Oxfordshire Minerals and Waste Local Plan

Part 1 – Core Strategy

Habitats Regulations Assessment Screening Report

August 2015
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Cover Photograph: Aston Rowant National Nature Reserve – Special Area of Conservation
1. Introduction

1.1 This is a Habitats Regulation Assessment (HRA) Screening Report for the Oxfordshire Minerals and Waste Local Plan: Part 1 – Core Strategy. The European Habitats Directive\(^1\) designates sites that are of international importance for their habitats, flora, or fauna; these are known as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. Together they make up a network of protected sites known as the Natura 2000 network or ‘European sites’. The Directive requires that land use plans are subject to Habitats Regulations Assessment (HRA) where they might have a significant effect on a Natura 2000 site. There are no Special Protection Areas or Ramsar sites in Oxfordshire or within 15km of the county border.

1.2 This document will assess the potential impacts of the development proposed in the Core Strategy on Special Areas of Conservation (SAC) in Oxfordshire and in neighbouring counties. The document has been prepared by Oxfordshire County Council for agreement by Natural England, the statutory consultee for Habitats Regulations Assessment.

1.3 This assessment builds on an earlier HRA Screening Report (August 2011) prepared by Oxfordshire County Council and takes into account changes made since that time to the Core Strategy, as well as additional technical information in a Technical Supplement to the Screening Report prepared to support the HRA in January 2012.

1.4 A list of definitions of the terms used in this report is at Appendix 1.

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\(^1\) Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna, as amended
2. The Habitats Directive

2.1 Under the European Habitats Directive sites are designated as Special Areas of Conservation (SACs) where they are of international importance for ecology. SACs and other sites of international ecological importance (such as Special Protection Areas classified under the Birds Directive for their value for birds) are therefore collectively known as “European Sites”. In Oxfordshire there are SACs but no SPAs or proposed SPAs or other types of European Sites. Article 6(3) of the Habitats Directive requires that a HRA of any plans that could affect European Sites is undertaken:

> Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

2.2 A ruling in 2005 by the European Court of Justice found that Britain had failed to apply Articles 6(3) and 6(4) of the Habitats Directive to land use plans. To address this issue, the Department for Environment and Rural Affairs (DEFRA) published amended regulations on 21 August 2007, stating that land use plans need to be assessed in line with articles 6(3) and 6(4) of the Habitats Directive. DCLG issued guidance to local authorities on writing the assessment; ‘Planning for the Protection of European Sites: Appropriate Assessment’ in August 2006. The guidance notes that ‘land use plans’ refer to Regional Spatial Strategies, the Mayor of London’s Spatial Development Strategy, Development Plan Documents, and Supplementary Planning Documents.

2.3 The purpose of this HRA is to assess the potential impacts of the draft planning strategies for minerals extraction and waste management in the Core Strategy of the Oxfordshire Minerals and Waste Local Plan, on the conservation objectives of the seven SACs in Oxfordshire and SAC in adjacent counties.

2.4 The Habitats Directive applies the precautionary principle to European Sites; plans and projects are only permitted if it can be shown that they will not have a likely significant adverse effect on the integrity of the sites. If there is shown to be a likely significant adverse effect then mitigation or an alternative solution should be found. If this is not possible then the plan/project should not be permitted unless it is demonstrated that there are imperative reasons of overriding public interest and compensatory measures are secured.²

² The Habitat Regulations Assessment Handbook, 2014 (DTA Publications)
2.5 The HRA process consists of four stages, as shown in Figure 2.1. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

Figure 2.1: Outline of the Four Stage Approach to HRA
(Source: The Habitat Regulations Assessment Handbook, 2014 (DTA Publications))

Stage 1: Screening
Plans or projects not likely to significantly affect a European site will be “screened out” of the need for any further assessment

↓

Stage 2: Appropriate Assessment and the Integrity Test
Competent authorities may agree to plans or projects that will not adversely affect the integrity of a European site

↓

Stage 3: Alternative Solutions
If there are alternative solutions a potentially damaging plan or project cannot be agreed to, it will need to be changed or refused

↓

Stage 4: Imperative Reasons of Overriding Public Interest and Compensatory Measures
Plans or projects may proceed for imperative reasons of overriding public interest if compensatory measures are secured
2.6 The HRA screening process (Stage 1) is set out in Figure 2.2.

*Figure 2.2: Screening Process*
(Source: The Habitat Regulations Assessment Handbook, 2014 (DTA Publications))

<table>
<thead>
<tr>
<th>Article</th>
<th>Regulation</th>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article 6 (3)</td>
<td>Regulation 61 (1)</td>
<td>Is it a plan or project within the scope of the Habitats Directive?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the plan or project of a type that could possibly have any (positive or negative) effect on a European site?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the plan or project directly connected with or necessary to the management of the only European site(s) potentially affected?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Identifying European sites potentially adversely affected and their “conservation objectives”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taking account of mitigation measures, would the plan or project be likely to have a significant adverse effect on any European site alone?</td>
</tr>
<tr>
<td></td>
<td>Regulation 61 (2)</td>
<td>Requiring the information necessary to decide whether the plan or project would be likely to have a significant adverse effect on a European site either alone or in combination with other plans or projects</td>
</tr>
<tr>
<td></td>
<td>Regulation 65</td>
<td>Coordination where more than one competent authority is involved in screening plans or projects</td>
</tr>
</tbody>
</table>

2.7 This report represents the evidence gathering stage and Tasks 1 and part of Task 2. The report should be read in combination with the Technical Supplement. The screening process should identify whether the Core Strategy will have a likely significant effect on any of the Special Areas of Conservation (SAC) in or beyond Oxfordshire. The definition of a “likely significant effect” was clarified in the judgement on the Waddenzee case. This clarifies the precautionary principle in undertaking assessments. Unless a significant effect can be objectively ruled-out with certainty, then it must be considered “likely”, therefore “likely significant effect” should be interpreted as any “possible significant effect” that could undermine the conservation objectives for the SAC.

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3 Habitats Regulations Assessment for Oxfordshire, Minerals Planning Strategy, Technical Supplement (Prepared for Oxfordshire County Council by Land Use Consultants and Maslen Environmental, January 2012)
4 European Court of Justice C-127/02 Waddenzee
2.8 The role of the Screening Assessment is to identify whether the preferred minerals and waste planning strategies and policies are considered to have a likely significant effect on a SAC or not. Where no likely significant effect is identified the strategies and policies are ‘screened out’ of further assessment.
3. Screening Methodology for the Report

3.1 The Habitats Directive and Regulations do not prescribe a methodology for a Habitats Regulations screening assessment. This revised HRA Screening Report builds upon the 2011 approach, in which the methodology was developed following a review of other HRAs, meetings with Natural England and a review of national guidance, including:

- Appropriate Assessment of the South East Plan (Workshop for Oxfordshire and Buckinghamshire sites 27 June 2006.)
- Meeting with Environment Agency 13\textsuperscript{th} November 2007
- Meeting with Natural England 30\textsuperscript{th} April 2007
- Meeting with Natural England 24\textsuperscript{th} April 2008
- Meeting with Natural England, 21\textsuperscript{st} May 2010
- Meeting with Natural England, Environment Agency and Consultants 9\textsuperscript{th} December 2011
- Meeting with Natural England 27\textsuperscript{th} August 2014
- Meeting with Natural England 4\textsuperscript{th} February 2015
- Meeting with Natural England 1\textsuperscript{st} July 2015
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EU 2001a);
- The Appropriate Assessment of Spatial Plans in England (RSPB, Dodd et al, 2007)

3.2 The screening methodology therefore:

- outlines details of the European sites which may be affected by the identified impact pathways and the conservation objectives that are to be met to achieve or maintain the favourable conservation status of those sites: Table 1 and Appendix 2;
- proposes that the methodology is based upon identified impact pathways for hydrological impacts and screening distances for air emissions: Section 3,
- describes the purpose and general nature of the Minerals and Waste Local Plan Core Strategy: Section 4
• reviews the geographical scope of the assessment in the report and the SACs that it covers: Section 5
• reviews the potential pollutants arising from mineral extraction and waste management facilities and impact pathways: Section 6.
• describes the preferred strategy for mineral working and screens potential impacts of mineral extraction: Section 7
• describes the preferred strategy for waste management facilities and screens potential impacts of waste management processes: Section 8
• identifies and screens plans and policies which 'in combination' with the Oxfordshire Minerals and Waste Local Plan Core Strategy could have a negative impact on a SAC: Section 9
• summarises and provides the conclusions of the screening opinion: Section 10.

3.3 Box 1 overleaf describes the source-pathway-receptor methodology which will be used as part of this assessment.

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6 Adapted from Environment Agency (2004) Guidance on assessment of risks from landfill sites External consultation V1.0
Box 1: Source - Pathway - Receptors

The ‘source’ for mineral extraction is defined as the hazardous properties and activities resulting from the process of extraction and operation of mineral resources. The ‘source’ for waste management facility development is defined by the hazardous properties and activities resulting from the waste to be managed and the operations to which it will be subjected.

‘Pathways’ are the means by which the identified hazards are transferred from the source into the environment and from there to any defined ‘receptors’. These include, but are not necessarily restricted to:

• releases to atmosphere such as landfill gas, associated traffic emissions, and particulate matter (atmospheric pathway)
• releases to the sub-surface environment such as leachate and hydrological impacts (sub-surface pathway)
• releases to surface water such as a leachate breakout and pollution incidents (surface water pathway)

Receptors are those entities that are liable to be adversely affected by the identified hazards. These include, but are not necessarily restricted to:

• ecosystems, especially sites (but not exclusively) designated in accordance with the Habitats and Birds Directives
• surface water in the vicinity of the site
• groundwater in the vicinity of the site
• atmosphere, which is a receptor in regard to the risk of climate change.

If it can be shown that there is no plausible connection or pathway between potential releases from a specified hazardous source and environmental receptors, which are known or expected to exist in the vicinity of the site, then the situation cannot be considered to present a risk. In such cases, there is no plausible source-pathway-receptor relationship.
4. **The Oxfordshire Minerals and Waste Local Plan – Core Strategy**

4.1 The Oxfordshire Minerals and Waste Local Plan: Part 1 – Core Strategy sets out planning strategies, policies and proposals for minerals and waste development in Oxfordshire for the period to 2031. The Minerals and Waste Local Plan will in due course also include a second document, Part 2 – Site Allocations Document. This Part 2 document, which will be prepared subsequent to and in accordance with the Core Strategy, will look in more detail at individual site options for minerals and waste developments and will be subject to a separate HRA.

4.2 The Core Strategy document comprises a vision and objectives for minerals and waste planning in Oxfordshire and separate spatial planning strategies for mineral extraction and waste management development, including broad locations for new developments.

4.3 The Core Strategy includes a range of Core Policies for minerals and waste that include policies to protect the environment. These include:

Policy C5:

“Proposals for minerals and waste development shall demonstrate that they will not have an unacceptable adverse impact on:

- the local environment;
- human health and safety;
- residential amenity and other sensitive receptors; and
- the local economy;

including from:

- noise;
- dust;
- visual intrusion;
- light pollution;
- traffic;
- air quality;
- odour;
- vermin;
- birds;
- litter;
- mud on the road;
- vibration;
- surface or ground contamination;
- tip and quarry-slope stability;
- differential settlement of quarry backfill;
- subsidence; and
- the cumulative impact of development.”
Where necessary, appropriate separation distances or buffer zones between minerals and waste developments and occupied residential property or other sensitive receptors and/or other mitigation measures will be required, as determined on a site-specific, case-by-case basis."

Policy C7

“Minerals and waste development should conserve and, where possible, deliver a net gain in biodiversity.

The highest level of protection will be given to sites and species of international nature conservation importance (e.g. Special Areas of Conservation and European Protected Species) and development that would be likely to adversely affect them will not be permitted.

Development that would be likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other development) will not be permitted except where the benefits of the development at this site clearly outweigh both the impacts that it is likely to have on the Site of Special Scientific Interest and any broader impacts on the national network of Sites of Special Scientific Interest.

Development that would result in the loss or deterioration of irreplaceable habitats, including ancient woodland and aged or veteran trees, will not be permitted except where the need for and benefits of the development in that location clearly outweigh the loss.

Development shall ensure that no significant harm would be caused to:
- Local Nature Reserves;
- Local Wildlife Sites;
- Local Geology Sites;
- Sites of Local Importance for Nature Conservation;
- Protected, priority or notable species and habitats.

Development that would result in significant harm will not be permitted, unless the harm can be adequately mitigated or, as a last resort, compensated for to result in a net gain in biodiversity (or geodiversity) or, if the impact cannot be fully mitigated or compensated for, the benefits of the development on that site clearly outweigh the harm.

All proposals for mineral working and landfill shall demonstrate how the development will make an appropriate contribution to the maintenance and enhancement of local habitats, biodiversity or geodiversity (including fossil remains and trace fossils), including contributing to the objectives of the Conservation Target Areas wherever possible. Satisfactory long-term management arrangements for restored sites shall be clearly set out and
included in proposals. These should include a commitment to ecological monitoring and remediation (should habitat creation and/or mitigation prove unsuccessful).

Minerals Strategy

4.4 Each Mineral Planning Authority is required under national planning policy (in the National Planning Policy Framework) to make provision for extraction of an amount of aggregate each year, in accordance with an annual Local Aggregate Assessment. The Core Strategy identifies Strategic Resource Areas as the broad locations within which the Council considers that the aggregate mineral extraction that will be required within the county over the plan period should take place.

4.5 The County Council’s preferred spatial strategy for aggregate minerals in policy M3 of the Core Strategy is for the principal locations for mineral extraction to be within the following strategic resource areas:

Sharp sand and gravel
- The Thames, Lower Windrush and Lower Evenlode Valleys area from Standlake to Yarnton;
- The Thames and Lower Thame Valleys area from Oxford to Cholsey;
- The Thames Valley area from Caversham to Shiplake.

Soft sand
- The Corallian Ridge area from Oxford to Faringdon;
- The Duns Tew area.

Crushed rock
- The area north west of Bicester;
- The Burford area south of the A40;
- The area east and south east of Faringdon.

4.6 The locations of the Strategic Resource Areas are indicated in the Minerals Key Diagram, see Figure 4.1.

4.7 The Core Strategy does not itself allocate specific sites for mineral working – that will be done in the Part 2 Site Allocations Document – but it sets out criteria that are to be used in assessing site options. Preliminary assessment of possible sites that have been nominated by the minerals industry and landowners has indicated that the required types and quantities of minerals could be provided for from potential sites, not including sites that are precluded from being worked due to potential impacts on SAC sites.
**Waste Strategy**

4.8 As Waste Planning Authority, the Council is expected to identify the amounts of waste that will need to be managed throughout the plan period, the waste management capacity that will be required to manage that waste effectively and where any new waste management facilities that will be needed should be located. The waste planning strategy in the Core Strategy identifies a need for additional capacity for certain types of waste management for different types of waste; and it identifies broad areas where facilities of different sizes should generally be located.

4.9 Policy W4 of the Core Strategy sets out the Council’s locational strategy for facilities to manage the principal waste streams (which account for most of the waste that will need to managed in Oxfordshire):

a) Strategic waste management facilities should normally be located in or close to Bicester, Oxford, Abingdon and Didcot.

b) Non-strategic waste management facilities should normally be located in or close to Bicester, Oxford, Abingdon and Didcot and the other large towns (Banbury, Witney and Wantage & Grove).

c) Elsewhere in Oxfordshire, and particularly in more remote rural areas, facilities should only be small scale, in keeping with their surroundings.

4.10 The Core Strategy defines strategic waste management facilities as having a capacity greater than 50,000 tonnes per annum; non-strategic facilities between 20,000 and 50,000 tonnes per annum; and local facilities less than 20,000 tonnes per annum. The areas for strategic facilities are broadly defined as within 10 kilometres of Oxford City centre or 5 kilometres of Bicester, Abingdon and Didcot. Non-strategic facilities should normally be located close to one of those towns or the larger towns of Abingdon, Bicester, Didcot, Banbury, Witney and Wantage & Grove. In both cases, facility locations should avoid the Oxford Green Belt and North Wessex Downs Area of Outstanding Natural Beauty.

4.11 This locational strategy does not include landfill sites. The Core Strategy does not identify any need for additional non-hazardous landfill capacity and policy W6 says further provision will not be made. For inert waste that cannot be recycled, this policy requires priority to be given to its use in infilling and restoration of unrestored quarries and it has been assessed that the need for additional inert waste landfill capacity can adequately be met in this way.

4.12 The broad locations for strategic and non-strategic waste management facilities are indicated in the Waste Key Diagram, see Figure 4.2.
4.13 As for minerals, the Core Strategy does not itself allocate specific sites for waste management facilities – that will be done in the Part 2 Site Allocations Document – but it sets out criteria that are to be used in assessing site options. Preliminary assessment of possible sites that have been nominated by the waste industry and landowners or otherwise identified has indicated that the requirements for additional waste management capacity could be provided for from potential sites, not including sites that are precluded from being developed due to potential impacts on SAC sites.
Figure 4.1: Core Strategy Minerals Key Diagram – Minerals Strategic Resource Areas

Legend

Minerals Strategic Resource Areas
Policy M3

- Crushed Rock
- Soft sand
- Sharp sand and Gravel

Key Growth

Rail Depot Policy M4

Area of Outstanding Natural Beauty
Green Belt
Special Areas of Conservation

Source: Oxfordshire County Council & Ordnance Survey Ordnance Survey Data

Figure 4.2 Core Strategy Waste Key Diagram
5. Oxfordshire Special Areas of Conservation and the Geographical Scope of the Assessment

5.1 There is no pre-defined guidance that dictates the geographical scope of an HRA. Therefore, in considering the scope of the assessment, impact pathways have been used as well as screening distances. Current government guidance suggests that the following European sites be included in the scope of assessment:

- all sites within Oxfordshire’s boundary; and
- other sites which could be affected by the proposed development within the authority’s boundary through a known ‘pathway’.

5.2 Impact pathways are routes by which a change in activity within Oxfordshire can lead to an effect upon a European site. The scan-collate-consider-select procedure should be used for selecting European sites relevant to the HRA for a Plan. This starts by scanning around the geographical location of the plan and as far beyond as necessary for sites that could be affected, checking for causal links between the Plan’s proposals and the qualifying features of the European sites. Information for assessment for each site should then be collated. Consideration should then be given to the relevant information and whether “zones of influence” or “significance thresholds or limits” may usefully be applied. Finally, selection is made of the relevant European sites for the assessment and their qualifying features likely to be affected.

