

Planning Policy

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Oxford City Council

Habitat Regulations Assessment for the Northern Gateway Area Action Plan

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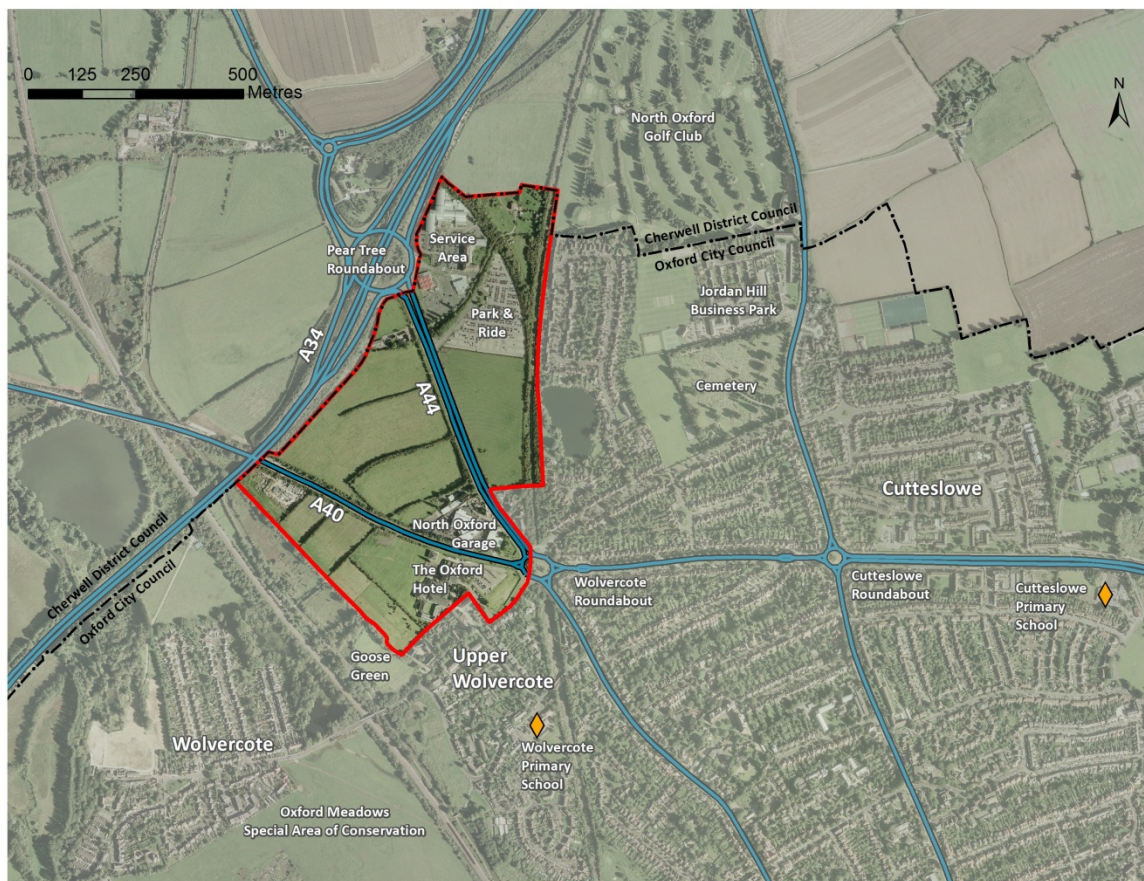
1. Introduction

- 1.1 This report discusses Stages 1 (screening) and 2 (appropriate assessment) of the Habitats Regulations Assessment (HRA) for the Northern Gateway Area Action Plan (AAP).
- 1.2 An HRA was carried out for the Oxford Core Strategy. Following adoption of the Core Strategy, a final version of the Core Strategy HRA was produced in order to bring together the previously published material and to reflect wording incorporated in the adopted Core Strategy.
- 1.3 An HRA was also published to accompany the Sites and Housing Plan. This included an assessment of the likely recreational impacts of new homes proposed in the Core Strategy at the Northern Gateway in relation to the 'in-combination' effects.

