

**Oxford Core Strategy Habitats
Regulations Assessment**

September 2008



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1. INTRODUCTION

Oxford City Council have undertaken this Habitats Regulations Assessment “in-house”, with auditing undertaken by Levett-Therivel Sustainability Consultants. This report discusses Stage 1 (screening) and Stage 2 (appropriate assessment).

1.1 Requirements of the Habitats Directive

Appropriate assessment of plans that could affect Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites (jointly called ‘European sites’) is required by article 6(3) of the European Habitats Directive¹, which states:

‘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 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.’

Article 6(4) of the Habitats Directive discusses alternative solutions, the test of “imperative reasons of overriding public interest” (IROPI) and compensatory measures:

If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

The Habitats Directive applies the precautionary principle to European sites. Plans and projects can only be permitted if it can be shown that they will have no significant adverse effect on the integrity of any European site, or if there are no alternatives to them and there are imperative reasons of overriding public interest as to why they should go ahead. In such cases, compensation will be necessary to ensure the overall integrity of the site network.

The Habitats Directive was implemented into UK legislation through the “Conservation (Natural Habitats, & c) Regulations 1994” (as amended). This piece of legislation is generally known as the Habitats Regulations.

1.2 Methodology Used for this Habitats Regulations Assessment

Habitats Regulations Assessment can involve up to a four stage process:

1. **Screening.** Determining whether a plan ‘in combination’ is likely to have a significant effect on a European site.
2. **Appropriate Assessment.** Determining whether, in view of the site’s conservation objectives, the plan ‘in combination’ would have an adverse effect (or risk of this) on the integrity of the site. If not, the plan can proceed.

¹ Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora

- 3. Assessment of alternative solutions.** Where the plan is assessed as having an adverse effect (or risk of this) on the integrity of a site, there should be an examination of alternatives.
- 4. Assessment where no alternative solutions remain and where adverse impacts remain.**

This HRA covers Stages 1 and 2 of this process. The two stages were carried out between July 2007 until September 2008. Broadly, the HRA process involved:

- Identification of European sites that could possibly be affected by Oxford's Core Strategy, qualifying features of those sites and, where available, key environmental conditions to support the sites' integrity;
- Identification of possible impacts arising from the Oxford Core Strategy
- Draft identification of impacts and sites that could be screened out, and those that were likely to require more detailed appropriate assessment;
- Continual discussions with English Nature to confirm that the proposed approach for the Appropriate Assessment was acceptable, and what additional information was required to complete the analysis;
- Collection of more detailed data from a wide variety of sources;

This report discusses stage 1 (screening), and stage 2 (appropriate assessment).

2. SCREENING

2.1 European Sites

Table 2.1 lists all European sites that are within 20km of the boundary of Oxford City Council.

Table 2.1 European sites within 20km of Oxford City Council boundary

Name of Site	Distance from boundary	Reason for Designation ²
Oxford Meadows SAC	Within City Boundary, extending into administrative area for Cherwell District Council.	<p>Annex I habitats that are a primary reason for selection of this site 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.</p> <p>Annex II species that are a primary reason for selection of this site Oxford Meadows is selected because Port Meadow is the larger of only two known sites in the UK for creeping marshwort <i>Apium repens</i>.</p>
Cothill Fen SAC	Located 7 kilometres from the city boundary	<p>Annex I habitats that are a primary reason for selection of this site This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. The M13 <i>Schoenus nigricans</i> – <i>Juncus subnodulosus</i> vegetation found here occurs under a wide range of hydrological conditions, with frequent bottle sedge <i>Carex rostrata</i>, grass-of-Parnassus <i>Parnassia palustris</i>, common butterwort <i>Pinguicula vulgaris</i> and marsh helleborine <i>Epipactis palustris</i>. The alkaline fen vegetation forms transitions to other vegetation types that are similar to M24 <i>Molinia caerulea</i> – <i>Cirsium dissectum</i> fen-meadow and S25 <i>Phragmites australis</i> – <i>Eupatorium cannabinum</i> tall-herb fen and wet alder <i>Alnus spp.</i> wood.</p>
Little Wittenham SAC	Located 19km from the City Boundary	<p>Annex II species that are a primary reason for selection of this site One of the best-studied great crested newt sites in the UK, Little Wittenham comprises two main ponds set in a predominantly woodland context (broad-leaved and conifer woodland is present). 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 to the south. Large numbers of great crested newts <i>Triturus cristatus</i> have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks.</p>

² Source: www.jncc.gov.uk

2.2 Appropriate Assessment of the South East Plan

An HRA for Draft South East Plan has already been carried out by Scott Wilson and Levett-Therivel³ The South East Plan will set out the spatial strategy for the region and the Oxford Core Strategy must conform to this document in its final adopted form. The findings of the accompanying HRA are therefore highly relevant to the HRA of the Oxford Core Strategy. However, it focused on information and impacts considered appropriate at the regional level. For example, rather than focusing on information and impacts relating to the specific location of future development, the assessment has addressed bigger issues such as air pollution and water abstraction across the region. The document states that in many instances the impacts are not inevitable but rather depend on how the South East Plan's policies and proposals are implemented on the ground.

The HRA of the Oxford Core strategy brings down the level of HRA to an Oxford wide level. It may be necessary for future planning applications to consider the impact at an individual site level.

The HRA of the Draft South East Plan concluded that there were a number of possible impacts 'for which it was not possible to conclude' that there would be 'no adverse effect' on the Oxford Meadows SAC due to developments under the South East Plan, either alone or in combination with other plans or projects. These included:

- Increased water abstraction;
- Increased effluent discharge;
- Reduced air quality;
- Increased primary aggregate requirements.

2.3 Oxford Core Strategy

The Oxford Core Strategy provides for:

- 8,000 new dwellings to be provided until 2026;
- 4,500 class B jobs to be provided until 2026;
- Small-scale Green Belt review to release safeguarded land for employment (Peartree/northern gateway) and residential (Barton), with a contingency site at Summertown;
- Green Belt review to release land for mixed-use residential development of at least 4,000 new homes to the south of the city, in land under administrative jurisdiction of South Oxfordshire District Council;
- Redevelopment of the Western side of the City centre through an AAP (West End Area Action Plan)

Table 2.2 shows likely key environmental considerations that are likely to give rise to significant effects as a result of policies in the Oxford City Council Core Strategy. Natural England recommended that the effects of the Core Strategy elements be categorised in the form of a schedule. The schedule provided by Natural England is as follows:

³ http://www.southeast-ra.gov.uk/southeastplan/key/appropriate_assessment.html (October 2006) and <http://gose.limehouse.co.uk/portal/rss/pcc/sahra> (July 2008)

Categorisation of the effects of the elements of the Core Strategy

- A – Policies and proposals that cannot have any negative effect on a European site
- B – Effects will be addressed in assessments “down the line”, including project assessment under regulation 48
- C – Could have an effect, but would not be likely to have a significant (negative) effect (alone or in combination with other plans or projects)
- D – Likely to have a significant effect alone and would require Appropriate Assessment
- E – Likely to have a significant effect in combination with other plans or projects and which require appropriate assessment of those combinations
- F – Likely to have a significant effect, alone or in combination with other plans or projects, but which would not adversely affect the integrity of a European site
- G – Likely to have a significant effect, alone or in combination with other plans or projects, and for which it cannot be ascertained that they would not adversely affect the integrity of a European site