Special Areas of Conservation with Oxfordshire

5.3 The following European sites lie within Oxfordshire:

- Oxford Meadows SAC
- Cothill Fen SAC
- Hackpen Hill SAC
- Little Wittenham SAC
- Hartslock Wood SAC
- Aston Rowant SAC
- Chiltern Beechwoods SAC

The locations of the SACs within Oxfordshire are shown in Figure 5.1
5.4 A summary of the SAC characteristics for each SAC is given in Table 1. A full description and map of each SAC is at Appendix 2.

Figure 5.1: Location of Special Areas of Conservation within Oxfordshire
5.5 Six SACs lie within 15km of the Oxfordshire county boundary which could potentially be affected by proposed minerals and waste development in Oxfordshire.

- Chiltern Beechwoods (partly in Oxfordshire)
- North Meadow & Clattinger Farm SAC
- Kennet & Lambourn Floodplain SAC
- River Lambourn SAC
- Kennet Valley Alderwoods (SAC)
- Windsor Forest and Great Park SAC

5.6 The locations of these SACs are shown on Figure 5.2.
Figure 5.2 Location of Special Areas of Conservation within 15km of Oxfordshire Boundary
### Table 5.1: Summary of Special Areas of Conservation – Site Character and Conservation Objectives

<table>
<thead>
<tr>
<th>Name of Sites</th>
<th>Grid Ref</th>
<th>SAC EU Code</th>
<th>Area (ha)</th>
<th>General Site Character</th>
<th>Conservation Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxford Meadow</td>
<td>SP492090</td>
<td>UK0012845</td>
<td>265.89</td>
<td>Humid grassland: Mesophile grassland (87%); Improved grassland (13%).</td>
<td>To maintain alluvial, species rich flood meadows in a favourable condition. Port Meadow with Wolvercote Common &amp; Green: to maintain, in favourable condition, the habitats for creeping marshwort <em>Apium Repens</em>.</td>
</tr>
<tr>
<td>Cothill Fen</td>
<td>SU463999</td>
<td>UK0012889</td>
<td>43.55</td>
<td>Inland water bodies (standing water, running water) (1%); Bogs. Marshes. Water fringed vegetation. Fens (25%); Dry grassland. Steppes (2%); Improved grassland (10%); Broad-leaved deciduous woodland (62%).</td>
<td>To maintain fen meadow, mire and swamp, and broadleaved mixed and yew woodland in a favourable condition.</td>
</tr>
<tr>
<td>Hackpen Hill</td>
<td>SU352847</td>
<td>UK0030162</td>
<td>35.83</td>
<td>Dry grassland. Steppes (100%)</td>
<td>To maintain lowland calcareous grassland supporting <em>Gentiana anglica</em> in a favourable condition.</td>
</tr>
<tr>
<td>Little Wittenham</td>
<td>SU572929</td>
<td>UK0030814</td>
<td>68.76</td>
<td>Inland water bodies (standing water, running water) (1%); Improved grassland (22%); Mixed woodland (77%).</td>
<td>To maintain lowland broadleaved woodland with ponds supporting a breeding population of great crested newts (<em>Triturus cristatus</em>) and a grassland habitat supporting a population of great crested newt in favourable condition.</td>
</tr>
<tr>
<td><strong>Hartslock Wood</strong></td>
<td>SU619789</td>
<td>UK0030164</td>
<td>34.24</td>
<td>Dry grassland. Steppes (13%) Mixed woodland (87%)</td>
<td>To maintain broadleaved mixed and yew woodland, lowland calcareous grassland and <em>Orchis simia</em> in favourable condition. The yew should remain at least frequent in the canopy, for it to maintain favourable status.</td>
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</tr>
<tr>
<td><strong>Aston Rowant</strong></td>
<td>SU727972</td>
<td>UK0030082</td>
<td>127.75</td>
<td>Heath. Scrub. Maquis and Garrigue. Phygrana (14%); Dry grassland. Steppes (62.5%); Broad-leaved deciduous woodland (23%); Other land (including towns, villages, roads, waste places, mines, industrial sites) (0.5%).</td>
<td>To maintain broadleaved mixed and yew woodland (calcareous oak, ash and beech woodland and neutral to acid oak, ash and beech woodland) and calcareous grassland (mixed chalk scrub with juniper) in favourable condition</td>
</tr>
<tr>
<td><strong>Chiltern Beechwoods</strong></td>
<td>SP975134</td>
<td>UK0012724</td>
<td>1276.48</td>
<td>Heath. Scrub. Maquis and Garrigue. Phygrana (4%) Dry grassland. Steppes (8%) Broad-leaved deciduous woodland (88%)</td>
<td>To maintain, in favourable condition, the beech forest habitat (<em>Asperulo-Fagetum</em> beech forest), broadleaved and mixed yew woodland.</td>
</tr>
</tbody>
</table>
6. Impact Pathways and Screening Criteria

6.1 The development and operation of minerals and waste sites can have an impact on SAC sites in a number of ways. This section reviews potential impacts, the use of screening distances and the source-pathway-receptor methodology. Screening distances are used as the basis on which the impacts of air emissions are assessed and the source-pathway-receptor methodology is used to assess potential hydrological impacts.

Quarries and Mineral Sites

Quarries and Minerals Sites - Direct Land Take

6.2 The Core Strategy does not permit the further development of sites that would result in direct landtake of SAC sites.

Quarries and Minerals Sites - Atmospheric Pollutants

6.3 Atmospheric pollutants generated from minerals sites are generally confined to dust and traffic exhaust emissions, of which oxides of nitrogen and carbon dioxide are considered significant for this assessment.

- Oxides of Nitrogen (NOx) - Nitrogen oxides are produced in combustion processes and also naturally by lightning, by livestock and, to a small extent, by microbial processes in soils. Power stations and vehicle emissions produce much of the UK emissions, with other industrial and domestic combustion processes. UK emissions are falling slowly because emission control strategies are being offset by increased numbers of vehicles. Emissions from road transport currently make the largest contribution to the UK total, accounting for some 33% in 2010 (Defra, 2011). An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats. High NOx levels can also have directly toxic effects on plants. The UK Air Pollution Information System includes data on air quality thresholds for SAC sites and whether or not these are currently exceeded. Thresholds vary by habitat type.

- Carbon dioxide – The rise in CO2 concentration is believed to be the main cause of climate change; it is one of the main combustion products from burning fossil fuels. Carbon dioxide is a long-lived pollutant and can remain in the atmosphere for between 50 and 200 years. It is not possible to relate quantities of carbon dioxide to

7 http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm
8 http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm
particular effects on specific European sites and it is therefore not considered further within the this HRA other than to note that increases in carbon dioxide will contribute at a global scale to accelerating rates of climate change.

6.4 The Department for Transport’s Transport Analysis Guidance\(^9\) notes that ‘beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant.’ This distance has been used in this screening report in order to determine which European sites, considered in terms of air pollution impacts, are at risk of likely significant effects from development proposed in the Core Strategy.

Quarries and Minerals Sites - Dust

6.5 Effects of dust will depend on the prevailing wind direction and the dispersal distance is related to particle size; large particles (>30µm) will mostly deposit within 100m of the source, intermediate particles (10-30µm) are likely to travel up to 200-500m. Smaller particles (<10µm) can travel up to 1km from the source. With regard to the interest features of European sites, it is likely to be the large and intermediate size particles that are of most concern since if present in sufficient quantities they can smother vegetation, preventing light penetration to the chloroplasts and blocking stomata thus interrupting photosynthesis and transpiration. In prolonged cases, death of plants can result.

6.6 Dust impacts cannot be quantified beyond the broad potential distances identified above for different particle sizes. For the purposes of screening, proposals for minerals development more than 200m from a European site have been ‘screened out’ as being unlikely to contribute significant dust impacts even without special mitigation such as ‘wetting’

Quarries and Minerals Sites - Water Resources

Water Quality

6.7 The quality of the water that feeds SAC sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.

\(^9\) Transport Analysis Guidance (TAG) on the analysis of environmental impacts in transport appraisals. Department for Transport. 10 Nov 2014

• Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water, further depleting the oxygen levels.

• Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

• Suspended solids of varying size can contaminate land directly.

Groundwater Resources

6.8 There are several ways in which mineral workings can affect groundwater resources:

• Quarries that are below the water table will require dewatering on a regular basis. Dewatering can lead to a reduction in the water table and “draw down” from hydraulically linked groundwater dependent habitats (including streams and rivers);

• The physical presence of a new quarry in the unsaturated zone (i.e. above the water table) can increase the possibility of aquifer contamination and result in a direct reduction in temporary groundwater storage capacity;

• If the water that is pumped from a quarry as a result of dewatering has a high proportion of clays and suspended particles, or is contaminated with metals or other pollutants, it can reduce water quality within those watercourses that receive the water;

• Backfilling a dormant quarry with overburden or imported fill may cause changes to groundwater levels, quality and flow paths in adjoining areas.

Quarries and Minerals Sites - Recreation

6.9 Following completion of mineral working there is potential for sites to be restored to an after use that generates increased recreational activity in the local area – whether it be formal or informal. Increased recreational activity can have impacts on SAC sites in various ways including:

• Direct impacts: trampling of sensitive vegetation and dog fouling
• Indirect Impacts: difficulties in undertaking necessary site management operations.
6.10 The Core Strategy includes a policy that excludes site restoration strategies that would be likely to increase recreational pressure on SAC sites. Recreational impacts are therefore screened out from the HRA.

Waste Sites

6.11 Waste Sites - Direct Land Take

The Core Strategy does not permit the further development of sites that would result in direct landtake of SAC sites.

Waste Sites – Atmospheric Pollution

6.12 Waste sites, particularly incinerators and landfill sites, can contribute to atmospheric pollution through emission of the following pollutants. A description of each pollutant and an explanation to justify whether each pollutant is assessed further or discounted are provided below.

- Methane: In the UK landfill was amongst the largest sources of methane emissions (40% of total in 2012)\(^{10}\). In terms of the effects of methane on habitats and species, there is no direct, chemical effect on animals or plants. There are, however, secondary effects arising from climate change which will bring about, for example, changes in air temperature, hydrology and sea level\(^{11}\). It is not possible to relate quantities of methane to particular effects on specific European sites and it is therefore not possible to consider this gas within the scope of this HRA other than to note that increases in methane will contribute at a global scale to accelerating rates of climate change.

- Carbon dioxide: Carbon Dioxide has been covered under quarries and minerals sites. It is therefore not possible to consider this gas within the scope of this HRA other than to note that increases in carbon dioxide will contribute at a global scale to accelerating rates of climate change.

\(^{10}\) DECC Methane: GHG Inventory Fact Sheet

• Oxides of Nitrogen (NOx): Further to the information under quarries and minerals sites the Environment Agency guidance on screening point-source pollution emitters\textsuperscript{12} lists the presence of a Natura 2000 site within 10km as one of the indicators that detailed assessment (i.e. dispersion-modelling) may be required for a planning application/IPCC consent. The implication of this is that the emissions of a point-source can normally be considered effectively inconsequential on sites located more than 10km distant. This would apply particularly to emitters such as thermal waste treatment facilities. A landfill gas flare (or utilisation engine) will produce an emission of exhaust gases such as sulphur dioxide, NOx, unburnt hydrocarbons, carbon monoxide and hydrogen chloride. However, the volume of exhaust gases is likely to be small in comparison to other combustion facilities and at a distance of >1km from the European site may well be inconsequential\textsuperscript{13}. A distance of 1km has therefore been used throughout this screening report as a basis on which to screen landfill issues in or out of assessment with regard to air quality issues.

The scale of vehicle movements associated with waste facilities depends upon the type and scale of facility, which are only identified in the Core Strategy at the most strategic scale. It is therefore not possible to give meaningful values for traffic movements. A review by ERM in 2007\textsuperscript{14} identified that:

- A Household Waste Recycling Centre may have small numbers of HDV movements per day but large numbers of car movements when the public brings its waste to the site.
- Energy from Waste facilities will generally have large numbers of HDV movements (100-200 per day) but there will be a much smaller number of cars traveling to the site.
- Most other forms of waste treatment fall between these two extremes, depending on their type and size.
- If there are multiple waste facilities on one site, the picture may be further complicated with different flows of vehicles to each facility.

• Hydrogen chloride and hydrogen fluoride (HCl and HF): Both of these chemicals are produced in small amounts as a result of certain energy from waste facilities. Quantities of hydrogen chloride and hydrogen fluoride emitted by incinerators typically result in ground-level concentrations lower than the concentration that will harm vegetation and therefore these chemicals are not considered further in this assessment.\(^\text{15}\)

• Ammonia (NH3) – The main source of ammonia is agriculture, although it is also produced by composting organic matter on waste sites. Impacts of NH3 include soil and freshwater acidification and enrichments of ecosystems by nitrogen, or eutrophication\(^\text{16}\) leading to changes in species composition and other harm to ecosystems.\(^\text{17}\)

• Low-level ozone (O3) – this is unlike the other pollutants mentioned, in that it is not emitted directly into the atmosphere, but is a secondary pollutant produced by a complex reaction between nitrogen dioxide (NO2), hydrocarbons and sunlight.\(^\text{18}\) Although peak levels of ozone are generally reducing, annual average levels are generally increasing. The long range nature of this pollutant means that the distance from source to deposition can often be across national boundaries. Low-level ozone can therefore only be addressed at the national and international level.

• Dioxins – These are long-lived organic compounds, which form when chlorinated substances in waste such as PVC plastic are burnt and accumulate in the human food chain. As with ozone, the distance from emission to deposition of dioxins can be many hundreds of miles, potentially crossing trans-national boundaries, and is dependent upon meteorological conditions. No new waste incineration facilities are proposed in the Core Strategy and therefore no impact is expected to be generated from this pollutant. Other than waste incinerators, the largest sources of dioxin emissions is thought to be the small scale burning of waste materials. The Core Strategy does not propose any facilities that include small scale burning operations. Such activity is controlled by the Environment Agency.

• Cadmium - In 2012 the main sources were fuel combustion and steel and iron manufacturing. The emissions from fuel combustion include a significant proportion from waste-derived fuel, solid fuel and fuel oil combustion. Emissions from non-ferrous metal activities have declined.

\(^{15}\) ERM, 2007 Appropriate Assessment of the Surrey Waste Development Framework
\(^{16}\) UK Air Pollution Information System http://www.apis.ac.uk
\(^{17}\) UK Air Pollution Information System http://www.apis.ac.uk
\(^{18}\) UK Air Pollution Information System http://www.apis.ac.uk
The decline in fuel oil combustion in power generation and the reduction in coal combustion have contributed to the overall decline in UK cadmium emissions. There has been a large reduction in cadmium from waste emissions due to improved controls on Municipal Solid Waste (MSW) incinerators from 1993 onwards.\(^{19}\)

- Landfill gas - Migration of landfill gas outside the perimeter of landfill sites taking biodegradable waste can occur, but only where sites have been inadequately engineered. In such circumstances the gas will exclude oxygen from the soil and lead to the exposure and possible death of plants and soil fauna. Such effects are unlikely beyond a 0.5km radius\(^{20}\), but since they are a result of poor engineering design, and any current landfill sites will be required to conform to all modern authorisations, they are not considered further in this assessment.

**Waste Sites - Biopathogen Emissions**

6.13 Some composting sites can result in the production of bio-pathogens, which if released into the environment can result in adverse effects on vegetation within European sites located close to the facility. Work which was carried out in Sussex in 2008 resulted in Natural England agreeing that a screening distance of 1km should be applied to such facilities\(^{21}\).

**Waste Sites - Dust**

6.14 Many waste facilities can create dust. Landfill sites, thermal treatment plants, in vessel composting facilities, materials recycling facilities and transport emissions associated with waste facilities all lead to dust arisings.

6.15 As with quarries and minerals sites, dust impacts cannot be quantified beyond the broad potential distances identified previously for different particle sizes. For the purposes of screening, proposals for waste development that concern areas more than 200m from a European site have been ‘screened out’ as being unlikely to contribute significant dust impacts even without special mitigation such as ‘wetting’.

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\(^{19}\) [http://naei.defra.gov.uk/overview/pollutants?pollutant_id=12](http://naei.defra.gov.uk/overview/pollutants?pollutant_id=12)


Waste Sites - Water Quality

6.16 As noted previously, SACs can be particularly susceptible to changes in the water quality and hydrological environment. Water quality may be adversely affected by waste sites through:

- pollution through water runoff from hard surfaces carrying oils, heavy metals and/or de-icing compounds. While these effects can be dispersed throughout the downstream water catchment, they will be most visibly manifested within tens of metres to a few hundred metres of the site; and

- discharges of leachate from landfill sites can add ammonia, other nutrients and chemical pollutants to surface water bodies. Leachate can also penetrate groundwater. Leachate can escape from landfill sites by leakage through a barrier / containment system, break out through a cap, or overtopping containment. Present day landfill sites are designed and operated to avoid discharges of landfill leachate.

Waste Sites – Recreation

6.17 Following completion of waste management operations there is potential for sites to be restored to an after use that generates increased recreational activity in the local area – whether it be formal or informal. Increased recreational activity can have impacts on SAC sites in various ways including:

- Direct impacts: trampling of sensitive vegetation and dog fouling
- Indirect Impacts: difficulties in undertaking necessary site management operations.

6.18 The Core Strategy includes a policy that excludes site restoration strategies that would be likely to increase recreational pressure on SAC sites. Recreational impacts are therefore screened out from the HRA.

Screening Distances

6.19 Table 6.1 summarises the screening distances that will be used for each source of impact discussed in this section of the report. The ‘screening distance’ is the distance within which (using the guidance on pathways available from the Environment Agency and the other sources identified in this section) different sources of impact from minerals and waste sites should be taken forward for more detailed consideration of impacts. The screening distance does not imply that all sites within that zone will lead to an adverse effect on a SAC site, merely that potential impacts/effects
cannot be dismissed. Conversely, any pathway that exceeds the screening distances shown can be assumed to result in no likely significant impact on a SAC.