Summary of the Area Action Plan

- 1.4 The City Council is now producing an AAP which looks at bringing forward an employment led mixed use development at the Northern Gateway. The AAP will guide the future development and change at this 44 hectare site. The Northern Gateway represents the only opportunity in the city to bring forward a large scale employment led mixed use development within Oxford. Figure 1.1 shows a map of the Northern Gateway site.

Figure 1.1: Location of the Northern Gateway site



- 1.5 The AAP for the Northern Gateway proposes the following:
- Up to 90,000m² of employment floorspace
 - Up to 500 new homes
 - A range of local scale retail uses (up to a total of 2,500m² gross internal area)
 - A Hotel (120-180 bedrooms) with associated leisure facilities
 - Refurbishment of the A34 services area in the north of the site
 - A full transport solution that mitigates the impacts of development and helps address existing traffic concerns, including a new on-site link road (A40 and A44) and significant improvements to public transport services and priority, walking and cycling
 - An enlarged Park and Ride facility
 - Useable, good-quality green public open space (at least 15% of site area including that occupied by housing)
 - Review of the Green Belt within the AAP boundary, and
 - A district/central renewable energy scheme within the site.
- 1.6 The Northern Gateway AAP sets out a series of policies including one reflecting a highly focussed Green Belt review, the upper limits of development at the site; the type and amounts of employment floorspace; high quality pedestrian and cycle links; road improvements; parking standards; design and amenity considerations; district heating; phasing and the delivery of infrastructure.

Requirements of the Habitats Directive

- 1.7 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 light of the conclusions of this assessment of the implications for the site and subject to the provisions in paragraph 4, the competent national authorities shall agree to the plan or project only 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.'*
- 1.8 Article 6(4) of the Habitats Directive discusses alternative solutions, the test of 'imperative reasons of over-riding 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 over-riding 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.'*
- 1.9 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

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

are imperative reasons of over-riding 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.

1.10 The Habitats Directive was implemented into UK legislation through the “Conservation (Natural Habitats, & c) Regulations 1994”). The currently relevant piece of legislation is The Conservation of Habitats and Species Regulations 2010 (as amended) and is generally known as the Habitats Regulations.

Methodology Used for this Habitat Regulations Assessment

- 1.11 A Habitat Regulations Assessment can involve up to a four stage process:
1. **Screening:** Determining whether a plan ‘alone or 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 ‘alone or in-combination’ would have an adverse effect (or risk of this) on the integrity of the site. If not, the plan can proceed
 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**
- 1.12 This HRA covers Stages 1 & 2 of the process. Oxford City Council has undertaken this HRA “in-house” and it was audited by Levett-Therivel Sustainability Consultants. Stage 1 was carried out between October 2013 and January 2014.
- 1.13 Stage 2 was carried out between March 2014 and July 2014. Broadly the HRA process involved:
- Identification of European sites that could possibly be affected by Oxford City Council’s Northern Gateway AAP, qualifying features of those sites and, where available, key environmental conditions to support the sites’ integrity
 - Identification of possible impacts arising from the Northern Gateway AAP, in combination with other relevant plans and projects;
 - Draft identification of impacts and sites that could be screened out, and those that were likely to require more detailed appropriate assessment;
 - Consultation with Natural England to confirm that the proposed approach for the Appropriate Assessment was acceptable, and what additional information was required to complete the analysis (see Appendix 1);
 - Collection of more detailed data from a wide variety of sources.

2. Screening

- 2.1 This section begins by describing the European sites that could possibly be affected by the AAP. It then explains how the HRA for the Oxford Core Strategy sets the context for this HRA by narrowing the analysis to one site (Oxford Meadows SAC) and three types of impact: air quality; hydrology and water quality; and recreation. It analyses all of the policies in the plan and takes a holistic overview of the implications of developing the area action plan as a whole.