Table 2.2 showing the likely key environmental considerations that are likely to give rise to significant effects as a result of policies in the Oxford City Council Core Strategy

Policy	Categorisation of the effects of elements of the Core Strategy*	If policy has no effect, then reasons why.	Key environmental considerations likely to give rise to significant effects
CS1 City Centre	A	Policy promoting development that attracts large numbers of people in the City centre (in line with the sequential test)	
CS2 District Centres	A	Policy promoting development of an appropriate size and scale for the district centres towards one of the five named centres	
CS3 Previously Developed and Greenfield Land	A (Impact of Greenfield development assessed alongside relevant individual options, i.e., Northern Gateway, Summertown etc.)	Policy focusing development primarily on previously developed land and steering it towards Greenfield land only where it is specifically allocated in the Core Strategy	
CS4 Regeneration Areas	A	Spatial policy promoting regeneration in five key areas across the City.	
CS5 Green Belt		Policy broadly protecting the Green Belt, apart from small-scale reviews to be carried out in appropriate Development Plan Documents)	Small scale review of the Green Belt at the Northern Gateway could involve the release of land south of the A40 for development, which could potentially involve development only 200 metres from the Oxford Meadows SAC. Issues arising from this are addressed through the relevant policy considerations below (e.g., Northern Gateway, land at Summertown)
CS6 West End	A	Development of 800 houses and 2ha of employment development. West End Area Action Plan now adopted, however in-combination effects are possible. Likely effects considered in relation to overall housing growth for the City.	
CS7 Northern Gateway		Policy promoting a strategic site for predominantly employment based development (closest point is 500m away from the SAC)	Site is a minimum of 500 metres from the Oxford Meadows SAC, on higher ground, but could potentially be a source of groundwater to the Oxford Meadows SAC Part of the site could be developed for housing. This could increase recreational pressure as well as groundwater pollution issues.
CS8 Land at Barton	A	Policy promoting a strategic site for predominantly residential development	

CS9 South Oxford SDA	A (Transport options assessed separately at AA stage)	Policy promoting partnership working in order to bring forward a strategic development area for at least 4,000 new houses to the south of the city (approx 6.5km away from the SAC)	Would not have any direct impact on the Oxford Meadows SAC given its location on the opposite side of the City, some 6.5 km from the boundary of the SAC. However, it is likely to increase pressures on the strategic road network in and around Oxford, including the A34, which runs through the Oxford Meadows SAC. Although this will be considered in more detail through transport modelling for the transport options.
CS10 Land at Summertown	C	Policy protecting land at Summertown for residential development should there be an inadequate number of housing sites to meet housing targets provided in the RSS	At the closest point the land is 1400 metres from the Oxford Meadows SAC. Could possibly affect drainage or increase recreational pressure.
CS11 Energy and Natural Resources	A	Policy for ensuring energy and natural resources are minimised in development proposals	
CS12 Waste and Recycling	A	Spatial planning policy promoting that developments have regard to the Waste Management Hierarchy during their design construction and operation. Policy also supports appropriately located that makes provision for the management and treatment of waste.	
CS13 Flooding	A	Policy protecting development proposals from flood risk	
CS14 Biodiversity	A	Hierarchical policy promoting protection of designated sites, including the SAC	
CS15 Supporting new access to development			Air Pollution as a result of increased pressure to use A34.
CS16 Supporting city-wide movement			Air Pollution as a result of increased pressure to use A34.
CS17 Primary Healthcare	A	Spatial planning policy to work with the PCT in provision of primary healthcare facilities	
CS18 Access to Education	A	Policy encouraging joint working with the LEA to improve access to education facilities throughout Oxford.	
CS19 Infrastructure and Developer Contributions	A	Policy for timely delivery of infrastructure and developer contributions	
CS20 Urban design, townscape and the historic environment	A	Policy to assist in the protection of the unique character of Oxford	

CS21 Community Safety	A	Policy for the incorporation safety into the design of development proposals	
CS22 Cultural and Community Development	A	Policy promoting cultural and community development in appropriate locations	
CS23 Green Space, Leisure and Sport	A	Policy seeking to maintain an average standard of recreation space across the city and supporting improvements to existing and opportunities for new facilities where appropriate	
CS24 Level of Housing Growth		Policy stipulating levels of housing growth across the City. Target to achieve 8,000 new homes within city boundary by 2026. Estimated 400 new dwellings/ year	<p>New houses likely to increase recreational pressure on SAC where located close by (addressed through assessment of strategic sites above)</p> <p>Potential for increased water abstraction to impact on hydrology of SAC (groundwater flow)</p> <p>Potential for groundwater to become polluted should new residential development be located close by the SAC (groundwater pollution)</p> <p>Air quality associated with transport movements.</p>
CS25 Mix of Housing	A	Policy ensuring an appropriate and balanced mix of housing is provided as part of new developments	
CS26 Affordable Housing	A	Policy for determining the proportion of affordable housing to be accepted as part of qualifying developments	
CS27 Student Accommodation	A	Policy limiting numbers of students taking up residence outside purpose built accommodation	
CS28 Accommodation for travelling communities	A	Criteria based policy according with national/ regional guidance to set the framework for site selection in other Development Plan Documents	
CS29 Sustainable Economy	A (Issues relating to the Northern Gateway are addressed through policy CS7 above)	Policy seeking to achieve managed economic growth throughout Oxford. Policy allocates Northern Gateway, but raises no additional problems other than strategic site policy above	
CS30 Employment Sites	A	Policy protecting key and other employment sites from losses to other forms of development.	
CS31 The universities	A	Policy promoting development by the universities is kept to existing sites.	

CS32 Hospitals and medical research	A	Spatial Policy promoting the continued focussing of hospital-related development on existing sites in Headington/ Marston	
CS33 Retail	A	Policy setting out the sequential test (spatially), Summertown is still allocated as a District Centre, as such development of an appropriate scale will be encouraged here.	Summertown is already well developed, so any development (other than the strategic site - dealt with separately) is likely to be on Brownfield land. As such, any effect would likely to be minor.
CS34 Sustainable tourism	A	Policy seeking to achieve longer stays and greater spends from tourists in Oxford.	

* Uses Natural England's categorisation of effects. See page 6.

2.4 Environmental Requirements of European Sites

Oxford Meadows SAC

The citation for the Oxford Meadows SAC states that:

Oxford Meadows includes vegetation communities that are perhaps unique 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 is the largest of only three known sites in the UK for creeping marshwort *Apium repens*.

Qualifying habitats: The site is designated under article 4 (4) of the Directive 992/43/EEC) as it hosts the following habitats listed in Annex I:

- Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

Qualifying species: The site is designated under article 4 (4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Creeping marshwort *Apium repens*.'

Natural England's report on the condition of the Oxford Meadows constituent Sites of Special Scientific Interest indicates that currently the whole of the Oxford Meadows SAC is in a favourable condition.

The following key environmental requirements to support the Oxford Meadows SAC's integrity were identified at an HRA screening workshop carried out for the South East Plan:

1. Minimal air pollution.
2. Absence of nutrient enrichment of waters; good water quality.
3. Balanced hydrological regime – alteration to adjacent rivers may alter flooding regime and reduce botanical diversity.
4. Maintenance of traditional hay cut and light aftermath grazing.
5. Absence of direct fertilisation.