Table 6.1: Screening distances for impacts based on ‘source-pathway-receptor’ methodology

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Screening Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air quality – thermal treatment</td>
<td>10km from European site</td>
</tr>
<tr>
<td>Air quality – landfill gas flares</td>
<td>1km from European site</td>
</tr>
<tr>
<td>Air quality - biopathogens</td>
<td>1km from European site</td>
</tr>
<tr>
<td>Air quality - dust</td>
<td>200m from European site</td>
</tr>
<tr>
<td>Air quality – traffic emissions</td>
<td>200m from European site</td>
</tr>
<tr>
<td>Water quality and flows</td>
<td>No standard distance – use Source/Pathway/Receptor Approach for each case</td>
</tr>
</tbody>
</table>
7. Screening of Minerals Strategic Resource Area Proposals

7.1 In summary, the County Council’s preferred spatial strategy for mineral working is:

i. Sharp sand and gravel – strategic resource areas in the Thames, Lower Windrush and Lower Evenlode Valleys area from Standlake to Yarnton (including the Lower Windrush Valley and Eynsham / Cassington / Yarnton areas); the Thames and Lower Thame Valleys area from Oxford to Cholsey (including areas around Sutton Courtenay, Long Wittenham, Culham, Drayton St Leonard, Warborough, Wallingford and Cholsey); and the Thames Valley area from Caversham to Shiplake;

ii. Soft sand – strategic resource areas in the Corallian Ridge area from Oxford to Faringdon; and the Duns Tew area;

iii. Crushed rock – strategic resource areas in the area north west of Bicester; the Burford area south of the A40; and the area east and south east of Faringdon.

7.2 The Core Strategy requires that sites for mineral working should avoid locations within or that would significantly affect an AONB, but indicates that small scale quarries for supplying building or walling stone to meet local needs may be acceptable in AONBs. The Core strategy requires that proposals for mineral working must comply with the Core Policies C1 – C11. These include specific protection being given to SACs and their component SSSIs (policy C7).

7.3 The minerals strategy areas are indicated on the Core Strategy Minerals Key Diagram (see Figure 4.1) and in relation to SAC sites in Figure 7.1 below. Section 6 of this report has highlighted that mineral working can have particular air pollution water quality and hydrological impacts on the environment. This assessment identifies that there are potential impact pathways that could be relevant to Oxford Meadows SAC, Cothill Fen SAC Little Wittenham SAC and Aston Rowant SAC. These impacts are discussed further below.
Figure 7.1: Core Strategy Minerals Strategic Resource Areas and Special Areas of Conservation (SAC Sites shown in Solid. Minerals SRA in hatched)
Air Pollution

Traffic Emissions

7.4 The Department for Transport's Transport Analysis Guidance\textsuperscript{22} notes that ‘beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant.’ Strategic Lorry routes are defined in the Core Strategy. The location of these routes is shown in Appendix 3. The SAC sites in Oxfordshire that lie within 200m of a road which could be used as a strategic lorry route for minerals and waste traffic are:

- Oxford Meadows SAC, located within 200m of the A40
- Aston Rowant SAC, located within 200m of the M40

7.5 The Air Pollution Information System (APIS) data for Oxford Meadows notes that the Maximum Critical Threshold levels for Nitrogen are not currently exceeded\textsuperscript{23}. More recent modelling of emissions from traffic has been undertaken for Oxford City Council to inform the HRA for the Northern Gateway Area Action Plan\textsuperscript{24}. This found that the 2013 baseline “critical level for nitrogen oxide concentrations was significantly exceeded at a number of locations within Oxford Meadows SAC adjacent to the A34 and A40.” Baseline modeling for 2026 predicts concentrations and deposition rates to be “significantly lower than in 2013 due to improvements in background pollutant concentrations and vehicle emissions” and “By 2026 the exceedence of the critical level is limited to a small strip either side of the A34 (approximately 5m within the SAC to the north of the road, and 30m within the SAC to the south of the road).”

7.6 The Highways Agency’s publication the Design Manual for Roads and Bridges (March 2011) notes that an assessment of air quality is required if “Heavy Duty Vehicle (HDV) flows will change by 200 AADT [Annual Average Daily Traffic Flow] or more…”\textsuperscript{25}.

7.7 An examination of predicted changes in HDV flows as a result of the minerals element of the Core Strategy has been undertaken to inform this Screening Report. This analysis is presented in Appendix 4.

\textsuperscript{22} Transport Analysis Guidance (TAG) on the analysis of environmental impacts in transport appraisals. Department for Transport. 10 Nov 2014

\textsuperscript{23} http://www.apis.ac.uk/src/select-a-feature?site=UK0012845&SiteType=SAC&submit=Next

\textsuperscript{24} Oxford City Council. Habitat Regulations Assessment for the Northern Gateway Area Action Plan, July 2014

\textsuperscript{25} Highways Agency (2007 Design Guide for Roads and Bridges, Vol 11, Section 3 Environmental Assessment Techniques, Part 1 Air Quality}
7.8 In summary this analysis concludes that the strategy for mineral working in the Core Strategy will over the course of the plan period to 2031 lead to:

   a) a reduction of 19 HDV movements per day (9%) in minerals traffic on the A40 where this road passes within 200m of the Oxford Meadows SAC;

   b) an increase of 57 HDV movements per day (6%) in minerals traffic on the A34 where this road passes within 200m of the Oxford Meadows SAC;

   c) no change from the existing position of no minerals traffic on the M40 where this road passes within 200m of the Aston Rowant SAC.

7.9 Data on actual emissions from HDV use associated with minerals development and how this relates to the overall traffic emissions is not available for the roads in question. Looking to the future, improvements in engine technology will over time reduce the pollution from heavy duty diesel engines reducing the absolute amount of nitrogen and acid deposition from HDV.

7.10 Within a scenario of reducing emissions the contribution to the overall vehicle emissions load from vehicle movements associated with mineral extraction along the A40, A34 and M40 arising from the minerals Core Strategy are not considered to generate a likely significant impact on Oxford Meadows SAC or Aston Rowant SAC.

Rail Transport Emissions

7.11 The Core Strategy Policy M1 notes that “Where practicable, the transport of recycled and secondary aggregate materials from sources distant to Oxfordshire should be by rail”. Chiltern Railways railway line runs alongside the eastern edge of Oxford Meadows for a distance of c.2.7km of which it directly borders the SAC for a distance of c. 1050m. There is a potential pathway for an increase in transport emissions from freight trains.

7.12 An assessment of emissions from existing and proposed rail traffic was undertaken to inform the Chiltern Railways (Bicester to Oxford Improvements) Order. This concluded that the increase in trains would generate an annual average additional 4µg m⁻³ of NOₓ depositions. In the context of a complex site the impact on Oxford Meadows SAC was not considered significant but additional monitoring was required to inform this conclusion.
7.13 Specific details on the frequency of rail-based minerals movements and the emissions from these are not available. Rail transport is noted to produce less emissions per tonne than road transport. In the absence of specific rail data a ‘worst-case’ scenario has been adopted that a proportion of minerals imported will move by road rather than rail. This has been built in to the assessment above and is covered in more detail in Appendix 4. Therefore it is concluded that there is no likely significant effect on Oxford Meadows SAC from the policy on movement of minerals by rail.

Dust

7.14 Policy C5 in the Core Strategy requires that “Proposals for minerals and waste development shall demonstrate that they will not have an unacceptable adverse impact on the environment, residential amenity and other sensitive receptors, including from noise, dust…”. The Core Strategy notes that “A buffer zone can help to mitigate the impact from workings”. Buffer zones of at least 200m around Strategy Areas have been provided around SAC sites to mitigate against dust. Therefore it is concluded that there are no likely significant effects from dust and this impact is screened out.

Hydrology

7.15 In Oxfordshire there are three European sites that have a particular hydrological sensitivity: Oxford Meadows; Cothill Fen; and Little Wittenham. Following comments received on the 2011 Screening Report a further review was commissioned in 2012 by Oxfordshire County Council on the hydrological impact of mineral extraction on Oxford Meadows and Cothill Fen\(^\text{26}\). The review considered in more detail the impact of extraction at a number of nominated sites within the minerals strategy areas. Nominated sites are not identified in the revised Core Strategy. However, the review also provided more general conclusions. The 2012 review should be read in association with this Screening Report. The overall conclusions of this report for Oxford Meadows and Cothill Fen are summarised below.


The 2012 Technical Review prepared for Oxfordshire County Council noted:

- the potential for hydrological connectivity between Oxford Meadows SAC and the south eastern end of the Eynsham/Cassington/Yarnton sharp sand and gravel extraction area;
- that extraction of sharp sand and gravel in the south-eastern part of the area has the “potential to affect the water chemistry, quality, levels, turbidity, sedimentation and pollution at Oxford Meadows SAC with consequent effects on the qualifying features”,
- “extraction of sand and gravel at these sites or within the south eastern part of the strategic area has the potential to result in significant effects to Oxford Meadows SAC, primarily as a result of changes in ground water levels at the site”.

In the light of the 2012 Technical Supplement the Core Strategy has been amended. Policy M4 states that

“Specific sites for working aggregate minerals within the strategic resource areas identified in policy M3, to meet the requirements set out in policy M2, will be identified in the Minerals & Waste Local Plan: Part 2 – Site Allocations Document, in accordance with the following criteria:…….

i) avoidance of locations likely to have an adverse effect on sites and species of international nature conservation importance and Sites of Special Scientific Interest; in the case of locations within the Eynsham / Cassington / Yarnton part of the Thames, Lower Windrush and Lower Evenlode Valleys area, it must be demonstrated that there will be no change in water levels in the Oxford Meadows Special Area of Conservation and the proposal must not involve the working of land to the north or north east of the River Evenlode”

The boundaries of the minerals strategic resource areas have been amended to reflect the specific recommendations of the Land Use Consultants and Maslen Environmental report. Account has been taken of the availability of mineral supply excluding these sensitive areas and the strategy is deliverable without using sites which could have a potential hydrological impact on Oxford Meadows SAC. It is concluded that there is no likely significant effect from the Core Strategy on the hydrology of Oxford Meadows.
**Cothill Fen - Hydrology**

7.19 The 2012 Technical Summary states that significant effects could occur if mineral extraction occurred in the eastern parts of the Faringdon – Tubney strategic area as they could be in the same groundwater catchment as the Cothill Fen SAC. It is also noted that previous mineral planning permissions (MW.017/08 – Upwood Park) have been granted in the vicinity of Cothill Fen SAC but only subject to very stringent controls on site operations including no mineral extraction below the water table and robust monitoring and reporting.

7.20 In the light of the 2012 Technical Supplement the Core Strategy has been amended. Policy M4 states that

“Specific sites for working aggregate minerals within the strategic resource areas identified in policy M3, to meet the requirements set out in policy M2, will be identified in the Minerals & Waste Local Plan: Part 2 – Site Allocations Document, in accordance with the following criteria:…….

i) avoidance of locations likely to have an adverse effect on sites and species of international nature conservation importance and Sites of Special Scientific Interest; ........ in the case of locations within the Corallian Ridge area, it must be demonstrated that there will be no change in water levels in the Cothill Fen Special Area of Conservation”

7.21 Future proposals for mineral extraction in the vicinity of Cothill Fen SAC would need to be subject to additional HRA work at the planning application stage to ensure that the proposals would not adversely affect the integrity of Cothill Fen SAC. The boundaries of the minerals strategic resource area adjacent to Cothill Fen have been amended to reflect the specific recommendations of the Land Use Consultants and Maslen Environmental report, excluding the hydraulic catchment of Cothill Fen. This is reinforced in the supporting text of the Core Strategy. Therefore it is concluded that there is no likely significant effect from the Core Strategy on the hydrology of Cothill Fen.

**Little Wittenham – Hydrology and Water Quality**

7.22 The Little Wittenham SAC is designated for the Annex II species Great Crested Newt (*Triturus cristatus*), for which the site is considered to be one of the best in the United Kingdom. The SAC consists of two main ponds set in a predominantly woodland context on ground that is higher than the surrounding River Thames valley bottom. The great crested newt population has been intensively studied. The complex of ponds and wetland habitats within the SAC are the focus of this species which is also known to range for several hundred metres into the surrounding woodland.
Additional ponds have recently been created by the site owners to enhance the habitat.

7.23 The SAC extends from high ground adjacent to Wittenham Clumps on its south-western boundary down to the River Thames which marks the northern limit of the SAC. The main woodland habitat area is not dependent upon the hydrology of the Thames floodplain. There is a potential impact pathway for contaminated water from mineral workings upstream to reach the eastern edge of the SAC during periods of flood and contaminate ponds on the river terrace which support smaller transient populations of great crested newts. However such flood water is not expected to have an impact on the main newt populations and their habitat on the higher ground. Policy C4 and C5 of the Core Strategy specifically requires that minerals proposals protect the Thames and other watercourses and avoid local environmental impacts. It is concluded that there is no likely significant effect on hydrology and water quality from the Core Strategy on Little Wittenham SAC.

Hartslock Wood – Water Quality

7.24 Hartslock Wood is not hydrologically connected to a minerals SRA. There is however a potential pathway for pollutants from an incident occurring upstream to reach the SAC site at a time of flood. However, the parts of the site that support the qualifying habitat are on a steep slope above the floodplain and therefore not directly connected to the potential pathway. It is therefore concluded that there is no likely significant effect on hydrology and water quality arising from the Core Strategy on Hartslock Wood SAC.

Special Areas of Conservation outside Oxfordshire

7.25 There are no obvious pathways for significant water quality or hydrological impacts as a result of minerals development in Oxfordshire on the six SAC sites outside the county boundary.

7.26 Of the six sites the River Lambourn SAC and Kennet and Lambourn Floodplain SAC are within the 200m screening distance of a road. As with sites within Oxfordshire the relative impact from vehicle emissions arising from the Core Strategy is not considered to generate a likely significant effect.

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27 2003. Lamberth, C. Geology, Hydrology and Water Quality of Little Wittenham cSAC and Hill Farm, Oxfordshire. Monitoring and interpretation of the interactions between the habitats and the geology and hydrology of the site. Lamberth, C. Oxford. for the Northmoor Trust
7.27 For these reasons, this report proposes that the six SAC which lie within 15km of the county boundary are not connected to minerals development in the county by a relevant impact pathway and that they can therefore be screened out of further assessment.
8. Screening of Waste Strategic Location Proposals

8.1 In summary, the County Council’s preferred spatial strategy for waste management facilities is:

- Strategic waste management facilities – dealing with more than 50,000 tonnes per annum – close to Bicester, Oxford, Abingdon and Didcot (within 10 km of Oxford City centre or 5 km of the other towns);

- Non-strategic waste management facilities – dealing with 20,000 to 50,000 tonnes per annum – in or close to Bicester, Oxford, Abingdon and Didcot and the other large towns (Banbury, Witney and Wantage & Grove);

- Elsewhere, and particularly in more remote rural areas, facilities should only be small scale – dealing with less than 20,000 tonnes per annum, in keeping with their surroundings.

- Existing permitted waste management sites are safeguarded from other development for future waste management use (subject to the planning conditions that apply to permissions for these sites).

8.2 The Core Strategy requires that proposals for new waste management facilities in the green belt will only be permitted in very special circumstances; and indicates that in AONBs only small scale waste management facilities for local needs would be acceptable, where the development would not compromise the objectives of their designation.

8.3 The Core strategy requires that proposals for development of waste management facilities must comply with the Core Policies C1 – C11. These include specific protection being given to SACs and their component SSSIs (policy C7).

8.4 The waste spatial strategy locations are indicated on the Core Strategy Waste Key Diagram (Figure 4.2)

Air Pollution

Transport

8.5 The Core Strategy (policy W3) discourages new energy recovery from waste facilities and envisages that no new non-hazardous landfills will be created (policy W6). The movement of waste for disposal will become increasingly focused on the residual waste disposal facility at Ardley. Waste transfer vehicles to this facility are expected to concentrate
journeys on the main road corridors shown on the Oxfordshire Lorry Route Map included within the Core Strategy. The SAC sites within 200m of a highlighted route are Oxford Meadows and Aston Rowant.

8.6 As with minerals traffic movements the Highways Agency’s publication the Design Manual for Roads and Bridges (March 2011) provides guidance on screening criteria. This notes that an assessment of air quality is required if “Heavy Duty Vehicle (HDV) flows will change by 200 AADT [Annual Average Daily Traffic Flow] or more…”28

8.7 An examination of predicted changes in HDV waste traffic flows has been undertaken to inform the preparation of this Screening Report. This analysis is presented in Appendix 5.

8.8 The conclusion of this assessment is that the waste planning strategy may lead to an increase of up to 48 movements passing Oxford Meadow SAC each day on A34/A40. This is below the screening level of 200 HDV movements. Waste movements between Oxfordshire and Buckinghamshire are likely to make use of M40 and pass Aston Rowant SAC, but as the adjacent local authority area becomes more self-sufficient in managing its own waste daily movements (currently in the order of 40 lorries) this number is not expected to increase and is more likely to reduce.

8.9 Therefore within the context of a reducing volumes of imported waste and reducing levels of engine emissions, vehicle movements resulting from the import of waste into the County are not considered to generate a likely significant impact on Oxford Meadows or Aston Rowant SAC sites.

8.10 The development of non-strategic and local waste management sites may lead to local increases in site related traffic and consequently emissions, but such facilities would be limited in scale (policy W4). Measures to protect the environment in Common Policy C7 give the highest level of protection to SAC sites. Consideration of all traffic emissions will be made within this policy. Likely significant effects from site-related transport arising from the Core Strategy are therefore screened out from this Assessment.

Dust

8.9 The screening distance for dust is 200m. Aston Rowant, Hartslock Wood, Hackpen Hill and Little Wittenham SAC are beyond the 200m screening distance from strategic and non-strategic waste management facility locations. The Core Strategy confirms that strategic and non-strategic waste management facilities will also be excluded within 200m of Oxford Meadows and Cothill Fen SAC. Likely significant effects from dust arising from the Core Strategy are therefore screened out from further assessment.

Other Airborne Pollutants

8.10 No further energy recovery from waste plants are proposed. Other non-hazardous biodegradable landfill can be disposed of at Sutton Courtenay Landfill and Finmere Quarry Landfill. Both these sites are beyond the 1km screening distance from a SAC for landfill gas flare emissions. Only inert waste is proposed at other landfill sites which will not generate pollutants of this class.

8.11 Oxford Meadows is within 500m of the existing Worton Farm biomass gassification facility that will be safeguarded within the Core Strategy policy W11. Safeguarding does not imply that sites will be brought forward for the further use or that permission will be granted. Core Policy C5 in the MWLP requires that “Proposals for minerals and waste development shall demonstrate that they will not have an unacceptable adverse impact on the environment, residential amenity and other sensitive receptors, including from noise, dust…air quality…”.

8.12 Likely significant effects from other airborne pollutants arising from the Core Strategy are therefore screened out of further assessment.

Water Resources

Leachate

8.13 Waste sites can lead to the pollution of water resources by discharges of leachate from landfill sites. In the event that landfill capable of producing leachate is consented the sites would be engineered and maintained to preclude leachate entering the groundwater in accordance with core policies C5 and C7.
Groundwater Pollution

8.14 There is a potential impact pathway from local pollution incidents to contaminate groundwater and / or enter the river network. SAC sites that are directly or potentially connected to the wider groundwater/ river network are Oxford Meadows, Cothill Fen, Hartslock Wood and Little Wittenham.