European Sites

- 2.2 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 areas for Cherwell District Council and West Oxfordshire District Council	<p>Annex I habitats that are a primary reason for selection of this site Oxford Meadows represents lowland meadows in the Thames Valley centre of distribution³. This site includes vegetation communities that are perhaps unique in the world reflecting the influence of long-term grazing and hay-cutting on lowland meadows. The site has benefitted from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function.</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>

² www.jncc.gov.uk

³ The JNCC maps show the distribution of lowland meadows habitats across the UK.

Cothill Fen SAC	Located 7 kilometres from the city boundary	<p>Annex I habitats that are a primary reason for selection of this site</p> <p>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 M13⁴ <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 site boundary	<p>Annex II species that are a primary reason for selection of this site</p> <p>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 land 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>

Oxford Core Strategy

- 2.3 An HRA was carried out for the Oxford Core Strategy. The Oxford Core Strategy sets out the strategic locations for housing and employment developments within Oxford as well as setting out a number of more general policies on climate change, housing, transport and employment. The Oxford Core Strategy also specifies the amount of housing required to 2026.
- 2.4 The HRA for the Core Strategy examined whether the policies within the Core Strategy would adversely affect the integrity of any European Sites within 20km of the City. Of the three sites that were within 20km of Oxford, two were screened out, and an appropriate assessment was undertaken in relation to the Oxford Meadows SAC.
- 2.5 The HRA for the Core Strategy considered whether the following could have an adverse impact on the Oxford Meadows SAC:
- increased water abstraction;
 - effluent discharge;
 - reduced air quality; and
 - increased recreational pressure

⁴ M13 (mire), M24 (fen meadow) and S25 (tall-herb fen) are national vegetation classification types for particular plants associated with types of habitat.

- 2.6 The appropriate assessment for the Core Strategy concluded that none of the policies in the Core Strategy were likely to have adverse effects on the integrity of 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 pressure
- 2.7 The Core Strategy Examination Inspectors referred to the HRA in their report. They summarised the HRA process, and noted that the original and updated assessments considered in detail impacts relating to air quality, the hydrological regime, and increased recreational pressure. The Inspectors recommended the need for some further work at a more detailed planning stage for the Northern Gateway and Summertown strategic areas, to confirm that the Core Strategy would not have a significant impact on the Oxford Meadows SAC.
- 2.8 The Core Strategy included an important paragraph in relation to the Northern Gateway at paragraph 3.4.43:
- 'If the results of these further assessments [a full hydrological risk appraisal; air quality modelling and analysis; and a recreational assessment] show that part of the Strategy cannot be delivered without adverse impacts on Oxford Meadows SAC, which cannot be fully mitigated, the plan will only make provision for level and location of development for which it can be concluded that there will be no adverse effect on the integrity of the SAC, even if this is below that in the strategic allocation.'*
- 2.9 The Core Strategy HRA concluded that there may be a tension between the competing objectives of, on the one hand achieving the Northern Gateway in its current form and, on the other hand, protecting the interests of the Oxford Meadows SAC. The City Council agreed with Natural England and the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT) that a conditional approval was the appropriate way to reconcile these tensions.
- 2.10 In April 2011 a legal challenge to Oxford City Council's decision to adopt the Core Strategy was put forward. On 28 June 2011 the Council successfully applied to strike out and/ or dismiss the Claimants claim on the grounds that the Claimant had no real prospect of success. The High Court found that: *"the conditional approval is a permissible and lawful course of action"*.
- 2.11 In paragraph 92 of the Judgement⁵ it is recognised that *"the Core Strategy is a high level strategic document and the detail falls to be worked out at a later stage. Subsequent appropriate assessment of specific proposals is indeed necessitated under the regime"*. In this case the details that were to be worked out at a later stage included an assessment of how increased recreational pressure as a result of housing development at the Northern Gateway would impact on the Oxford Meadows SAC. More importantly, the Judgement clarifies the issue of whether subsequent DPDs should have their own appropriate assessment:

⁵ A weblink to the judgement can be found here:
<http://www.chiltern-evergreen3.co.uk/uploads/02May2012/OBJ123-32.pdf>

'Each appropriate assessment must be commensurate to the relative precision of the plans at any particular stage and no more. There does not have to be an appropriate assessment at the Core Strategy stage, but such an assessment cannot do more than the level of the strategy at that stage permits... If the use of a "safeguard" condition... was impermissible, proposals would have to be ruled out altogether at the Core Strategy stage and there could be no scope for subsequent assessment at a later stage, as specifically envisaged by Adv. General Kotott.'