A further workshop on HRA for the Oxford Core Strategy was held on the 20th October 2006 at which the additional issues of ensuring that recreational pressures are maintained at a reasonable level and that the A34 does not need to be widened were also raised as issues that need to be addressed. The possible impact of promoting East-West rail has also been added for assessment.

Cothill Fen SAC

The citation for the Cothill Fen SAC states that:

This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. 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.

Qualifying habitats: The site is designated under article 4 (4) of the Directive 992/43/EEC) as it hosts the following habitats listed in Annex I:

- Alkaline Fens
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) * Priority feature

The following key environmental requirements to support the Cothill Fen SAC's integrity were identified in HRA for the South East Plan:

- High water table.
- Calcareous, base-rich water supply
- Minimal air pollution.

Little Wittenham SAC

The citation for the Little Wittenham SAC states:

Little Wittenham comprises two main ponds set in a predominantly woodland context (broad-leaved and conifer woodland is present). 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 to the south. Large numbers of great crested newts *Triturus cristatus* have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks.

Qualifying species: The site is designated under article 4 (4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

Great crested newts *Triturus cristatus*

No information was included about the environmental requirements for Little Wittenham in the South East Plan. However, the HRA for the South West RSS included the environmental requirements for sites that include great crested newts:

- Maintenance of habitat diversity including unshaded, medium sized ponds, and a variety of terrestrial habitat such as woodland, scrub and grassland, fallen branches, and piles of logs and stones to provide suitable resting, foraging and hibernation areas.
- Water quality and levels requires maintenance to support suitability as breeding ponds.
- Control or elimination of fish and invasive/alien aquatic plants may be required.

Natural England included the additional potential impact of recreational impacts since the area adjacent to Little Wittenham is a popular visitor area. The HRA therefore looks at potential additional recreational pressures for development proposed in the Oxford Core Strategy.

2.5 Possible impacts of the Oxford Core Strategy on the European Sites

Table 2.3 shows the policies that are likely to have an impact on the Oxford Meadows SAC and the likely nature, magnitude, location and extent of any impacts.

Table 2.3 Possible impacts of Oxford Core Strategy on Oxford Meadows SAC

Nature	Policies likely to have an impact on the SAC	Magnitude	Duration	Location	Conclusions
Air Pollution Impacts:	<ul style="list-style-type: none"> • Northern Gateway: Employment Growth at Peartree • SDA: at least 4,000 new dwellings by 2026 • Supporting access to new development • Supporting city-wide movement • Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) 	<p>Employment development at Northern Gateway could increase vehicle movements along the A34 which bisects the Oxford Meadows SAC</p> <p>An increase in housing numbers is likely to generate an increase in vehicle movements across Oxford, but also on the A34 which bisects the Oxford Meadows SAC</p>	<p>Throughout the Core Strategy Period</p> <p>Throughout the Core Strategy Period</p>	<p>The nearest boundary of the Northern Gateway Strategic development site is located approx. 500m to the North of the SAC.</p> <p>The proposed area of search for the Oxford SDA is over 6.5km away at the southern edge of the city.</p> <p>The SHLAA all sites considered suitable for housing throughout Oxford. The nearest potential housing site to the Oxford Meadows SAC is Peartree.</p>	See section 3.1 for details.
Water quality impacts	<ul style="list-style-type: none"> • Northern Gateway: Employment Growth at Peartree • Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) • Land at Summertown 	<p>Low/ not significant</p> <p>The level of housing development proposed by the Core Strategy is likely to generate a population increase of around 20,000 people. The total population of Oxford is around 150,000. This represents a potential increase of around 13%.</p>	<p>Throughout the Core Strategy period</p> <p>Throughout the Core Strategy Period</p> <p>(Land at Summertown towards the end)</p>	<p>The nearest boundary of the Northern Gateway Strategic development site is located approx. 500m to the North of the SAC.</p> <p>Mostly downstream of Oxford Meadows SAC as water is treated at treatment works in Sandford to the south of the city. Potentially pollution of groundwater in north Oxford could affect water quality at Oxford Meadows SAC.</p>	See section 3.2 for details.

Nature	Policies likely to have an impact on the SAC	Magnitude	Duration	Location	Conclusions
Balanced hydrological regime	<ul style="list-style-type: none"> Northern Gateway: Employment Growth at Peartree Land at Summertown Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) 	<p>The level of housing development proposed by the Core Strategy is likely to generate a population increase of around 20,000 people. The total population of Oxford is around 150,000. This represents a potential increase of around 13%</p>	<p>Throughout the Core Strategy period. (Land at Summertown towards the end)</p>	<p>The nearest boundary of the Northern Gateway Strategic development site is located approx. 500m to the North of the SAC</p>	<p>See section 3.3 for details.</p>
Recreational pressure	<ul style="list-style-type: none"> SDA: at least 4,000 new dwellings by 2026 Land at Summertown Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) 	<p>Low/ negligible</p> <p>Compared to the overall catchment area for Port Meadow, additional possible development at Summertown would have limited impact. The Strategic Housing Land Availability Assessment (SHLAA) states that there could be up to 200 new homes, with accompanying recreational space, built at Summertown.</p> <p>The level of housing development proposed by the Core Strategy is likely to generate a population increase of around 20,000 people. The total population of Oxford is around 150,000. This represents a potential increase of around 13%.</p>	<p>Throughout the Core Strategy period (Land at Summertown towards the end)</p>	<p>SDA over 6.5km away on southern boundary of city.</p> <p>At the closest point the land is 1400 metres from the Oxford Meadows SAC, so could possibly affect drainage or increase recreational pressure.</p> <p>Oxford has a wealth of green infrastructure and open spaces.</p>	<p>See section 3.4 for details.</p>

Nature	Policies likely to have an impact on the SAC	Magnitude	Duration	Location	Conclusions
Maintenance of traditional hay cut and light aftermath grazing.	N/a. Core Strategy does not propose any policies that will alter the way that the site is managed.	None – related to activities directly at the site, which the Core Strategy will not affect.	Throughout the Core Strategy Period	Site management not impacted upon by Core Strategy	Core Strategy unlikely to have significant effects since what is proposed does not affect the maintenance of the site.
Absence of direct fertilisation					

Table 2.4 Possible impacts of Oxford Core Strategy on Cothill Fen SAC

Nature	Policies likely to have an impact on the SAC	Magnitude	Duration	Location	Conclusions
High water table.	<ul style="list-style-type: none"> SDA: at least 4,000 new dwellings by 2026 Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) 	Negligible/ nil.	Throughout the Core Strategy period	7km from the City Boundary.	Unlikely to be significant
Calcareous, base-rich water supply		Cothill Fen SAC is in a different river catchment from Oxford.		Cothill Fen SAC is in a relatively remote location. It can only be accessed by private car, or by local residents on foot.	Unlikely to be significant
Minimal air pollution		Air pollution impacts tend to be highly localised.		Given the distance from the site, unlikely to be significant impacts	
Recreational impacts		Recreational pressure likely to be slight as a result of the proposed development in the Oxford Core Strategy.		Unlikely to be significant	