8.15 Upwood Park Quarry which has a safeguarded site for waste disposal is within the groundwater zone of Cothill Fen SAC. Oxford Meadows SAC lies within the Thames floodplain that receives flows from further upstream to the west including land that falls within the non-strategic sites preferred area around Witney and is also close to the safeguarded Worton Farm biomass gasification site. Little Wittenham and Hartslock Wood SAC are not directly linked to safeguarded sites but are within the floodplain of the Thames that receives flows from further upstream including land that falls within the non-strategic sites preferred area around Abingdon. Local and agricultural sites, the locations of which have not yet been identified, could also lead to local water pollution incidents. Consents for new waste site development of whatever scale or extension would need to comply with the core policies including C4 and C5 which requires that proposals do not have an unacceptable adverse effect on surface or groundwater or other aspects of the environment and provides specific protection for the River Thames and other watercourses.

8.16 Likely significant effects on water resources arising from the Core Strategy are therefore screened out of further assessment.

Hazardous and Radioactive Waste

8.17 There are a range of hazardous waste streams generated in Oxfordshire and surrounding counties. The Core Strategy indicates that Oxfordshire will seek to be as self-sufficient as possible in the management and disposal of hazardous wastes including air pollution control residues, electronic equipment, contaminated waste and other hazardous waste landfill. Policy W7 provides for hazardous waste to be managed or disposed of at appropriately designed facilities subject to meeting core policies.

8.18 Policy W9 makes provision for the storage of intermediate level radioactive waste at the Harwell Oxford Campus. Storage will take place within a specially constructed building built to rigorous standards and regulated by, amongst others, the Environment Agency. This disposal will not therefore have an impact on any SAC because its location is distant from them. Likely significant effects from intermediate-level hazardous waste arising from the Core Strategy are therefore screened out of further assessment.
8.19 Policy W9 also makes provision for the treatment, storage and (if demonstrated to be the most sustainable option) disposal of low level radioactive waste at Harwell Oxford Campus and Culham Science Centre. Such a facility would be regulated by the Environment Agency. The screening distance recommended by the Environment Agency, beyond which it is unlikely there will be impacts on SAC sites, is 1km from landfills. As these two sites are further than 1km from a SAC the likely significant effects from this disposal option arising from the Core Strategy are therefore screened out of further assessment.

Special Areas of Conservation outside Oxfordshire

8.20 Six SACs lie within 15km of the Oxfordshire border which could potentially be affected by proposed development of waste management facilities in Oxfordshire:

- Chiltern Beechwoods (partly in Oxfordshire)
- North Meadow & Clattinger Farm SAC
- Kennet & Lambourn Floodplain SAC
- River Lambourn SAC
- Kennet Valley Alderwoods (SAC)
- Windsor Forest and Great Park SAC

8.21 All the above six sites are either beyond the screening distances for the air quality emissions that may be generated from the development of waste management facilities or, where they may be subject to traffic generated emissions such as on the River Lambourn SAC and Kennet and Lambourn Floodplain SAC adjoining the A34 these are considered not significant against the scale of existing traffic emissions. There are no obvious pathways for water quality or hydrological impacts as a result of waste management development in Oxfordshire. These sites are therefore screened out of further assessment in this HRA.
9. **Existing Trends, Other Plans, Policies, Strategies and Initiatives**

9.1 Article 6(3) of the Habitats Directive states that ‘Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implication of the site in view of the site’s conservation objectives.’

9.2 Table 9.1 shows relevant plans policies, strategies and initiatives which have the potential to have a cumulative or synergistic effect on SAC habitats, flora or fauna, with the emerging Core Strategy. The County Council considers that the most relevant documents with quantifiable impacts and spatial implications for European sites in and adjacent to Oxfordshire are:

- Adopted and emerging Local Plans for Oxford City and the other Oxfordshire Districts
- Adopted and emerging Local Plans and Minerals and Waste Local Plans for adjoining authority areas: Swindon; Gloucestershire County; Cotswold District; Warwickshire County; Stratford on Avon District; Northamptonshire County; South Northamptonshire District; Buckinghamshire County; Aylesbury Vale District; Wycombe District; Wokingham; Reading; West Berkshire
- Oxfordshire Local Transport Plan 2011 – 2030 (LTP3)
- Connecting Oxfordshire - Local Transport Plan 2015 – 2031 (LTP4) - Draft
- Thames Water plans (including Thames River Basin Management Plan and Water Resource Management Plan)
- Rail Proposals

9.3 The Core strategy provides for supply of aggregate minerals that will be used in and management of waste generated by the development proposed in other area plans. At the strategic level at which they function the impacts from the supply of minerals and management of waste are already included in the HRA assessments of those plans.

9.4 In conclusion it is considered that there are no likely significant effects in combination with other plans.
Table 9.1: Other Relevant Plans, Policies, Strategies and Initiatives

<table>
<thead>
<tr>
<th>Policy, plan, strategy or initiative</th>
<th>Background</th>
<th>Identified Impacts</th>
<th>In-combination Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vale of White Horse Local Plan 2011 (adopted 2006) and new Local Plan (examination in 2015)</td>
<td>The new local plan proposes 23,000 new jobs and 20,560 new homes 2011-2031.</td>
<td>Science Vale is the focus of growth. Currently proposed that the housing growth would be focused at Didcot, Grove &amp; Wantage and north Abingdon. Economic growth planned at Harwell Campus, Milton Park and Didcot Power Station. The HRA for the Local Plan (2031 Part 1) concluded that no housing sites, alone or in combination, would have a likely significant adverse effect on any SAC. However, the increase in total housing growth across Oxfordshire was identified as having a potential significant impact on Oxford Meadows SAC. It identifies the need for a strategic study of potential effects of new development in Oxfordshire of air quality on the SAC. Until that study has been completed a precautionary approach was taken and the report concludes that plan-level measures were adequate within the draft Local Plan.</td>
<td>None</td>
</tr>
</tbody>
</table>

**South Oxfordshire Core Strategy (and 2031 Local Plan).**

The adopted Local Plan Core Strategy proposed 5,187 homes 2006-2027. Strategic housing allocations at Didcot, Wallingford, Thame and Henley.

Local Plan 2031 is currently in preparation. This is looking at a number of growth options in addition to the development proposed in the Core Strategy.

The options for housing distribution have been refined to focus on delivery where there is economic growth potential in Science Vale and supporting market towns and larger villages. More flexibility for Neighbourhood Plans to influence housing numbers in villages. For any unmet need from Oxford, they conclude that it would probably be best to ring-fence this growth to one or more large strategic sites.

The Appropriate Assessment of the (now adopted) 2027 Core Strategy concluded that none of the six European Sites assessed would be adversely impacted by the plan or in combination effects. A HRA Screening Report is being developed for the draft 2031 Local Plan. This identifies potential impacts resulting from the spatial distribution of housing under the core strategy and four potential growth scenarios. The core strategy is not considered to generate likely significant effects. Further information is required for the growth scenarios.

**None**
| Oxford City Core Strategy 2026 | 8,000 new homes and between11,280-13,900 new jobs between 2006 and 2026. Strategic employment area at Northern Gateway. The Northern Gateway Area Action Plan Examination hearings have taken place and were reported in May 2015. | Impacts reviewed included pressure on recreational facilities accessible to Oxford such as Oxford Meadows SAC; proximity of new employment land to Oxford Meadows SAC; associated traffic generation and air pollution. The Appropriate Assessment of the Core Strategy 2026 concluded that the policies were not likely to have adverse effects on the integrity of Oxford Meadows SAC. The Inspector’s Report for the Northern Gateway concludes the AAP HRA is satisfactory and the AAP is sound in relation to biodiversity.  

HRA of the spatial distribution of housing under the Core Strategy level of growth.  

• HRA of the four growth scenarios for the Local Plan 2031. | None |
| Cherwell Local Plan 2011 – 2031 (adopted July 2015) | Housing numbers of 22,840. Focus on housing and employment at Bicester and Banbury. Upper Heyford and villages also expect some growth | The HRA identified that Oxford Meadows SAC as the focus for potential impact, with hydrology and air quality being the primary impact pathways. Further assessment and policy development has concluded that there are no likely significant effects arising. The air quality assessment notes the role played by improvements in engine technology offsetting increases in vehicle numbers. With regard to in-combination effects 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 were completed and it was determined that there are no likely significant effects on Oxford Meadows SAC from the development proposed in the Cherwell Local Plan alone, or in combination with other planned development to be provided in Oxfordshire by 2031 | None |
| West Oxfordshire Local Plan | Proposing to increase the Local Plan housing target from 306 homes per year to 525 homes per year. This equates to a total of 9,450 homes from 2011 – 2029 compared to the previous target of 5,500 homes, which is lower than the SHMA figure. The majority of future development would be focused at the District’s three main towns of Witney, Carterton and Chipping Norton. | Unlikely to have significant impacts on any SACs, due to the distance to the main areas of growth and lack of pathways. A Stage 2 report was carried out to assess potential impacts on Cothill Fen and Oxford Meadows for recreational pressure and air quality for Oxford Meadows. The report concluded that there would not be likely significant effects. | None |
|Wycombe Core Strategy 2006-2026| 7,800 new homes in Wycombe District between 2006-2026 are allocated in the adopted Core Strategy, of which the majority in High Wycombe, Marlow and Princes Risborough. There was a consultation in 2014 on additional housing requirements. Four options were consulted on, ranging from 9,600 to 14,300 total homes required 2011-2031. | Potential impact of recreational pressures on Aston Rowant. Potential reduction in air quality due to increased traffic generation associated with new development. The HRA of the emerging Local Plan was not available at the time of writing. The HRA of the existing Core Strategy (adopted 2008) concluded that the Wycombe Development Framework Core Strategy was unlikely to have a significant effect, either individually or in combination with other plans or projects, upon the integrity of the Aston Rowant SAC, Chiltern Beechwoods SAC or Burnham Beeches SAC. | None |

|Swindon Borough Local Plan 2026 (Adopted March 2015)| Swindon would be a focus of development, with new eastern villages and rural growth. Swindon: 77.5 ha new employment land (plus 42ha with extant permission of allocations), 22,000 new homes by 2026. | Potential increase in recreational pressure on Hackpen Hill, an area of access land. The HRA of the Local Plan (2031) concluded that the plan would not have any adverse effects on the integrity of the European Sites provided the avoidance and mitigation measures recommended within the HRA Report (July 2009) are incorporated into the Submission document | None |
| West Berkshire Core Strategy (adopted) | 10,500 new homes to 2026 – distribution following the existing settlement pattern. | Possible recreational pressure on Hackpen Hill. The HRA concluded that the Core Strategy DPD, either alone or in combination with other plans and projects, will not affect the integrity of any of the European sites within the district or within 5km of the district boundary. | None |
| Replacement Minerals Local Plan for Berkshire Incorporating the Alterations adopted in December 1997 and May 2001 & Waste Local Plan for Berkshire (1998). Issues & Options stage consultation on the new Minerals & Waste Development Plan was carried out in early 2015 | Policies to show which areas have a strong presumption against extraction and others where there is also resource. There is an area close to the Oxfordshire border near Shiplake which has minerals but where there is not a presumption against extraction. | Unlikely to have an impact on SACs in Oxfordshire due to lack of pathways. A HRA screening assessment will be carried out on the emerging Minerals & Waste Development Plan. | None |
| Oxfordshire Local Transport Plan 4 | Focus on Area Strategies for Oxford, Science Vale, Bicester, Banbury, Witney and Carterton. Oxford Transport Strategy (e.g. new park and ride facilities) and Science Vale (e.g. upgraded roundabout at Lodge Hill Slips). Elements of the Science Vale Strategy (e.g. A4130 realignment) would be delivered at a distance of 1.7km from the European site. Elements of the Oxford Transport Strategy (e.g. A40 link and junction enhancements) would be delivered at in relatively close proximity to Oxford Meadows SAC and Area Strategies have potential impact pathways to this site. | The Draft HRA Screening Report for the draft LTP4 concluded 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. Project level HRA Screening 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 within the Oxford and Science Vale Strategies are available, together with the details of other plans, to ensure compliance with the Habitats Regulations. 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 | None (at strategic level) |
| Thames Water’s Water Resources Management Plan 2015-2040 | Focus on demand management. | The HRA found that there were unlikely to be any significant effects on European sites from the final WRMP, either alone or in combination with other plans or projects. | None |
| Thames River Basin Management Plan | Review of abstraction licences from River Thames and its tributaries. | It is intended that this Plan should improve river flows to Oxford Meadows by reducing permitted abstraction. Each updated River Basin Management Plan will be accompanied by an HRA, initial assessment in the SEA/SA indicates that the updated plans would be unlikely to have effects on SPAs and SACs that are significant at the scale of the plan (river basin district). | None |
10. Conclusions of HRA Screening Assessment

10.1 The following Special Areas of Conservation (SAC) were identified in this screening report for the Minerals and Waste Local Plan – Part 1 Core Strategy:

- Oxford Meadows SAC
- Cothill Fen SAC
- Hackpen Hill SAC
- Little Wittenham SAC
- Hartslock Wood SAC
- Aston Rowant SAC
- Chiltern Beechwoods SAC

10.2 The Core Strategy part of the Minerals and Waste Local Plan is to be followed and supplemented by a further Site Allocations Development Plan Document which will be subject to a separate Habitat Regulations Assessment. This HRA reviews potential impacts on SAC sites arising from the adoption of the Core Strategy by Oxfordshire County Council. Impacts have been assessed using a combination of screening distances for certain effects and where these cannot be defined a source-pathway-receptor assessment. Impacts have been assessed against the criteria of 'likely significant effect' in accordance with the HRA regulations. The Core Strategy includes a wide range of environmental protection policies that cover both general site operation and policies relating to specific SAC sites. Specific sites when they are put forward for development will need to undertake a more detailed HRA where this is appropriate.

10.3 Impacts have been identified in the following categories and are summarised further below:

- Air Pollution
- Water Resources
- Recreation
- Hazardous Materials
Air Pollution

10.4 Local level effects such as site based emissions, site traffic, dust are covered within the Core Strategy by core policies such as C5: General Environmental and Amenity Protection. This policy requires that developments will “not have an unacceptable adverse impact on the environment, residential amenity and other sensitive receptors...”. Local air pollution arising from the Core Strategy is not considered to have a likely significant effect and is therefore screened out.

10.5 Air quality impacts may arise from the use of the wider road network by minerals and waste transport vehicles moving their cargo around the county and beyond. An increase of 200 in the Annual Average Daily Traffic Flow movements for Heavy Duty Vehicles has been used as the screening threshold following Department for Transport Guidance. HDV traffic flows on strategic lorry routes with the potential to affect Oxford Meadows SAC or Aston Rowant SAC have been examined for the A34, A40 and M40 and are assessed as falling below this 200 AADT threshold for minerals and waste movements combined. Together with a future expectation of reducing engine emissions the change in HDV flows are not considered to generate a likely significant effect on these SAC sites. There are no plans within the Core Strategy for a new thermal waste disposal plant which might generate strategic level emissions. Air pollution from these sources arising from the Core Strategy is not considered to have a likely significant effect and is screened out.

Water Resources

10.6 The impact of mineral extraction on the groundwater hydrology of Oxford Meadows and Cothill Fen was examined in detail in a separate technical document prepared in 2012. The Core Strategy has been prepared taking that document into account and including specific policies and guidance to avoid those impacts.

10.7 There are potential pollution pathways from the incidents on operational minerals and waste which could affect SAC downstream of those sites. Policy C4 of the Core Strategy requires that protection be given to watercourses and C5 requires developments to demonstrate that they will not have an impact on the local environment. Water resource impacts arising from the Core Strategy are not considered to have a likely significant effect and are screened out.
Recreation

10.8 The Core Strategy includes a policy that excludes site restoration strategies that would be likely to increase recreational pressure on SAC sites. Recreational impacts are therefore screened out.

Hazardous and Radioactive Materials

10.9 The Core Strategy includes proposals to make provision for the storage, treatment and disposal of hazardous and intermediate and low level radioactive wastes arising within the county and possibly also for wastes from outside the county. There are specific proposals for facilities for radioactive wastes at Harwell and Culham. These facilities would be outside the screening distance and therefore hazardous and radioactive waste impacts arising from the Core Strategy are not considered to have a likely significant effect and are screened out.

SAC outside the County

10.10 Six SACs lie within 15km of the Oxfordshire county boundary which could potentially be affected by proposed minerals and waste development in Oxfordshire.

- Chiltern Beechwoods (partly in Oxfordshire)
- North Meadow & Clattinger Farm SAC
- Kennet & Lambourn Floodplain SAC
- River Lambourn SAC
- Kennet Valley Alderwoods (SAC)
- Windsor Forest and Great Park SAC

10.11 There are no obvious pathways for significant water quality or hydrological impacts as a result of waste development in Oxfordshire on the five SAC sites outside the county boundary.

10.12 Of the five sites Lambourn SAC and the Kennet and Lambourn Floodplain SAC adjoining the A34 are within the 200m screening distance. As with sites within Oxfordshire the relative impact from vehicle emissions arising from minerals sites is not considered to generate a likely significant effect.

10.13 For these reasons, this report proposes that the six SACs which lie within 15km of the county boundary are not connected to minerals and waste development in the county by a relevant impact pathway and that they can therefore be screened out of further assessment.
Impacts in Combination with Other Plans

10.14 A range of other relevant strategic plans have been reviewed to assess whether there are any cumulative or in-combination effects. No such effects have been identified. Therefore in-combination impacts arising from the Core Strategy are not considered to have a likely significant effect and are **screened out**.
Appendix 1

Definitions of terms used in the report

The Habitats Directive refers to a number of phrases which have specific meanings within the context of the implementation of the Directive and in relation to the Appropriate Assessment process.

- **Competent authority**: The "competent authority" is defined as including any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office.\(^{29}\)

- **Conservation objectives**: objectives to maintain the primary and secondary reasons for designation in a favourable condition. Conservation objectives relate to the component SSSIs which make up a Special Area of Conservation.

- **Conservation status**: the sum of the influences acting on a natural habitat and its typical species that may affect its long term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory. The conservation status is described as ‘favourable’ when its natural range and areas within that range are stable or increasing, and the specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.

- **Likely significant effect**: is an effect that may be predicted as the result of a plan or a project that may affect the conservation objectives of the features for which the site was designated. The concept of ‘significant effect’ should be interpreted strictly and as objectively as possible in relation to the specific features and environmental conditions of the site concerned. Unless a significant effect can be objectively ruled-out with certainty, then it must be considered “likely”.

