ramsar Site	Wetlands designated as internationally important under the Convention on Wetlands, Ramsar, 1971.
Site of Special Scientific Interest	SSSIs are designated by Natural England. They underpin other nature conservation designations, such as Special Protection Areas and Special Areas of Conservation. SSSIs can be of biological interest (Biological SSSIs), or geological interest, (Geological SSSIs). A minority of sites are notified for both biological and geological interest.
Special Area of Conservation	SACs are designated to protect the 220 habitats and approximately 1000 species listed in Annex I and II of the Habitats Directive which are considered to be of European interest following criteria given in the directive. Each SAC has various conservation objectives.
Special Protection Area	Sites that are strictly protected sites classified in accordance with Article 4 of the EC Directive on

	the conservation of wild birds (79/409/EEC), (Birds Directive). They are classified for rare and vulnerable birds, listed in Annex I of the Birds Directive, and for regularly occurring migratory species.