Table 2.5 Possible Impacts of Oxford Core Strategy on Little Wittenham SAC

Nature	Policies likely to have an impact on the SAC	Magnitude	Duration	Location	Conclusions
Maintenance of habitat diversity including unshaded, medium sized ponds, and a variety of terrestrial habitat such as woodland, scrub and grassland, fallen branches, and piles of logs and stones to provide suitable resting, foraging and hibernation areas.	N/a. Core Strategy does not propose any policies that will alter the way that the site is managed.	None – related to activities directly at the site, which the Core Strategy will not affect.	Throughout the Core Strategy period	Little Wittenham SAC is Located 19km from the City Boundary	Core Strategy unlikely to have significant effects since what is proposed does not affect the maintenance of the site.
Water quality and levels requires maintenance to support suitability as breeding ponds.	<ul style="list-style-type: none"> • SDA: at least 4,000 new dwellings by 2026 • Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) 	Water levels are managed along the Thames. Water levels are controlled through locks and weirs to maintain a balanced flow throughout			Unlikely to be significant
Control or elimination of fish and invasive/alien aquatic plants may be required.	N/a. Core Strategy does not propose any policies that will alter the way that the site is managed.	None – related to activities directly at the site, which the Core Strategy will not affect.			Core Strategy unlikely to have significant effects since what is proposed does not affect the maintenance of the site.
Increased recreational pressures due to popular visitor area adjacent to the Little Wittenham SAC	<ul style="list-style-type: none"> • SDA: at least 4,000 new dwellings by 2026 • Housing numbers 8,000 dwellings by 2026 (4,00 dwellings/ year) 	A high level of green space is proposed to be maintained throughout Oxford. This will reduce the need to travel to other areas to enjoy green spaces.			Unlikely to be significant

2.6 Screening conclusions

Oxford Meadows SAC

Table 2.3 suggests that the Oxford Core Strategy could have significant impacts on the Oxford Meadows SAC with regard to the following:

- Air pollution;
- Water quality.
- Balanced hydrological regime; and
- Increased recreational pressure.

These are discussed further at Section 3.

It has been possible to screen out some of the impacts on the Oxford Meadows SAC:

- Maintenance of traditional hay cut and light aftermath grazing
- Absence of direct fertilisation

These have been screened out as they are related to activities directly at the site, which the Oxford Core Strategy will not affect.

Cothill Fen SAC

It is considered that the Oxford Core Strategy could not have an adverse impact on either Cothill Fen. Cothill Fen is an alkaline fen dependent on a high water table and calcareous, base-rich water supply. As Cothill Fen is in the catchment of the River Ock, which is in a different catchment, it could not have an adverse impact on this site. Cothill Fen is in a relatively remote location and can only be accessed by private car, or by local residents travelling on foot. Recreational pressure is therefore likely to be slight as a result of the proposed development in the Oxford Core Strategy. Development within Oxford, and the Strategic Development Area are likely to feature new green spaces, which will ease recreational pressure on the Cothill Fen. Given the results of table 2.4, a full appropriate assessment of this site is not required.

Little Wittenham SAC

Little Wittenham has been designated because it contains two ponds with large populations of great crested newts. As development in Oxford will not affect the habitat in the ponds or the newts foraging habitat around them, the Oxford Core Strategy could not have an adverse impact on this site. This site has therefore been excluded from further assessment in this screening exercise and the remainder of this document relates exclusively to the Oxford Meadows SAC.

Natural England noted that there could be additional recreational pressure as a result of the Oxford Core Strategy on the SAC at Little Wittenham as the area adjacent to the SAC is a popular visitor destination. Given the distance from the Little Wittenham SAC (19km from the city boundary), and the proposed standard in the citywide target of 5.75 ha of green space per 1,000 population as proposed in the Oxford City Green Space Strategy, it is unlikely that the level of population predicted as a result of the Oxford Core Strategy will have an adverse impact on the Little Wittenham SAC. The Oxford Strategic Development Area (SDA) is on the southern edge of the City within the administrative area of South Oxfordshire District Council. As such any impacts associated with the development would need to be assessed by South Oxfordshire as part of their HRA. Given the results in table 2.5, a full appropriate assessment of this site is not required.

3. APPROPRIATE ASSESSMENT

The following sections deal with each of the possible environmental requirements of the Oxford Core Strategy on the Oxford Meadows SAC, and the likelihood of 'in-combination' significant effects. Each of the environmental requirements is dealt with in turn:

- Air pollution
- Water quality
- Water levels
- Recreational pressure

In compliance with Article 6(3) of the Habitats Directive, the City Council must consider the implications of the Oxford Core Strategy for relevant sites 'in combination' with other plans or projects' that might have significant impacts on these sites. The following documents have therefore been considered:

- Draft South East Plan, including the Panel Report (August 2007) and the Proposed Modifications by the Secretary of State (July 2008);
- Oxford Local Plan 2001-2016 – although this document will eventually be superseded by the Local Development Framework, at present it sets out the City Council's adopted development control policies and development sites. It is therefore a plan that needs to be considered in this assessment.
- West Oxfordshire Local Plan 2011 and Core Strategy Issues and Options (March 2008);
- Vale of White Horse Local Plan 2011, and Core Strategy Issues and Options (November 2007);
- Cherwell District Council's Core Strategy Issues and Options document (February 2006);
- Oxfordshire Minerals and Waste Development Framework – Minerals Sites Development Plan documents;
- Oxford Flood Risk Management Study Scoping Consultation Paper (June 2005)
- Catchment Management Plan

3.1 Air Pollution

Baseline situation

A desk-based review of available information has been carried out. As part of this review, data provided by the Air Pollution Information Service was analysed in order to determine whether there would be any likely significant effects (i.e., whether or not the critical load for N deposition would be breached) as a result of the policies and proposals in the Core Strategy.

The Air Pollution Information Service shows air pollution at 2003 and then projected forward to 2010 for the Oxford Meadows SAC. For the Oxford Meadows SAC, data is provided in relation to N deposition, and S deposition only for these dates. Information does exist in relation to other pollutants, but it is from 1999/2000 only.

Table 3.1 shows where air pollution levels at Oxford Meadows SAC exceeded the site's critical load in 1999/2000. Pollution levels were within the critical load for acid deposition, ammonia, nitrogen deposition, and sulphur dioxide (SO₂); but near capacity for ozone. Environment Agency data from 2005 suggests that neither nitrogen nor acid thresholds are exceeded at Oxford Meadows SAC.

Critical loads represent the exposure below which there should be no significant harmful effects on sensitive elements of the ecosystem (according to current knowledge), have been

established for a number of habitats dependent on low nitrogen levels. Critical loads are expressed in deposition of units of kg/N/ha/yr.

Table 3.1 showing where air pollution levels at Oxford Meadows SAC exceeded the site's critical load in 1999/2000.

pollutant	deposition / critical load
acid deposition	0.433
ammonia	0.163
N deposition	0.772
NOx	0.99
ozone	1.26
SO2	0.18

Source: <http://www.apis.ac.uk>

Key: deposition / critical load

<0.25	0.25-0.74	0.75-0.99	1-1.24	1.25-1.99	2+
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Note: The critical air pollutant loads that a given site can accommodate depends on the type of site. In this case, Oxford Meadow has been assumed to be unimproved hay meadow.

Table 3.2 shows data from the APIS website from 2003 (with predictions to 2010) for N deposition and S deposition, and their related critical loads.