- **Natura 2000 site**: A coherent European ecological network of Special Areas of Conservation and Special Protection Areas, provided for by Article 3(1) of the Habitats Directive. This network, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, enables the natural habitat types and the species’ habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.

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\(^{29}\) The Conservation (Natural Habitats, &c.) Regulations 1994


Appendix 1
- **Precautionary principle**: projects can only be permitted where it has been ascertained that they will have no adverse effect on the integrity of the site. If there is any doubt about potential impacts of a development on a European site, development will not take place unless it can be demonstrated that adequate mitigation measures have been implemented to ensure that damage does not occur.

- **Qualifying feature**: The habitats or species for which a SAC has been designated. Qualifying features are listed in the individual site citations.

*Site integrity*: the coherence of a site’s ecological structure and function across its whole area which enables it to sustain the habitat, complex of habitats and /or the levels of populations of the species for which it was classified. A detailed assessment of whether the Core Strategy will have an impact on the integrity of the sites will be carried out in Stage 2 in, the Appropriate Assessment stage, if necessary.
Appendix 2  Description of each Special Area of Conservation

Oxford Meadows
Qualifying Features of Oxford Meadows SAC:

The site is designated as a SAC primarily for:

- Lowland hay meadow (Annex I habitat)
- Creeping marshwort (*Apium repens*) (Annex II species)

Oxford Meadows SAC consists of four SSSI: Port Meadow with Wolvercote Common and Green, Wolvercote Meadows, Pixey and Yarnton Meads and Cassington Meadows. This SAC is considered to be one of the best areas in the United Kingdom for lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*). Together with North Meadow and Clattinger Farm in Wiltshire, Oxford Meadows represents lowland hay meadows in the Thames Valley centre of distribution. The site includes vegetation communities that are perhaps unique in the world in reflecting the influence of long-term grazing and hay-cutting on lowland hay meadows. The site has benefited from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function. Port Meadow and Wolvercote Common is the larger of only two known sites in the UK for Annex II species creeping marshwort (*Apium repens*).\(^{30}\)

The special interest of the site is critically dependent upon groundwater levels and annual flooding. Several of the component parts are dependent upon traditional hay-cutting and aftermath grazing. Port Meadow is registered Common Land with common grazing rights administered by the Freemen of Oxford and Wolvercote Commoners’ Committee. Stocking levels are high and grazing takes place throughout the year. The impact of high grazing pressure upon *A. repens* is under investigation as part of a wider programme of research into the ecology of the species. At present, it is thought that *A. repens* is tolerant if not dependent upon this management regime. Groundwater levels and flooding events on Port Meadows are monitored, as is the distribution of *A. repens* on the site.\(^{31}\)

The conservation objectives for Oxford Meadows SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species


\(^{31}\) [http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012845.pdf](http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012845.pdf)
• The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
• The populations of qualifying species, and,
• The distribution of qualifying species within the site.  

The Condition Assessments of the component SSSI dating from 2010 – 2012 assessed the overall condition as favourable, noting some issues with waterlogging on Pixey and Yarnton Meads.  

A survey in August 2014 indicates the _A. repens_ population in Port Meadow has significantly decreased in size. It is considered that this change may be associated directly or indirectly with hydrological changes possibly deeper, more prolonged and frequent flood episodes. Adjustment of the water level management is proposed as a means to help mitigate for these changes. 

The UK Air Pollution System reports that the SAC is not currently exceeding Critical Load thresholds. More recent local air quality modelling data indicates that sections of the SAC closest to the A34 and A40 are exceeding the thresholds. 

Key environmental conditions supporting the site: 

1) Maintenance of traditional hay cut 
2) Maintenance of appropriate grazing regime 
3) Minimal air pollution 
4) Absence of direct fertilisation 
5) Balanced hydrological regime 
6) Absence of excessive nutrient enrichment of floodwaters. 

The 2014 Site Improvement Plan identified two main issues for the SAC, hydrological changes and invasive species – particularly New Zealand pygmyweed _Crassula helmsii_.

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32 European Site Conservation Objectives for Oxford Meadows Special Area of Conservation: Site code:  UK 0012845  30 June 2014 – version 2


34 Natural England, Site Improvement Plan Oxford Meadows 20/11/2014

35 www.apis.ac.uk

36 Appropriate Assessment of South Oxfordshire District Council Core Strategy (SODC, 2012)

37 Oxford Meadows SAC Site Improvement Plan, Natural England, 2014


Appendix 2
In summary, the proposed improvement measures were:

- Improve the knowledge and understanding of the hydrological conditions on the SAC
- Eliminate/control the *Crassula* populations on the site

**Oxford Meadows – Other HRA Assessments**

In their report on appropriate assessment of the impacts of the proposed Bicester to Oxford rail improvements project\(^\text{38}\), ERM addressed the issue of air pollution on Oxford Meadows. They noted that:

- The meadow is in favourable condition due to intensive grazing and flooding
- The hay meadow and *A. repens* are not negatively affected by the high level of nitrogen, indeed *A. repens* is associated with areas trampled by cattle and horses and has a preference for habitats which are nitrogen rich.
- That maintenance of the grazing and flooding regime was important in limiting competition from other nitrogen favouring plants that would otherwise out-compete *A. repens*.
- The contribution from an increase in rail traffic was not expected to have a negative impact on the SAC (the need for additional monitoring was noted)
- That long-term monitoring would be beneficial but implementation of any mitigation work would be difficult due to complex land ownership and use arrangements.

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Cothill Fen
Qualifying Features of Cothill Fen SAC

Cothill Fen is primarily designated for its alkaline fens (“a complex assemblage of vegetation types characteristic of sites where there is tufa and/or peat formation with a high water table and a calcareous base-rich water supply”), for which this is considered to be one of the best areas in the UK, and for the alluvial forests with common alder (Alnus glutinosa) and common ash (Fraxinus excelsior), for which the area is considered to support a significant presence. 39 Included within the site is Cothill National Nature Reserve.

The lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. The M13 Schoenus nigricans – Juncus subnodulosus vegetation found here occurs under a wide range of hydrological conditions, with frequent bottle sedge Carex rostrata, grass-of-Parnassus Parnassia palustris, common butterwort Pinguicula vulgaris and marsh helleborine Epipactis palustris. The alkaline fen vegetation forms transitions to other vegetation types that are similar to M24 Molinia caerulea – Cirsium dissectum fen-meadow and S25 Phragmites australis – Eupatorium cannabinum tall-herb fen and wet alder Alnus spp. wood.

The open fen habitats on the site have suffered from the effects of successional change as a result of cessation of traditional management (grazing and peat cutting). Parts of the site have become dominated by reed, scrub or molinia and only relatively small areas of species-rich short fen remain. Natural England and the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust now have management control. Management initiatives include reed cutting and scrub removal to increase area and diversity of the short fen habitat and to improve habitat suitability for southern damselfly. 40

APIS data for Cothill Fen identifies a critical range of 15 – 30 kg/N/ha/yr and that the current average deposition of 19.1kg/N/ha/yr. The site therefore is exceeding the minimum critical threshold. 41

Key environmental conditions supporting the site: 42

1) High water table
2) Calcareous base rich water supply

40 http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012889.pdf
41 www.apis.ac.uk
42 Appropriate Assessment of South Oxfordshire District Council Core Strategy (SODC, 2012)
Appendix 2
The conservation objectives for Cothill Fen SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely.\(^{43}\)

The 2014 Site Improvement Plan\(^{44}\) identified three main issues for the SAC; water pollution, hydrological changes; and air pollution (impact of atmospheric nitrogen deposition). In summary, the proposed improvement measures were under three headings:

- Investigate the impact, pathways and sources of water pollution. Draw up and implement a Diffuse Water Pollution Plan.
- Investigate the hydrology of the site
- Reduce the impacts of atmospheric nitrogen.

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\(^{43}\) European Site Conservation Objectives for Cothill Fen Special Area of Conservation: Site code: UK 0012889  30 June 2014 – version 2

\(^{44}\) Cothill Fen SAC Site Improvement Plan, Natural England, 2014

Qualifying Features of Hackpen Hill SAC

Hackpen Hill is designated as a SAC for:

- Early gentian (a chalk grassland flower) (Annex I species)
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) (Annex I habitat present as a qualifying feature)

Hackpen Hill is an extensive area of unimproved chalk grassland in the North Wessex Downs Area of Outstanding Natural Beauty. The site has a variety of aspect and gradients, with the grassland dominated by red fescue Festuca rubra and upright brome Bromus erectus. The herb flora includes a significant population of early gentian Gentianella anglica, as well as autumn gentian Gentianella amarella, fragrant orchid Gymnadenia conopsea, frog orchid Coeloglossum viride, horseshoe vetch Hippocrepis comosa, common rock-rose Helianthemum nummularium and dwarf thistle Cirsium acaule.

In 2014, the Natural England Site Improvement Plan for this SAC stated that no current issues affecting the Natura 2000 feature(s) had been identified on this site.

APIS data for Hackpen Hill nitrogen deposition identifies a critical range of 15 – 25 kg/N/ha/yr and that the current average deposition of 20.8kg/N/ha/yr. The site therefore is exceeding the minimum critical threshold.

The conservation objectives for Hackpen Hill SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

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45 Vale of White Horse Local Plan HRA (URS, 2014)
46 http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK0030162
47 Hackpen Hill SAC Site Improvement Plan, Natural England, 2014
48 www.apis.ac.uk
European Site Conservation Objectives for Hackpen Hill Special Area of Conservation: Site code: UK 0030162  30 June 2014 – version 2

Appendix 2
**Qualifying Features of Little Wittenham SAC**

Little Wittenham SAC is designated for Great crested newt (*Triturus cristatus*) for which this is considered to be one of the best areas and one of the best-studied great crested newt sites in the UK. Little Wittenham comprises two main ponds set in a predominantly woodland context including broad-leaved and conifer woodland. There are also areas of grassland, with sheep grazing and arable bordering the woodland to the south and west. The River Thames is just to the north of the site, and a hill fort and the prominent local feature of Wittenham Clumps to the south. Large numbers of great crested newts have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks.  

Little Wittenham SAC is managed by the Earth Trust primarily for nature conservation and environmental education. The great crested newt population has been the subject of intensive research and ongoing management includes the provision of new ponds and the creation of hibernation sites. The great crested newt population appeared to be relatively stable and was not considered to be under any known threat when the JNCC reported on the site condition in 2011.  

The entire site was assessed to be in favourable condition in the latest Condition Assessment process (October 2010).  

APIS data for Hackpen Hill does not currently include data relevant to the Qualifying Features of great crested newts. The current average deposition of nitrates is 11.3 kg/N/ha/yr.  

The conservation objectives for Little Wittenham SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

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51 [http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030184.pdf](http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030184.pdf)
52 [Natural England Designated Sites: Condition of SSSI Units for SAC in County OXFORDSHIRE](http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK0030184)
53 [http://www.apis.ac.uk/src/select-a-feature?site=UK0030184&SiteType=SAC&submit=Next](http://www.apis.ac.uk/src/select-a-feature?site=UK0030184&SiteType=SAC&submit=Next)
54 [European Site Conservation Objectives for Little Wittenham Special Area of Conservation: Site code: UK0030184 30 June 2014 – version 2](http://www.apis.ac.uk/src/select-a-feature?site=UK0030184&SiteType=SAC&submit=Next)
Key environmental conditions supporting the site\textsuperscript{55}

1) Suitable foraging and refuge habitat within 500 metres of the pond
2) Relatively unpolluted water of neutral pH
3) Some ponds deep enough to retain water throughout February to August at least one year in three
4) Retention of landscape features and connectivity in surrounding area

The 2014 Site Improvement Plan\textsuperscript{56} identified three main issues for the SAC, two of these were in relation to invasive species and one in relation to public access and disturbance.

The proposed improvement measures were:

- Remove fish from breeding ponds
- Construct further ponds in the SAC to provide additional fish-free breeding habitat
- Conduct audits to determine the best locations for signed access routes, and construct new access routes

\textsuperscript{55} Appropriate Assessment of South Oxfordshire District Council Core Strategy (SODC, 2012)
\textsuperscript{56} Little Wittenham SAC Site Improvement Plan, Natural England, 2014
Hartslock Wood

LOCATION OF HARTSLOCK WOOD SPECIAL AREA OF CONSERVATION IN RELATION TO MINERALS STRATEGIC RESOURCE AREAS AND STRATEGIC WASTE AREAS
Qualifying Features of Hartslock Wood SAC

Hartslock Wood SAC is designated for the following qualifying features:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) (important orchid sites);
- Yew-dominated woodland

This site hosts the priority habitat type "orchid rich sites". The steep slopes of this site on the chalk of the Chilterns comprise a mosaic of chalk grassland, chalk scrub and broadleaved woodland. The chalk grassland mostly consists of a mosaic of shorter-turf NVC type CG2 *Festuca ovina–Avenula pratensis* grassland and taller CG3 *Bromus erectus* grassland. The site supports one of only three UK populations of monkey orchid *Orchis simia*, a nationally rare Red Data Book species.

The bulk of this site lies on a steep slope above the River Thames. Recent storms and landslips have resulted in a diverse age-structure for the yew population, for which this is considered one of the best areas in the United Kingdom. Open patches show a rich flora including local species such as southern wood-rush *Luzula forsteri*, wood barley *Hordelymus europaeus* and narrow-lipped helleborine *Epipactis leptochila*.

Natural woodland dynamics are allowed to prevail over a significant proportion of Hartslock Wood. The conservation objectives state that the yew should remain at least frequent in the canopy, for it to stay favourable. Whilst some natural regeneration of yew is occurring, it is not clear how the wood will develop and whether yew will retain dominance in the canopy. In 2011, JNCC reported that the yew on site often exhibits strong indications of chlorosis (yellowing). It is not known whether this is a natural consequence of stress relating to the strongly calcareous soil conditions or a result of some other factor. However, the JNCC considered that the wood was not under any significant threat at that time. Woodland management is supported financially by a WGS scheme, which promotes retention of yew and removal of non-native tree species. The grassland area of the site is managed as a nature reserve by the Buckinghamshire, Berkshire & Oxfordshire Wildlife Trust.

APIS data for Hartslock Wood nitrogen deposition identifies for the *Taxus baccata* woodland a critical range of 5 – 15 kg/N/ha/yr and that the current average deposition of 31.5 kg/N/ha/yr; and for the semi-natural dry grassland and scrubland a critical range of 15 – 25 kg/N/ha/yr and an average deposition of 16.7 kg/N/ha/yr. The site therefore is exceeding the minimum critical threshold for both communities and the upper critical threshold for the woodland community.

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60 [http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030164.pdf](http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030164.pdf)
The conservation objectives for Hartslock Wood SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of the qualifying natural habitats
- The structure and function (including typical species) of the qualifying natural habitats, and,
- The supporting processes on which the qualifying natural habitats rely

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61 European Site Conservation Objectives for Hartslock Wood Special Area of Conservation: Site code: UK 0030164 30 June 2014 – version 2
Appendix 2
Qualifying Features of Aston Rowant SAC

Aston Rowant National Nature Reserve is designated primarily for its *Juniperus communis* formations on heaths or calcareous grasslands, together with a qualifying feature beech (*Asperulo-Fagetum*) forests for which the area is considered to support a significant presence. Aston Rowant is one of the best remaining examples in the UK of lowland and juniper scrub near the northern edge of the habitat’s range on the chalk of southern England where it is rare and declining. The juniper population has been estimated to be between 1,000 and 2,000 individuals of various age-classes. on chalk substrate.

In 2011 JNCC explained that approximately 95% of the site is designated as a National Nature Reserve and is under the direct management control of English Nature (now Natural England). The size and health of the juniper population is being assessed as part of a wider project to improve the prospects for this species in the Chilterns. However, despite carefully controlled grazing and scrub management, the juniper population at Aston Rowant is declining because of a very low rate of reproduction. The reasons for this are not yet fully understood. A management strategy to protect existing plants, to promote reproduction and to protect young plants is being actively pursued.

The conservation objectives for Aston Rowant SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely

APIS data for Aston Rowant nitrogen deposition identifies for the *Asperulo – Fagetum woodland* a critical range of 10 – 20 kg/N/ha/yr and the current average deposition of 38.5 kg/N/ha/yr; and for the *Juniperus communis* formation semi-natural dry grassland and scrubland a critical range of 10 - 20 kg/N/ha/yr and an average deposition of 38.5 kg/N/ha/yr. The site therefore is exceeding the maximum critical threshold on nitrogen deposition for both communities.

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63 [http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK00300082.pdf](http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK00300082.pdf)
64 European Site Conservation Objectives for Aston Rowant Special Area of Conservation: Site code: UK00300082 30 June 2014 – version 2

Key environmental conditions supporting the site: 65

1) Regular management to keep vegetation open and allow seedlings to establish
2) Prevention of rabbit grazing of seedlings
3) Minimal air pollution

The 2014 Site Improvement Plan 66 identified six main issues for the Aston Rowant SAC:

1. Unsustainable on-site population or habitat
2. Changes in species distributions
3. Deer
4. Conflicting conservation objectives
5. Disease
6. Air pollution (impact of atmospheric nitrogen deposition).

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65 Appropriate Assessment of South Oxfordshire District Council Core Strategy (SODC, 2012)
66 Aston Rowant SAC Site Improvement Plan, Natural England, 2014
Appendix 2
Qualifying Features of Chiltern Beechwoods SAC:

The Chilterns Beechwoods SAC comprises several land parcels across Buckinghamshire and Hertfordshire, all of which are also designated as SSSIs. The SAC is designated primarily for its *Asperulo-Fagetum* beech forests for which this is considered to be one of the best areas in the United Kingdom. It also has one qualifying Annex I habitat (Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) for which the area is considered to support a significant presence and one qualifying Annex II species (stag beetle, *Lucanus cervus*).

There are 9 component SSSIs, each of which has its own conservation objectives. The component SSSI are Ashridge Commons and Woods SSSI, Aston Rowant Woods SSSI, Bisham Woods SSSI, Bradenham Woods, Park Wood and The Coppice SSSI, Ellesborough and Kimble Warrens SSSI, Hollowhill and Pullingshill Woods SSSI, Naphill Common SSSI, Tring Woodlands SSSI, Windsor Hill SSSI. Of these Aston Rowant Woods SSSI is within Oxfordshire.