Site and grid reference*	Habitat	Pollutant, measurement	Critical load range	Deposition** 2003	Deposition** 2010
Oxford Meadows	Lowland hay meadows	N deposition, kg/N/ha/yr	20-30	15.9	13.9
		S deposition, Keq/ S/ ha/ yr	3.88-3.89	0.48	0.36

Note: The Site Relevant Critical Loads tool provides critical loads for acidity and nitrogen for designated features within an SAC or SPA site. A user can view an overview of each interest feature for each site. Critical loads will be assigned to each feature if it is sensitive to either nutrient nitrogen or acidity. (Source: www.apis.ac.uk)

* From <http://www.jncc.gov.uk/page-1458>

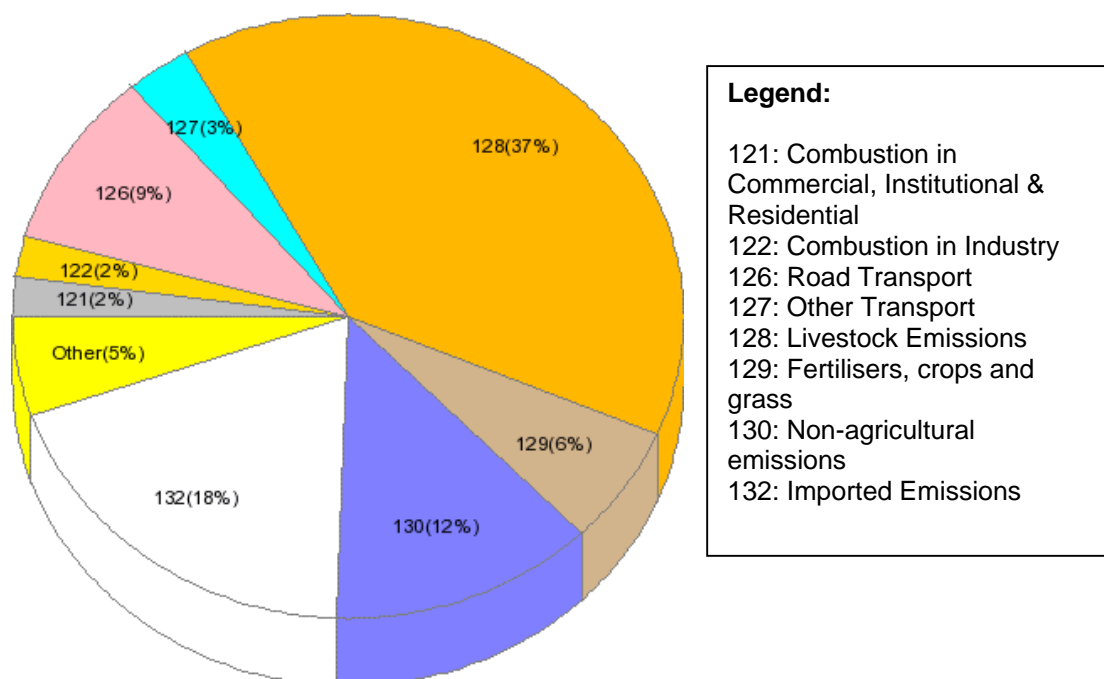
** Estimated to 2010

Key:

Yellow	Deposition within critical load range	Red	Deposition exceeds critical load range by 25-100%
Orange	Deposition exceeds critical load range by <25%	Purple	Deposition exceeds critical load range by >100%

The Air Pollution Information Service (APIS) website gave two scenarios for measuring the different pollutants at the SAC. The first was a baseline of 2003. The second was an extrapolated estimate to 2010. The 2010 scenario has been used in this instance. Chart 3.1 below shows the likely deposition of Nitrogen by source, at the Oxford Meadows SAC in 2010. NOx levels throughout the UK are expected to drop until about 2020 due to improvements in vehicles' Euro standards and reductions in power station emissions.

Figure 3.1 showing N deposition by source at 2010:



Possible impact of the Core Strategy

Nitrogen deposition has been focused on here as it is one of the key indicators from the APIS website.

Nitrogen Dioxide is taken up by plants principally through their stomata. Concentrations of Nitrogen Dioxide are higher close to roads so vegetation in these areas is exposed to a larger source of nitrogen. The Environment Agency’s advice⁴ on traffic related pollution is that it needs to be considered if a road carrying a significant proportion of new traffic related to a plan runs within 200 metres of a European site. In the case of the Oxford Core Strategy, this will generate additional new traffic that will pass along the A34 through the Oxford Meadows SAC.

Interim Advice Note 61/05 (Guidance for Undertaking Environmental Assessment of Air Quality for Sensitive Ecosystems in Internationally Designated (Nature Conservation Sites and SSSIs) provides information about Nitrogen Deposition, as well as Nitrogen Oxides (NO_x) emissions at the local scale. Interim Advice Note 61/05 states that:

If there is a Designated Site within 2km of a scheme so that an Appropriate Assessment is required, but there is no significant change in emissions from roads within 200m of the site, then the scheme will not result in a significant change in air quality and the effects of a change in air quality can be assumed to be negligible.

Chart 3.1 shows a small percentage of the total N deposition at Oxford Meadows SAC can be attributed to housing, employment and transport – the issues covered by spatial planning. The following sources are all considered to contribute to the deposition of Nitrogen under the 2010 scenario:

- 121: Combustion in Commercial, Institutional & Residential (2%)
- 122: Combustion in Industry (2%)

⁴ English Nature (16 May 2006) letter to Runnymede Borough Council, ‘Conservation (Natural Habitats &c.) Regulations 1994, Runnymede Borough Council Local Development Framework

126: Road Transport (9%)
127: Other Transport (3%)
Other (5%)

It was considered necessary to include the “other” category as this could include NO_x emissions, which would be likely to result in N deposition.

As a total percentage the total amount of N deposition at the Oxford Meadows SAC that is attributable to spatial planning under the 2010 scenario would be **21%**. Existing Oxford residents are only responsible for part of this, and the Oxford Core Strategy would increase the number of homes in Oxford by about 13%. Even using a very precautionary approach, assuming that (as a very worst case scenario), that N deposition attributable to the Oxford Core Strategy doubles, total N deposition (using this scenario) at the Oxford Meadows SAC would increase by 21% from 13.9 kg/N/ha/yr to 16.8 kg/N/ha/yr. This figure is still within the critical load range for the site.

Given this desk-based analysis, Air Pollution impacts (particularly N deposition) as a result of the Oxford Core Strategy are unlikely to have a significant effect on the Oxford Meadows SAC.

Possible ‘In combination’ impacts

Development of 55,200 new homes in Oxfordshire, as proposed in policy H1 of the draft South East Plan, and 80,000 new homes and 2 million square metres of new business floorspace in South Hampshire, as proposed in policy SH3 of the Proposed Changes to the South East Plan, is likely to increase traffic levels on the A34 and cause reduced air quality. However, the HRA for the RSS for the South East that:

“Research by AEA Technology suggests that background air quality throughout the UK will improve very significantly over the next 10-15 years, primarily as a result of tightening Euro emission standards for cars and lorries, and cleaner energy generation⁵. The model used does not include the higher housing figures being proposed in various RSSs, nor recent government proposals for new power stations (for instance it assumes that the number of fossil fuel burning power stations will decrease from 23 in 2005 to 12 in 2010 and 5 in 2020). Even if the new stations use ‘clean coal’ technology as proposed, these will still have some impact on air quality. A recent DEFRA study⁶ also suggests that assumptions about vehicle emissions should add 15% to Euro emission standards to take account of real-world effects such as poor maintenance, low tyre pressure, poor driving, and increasing use of air conditioning. DEFRA’s Air Quality Expert Group (2007) “*recommends that local authorities, and any other users of the future-year adjustment factors, currently provided by Defra to adjust monitoring data, should*

⁵ Grice, S. *et al* (2006). *Baseline projections of air quality in the UK for the 2006 review of the Air Quality Strategy*, report to Defra *et al* [online] available at: http://www.airquality.co.uk/archive/reports/cat16/0604041040_baselineprojectionsreport5.pdf (accessed 14 May 2008); and Grice, S. *et al.* (2007). *Updated projections of air quality in the UK for base case and additional measures for the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007*, report to Defra *et al* [online] available at: http://www.airquality.co.uk/archive/reports/cat17/0707171116_newbaselineandadditionalmeasuresreport_v6.pdf (accessed 14 May 2008).

⁶ Defra (2007). *Passenger transport emissions factors: Methodology paper* [online] available at: <http://www.defra.gov.uk/environment/business/envrp/pdf/passenger-transport.pdf> (accessed 14 May 2008).

exercise caution, as actual decreases in NO₂ concentrations at some sites may be considerably smaller than those calculated using these adjustment factors”⁷.

Nevertheless, one can assume that, in most parts of the region, future air quality to 2020 / 2025 will be better than today’s. After that, air quality is expected to get worse because the increase in vehicle use will outweigh technical improvements; and because no further significant technical improvements are expected. In the longer term, shipping and aircraft emissions are also expected to increase significantly⁸.”

As such, ‘in combination’ impacts are likely to be insignificant.

3.2 Water Quality

Baseline situation

Oxford Meadows SAC straddles the north western boundary of Oxford. Most of it is therefore upstream of the large urban areas of Oxford. However, a study of ‘The Hydrology of the Oxford Meadows’⁹ states that ‘The Second Terrace Gravels (Summertown Radley Terrace) on which much of Oxford is built appears to be a source of groundwater recharge (Eyles 1986) with groundwater/surface water flowing south and west across Port Meadow to the Seacourt Stream.’

Water quality is firmly within the remit of the Environment Agency and the Water companies.

Possible impact of the Core Strategy

The Core Strategy could affect water quality in two ways: 1. through pollution of the groundwater, and 2. through effluents from wastewater treatment works.

Pollution of groundwater in north Oxford. Given that most of the North Oxford gravel terrace is already developed, the impact on nutrient enrichment and water quality would probably not be significant. However, two strategic locations for development that have been identified are on the North Oxford gravel ridge, namely Pear Tree/Northern Gateway and land at Summertown. Pear Tree/Northern Gateway is only 500 metres from the Oxford Meadows at its closest point.

The potential for development at Peartree/ Northern Gateway and Summertown and the likelihood of significant effects as result of development at these two strategic locations has been discussed with the Environment Agency.

Oxford City Council Adopted Local Plan contains a policy that specifically deals with groundwater and water quality. Policy NE.13 deals with the prevention of surface or groundwater pollution. Oxford City Council Adopted Local Plan Policy NE.13 states:

Planning permission will only be granted for development that will not cause a deterioration in surface or groundwater quality. Appropriate measures to prevent pollution will be required. The applicant may be required to submit details of an

⁷ Air Quality Expert Group (2007) *Trends in primary nitrogen dioxide in the UK*, <http://www.defra.gov.uk/environment/airquality/publications/primaryno2-trends/pdf/executive-summary.pdf> (accessed 7 July 2008)

⁸ J. Stedman and S. Grice, pers. comm., June 2008.

⁹ A. Dixon (2005) *The Hydrology of Oxford Meadows*

investigation of the site and any precautionary measures, which are proposed. Precautionary measures will be secured through planning conditions or a planning obligation.

This policy has been saved, and will continue, until it is replaced by an equivalent policy in an appropriate Development Plan Document. Applicants will be required to comply with it when they submit proposals for development on the North Oxford Gravel terrace.

Effluent from wastewater treatment works (WWTW). Oxford Meadows SAC is located towards the north / upstream of the city. Sewage treatment will be dealt with at Sandford Sewage Treatment Works, which is located just outside Oxford on its southern boundary, downstream of the SAC.

Oxford City Council is not proposing a level of development that exceeds the capacity of waste water treatment works. Throughout the production of the Core Strategy, Thames Water have been consulted and have supported the proposed new housing both in Oxford and to the South of the City in the proposed Strategic Development Area. Thames Water stated that they would be able to cope with any additional demand placed on them at the WWTW.

Oxford City Council also has an adopted SPD, which deals with a variety of issues, including water resources. The SPD currently requires all developments over a certain threshold size to undertake a Natural Resource Impact Analysis (NRIA). One of the objectives of the NRIA is to incorporate the minimisation of water resources and encourage the use of water saving devices in new developments. The requirement for developers to submit an NRIA will be incorporated in the Core Strategy.

Additional measures, such opportunities for reedbeds, sustainable drainage, etc., should be investigated later on in the planning process, (Natural England's Category B, for "down the line" assessments), for instance, through the production of the Northern Gateway AAP, or at the detailed masterplanning/ application stage.

As such, water quality impacts as a result of the Oxford Core Strategy are unlikely to have a significant effect on the Oxford Meadows SAC.

Possible 'in combination' impacts

Nutrient enrichment could potentially occur as a result of the application of fertilizers upstream of Oxford Meadows SAC (outside the boundary of the City. Effluent discharges upstream from Oxford could also potentially affect water quality. However The Environment Agency only gives consent to developments that will allow water quality standards to be met. The Environment Agency has recently increased the consented discharge at Sandford, to the South of Oxford, from 90,000 to 120,000 cubic metres a day.¹⁰

As such, development in Oxford will not have any 'in combination' water quality impact on the Oxford Meadows SAC.

¹⁰ Environment Agency (February 2008) CAMS update www.environment-agency.gov.uk

3.3 Balanced Hydrological Regime

Baseline situation

Oxford's water comes from Farmoor reservoir, which derives its water from the River Thames. Thames Water has an abstraction licence for abstracting water at Farmoor reservoir, which is currently close to being fully utilised. As the Oxford Meadows SAC forms part of the river Thames flood plain, there is the potential for water abstraction from the Thames to affect the hydrology of Oxford Meadows. The Environment Agency has undertaken a study on the Oxford Meadows SAC in relation to the abstraction licence that it allows from Farmoor Reservoir and their likely effects on the Oxford Meadows SAC.

The Environment Agency regulates (audits/ controls/ limits) Thames Water's abstraction licence from Farmoor. According to the Catchment Abstraction Management Strategy for the River Thames February 2008 update (produced by the Environment Agency), in February 2007, in consultation with Thames Water, the Environment Agency replaced several unused licences in rural Oxfordshire and Berkshire with an increase in a large licence at Gatehampton on the River Thames. The increase, from 25,620,000 to 31,279,770 cubic metres a year, made more water available to supply the Oxford area.

Thames Water has made provision to bring additional water supplies from another area – GATOX (Cleeve). The Cleeve source will provide Thames Water with an additional limited resource which Thames Water estimate will, under current planning horizons, provide water up to 2020.