In 2011 JNCC noted that the majority of beechwoods in the Chilterns were relatively uniform in terms of age-class and species composition, as a result of historical promotion of beech as a timber tree. Significant changes to the structural and species diversity of these woods were required in order to promote a more natural composition. Beech woodland in the Chilterns was facing a decline due to very low market value for timber (at that time) and damage to young trees by grey squirrels. The availability of financial support through Grant Schemes went some way in helping to address this issue but it was not clear whether this offered sufficient incentive to woodland managers to continue to manage in ways which would promote an increase in structural and species diversity of the characteristic beechwood communities. In particular, there may be a lack of sufficient financial support to provide for the retention of a larger proportion of mature trees in order to increase the provision of dead-wood habitat. This latter issue was the subject of a joint national review by English Nature and Forestry Commission. The long-term sustainability of the juniper populations was uncertain due to the lack of natural regeneration and a poor ability to compete with other scrub species. Means of improving the prospects for juniper in the Chilterns were being investigated; a joint initiative between English Nature Natural England, local authorities and the local wildlife trust being in place.67

APIIS data for Chiltern Beechwoods nitrogen deposition identifies for the *Asperulo – Fagetum woodland* a critical range of 10 – 20 kg/N/ha/yr and the current average deposition of 39.6 kg/N/ha/yr; for the semi-natural dry grasslands and scrublands a critical range of 15 - 25 kg/N/ha/yr and an average deposition of 20.8 kg/N/ha/yr and for the Stag Beetle a critical range of 10 – 20 kg/N/ha/yr and the current average deposition of 39.6 kg/N/ha/yr. The site therefore is exceeding the minimum critical

67 http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012724.pdf

threshold on nitrogen deposition for all communities and the maximum critical threshold for the woodland and stag beetle communities.

The conservation objectives for Chiltern Beechwoods SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.  

\[\text{68} \] European Site Conservation Objectives for Chiltern Beechwoods Special Area of Conservation: Site code: UK 0012724  30 June 2014 – version 2

Appendix 2*
Appendix 3

Oxfordshire Lorry Route Map
Appendix 4

Assessment of Transport Effects of Minerals Strategy

(Oxfordshire Minerals and Waste Local Plan: Part 1 – Core Strategy
Habitats Regulations Assessment Screening Report 2015: Minerals
Transport Assessment)

1. Introduction

1.1 The only mineral that is produced and consumed in Oxfordshire in
significant quantities, and which the emerging new Oxfordshire Minerals
and Waste Local Plan makes specific provision for, is aggregate:
comprising soft sand, sharp sand and gravel and crushed rock (local
limestone and ironstone and imported limestone and granite). Recycled
and secondary aggregate materials are also produced and consumed in
Oxfordshire but these are derived from waste materials and their
movement is therefore covered in the separate Waste Transport
Assessment.

1.2 This assessment looks at the amount of additional primary aggregate
mineral traffic (i.e. excluding recycled and secondary aggregate materials)
that may be generated by the increase and changes in the pattern of
mineral supply expected and planned for in the Minerals and Waste Local
Plan: Part 1 – Core Strategy. In particular, it assesses the extent to which
this may impact on those SACs that are within 200 metres of a road where
an associated increase in traffic can be expected. The Core Strategy, in
particular in Policy C10 on transport, seeks to direct heavy duty vehicles
(HDVs) to the advisory lorry routes shown on the Oxfordshire Lorry
Routemaps.

1.3 Of the seven SACs in Oxfordshire, only the Oxford Meadows and Aston
Rowant SACs lie within 200 metres of any of these advisory lorry routes. The roads concerned are:
  • in respect of Oxford Meadows SAC – the A34 and A40; and
  • in respect of Aston Rowant SAC – the M40.

2. Existing Situation and Assumptions

2.1 The most recent year for which comprehensive data is available on the
amount of primary aggregate mineral produced in, exported from,
imported into and consumed in Oxfordshire is for 2009 (from the Collation
of the Results of the 2009 Aggregates Mineral Survey for England and
Wales, DCLG, October 2011). This is therefore taken as the base
(existing) position. Quantities moved within Oxfordshire in 2009 are shown in Appendix 4 Table 1.

**Table 1: Aggregate moved within Oxfordshire in 2009:**

<table>
<thead>
<tr>
<th>Mineral category</th>
<th>Annual quantity moved (million tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sand &amp; gravel consumed in Oxon (Produced &amp; consumed in Oxon + imports into county)</td>
<td>0.757 mt</td>
</tr>
<tr>
<td>Sand &amp; gravel produced in Oxon and exported out of county</td>
<td>0.140 mt</td>
</tr>
<tr>
<td>Total sand and gravel moved in Oxon</td>
<td>0.897 mt</td>
</tr>
<tr>
<td>Crushed rock consumed in Oxon (Produced &amp; consumed in Oxon + imports into county)</td>
<td>0.625 mt (including imports)</td>
</tr>
<tr>
<td>Crushed rock produced in Oxon and exported out of county</td>
<td>0.179 mt</td>
</tr>
<tr>
<td>Total crushed rock moved in Oxon</td>
<td>0.804 mt</td>
</tr>
<tr>
<td>Total aggregate moved in Oxon</td>
<td>1.701 mt</td>
</tr>
</tbody>
</table>

2.2 All movements of sand and gravel, including imports into the county, were by road. Movements of crushed rock produced in Oxfordshire were all by road; most crushed rock imports into the county were by rail but the material was then distributed within Oxfordshire by road.

2.3 The following assumptions can be made about the breakdown of these movements of aggregate.

2.4 Sand & gravel:

2.4.1 Sand and gravel is made up two distinct mineral types with distinct markets: soft sand and, sharp sand and gravel.

2.4.2 Oxfordshire is a net exporter of soft sand and there are no significant sources of soft sand outside Oxfordshire that are close to the county boundary. It can therefore be assumed that all of Oxfordshire’s demand for soft sand is met from quarry production within Oxfordshire and that imports of soft sand are effectively zero (i.e all sand and gravel imports comprise sharp sand and gravel).
2.4.3 Therefore, the total quantity of soft sand moved in Oxfordshire in 2009 was 0.165 mt (2009 Oxfordshire sales – from 2009 Aggregates Mineral Survey), all being produced from Oxfordshire quarries.

2.4.5 The total quantity of sand and gravel moved in Oxfordshire in 2009 was 0.897 mt (from Appendix 4 Table 1). Therefore the total quantity of sharp sand & gravel moved in Oxfordshire in 2009 was 0.732 mt (0.897 – 0.165). Of this, 0.462 mt was produced from Oxfordshire quarries (2009 sales Oxfordshire sales – from 2009 Aggregates Mineral Survey) and 0.270 mt was imported into the county.

2.5 Crushed rock

2.5.1 Oxfordshire is a net importer of crushed rock. The total quantity of crushed rock moved in Oxfordshire in 2009 was 0.804 mt (from Appendix 4 Table 1). It can be assumed that this comprises: 0.363 mt produced from Oxfordshire quarries (2009 sales); and 0.441 mt imported into the county. It can also be assumed that all imports were by rail to rail depots in Oxfordshire, with the aggregate then being distributed by road to markets within Oxfordshire.

2.6 Summary of aggregate road movements in 2009

2.6.1 From the information above, it can be assessed that movements of aggregate by road in Oxfordshire in 2009, by mineral type, were as shown in Appendix 4 Table 2.

Table 2: Movements of aggregate by road in Oxfordshire in 2009

<table>
<thead>
<tr>
<th>Mineral type/source</th>
<th>Quantity of mineral moved in Oxfordshire in 2009 (million tonnes)</th>
<th>Average HDV movements per day in Oxfordshire in 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Soft sand quarried in Oxon</td>
<td>0.165 mt</td>
<td>60 HDV per day</td>
</tr>
<tr>
<td>2. Sharp sand &amp; gravel quarried in Oxon</td>
<td>0.462 mt</td>
<td>168 HDV per day</td>
</tr>
<tr>
<td>3. Sharp sand &amp; gravel imported into Oxon by road</td>
<td>0.270 mt</td>
<td>98 HDV per day</td>
</tr>
<tr>
<td>4. Crushed rock quarried in Oxon</td>
<td>0.363 mt</td>
<td>132 HDV per day</td>
</tr>
<tr>
<td>5. Crushed rock moved by road from rail depots in Oxon</td>
<td>0.441 mt</td>
<td>160 HDV per day</td>
</tr>
<tr>
<td>Total aggregate moved in Oxon by road</td>
<td>1.701 mt</td>
<td>618 HDV per day</td>
</tr>
</tbody>
</table>
2.7 Distribution of demand for aggregate within Oxfordshire

2.7.1 There is no direct information on the distribution of demand for and hence consumption of aggregate minerals within Oxfordshire. It is assumed that there is a broad correlation between population size and aggregate usage. On this basis, the current district population figures can be used as a proxy to derive an approximate distribution of demand and consumption, as shown in Appendix 4 Table 3. Given that aggregate minerals are used in construction, the County Council has also looked at using existing and forecast levels of economic growth and development, including development planned in district local plans and need for housing identified in the Oxfordshire Strategic Housing Market Assessment (2014), as indicators of demand for aggregate. That work has produced similar conclusions and supports the use of population figures to give an approximate distribution of demand for aggregate minerals.

Table 3: Distribution of aggregate demand and consumption

<table>
<thead>
<tr>
<th>District Area</th>
<th>Population 2014</th>
<th>Percentage of Total Oxfordshire Aggregate Demand/Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cherwell</td>
<td>142,359</td>
<td>22%</td>
</tr>
<tr>
<td>Oxford City</td>
<td>151,739</td>
<td>23%</td>
</tr>
<tr>
<td>South Oxfordshire (SODC)</td>
<td>136,013</td>
<td>21%</td>
</tr>
<tr>
<td>Vale of White Horse (VoWH)</td>
<td>122,432</td>
<td>18%</td>
</tr>
<tr>
<td>West Oxfordshire (WODC)</td>
<td>106,008</td>
<td>16%</td>
</tr>
<tr>
<td>Oxfordshire Total</td>
<td>658,551</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Oxfordshire County Council Small Area Projections – population figures (Jan 2014)
3. **Existing (2009) minerals HDV movements on roads passing within 200m of a SAC**

3.1 The only lorry advisory routes within Oxfordshire passing within 200m of a SAC are:
   - A40 – past Oxford Meadows SAC;
   - A34 – past Oxford Meadows SAC;
   - M40 – past Aston Rowant SAC.

3.2 The 2009 (existing) minerals HDV movements can be apportioned to the roads passing within 200m of a SAC, as follows.

3.3 **1. Soft sand quarried in Oxfordshire**
   (total 60 HDV movements per day)

3.3.1 Most soft sand production in Oxfordshire is from quarries in VoWH; one other quarry, at Duns Tew in Cherwell / WODC has small production.

3.3.2 It is assumed that all production from Duns Tew Quarry goes to markets in Cherwell and WODC and therefore the associated lorry traffic involved does not use any of the roads passing within 200m of a SAC. This assumes that movements to and from the Winey area of WODC would use the more direct A4095 Bicester – Witney road rather than the A40.

3.3.3 As a worst case scenario, it is assumed that all existing (i.e 2009) production of soft sand is from quarries in VoWH. Some of this production is exported out of Oxfordshire, mostly westwards to Swindon, Wiltshire & Gloucestershire, but taking a worst case position it is assumed that all production is consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

3.3.4 From this, the following split of lorry traffic movements can be assumed:
   a) 50.5% to VoWH, SODC & south Oxford – not using roads passing within 200m of a SAC;
   b) 49.5% to Cherwell, WODC & north Oxford – using the A34 past Oxford Meadows = 29.7 HDV per day;
   c) 16% to WODC – in addition to b) above, using the A40 past Oxford Meadows = 9.6 HDV per day.

3.3.5 Summary of soft-sand HDV movements on roads passing within 200m of a SAC:
   - A40 past Oxford Meadows SAC = total 9.6 HDV per day;
   - A34 past Oxford Meadows SAC = total 29.7 HDV per day;
   - M40 past Aston Rowant SAC = total 0 HDV per day.
3.4 2. Sharp sand & gravel quarried in Oxfordshire
(tot 168 HDV movements per day)

3.4.1 Sales from Oxfordshire quarries in 2009 were split:
- 64% from quarries in WODC & Cherwell;
- 36% from quarries in VoWH and SODC.

3.4.2 Most of the production from quarries in WODC & Cherwell was from WODC, so as a worst case position it is assumed that all current production from WODC & Cherwell is from quarries in WODC.

3.4.3 It is assumed that all production from Oxfordshire quarries is consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

3.4.4 From this, the following split of sharp-sand and gravel HDV traffic movements can be assumed:
   a) 39% to VoWH & SODC: comprising all production from quarries in VoWH and SODC – not using roads passing within 200m of a SAC; and 3% production from quarries in WODC – using the A40 past Oxford Meadows = 5.0 HDV per day, and the A34 past Oxford Meadows = 5.0 HDV per day;
   b) 16% to WODC: all from quarries in WODC – not using roads passing within 200m of a SAC;
   c) 22% to Cherwell: all from quarries in WODC – using the A40 past Oxford Meadows = 37.0 HDV per day;
   d) 23% to Oxford: all from quarries in WODC – using the A40 past Oxford Meadows = 38.6 HDV per day; of which 11.5% go to south Oxford via the A34 – using the A34 past Oxford Meadows = 19.3 HDV per day.

3.4.5 Summary of movements on roads passing within 200m of a SAC:
   A40 past Oxford Meadows SAC = total 80.6 HDV per day;
   A34 past Oxford Meadows SAC = total 24.3 HDV per day;
   M40 past Aston Rowant SAC = total 0 HDV per day.

3.5 3. Sharp sand & gravel imported into Oxfordshire by road
(tot 98 HDV movements per day)

3.5.1 Nearly all imports of sand & gravel in 2009 came from Gloucestershire, in particular from a quarry near Fairford, and this is understood to have been the case in other recent past years.
3.5.2 As a worst case position it is assumed that all imports are from Gloucestershire, via the A40. It is assumed that all imports are consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

3.5.3 From this, the following split of lorry traffic movements can be assumed:
   a) 16% to WODC – not using roads passing within 200m of a SAC;
   b) 22% to Cherwell – using the A40 past Oxford Meadows = 21.6 HDV per day;
   c) 39% to VOWH & SODC – using the A40 past Oxford Meadows = 38.2 HDV per day, and the A34 past Oxford Meadows = 38.2 HDV per day;
   d) 23% to Oxford – using the A40 past Oxford Meadows = 22.6 HDV per day; of which 11.5% go to south Oxford via A34 – using the A34 past Oxford Meadows = 11.3 HDV per day.

3.5.4 Summary of movements on roads passing within 200m of a SAC:
   - A40 past Oxford Meadows SAC = total 82.4 HDV per day;
   - A34 past Oxford Meadows SAC = total 49.5 HDV per day;
   - M40 past Aston Rowant SAC = total 0 HDV per day.

3.6 Crushed rock quarried in Oxfordshire
   (total 132 HDV per day)

3.6.1 There are 3 areas of crushed rock quarrying in Oxfordshire, in Cherwell, WODC and VoWH,. It is assumed that production and resultant HDV movements are evenly split between them:
   - WODC (Burford area): 33.4% – 44.0 HDV per day;
   - Cherwell (Ardley): 33.3% – 44.0 HDV per day;
   - VoWH (Faringdon area): 33.3% – 44.0 HDV per day.

3.6.2 It is assumed that all production from Oxfordshire quarries is consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

3.6.3 From this, the following split of lorry traffic movements can be assumed:
   a) 39% to VoWH & SODC: comprising all production from quarries in VoWH (33.3%) – not using roads passing within 200m of a SAC; and 2.9% production from quarries in WODC – using the A40 past Oxford Meadows = 3.8 HDV per day, and the A34 past Oxford Meadows = 3.8 HDV per day; and 2.8% production from quarries in Cherwell – using the A34 past Oxford Meadows = 3.7 HDV per day;
   b) 16% to WODC: all from quarries in WODC – not using roads passing within 200m of a SAC;
   c) 22% to Cherwell: all from quarries in Cherwell – not using roads passing within 200m of a SAC;
d) 23% to Oxford: comprising 14.5% from quarries in WODC – using the A40 past Oxford Meadows = 19.1 HDV per day; of which 7.25% go to south Oxford via the A34 – using the A34 past Oxford Meadows = 9.6 HDV per day; and 8.5% from quarries in Cherwell, of which 4.25% go to south Oxford via the A34 – using the A34 past Oxford Meadows = 5.6 HDV per day.

3.6.4 Summary of movements on roads passing within 200m of a SAC:
   - A40 past Oxford Meadows SAC = total 22.9 HDV per day;
   - A34 past Oxford Meadows SAC = total 22.7 HDV per day;
   - M40 past Aston Rowant SAC = total 0 HDV per day.

3.7 Crushed rock moved by road from rail depots in Oxon
(160 HDV per day)

3.7.1 There are 3 rail aggregate depots in Oxfordshire. It is assumed that the total import to Oxfordshire rail depots and the resultant HDV movements from them are evenly split between the 3 depots:
   - Banbury (Cherwell): 33.3%;
   - Kidlington (Cherwell): 33.3%;
   - Sutton Courtenay (VoWH): 33.4%.

3.7.2 It is assumed that all imports to Oxfordshire rail depots are consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

3.7.3 From this, the following split of lorry traffic movements can be assumed:
   a) 22% to Cherwell – from Banbury or Kidlington Depots – not using roads passing within 200m of a SAC;
   b) 16% to WODC – from Banbury or Kidlington Depots – using the A40 past Oxford Meadows = 25.6 HDV per day;
   c) 39% to VOWH & SODC – from Sutton Courtenay Depot (33.4%) – not using roads passing within 200m of a SAC; and from Banbury or Kidlington Depots (5.6%) – using the A34 past Oxford Meadows = 9.0 HDV per day;
   d) 23% to Oxford – from Banbury or Kidlington Depots, of which 11.5% go to south Oxford via A34 – using the A34 past Oxford Meadows = 18.4 HDV per day.

3.7.4 Summary of movements on roads passing within 200m of a SAC:
   - A40 past Oxford Meadows SAC = total 25.6 HDV per day;
   - A34 past Oxford Meadows SAC = total 27.4 HDV per day;
   - M40 past Aston Rowant SAC = total 0 HDV per day.
3.8 Overall summary of existing movements on roads passing within 200m of a SAC

3.8.1 An overall summary of minerals traffic movements on roads passing within 200m of SACs in 2009, the existing position, is set out in Appendix 4 Table 4.

**Table 4: Summary of existing movements on roads passing within 200m of a SAC**

<table>
<thead>
<tr>
<th>Mineral type/source</th>
<th>Minerals traffic on roads passing within 200m of SACs (HDV movements per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A40 – Oxford Meadows SAC</td>
</tr>
<tr>
<td>1. Soft sand quarried in Oxon</td>
<td>9.6</td>
</tr>
<tr>
<td>2. Sharp sand &amp; gravel quarried in Oxon</td>
<td>80.6</td>
</tr>
<tr>
<td>3. Sharp sand &amp; gravel imported into Oxon by road</td>
<td>82.4</td>
</tr>
<tr>
<td>4. Crushed rock quarried in Oxon</td>
<td>22.9</td>
</tr>
<tr>
<td>5. Crushed rock moved by road from rail depots in Oxon</td>
<td>25.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>221.1</strong></td>
</tr>
</tbody>
</table>

4. Planned provision for mineral supply made in Core Strategy for period to 2031

4.1 The Minerals and Waste Local Plan: Part 1 – Core Strategy (policy M2) provides for an annual supply of aggregate minerals from quarrying in Oxfordshire in accordance with the Local Aggregate Assessment (LAA). The provision figures in the LAA 2014 (in million tonnes per annum) are:

- Soft sand: 0.189 mtpa
- Sharp sand & gravel: 1.015 mtpa
- Crushed rock: 0.584 mtpa
- Total: 1.788 mtpa

4.2 To allow for an increase in demand for aggregates, as forecast in the LAA 2014, it is assumed that imports of crushed rock over the plan period to 2031 will be at the average rate for the 10 year period 2004 – 2013. This would add an estimated 0.530 mtpa of mineral supply into Oxfordshire. It is assumed this will all imported by rail to the existing Oxfordshire rail depots and will be distributed to markets within Oxfordshire by road.

4.3 In recent years there has also been a net import of sharp sand & gravel into Oxfordshire, but it is understood that this was a temporary situation to compensate for local supply shortages. The Core Strategy provides for all Oxfordshire’s requirement for sand and gravel to be met from quarrying within the county, thus eliminating the need for continued imports.

4.4 Therefore the Core Strategy provides for a total quantity of aggregate mineral provision/supply (and consequent movement by road) in Oxfordshire of 2.318 mtpa by 2031 (1.788 + 0.530). This is an increase of 0.617 mtpa from the existing total level of 1.701 recorded in Appendix 4 Table 1.

4.5 Summary position

4.5.1 From the above, it can be assumed that movements of aggregate by road in Oxfordshire in 2031, by mineral type, will be as shown in Appendix 4 Table 5.

Table 5: Movements of aggregate by road in Oxfordshire in 2031

<table>
<thead>
<tr>
<th>Mineral type/source</th>
<th>Quantity of mineral moved in Oxfordshire in 2031 (million tonnes)</th>
<th>Average HDV movements per day in Oxfordshire in 2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Soft sand quarried in Oxon</td>
<td>0.189 mt</td>
<td>69 HDV per day</td>
</tr>
<tr>
<td>2. Sharp sand &amp; gravel quarried in Oxon</td>
<td>1.015 mt</td>
<td>369 HDV per day</td>
</tr>
<tr>
<td>3. Sharp sand &amp; gravel imported into Oxon by road</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Crushed rock quarried in Oxon</td>
<td>0.584 mt</td>
<td>212 HDV per day</td>
</tr>
<tr>
<td>5. Crushed rock moved by road from rail depots in Oxon</td>
<td>0.530 mt</td>
<td>193 HDV per day</td>
</tr>
<tr>
<td>Total aggregate moved in Oxon by road</td>
<td>2.318 mt</td>
<td>843 HDV per day</td>
</tr>
</tbody>
</table>
Note: Calculation of daily average HDV movements based on: average 20 tonne per lorry load; 2 lorry movements per load; 275 working days per year in the quarrying & construction industries.

4.5.2 The total number of aggregate mineral HDV movements that are expected to result from the policies in the Core Strategy in 2031 is 843 HDV per day. This represents an of increase 225 HDV movements per day over the period to 2031 from the existing total of 618 HDV movements per day shown in Appendix 4 Table 2.

5. Planned (2031) minerals HDV movements on roads passing within 200m of a SAC

5.1 The only roads within Oxfordshire passing within 200m of a SAC are:
- A40 – past Oxford Meadows SAC;
- A34 – past Oxford Meadows SAC;
- M40 – past Aston Rowant SAC.

5.2 The minerals HDV movements in 2031 that are expected to result from the policies in the Core Strategy can be apportioned to the roads passing within 200m of a SAC, as follows.

5.3 1. Soft sand quarried in Oxfordshire (total 69 HDV movements per day)

5.3.1 The Core Strategy (policy M3) identifies strategic areas for future soft sand working in VoWH and at Duns Tew in Cherwell / WODC, but it is expected that most production will be from quarries within the larger resource area in VoWH.

5.3.2 It is assumed that the limited production from continued quarrying at Duns Tew in Cherwell / WODC will all go to Cherwell & WODC, with the traffic not using any roads passing a SAC.

5.3.3 Taking a worst case position, it is assume all production of soft sand will come from quarries in VoWH.

5.3.4 Some production will be exported out of Oxfordshire, mostly westwards to Swindon, Wiltshire & Gloucestershire, but as a worst case position it is assumed that all production will be consumed in Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.
5.3.5 From this, the following split of lorry traffic movements can be assumed:
   a) 50.5% to VoWH, SODC & south Oxford – not using roads passing
       within 200m of a SAC;
   b) 49.5% to Cherwell, WODC & north Oxford – using the A34 past
       Oxford Meadows = 34.2 HDV per day; of which 16% go to WODC
       using the A40 past Oxford Meadows = 11.0 HDV per day.

5.3.6 Summary of movements on roads passing within 200m of a SAC:
   A40 past Oxford Meadows SAC = total 11.0 HDV per day;
   A34 past Oxford Meadows SAC = total 34.2 HDV per day;
   M40 past Aston Rowant SAC = total 0 HDV per day.

5.4 2. Sharp sand & gravel quarried in Oxfordshire
(totals 369 HDV movements per day)

5.4.1 The Core Strategy (policy M4) proposes a change in the pattern of sharp
sand and gravel production over the plan period to reflect more closely the
distribution of demand within Oxfordshire. The population distribution
figures in Appendix 4 Table 3 indicate that the split of demand between
northern Oxfordshire (Cherwell, WODC and north Oxford) and southern
Oxfordshire (VoWH, SODC and south Oxford) is around 49.5 : 50.5.

5.4.2 The Core Strategy (policy M3) identifies strategic areas for future sharp
sand and gravel working in WODC and in VoWH/SODC. It can therefore
be assumed that by 2031 the split of sharp sand and gravel production in
Oxon will be:
   • 49.5% from quarries in WODC;
   • 50.5% from quarries in VoWH and SODC.

5.4.3 It is assumed that all production from Oxfordshire quarries is consumed
within Oxfordshire, divided between the five districts in the proportions
shown in Appendix 4 Table 3.

5.4.4 From this, the following split of lorry traffic movements can be assumed:
   a) 39% to VoWH & SODC: all from quarries in VoWH and SODC – not
      using roads passing within 200m of a SAC;
   b) 16% to WODC: all from quarries in WODC – not using roads
      passing within 200m of a SAC;
   c) 22% to Cherwell: all from quarries in WODC – using the A40 past
      Oxford Meadows = 81.2 HDV per day;
d) 23% to Oxford: 11.5% from quarries in VoWH & SODC, of which 5.75% go to north Oxford –using the A34 past Oxford Meadows = 21.2 HDV per day; and 11.5% from quarries in WODC – using the A40 past Oxford Meadows = 42.4 HDV per day; of which 5.75% go to south Oxford via A34 –using the A34 past Oxford Meadows = 21.2 HDV per day.

5.4.5 Summary of movements on roads passing within 200m of a SAC:
- A40 past Oxford Meadows SAC = total 123.6 HDV per day;
- A34 past Oxford Meadows SAC = total 42.4 HDV per day;
- M40 past Aston Rowant SAC = total 0 HDV per day.

5.5 3. Sharp sand & gravel imported into Oxfordshire by road

5.5.1 The Core Strategy provides for all of Oxfordshire’s demand for sharp sand and gravel to be met by production from quarries within Oxfordshire. There should be no requirement for import of sharp sand and gravel from outside Oxfordshire over the period of the plan to 2031. Consequently, no HDV movements are expected to result from importation of sharp sand and gravel.

5.6 4. Crushed rock quarried in Oxfordshire (total 212 HDV per day)

5.6.1 The Core Strategy (policy M3) identifies three strategic areas for future crushed rock working, in Cherwell, WODC and VoWH, where existing quarrying takes place. It is assumed that production and resultant HDV movements are evenly split between them:
- WODC (Burford area): 33.4% – 70.7 HDV per day;
- Cherwell (Ardley): 33.3% – 70.7 HDV per day;
- VoWH (Faringdon area): 33.3% – 70.6 HDV per day.

5.6.2 It is assumed that all production from Oxfordshire quarries is consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

5.6.3 From this, the following split of lorry traffic movements can be assumed:
   a) 39% to VoWH & SODC: comprising all production from quarries in VoWH (33.3%) – not using roads passing within 200m of a SAC; and 2.9% production from quarries in WODC – using the A40 past Oxford Meadows = 6.1 HDV per day; and the A34 past Oxford Meadows = 6.1 HDV per day; and 2.8% production from quarries in Cherwell – using the A34 past Oxford Meadows = 5.9 HDV per day;
   b) 16% to WODC: all from quarries in WODC – not using roads passing within 200m of a SAC;
c) 22% to Cherwell: all from quarries in Cherwell – not using roads passing within 200m of a SAC;
d) 23% to Oxford: 14.5% from quarries in WODC – using the A40 past Oxford Meadows = 30.7 HDV per day, of which 7.25% go to south Oxford via A34 – using the A34 past Oxford Meadows = 15.4 HDV per day; and 8.5% from quarries in Cherwell, of which 4.25% go to south Oxford via the A34 – using the A34 past Oxford Meadows = 9.0 HDV per day.

5.6.4 Summary of movements on roads passing within 200m of a SAC:
A40 past Oxford Meadows SAC = total 36.8 HDV per day;
A34 past Oxford Meadows SAC = total 36.4 HDV per day;
M40 past Aston Rowant SAC = total 0 HDV per day.

5.7 5. Crushed rock moved by road from rail depots in Oxon
(193 HDV per day)

5.7.1 The Core Strategy (policy M6) identifies four rail aggregate depots in Oxfordshire, three existing depots and one with planning permission but not yet developed. It is assumed that by 2031 the total import to Oxfordshire rail depots and the resultant HDV movements from them will be evenly split between these four depots:
- Banbury (Cherwell) – existing: 25%;
- Kidlington (Cherwell) – existing: 25%;
- Sutton Courtenay (VoWH) – existing: 25%;
- Shipton on Cherwell (Cherwell) – permitted: 25%.

5.7.2 It is assumed that all imports to Oxfordshire rail depots are consumed within Oxfordshire, divided between the five districts in the proportions shown in Appendix 4 Table 3.

5.7.3 From this, the following split of lorry traffic movements can be assumed:
a) 22% to Cherwell – from Banbury, Kidlington and Shipton on Cherwell Depots – not using roads passing within 200m of a SAC;
b) 16% to WODC – from Banbury, Kidlington or Shipton on Cherwell Depots – using the A40 past Oxford Meadows = 30.9 HDV per day;
c) 39% to VOWH & SODC – from Sutton Courtenay Depot (25%) – not using roads passing within 200m of a SAC; and from Banbury, Kidlington or Shipton on Cherwell Depots (14%) – using the A34 past Oxford Meadows = 27.0 HDV per day;
d) 23% to Oxford – from Banbury, Kidlington or Shipton on Cherwell Depots, of which of which 11.5% to south Oxford via A34 – using the A34 past Oxford Meadows = 22.2 HDV per day.
5.7.4 Summary of movements on roads passing within 200m of a SAC:
A40 past Oxford Meadows SAC = total 30.9 HDV per day;
A34 past Oxford Meadows SAC = total 49.2 HDV per day;
M40 past Aston Rowant SAC = total 0 HDV per day.

5.8 Crushed rock moved to rail depots in Oxon
(0.530 mtpa – equivalent to 193 HDV per day)

5.8.1 The possible impact on SACs from movement of crushed rock into Oxfordshire to the rail depots also needs to be considered. These movements are currently by rail, but a worst case transport impact scenario would involve all imported crushed rock being moved by road instead of rail.

5.8.2 The Core Strategy (policy M6) identifies four rail aggregate depots in Oxfordshire, as detailed in paragraph 5.7.1 above; three in Cherwell and one in VOWH. It is assumed that imports into Oxfordshire will be split: 50% from the East Midlands (i.e. from north of Oxfordshire); and 50% from the South West (i.e from southwest of Oxfordshire). As in paragraph 5.7.1 above, it is also assumed that by 2031 the total import to Oxfordshire rail depots will be evenly split between the four depots.

5.8.3 It is assumed that all imports to the Sutton Courtenay depot (in VOWH) will come from the South West, as is currently the case. This will account for 50% of the imports from the South West. It follows that the remaining 50% of the imports from the South West (i.e. 25% of the total imports) will go to one or more of the three depots in Cherwell. If this is moved by road, this would involve use of the A34 past Oxford Meadows SAC.

5.8.4 Therefore, in the worst case scenario there would be a further 48 HDV movements per day using the A34 past Oxford Meadows. No movements would be involved on either the A40 past Oxford Meadows SAC or the M40 past Aston Rowant SAC.

5.9 Overall summary of planned movements on roads passing within 200m of a SAC

An overall summary of minerals traffic movements on roads passing within 200m of SACs expected by 2031, the planned position, is set out in Appendix 4 Table 6.
Table 6: Summary of planned movements on roads passing within 200m of a SAC

<table>
<thead>
<tr>
<th>Mineral type/source</th>
<th>Minerals traffic on roads passing within 200m of SACs (HDV movements per day)</th>
<th>A40 – Oxford Meadows SAC</th>
<th>A34 – Oxford Meadows SAC</th>
<th>M40 – Aston Rowant SAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Soft sand quarried in Oxon</td>
<td>11.0</td>
<td>34.2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2. Sharp sand &amp; gravel quarried in Oxon</td>
<td>123.6</td>
<td>42.4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3. Sharp sand &amp; gravel imported into Oxon by road</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4. Crushed rock quarried in Oxon</td>
<td>36.8</td>
<td>36.4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5. Crushed rock moved by road from rail depots in Oxon</td>
<td>30.9</td>
<td>49.2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6. Crushed rock moved by road to rail depots in Oxon</td>
<td>0</td>
<td>48</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>202.3</strong></td>
<td><strong>210.2</strong></td>
<td><strong>0</strong></td>
<td></td>
</tr>
</tbody>
</table>
6. Cross-boundary movement of minerals by road

6.1 Cross-boundary movements of minerals that could lead to HDV minerals traffic on roads passing within 200 metres of Oxford Meadows SAC (i.e. on the A40 or A34), in particular the existing imports of sharp, sand and gravel from Gloucestershire, are covered by the preceding analysis.

6.2 In the case of Aston Rowant SAC, which lies within 200 meters of the M40 close to where that road passes from Oxfordshire into Buckinghamshire, the preceding analysis shows no existing (2009) movements on this road and no planned (2031) movements. There is some movement of aggregate between Oxfordshire and Buckinghamshire, in both directions, but this movement is small and it is believed that most such movements are from and to the northern part of Oxfordshire, which would not involve use of the M40.

6.3 Information from the 2009 Aggregate Minerals Survey shows that approximately 14,000 tonnes of sand and gravel (2.2% of total production) was exported from Oxfordshire to Buckinghamshire and Milton Keynes (combined) and that less than 8,000 tonnes (1% of Oxfordshire’s consumption) was imported from Buckinghamshire. In addition, the 2009 survey shows that up to approximately 23,000 tonnes of crushed rock (6.4% of production) was exported from Oxfordshire to Buckinghamshire and Milton Keynes (combined). Oxfordshire’s crushed rock quarries are located either in the west of the county (near Faringdon and Burford) or the north of the county. It is likely that movements of this material from Oxfordshire to Buckinghamshire would be from the northern part of the county, using routes further north than the M40.

6.4 The Core Strategy provides for all of Oxfordshire’s demand for sand and gravel to be met by production from quarries within Oxfordshire. There should be no requirement for import of sand and gravel from outside Oxfordshire over the period of the plan to 2031 and, consequently, no HDV movements are expected to result from importation of sand and gravel. The Core Strategy also does not make particular provision for export of sand and gravel, apart from allowing for a continuation of export of soft sand (which is mainly exported westwards to Wiltshire and Gloucestershire) and of sharp sand and gravel from the Caversham area to the Reading area of Berkshire, neither of which is expected to involve movements on the M40.

6.5 Under the Core Strategy, imports of crushed rock are expected to comprise only higher quality material such as Carboniferous limestone and granite, transported into Oxfordshire by rail mainly from Somerset and Leicestershire; demand for lower quality material is planned to be met from quarries in Oxfordshire. The Core Strategy provides for a
continuation of some export of crushed rock quarried in Oxfordshire out of the county, but this is expected to be mainly to destinations to the north and north west of Oxfordshire, as is currently the case, which is not expected to involve movements on the M40.

6.6 Whilst it is likely that there currently some movements of minerals by HDV vehicles along the M40 past Aston Rowant SAC, the evidence points to this being a relatively small number; and the Core Strategy does not propose any change in the patterns of mineral production or supply that would lead to any change in this position. Consequently, no increase in minerals HDV movements on the M40 past Aston Rowant SAC is expected over the period of the Core Strategy to 2031.

7. Change in minerals HDV movements on roads passing within 200m of a SAC

7.1 The changes in minerals HDV movements on roads passing within 200m of a SAC that are expected to occur over the period of the Core Strategy, from the base (2009) position to the planned (2031) position are shown in Appendix 4 Table 7, which sets out a comparison of the total figures from tables 4 and 6.

Table 7: Change in movements over Core Strategy period on roads passing within 200m of a SAC

<table>
<thead>
<tr>
<th>Road passing within 200m of SAC</th>
<th>Change in minerals traffic on roads passing within 200m of SACs from existing position (2009) to planned position (2031) (HDV movements per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>A40 – Oxford Meadows SAC</td>
<td>221.1</td>
</tr>
<tr>
<td>A34 – Oxford Meadows SAC</td>
<td>153.6</td>
</tr>
<tr>
<td>M40 – Aston Rowant SAC</td>
<td>0</td>
</tr>
</tbody>
</table>
7.2 Conclusion

7.2.1 The strategy for mineral working in the Core Strategy will over the course of the plan period to 2031 lead to:

   d) a reduction of 19 HDV movements per day (9%) in minerals traffic on the A40 where this road passes within 200m of the Oxford Meadows SAC;

   e) an increase of 57 HDV movements per day (6%) in minerals traffic on the A34 where this road passes within 200m of the Oxford Meadows SAC;

   f) no change from the existing position of no minerals traffic on the M40 where this road passes within 200m of the Aston Rowant SAC.
Appendix 5

Assessment of Transport Effects of Waste Strategy


1 Introduction

1.1 This note looks at the amount of additional traffic that may be generated by the growth in waste forecast in the Minerals and Waste Local Plan: Part 1 (Core Strategy) – hereinafter referred to as the Plan - and, in particular, the extent to which this may impact on those SACs that are within 200 metres of a road where an associated increase in traffic can be expected. The Plan’s spatial strategy seeks to direct Heavy Duty Vehicle waste movements to preferred routes – as shown on the Oxfordshire Lorry Route Map (Core Policy C10). Of the seven SACs in Oxfordshire only Oxford Meadows SAC and Aston Rowant SAC lie within 200 metres of any of these routes.