The Environment Agency also increased the consented discharge at a sewage treatment works at Sandford, to the south of Oxford, from 90,000 to 120,000 cubic metres a day. The potential impact of the abstractions has therefore moved downstream from sensitive tributaries to the main river, where it has been further mitigated by returning the water upstream of the point of abstraction.¹¹

Possible impacts from the Oxford Core Strategy

According to the Audit Commission, annual water use per capita in Oxford is 59,860 litres. If the City Council follows the South East Plan Panel's recommendation for 8,000 dwellings to be built in Oxford over the next 20 years, plus an additional 4,000 dwellings are built in the proposed South Oxford Strategic Development Area, and there are 2.32 persons per household, giving a total population increase of 27,840, the total increase in water consumption would be 1,666,502,400 litres per year. In addition there is the extra water that will be used by non-residential development: commercial, hospital etc.

However, while a significant volume of water, this still constitutes a small proportion of the total extracted from the Thames at Farmoor /Swinford. The total water supply from these sites is between 140 and 160 million litres a day or 58,400 million litres a year. Based on these figures the increase in the water consumption from Farmoor/ Swinford arising from the implementation of the Core Strategy residential development would amount to 2.85%. Thames Water has confirmed that the figures for volumes of water abstracted at Farmoor Reservoir are fairly accurate and consider them suitable for inclusion in the Appropriate Assessment of the Oxford Core Strategy. The Environment Agency's increase in the abstraction licence is able to accommodate the estimated increase of 1,666,502.4 cubic metres anticipated by the Oxford Core Strategy.¹² The EA were contacted as to whether this increase would be able to

¹¹ Environment Agency, CAMS update February 2008

¹² Environment Agency, CAMS update February 2008

accommodate development in the Oxford Core Strategy. The EA responded that it would be unlikely to have a significant impact on the Oxford Meadows SAC.

Furthermore, the City Council has adopted a Natural Resource Impact Analysis Supplementary Planning Document (NRIA SPD). This requires new developments to look at the issue of minimising the use of water resources, and encourages new developments to look at measures such as water-saving devices; rainwater collection/harvesting and grey water recycling. The preferred target is to achieve a 30% reduction of average water use, though the minimum standard is simply not to exceed the *current average water consumption*. The Oxford 2026 Core Strategy Proposed Submission Document also has a policy CS11 on Energy and Natural Resources. Developments on qualifying sites will be expected to demonstrate that they have minimised water consumption by incorporating appropriate design and technologies. Any targets will be set in an appropriate level Local Development Document.

Groundwater flow from the north Oxford Gravel terrace may have an important role in maintaining water levels in the Wolvercote Common/Port Meadow area of the Oxford Meadows SAC. It is important, therefore, that new development in north Oxford, including Peartree/Northern Gateway, includes provision for sustainable drainage so that rainwater is able to continue to percolate into the ground, in order to avoid diminishing this water resource. The city council has an adopted Local Plan policy, NE.10 relating to this issue, which states that:

Planning permission will only be granted for developments that would not significantly increase surface water run-off. Wherever practicable, this will be through the use of sustainable drainage systems. The city council will require developers to demonstrate that they have made appropriate provision for surface water drainage and that this would effectively mitigate any potential adverse impact from surface water run-off.

This is supported by Planning Policy Statement (PPS) 25 on Development and Flood Risk, which states in paragraph F6 that surface water arising from a developed site should, as far as practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account.

Given these mitigation measures, the impact of the Oxford Core Strategy is therefore unlikely to have a significant effect on the balanced hydrological regime of the Oxford Meadows SAC.

Possible 'in combination' impacts

Development in Oxfordshire and Swindon uses water from the River Thames catchment upstream of Oxford Meadows. This could affect the hydrology of the Oxford meadows SAC as it is likely to lead to increased abstraction from the Thames. Residential development in Oxford alone over the Core strategy period is likely to increase the water supply needed from Farmoor/Swinford by 2.85%. With significant development proposed at Swindon and Bicester, both of which currently derive much of their water supply from Farmoor/Swinford the total increase in water supply from this source could be significant, which would increase the amount of water being extracted from the Thames. Development of a proposed eco-town of 10,000 – 15,000 homes at Weston Otmoor and 1,000 homes at Upper Heyford (Cherwell District Council) could also increase water abstraction.

This is likely to be mitigated by the new pipeline that Thames Water are constructing from Goring to Fyfield, which will enable more of Swindon's water supply to be derived from the borehole at Cleeve. Adverse impacts would be most likely to arise in drought conditions, when a

drought permit may be issued allowing additional abstraction from the Thames. This happened, for example, in November 2003 when abstraction of up to $90,000\text{m}^3\text{day}^{-1}$ (rather than $59,100\text{m}^3\text{day}^{-1}$) was permitted when flow was less than $136,380\text{m}^3\text{day}^{-1}$. However, water levels in the Thames have not dropped enough to affect the meadows since the drought of 1976. The low flow conditions of 2003 did not approach the severity of 1976. The probability of a repeat of 1976 conditions is dependent on water demand and future drought patterns.¹³

The Panel report for the Draft South East Plan states that "...with [an] 8% energy saving (which should be achievable following current strengthening of the Building Regulations) and continued development of water supply resources by the water companies shows that with the draft Plan housing levels, all water resources zones except Milton Keynes will experience an approximate supply-demand balance or small surplus at 2016 and 2026."

Gravel extraction to meet the increased primary aggregate targets (South East Plan Policy M3) could affect the hydrology of the site. The SA of the draft South East Plan states in paragraph 12.3.2 that 'expansion of quarrying within the catchment of the Oxford Meadows SAC may lead to problems of maintaining groundwater levels in part of the site.' While development in Oxford will require the use of additional aggregates, these are serving a nationwide catchment and even if the amount of development in the Core Strategy was reduced this would not have a direct effect on gravel extraction in the vicinity of the Oxford Meadows SAC. While therefore it is important to reduce the use of aggregates and to maximise re-use and recycling, this would be unlikely to reduce the need for gravel extraction in the vicinity of the Oxford Meadows.

The Environment Agency's flood alleviation scheme for Oxford, which is likely to consist of enlargement of existing watercourses and/or creating flood relief channels, may affect the flooding regime of the River Thames. Natural England has stipulated that a key requirement of the Oxford flood relief scheme is that it does not have an adverse impact on the Oxford Meadows hydrological regime.

The Environment Agency was contacted with regard to the potential 'in-combination' impacts of other plans and projects on the Oxford Meadows SAC. The Environment Agency conducted an HRA for the abstraction license at Farmoor – the only abstraction likely to have an impact on Oxford Meadows SAC. The EA stated that because of the way that water in the River Thames is controlled – through weirs and locks, flows could be maintained along the river. Because flow is controlled in this manner, the EA stated that 'in-combination' impacts of other plans and programmes, would be unlikely to have a significant effect on the Oxford Meadows SAC.¹⁴

Given the above, it is unlikely that there will be any 'in-combination' impacts with regard to the hydrology of the Oxford Meadows SAC.

¹³ David M Cooper 'Water Levels in three monitoring transects across Yarnton and Pixey Meads, Oxford, during 2004: Inferences on the effect of abstraction from the Thames at Farmoor Reservoir' CEH Wallingford, October 2005 pages ii & 8.

¹⁴ Personal Communication with the EA, August 2008

3.4 Recreational pressure

Baseline situation

Extensive public use is already made of the Oxford Meadows SAC for informal recreation without an adverse impact on *Apium repens*, the species for which it has been designated a SAC. This species is not particularly sensitive to trampling and also thrives in the wettest areas, where there is least recreational pressure for most of the year. The remaining areas of the SAC are further away and have very limited or no public access, with no ready access from Oxford as they are on the north side of the Thames towpath.

Possible impacts of the Core Strategy

Public consultation carried out by Scott Wilson as part of their 'Oxford City Green Space Study' revealed that people are willing to walk approximately 1,900 metres to important green spaces such as Oxford Meadows SAC, which includes the Oxford Meadows SAC. 1,900 metres from Oxford Meadows SAC covers all of north and west Oxford, including the proposed strategic development sites at Peartree/Northern Gateway, the West End and the land at Summertown. Peartree is being considered only for employment-led uses. As such it should not significantly affect recreational use of Oxford Meadows SAC. Land at Summertown is identified as a suitable site to meet longer-term residential development needs. It may not necessarily come forward for development within the period covered by the Core Strategy. The railway line, canal and St Edward's School sports ground create significant severance from Oxford Meadows SAC. Regular use from residents of Summertown is therefore unlikely. In any event, new public open space created as part of any future development in Summertown would be likely to ease potential recreational pressure from Summertown on Oxford Meadows SAC.

The other main area of new housing within 1,900 metres of Oxford Meadows SAC will be in the West End. The West End is only 800 metres from the southern end of Oxford Meadows SAC. It is likely that some people will use this area of the SAC for recreational purposes. However, a key aim of the West End development is to improve the public realm and green spaces in the area, offering enhanced recreational opportunities. The creation of a linear park along Castle Mill Stream, improvements to Oxpens Field and to the path along the Thames are all being made to the West End of Oxford in order to improve the environment (in all senses of the word) of the area. Amenity space and play areas to serve the new residential development will also be required. It is expected therefore that many recreational needs will be met within the West End, which will reduce the pressure on Oxford Meadows SAC. There are also already extensive alternative areas of green space that residents of the West End would be able to use including Grandpont Nature Park, Christchurch Meadows and the University Parks.

An important aim of the Core Strategy is to ensure that adequate green space is provided as part of new developments. To this end the Core Strategy will use the citywide target of 5.75 ha of green space per 1,000 population as recommended by the Oxford Green Space study (Scott Wilson). The Core Strategy will be worded to ensure that larger developments provide appropriate on-site green space. Contributions will continue to be taken to improve the quality of existing open space. Opportunities will also be sought to open up new areas of green space to the general public. It is expected therefore that many of the recreational needs of new residents will be met by new green space provision as well as by the extensive areas of existing green spaces. The new green areas could also draw existing users away from the SAC, which would help to reduce recreational pressure.

The Oxford Core Strategy is therefore unlikely to have a significant effect on the balanced hydrological regime of the Oxford Meadows SAC. This has therefore been screened out at this stage of the assessment.

Possible 'in combination' impacts

There has been extensive development in the Oxford canal corridor over recent years, but this is now largely complete. Few other sites have been allocated for residential development within 1900m of the Oxford Meadows SAC in the 'Oxford Local Plan 2001-2016'. One such site is the Wolvercote Paper Mill, allocated for a mix of employment and employment generating uses. In north Oxford there are few other opportunities for residential development, other than infilling and potential redevelopment of existing properties. This is mainly due to the extensive area of the Oxford flood plain. Access to the Oxford Meadows SAC from the existing residential areas in north Oxford is limited by the severance created by the main Oxford to Birmingham railway line.

The recently adopted West End Area Action Plan proposes 800 new homes as well as 2ha of employment land. The West End of the city is within 1900m of the Oxford Meadows SAC. However, there are already a number of accessible green spaces within Oxford, including University Parks and Christchurch Meadows. Access to the Oxford Meadows SAC is not easy. As such 'in combination' impacts are thus unlikely.

Table 3.3 showing a summary of all impacts including 'in-combination' effects

Site	Qualifying Features	Key environmental conditions to support site integrity*	Possible impacts arising from plan	Is there a risk of significant effect	Possible impacts from other trends, plans, etc.,	Is there a risk of significant 'in-combination' effects?
Oxford Meadows SAC	<p>Lowland hay meadows in the Thames Valley centre of distribution.</p> <p>Site includes vegetation communities that are perhaps unique in the world in reflecting influence of long-term grazing and hay-cutting on lowland hay meadows.</p> <p>Site benefited from survival of traditional management, which has been undertaken for several centuries.</p> <p>Site exhibits good conservation of structure and function.</p> <p>Oxford Meadows is selected because Oxford Meadows SAC is the larger of only two known sites in the UK for creeping marshwort <i>Apium repens</i>.</p>	<p>Minimal air pollution - NOx may cause reduction in diversity</p>	<p>Development of 4,000 new houses and 4,500 new jobs as a result of the Core Strategy, particularly with the allocation of a strategic employment site (Peartree) could result in an increase in air pollution</p>	No	<p>Development of 55,200 new homes in Oxfordshire, as proposed in policy H1 of the draft South East Plan, and 80,000 new homes and 2 million square metres of new business floorspace in South Hampshire, as proposed in policy SH3 of the Proposed Modifications to the South East Plan could increase pressure to use the A34.</p>	<p>Unlikely to be significant in the Core Strategy period due to tightening of European emissions standards for cars/ lorries and cleaner energy generation.</p>
		<p>Absence of nutrient enrichment of waters; good water quality/ Flood waters that are not from a eutrophic source.</p>	<p>Two strategic locations for development have been identified are on the North Oxford gravel ridge, namely Pear Tree/Northern Gateway and land at Summertown</p> <p>Pear Tree/ Northern Gateway is only 500 metres from the Oxford Meadows at its closest point.</p>	<p>Most of the North Oxford gravel terrace is already developed the impact on nutrient enrichment and water quality would be unlikely to be significant.</p> <p>Discussions with the EA confirmed that development at Peartree/ Northern Gateway unlikely to have significant impact on Oxford Meadows SAC.</p>	<p>Nutrient enrichment could potentially occur as a result of the application of fertilizers upstream of Oxford Meadows (outside the city boundary). This will not be affected by spatial planning policy.</p> <p>It could also arise from effluent discharges upstream of Oxford.</p> <p>Any impact from development upstream would need to be considered by the relevant Appropriate Assessment.</p>	<p>Little or no impact</p>

	Balanced hydrological regime – alteration to adjacent rivers may alter flooding regime and reduce botanical diversity.	Closest development is Peartree/ Northern Gateway. Given the size and scale of this development it is unlikely that significant effects on groundwater flow that would affect the hydrology of the Oxford Meadows SAC would take place.	No	Development in Oxfordshire and Swindon uses water from the River Thames could affect the hydrology of the Oxford Meadows SAC.	Unlikely to be significant as EA has investigated abstraction license at Farmoor.
	Recreational pressures	Few opportunities for residential development in North Oxford so unlikely to increase recreational pressure.	No	Unlikely	The area close to Oxford Meadows outside of Oxford is Green Belt and flood plain so is unlikely to be developed.

*Identified at an appropriate assessment screening workshop carried out for the South East Plan

Conclusions

The Oxford Meadows SAC is currently judged by Natural England to be in a favourable condition. This screening opinion has concluded that none of the policies in the Oxford 2026 Core Strategy Proposed Submission Document are likely to have significant effects on the Oxford Meadows SAC with regard to the following environmental requirements of the site:

- Maintenance of traditional hay cut and light aftermath grazing
- Absence of direct fertilisation
- Minimal Air Pollution
- Absence of nutrient enrichment of waters; good water quality
- Balanced Hydrological Regime
- Recreational pressures