1.2 The plan intends that Oxfordshire will be net self-sufficient in meeting the vast majority of its waste needs, so most of the waste related traffic generated by the growth expected will be moving on roads within the county boundary. Any increase in existing movement within the county is therefore more likely to impact on Oxford Meadows SAC (in view of its central location) than on Aston Rowant SAC (on the edge of the county).

1.3 Some of Oxfordshire’s waste will nevertheless continue to cross the county boundary to be managed elsewhere; and some waste from other areas will continue to be managed in Oxfordshire. An increase in traffic resulting from any growth in these movements could impact on Aston Rowant SAC but is less likely to impact on Oxford Meadows SAC.

2 Oxfordshire Waste

2.1 By the end of the plan period Oxfordshire could be generating an additional 654,000 tonnes of waste per annum (Appendix 5 Table A1). The vast majority of this (617,000 tonnes) will come from the principal waste streams (municipal solid waste; commercial and industrial waste; construction, demolition and excavation waste).
Table A1
Waste generated in Oxfordshire in 2012 and 2031 (tonnes) per annum

<table>
<thead>
<tr>
<th>Waste</th>
<th>Core Strategy Source</th>
<th>2012 (existing)</th>
<th>2031 (forecast)</th>
<th>Increase</th>
<th>Proportion of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Streams</td>
<td>Table 4</td>
<td>2,015,000</td>
<td>2,632,000</td>
<td>617,000</td>
<td>94%</td>
</tr>
<tr>
<td>Hazardous</td>
<td>Table 14</td>
<td>52,000</td>
<td>79,000</td>
<td>27,000</td>
<td>4%</td>
</tr>
<tr>
<td>Radioactive (LLW)</td>
<td>Table 15</td>
<td>3,420</td>
<td>107,700</td>
<td>5,000*</td>
<td>1%</td>
</tr>
<tr>
<td>Waste Water</td>
<td>Table 16</td>
<td>20,000</td>
<td>25,000</td>
<td>5,000</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>654,000</td>
<td></td>
</tr>
</tbody>
</table>

* Note: Rounded from 4,966 tonnes - which takes the difference between 2012 and 2031 and divides by 21 years (figure for 2031 is total arisings over the plan period).

2.2 This waste growth will generate some 65,400 additional lorry movements each year, equating to some 214 HGV movements per day (Appendix 5 Table A2), based on average 20 tonne per lorry load; 2 lorry movements per load; 306 working days per year.

Table A2
Number of lorry movements required to transport additional waste generated in Oxfordshire during the plan period

<table>
<thead>
<tr>
<th>Additional waste generated in 2031</th>
<th>Number of additional lorry loads in 2031</th>
<th>Equivalent number of lorry movements In 2031</th>
<th>Number of lorry movements per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>654,000</td>
<td>32,700</td>
<td>65,400</td>
<td>214</td>
</tr>
</tbody>
</table>

2.3 Existing waste management facilities have capacity to manage about a third of the additional waste. It has been estimated\(^{69}\) that there will be a need to provide new facilities to manage some 436,700 tonnes of waste per annum, accounting for 142 of the expected additional daily lorry movements.\(^{70}\) However, for the purpose of identifying the impact of additional traffic on the SACs it will be assumed that all of the additional traffic (214 daily movements) will be generated by new facilities.\(^{71}\)

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\(^{69}\) Oxfordshire County Council Waste Needs Assessment July 2015
\(^{70}\) i.e. two thirds of all additional waste movements (214 daily)
\(^{71}\) This ensures that the potential impact all additional traffic movements are considered: it is otherwise impossible to assess the impact of traffic that will arise from any additional waste managed at existing facilities.

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2.4 To meet the plan’s targets for diverting waste from landfill, the required waste management capacity will be mainly for the recycling of household or commercial and industrial (HIC) waste and for construction, demolition and excavation (CDE) waste.

Table A3
Type of facilities required to manage additional waste generated in Oxfordshire In 2031

<table>
<thead>
<tr>
<th>Facility type</th>
<th>Capacity requirement</th>
<th>Proportion of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC recycling</td>
<td>316,300</td>
<td>72%</td>
</tr>
<tr>
<td>Inert waste recycling</td>
<td>120,400</td>
<td>28%</td>
</tr>
<tr>
<td>Total</td>
<td>436,700</td>
<td></td>
</tr>
</tbody>
</table>

2.5 The Part 1 plan does not seek to identify the number of new facilities, but the spatial strategy gives guidance (policy W4) on where facilities of varying scale should be located.

Table A4
Distribution of waste management capacity requirement in Oxfordshire

<table>
<thead>
<tr>
<th>Type</th>
<th>Scale</th>
<th>Strategic Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>&gt;50,000 tpa</td>
<td>Bicester, Oxford, Abingdon, Didcot</td>
</tr>
<tr>
<td>Non-Strategic</td>
<td>20,000 tpa – 50,000 tpa</td>
<td>Bicester, Oxford, Abingdon, Didcot, Banbury, Witney, Wantage/Grove</td>
</tr>
<tr>
<td>Local</td>
<td>&lt;20,000 tpa</td>
<td>Market Towns and Rural Areas</td>
</tr>
</tbody>
</table>

2.6 Local facilities may be located in the strategic and non-strategic areas, but it is more likely that they will locate in areas where there is no competition from larger facilities. Local facilities will more likely make use of the local road network and are unlikely to generate traffic on that part of A34 and A40 close to Oxford Meadows SAC.

2.7 Strategic facilities are far more likely to attract traffic onto the strategic road network because of the juxtaposition of Bicester, Oxford, Abingdon and Didcot on the A34 corridor. It is therefore appropriate to estimate how many of the anticipated additional daily movements (214) are likely to be generated by strategic facilities. Non-strategic facilities may also locate in the strategic areas, although they too will find it difficult to compete with strategically sized facilities. They are therefore more likely to become established in Banbury, Witney and Wantage/Grove. They are less likely
to attract traffic onto the strategic road network around Oxford Meadows, but this possibility cannot be ruled out entirely.

2.8 Appendix 5 Table A5 shows how recycling capacity is currently distributed by scale of facility. This provides a guide to how new capacity may be provided in future.

Table A5
Facilities currently recycling the principal waste streams in Oxfordshire

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Strategic</th>
<th>Non-strategic</th>
<th>Local</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tonnage</td>
<td>%</td>
<td>tonnage</td>
<td>%</td>
</tr>
<tr>
<td>HIC recycling</td>
<td>298,000 50%</td>
<td>133,000 22%</td>
<td>169,300 28%</td>
<td>600,300</td>
</tr>
<tr>
<td>Inert waste recycling</td>
<td>728,000 63%</td>
<td>375,000 32%</td>
<td>50,100 5%</td>
<td>1,153,100</td>
</tr>
<tr>
<td>Total</td>
<td>1,026,000 59%</td>
<td>508,000 29%</td>
<td>219,400 12%</td>
<td>1,753,400</td>
</tr>
</tbody>
</table>

2.9 Appendix 5 Table A5 shows how the additional recycling requirement (from Appendix 5 Table 3) would be distributed if the same pattern were followed.

Table A6
Range of facilities likely to be managing additional waste generated in Oxfordshire in 2031

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Strategic</th>
<th>Non-strategic</th>
<th>Local</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tonnage</td>
<td>%</td>
<td>tonnage</td>
<td>%</td>
</tr>
<tr>
<td>HIC recycling</td>
<td>158,200 50%</td>
<td>69,600 22%</td>
<td>88,500 28%</td>
<td>316,300</td>
</tr>
<tr>
<td>Inert waste recycling</td>
<td>75,900 63%</td>
<td>38,500 32%</td>
<td>6,000 5%</td>
<td>120,400</td>
</tr>
<tr>
<td>Total</td>
<td>234,100 54%</td>
<td>108,100 25%</td>
<td>94,500 21%</td>
<td>436,700</td>
</tr>
</tbody>
</table>

Totals rounded to nearest 100 tonnes

2.10 At least 54% of the additional capacity requirement could be provided in or close to the areas around Bicester, Oxford, Abingdon and Didcot.

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Table A7
Distribution of additional waste management capacity requirements

<table>
<thead>
<tr>
<th>Scale</th>
<th>Broad Locations</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>Bicester, Oxford, Abingdon, Didcot</td>
<td>(54%) 234,100</td>
</tr>
<tr>
<td>Non-Strategic</td>
<td>Bicester, Oxford, Abingdon, Didcot, Banbury, Witney, Wantage/Grove</td>
<td>(25%) 108,100</td>
</tr>
<tr>
<td>Local</td>
<td>Market Towns and Rural Areas</td>
<td>(21%) 94,500</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>436,000</strong></td>
</tr>
</tbody>
</table>

2.11 Appendix 5 Table A7 shows the result of this distribution in terms of daily traffic movement.

Table A8
Possible apportionment of additional daily traffic movements

<table>
<thead>
<tr>
<th>Scale</th>
<th>Broad Locations</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>Bicester, Oxford, Abingdon, Didcot</td>
<td>(54%) 116</td>
</tr>
<tr>
<td>Non-Strategic</td>
<td>Bicester, Oxford, Abingdon, Didcot, Banbury, Witney, Wantage/Grove</td>
<td>(25%) 54</td>
</tr>
<tr>
<td>Local</td>
<td>Market Towns and Rural Areas</td>
<td>(21%) 44</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>214</strong></td>
</tr>
</tbody>
</table>

2.12 Allowing for the possibility that non-strategic facilities may also locate in the strategic areas, waste growth could result in 116-170 additional vehicle movements on A34 / A40. But not all of these movements will affect Oxford Meadows SAC. For example, facilities provided in the Bicester area are unlikely to generate traffic passing Oxford Meadows SAC if waste from southern Oxfordshire is able to access capacity provided in the Abingdon/Didcot area. Oxford City is poorly served by waste management facilities at present (see Appendix 5 Table AA1) and is unlikely to accommodate significant facilities given the difficulty of finding sites inside the city boundary.

2.13 Three spatial options can be envisaged and these are set out in more detail in Appendix 5 Table AA2 at the end of this Appendix. The resulting traffic impacts are summarised below.
Table A9
Additional lorry traffic movements impacting on Oxford Meadow SAC (2031)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Number of HGV movements affecting SAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All capacity located in the Bicester area</td>
<td>78 - 119</td>
</tr>
<tr>
<td>2</td>
<td>All capacity located in the Abingdon/Didcot area</td>
<td>58 - 85</td>
</tr>
<tr>
<td>3</td>
<td>Capacity distributed evenly between Bicester area and Abingdon/Didcot area</td>
<td>33 - 48</td>
</tr>
</tbody>
</table>

2.14 Option 3, or something close to it\textsuperscript{73}, is considered to represent the most likely outcome. This would result in some 33 – 48 additional daily traffic movements on the road network adjoining Oxford Meadows SAC.

3 Cross boundary movement of waste

3.2 In 2013 some 668,540 tonnes of waste entered Oxfordshire from other areas. Much of this was non-hazardous waste disposed by landfill (see Appendix 5 Table A10). By contrast, Oxfordshire ‘exported’ some 382,541 tonnes of waste for management elsewhere.

Table A10
Waste entering Oxfordshire from other areas in 2013 (tonnes)

<table>
<thead>
<tr>
<th>Source</th>
<th>Inert waste</th>
<th>Non-hazardous waste</th>
<th>Hazardous waste</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recovery</td>
<td>Landfill</td>
<td>Recovery</td>
<td>Landfill</td>
</tr>
<tr>
<td>Imports</td>
<td>89,065</td>
<td>95,476</td>
<td>130,780</td>
<td>328,154</td>
</tr>
<tr>
<td></td>
<td>668,450</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3 Imported and exported waste could thus account for some 343 HGV movements per day. However, some of the non-hazardous waste brought into Oxfordshire is from London and arrives by rail. Once off-loaded at Sutton Courtenay there is little further movement, so the 190,000 tonnes of waste that was handled in this way in 2013 would reduce the overall number of daily lorry movements on advisory routes to 280.

\textsuperscript{73} Table AA1 shows that in terms of waste management capacity West Oxfordshire and Cherwell Districts are better provided for than South Oxfordshire and Vale of White Horse Districts. This could result in rather more than half of the required capacity being provided in the area south of the city and any bias is unlikely to be significant.

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3.4 Oxford Meadows SAC is located in the centre of Oxfordshire, and this reduces the likelihood of imported or exported waste using A34/A40 in the vicinity of the SAC. The economics of waste transport will determine that waste entering or leaving Oxfordshire will be to or from immediately adjoining areas. So, for example, waste entering Oxfordshire from Gloucestershire is most likely to be managed in West Oxfordshire and unlikely to travel via A40/A34 to be managed in South Oxfordshire. With so few waste management facilities in Oxford, waste from other areas is also unlikely to be drawn into the centre of the county to pass Oxford Meadows SAC.

3.5 Waste to and from Buckinghamshire is likely to travel by M40 and pass Aston Rowant SAC. In 2013 Oxfordshire sent 73,490 tonnes of waste to Buckinghamshire. In turn, Buckinghamshire sent 46,211 tonnes of waste to Oxfordshire. This equates to 40 of the 280 estimated daily movements.

3.6 Data for 2014, when available, is expected to confirm a significant decrease in the amount of waste entering Oxfordshire. This is because household waste from West London which was being transported to the Sutton Courtenay landfill by rail will now be travelling to South Gloucestershire under a new long term contract. However, this will have no material impact on either of the SACs.

3.7 Waste from West London does not account for all of the waste coming to Oxfordshire from London. But the adopted Further Alterations to the London Plan commit the London Boroughs to becoming net self-sufficient in the management of their waste by 2026 and although it is likely that some waste will continue to enter Oxfordshire from London before then – more likely in the form of inert material from engineering projects – overall waste from London is expected to decrease significantly during the plan period. Any impact on waste entering Oxfordshire from London via M40 is therefore likely to result in a reduction of lorry movements.

3.8 There is only one example where waste from another area is likely to increase during the plan period. Waste will continue to be sent for landfill at Sutton Courtenay from Berkshire and the amounts could increase to 57,000 tonnes per annum (from 37,500 tonnes) by 2030. Although transported by road and likely to make use of A34, Sutton Courtenay is nevertheless south of Oxford and this traffic will not pass Oxford Meadows SAC.

3.9 The South East Waste Planning Authorities have signed a Memorandum of Understanding (MoU) and each authority aims to become net self-sufficient in meeting its own waste needs. The MoU effectively commits each authority (including Oxfordshire and Buckinghamshire) to seek to provide capacity sufficient to manage an amount of waste equivalent to
that arising in its own area. The effect of this is that waste imports into Oxfordshire to landfill will decrease over the plan period as more waste is diverted from landfill to recycling and recovery in other counties and Oxfordshire’s landfill capacity and number of landfill sites will decrease.

3.10 Inevitably some cross-boundary movement of waste will continue, but the movement of waste into and out of Oxfordshire – and the resulting traffic – is expected to decrease.

4 Summary

4.1 The waste planning strategy may lead to an increase of up to 48 movements passing Oxford Meadow SAC each day on A34/A40. This does not take into account lorry movements associated with waste from other areas but as these are likely to decrease, any impact will only reduce the net increase in movements.

4.2 Waste movements between Oxfordshire and Buckinghamshire are likely to make use of M40 and pass Aston Rowant SAC, but as each area becomes more self-sufficient in managing its own waste daily movements (currently in the order of 40 lorries) are not expected to increase and are more likely to reduce.
Table AA1
Oxfordshire: distribution of waste management capacity by District

<table>
<thead>
<tr>
<th>Area</th>
<th>Population</th>
<th>%</th>
<th>Number of waste sites</th>
<th>Waste Management Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tonnes per annum</td>
</tr>
<tr>
<td>Cherwell</td>
<td>142,359</td>
<td>22%</td>
<td>21</td>
<td>950,000</td>
</tr>
<tr>
<td>Oxford</td>
<td>151,739</td>
<td>23%</td>
<td>5</td>
<td>19,750</td>
</tr>
<tr>
<td>South</td>
<td>136,013</td>
<td>21%</td>
<td>20</td>
<td>358,500</td>
</tr>
<tr>
<td>Vale</td>
<td>122,432</td>
<td>18%</td>
<td>23</td>
<td>593,700*</td>
</tr>
<tr>
<td>West</td>
<td>106,008</td>
<td>16%</td>
<td>26</td>
<td>01,400</td>
</tr>
<tr>
<td>County</td>
<td>658,551</td>
<td>100%</td>
<td>95</td>
<td>2,523,350</td>
</tr>
</tbody>
</table>

Source: Oxfordshire County Council Small Area Projections (Jan 2014)
Facility number and capacity figures do not include facilities with planning permission but not yet built
Does not include capacity of contaminated groundwater treatment plant at Harwell

Table AA2
Options for the distribution of additional strategic waste management capacity

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Formula</th>
<th>Daily Movements (Strategic)</th>
<th>Daily Movements (Strategic/ non-strategic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All capacity located in the Bicester area</td>
<td>Deduct from estimated waste movements those that would arise from waste generated in the Cherwell area and the northern half of Oxford (33%)</td>
<td>78</td>
<td>119</td>
</tr>
<tr>
<td>2</td>
<td>All capacity located in the Abingdon/Didcot area</td>
<td>Deduct from estimated waste movements those that would arise from waste generated in the Vale and SODC and the southern half of Oxford (50%)</td>
<td>58</td>
<td>85</td>
</tr>
<tr>
<td>3</td>
<td>Capacity evenly distributed between Bicester area and Abingdon/Didcot area</td>
<td>Assume all waste is managed without needing to pass Oxford Meadows SAC except for that which is generated in West Oxfordshire and half of the waste generated by Oxford (28%) i.e. waste from the southern part of the city is not guaranteed to travel south; and waste from north of city is not guaranteed to travel north.</td>
<td>33</td>
<td>48</td>
</tr>
</tbody>
</table>