- 2.12 The HRA for the Northern Gateway AAP should therefore be more detailed than the HRA for the Core Strategy.

Sites and Housing Plan

- 2.13 An HRA was carried out for the Sites and Housing Plan. The Sites and Housing Plan updated the housing policies and the site allocations policies from Oxford's Local Plan. All of the housing policies and the majority of the sites were screened out of the assessment based on criteria agreed with Natural England. The remaining sites were taken forward and their impacts assessed against the conservation interests of the site. Mitigation measures were put forward in relation to each conservation objective and included the following:
- Limited use of basements where development sites could be located on the gravel terrace;
 - Reliance on saved policies on groundwater and water quality; and
 - Provision of information boards, dog and litter bins and in some cases alternative recreational space for dog-walkers.
- 2.14 With these mitigation measures, the HRA concluded that the Sites and Housing Plan would not have any adverse impacts either alone or in combination on the integrity of the Oxford Meadows SAC.

Screening Methodology

- 2.15 This HRA for the Northern Gateway AAP considers only impacts on the Oxford Meadows SAC, for the same reasons that the HRA for the Core Strategy screened out all European sites except the Oxford Meadows SAC.
- 2.16 Table 2.1 explains the reasons for which the Oxford Meadows have been designated as a SAC. Natural England's report on the condition of Oxford Meadows from 6 July 2010 indicates that the Oxford Meadows SAC is in a favourable condition.⁶
- 2.17 The following key requirements to support the integrity of the Oxford Meadows SAC were agreed at a 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

⁶ Web-link to condition of SSSI units for Oxfordshire (includes units that make up the Oxford Meadows SAC) <http://www.sssi.naturalengland.org.uk/special/ssi/reportAction.cfm?Report=sdrt13&Category=C&Reference=1033>

5. Absence of direct fertilisation
- 2.18 A further workshop on HRA for the Oxford Core Strategy raised the additional issues of ensuring recreational pressures are maintained at a reasonable level.
- 2.19 Requirements for the maintenance of traditional hay cut and light aftermath grazing; and for the absence of direct fertilisation are related only to the management of the SAC, and are not affected by the location of housing or employment development. The other requirements are the subject of this report.
- 2.20 For the HRA of the Core Strategy, Natural England recommended that the effects of the DPD be categorised in the form of a schedule. This approach has been adopted for the Northern Gateway AAP. This allows policies with no negative effect on European sites to be eliminated from further appraisal, so that the appraisal can concentrate on those policies with possible effects.
- 2.21 The schedule provided by Natural England is as follows:
- **A** – Policies and proposals that cannot have any negative affect on a European Site
 - **B** – Effects will be addressed “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 an 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

How were the policies screened in and out of the assessment?

- 2.22 This section sets out the considerations that have been given as to why the policies in the plan have been screened out in relation to each of the conservation objectives for the site.

Air Quality

- 2.23 The HRA for the Core Strategy found that there were would not be any likely impacts on the Oxford Meadows SAC subject to additional wording that was added to the Core Strategy itself at paragraph 3.4.41. The additional wording that was added to the Core Strategy was as follows:

‘The [Northern Gateway] Area Action Plan must also be supported by more detailed air quality modelling and analysis to show that there will not be any localised adverse effects on the SAC resultant from construction or increased road trips on roads within 200m of European sites.’

- 2.24 The HRA for the Core Strategy also states that:

'English Nature (now Natural England's) advice⁷ 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 200m of a European site. Natural England recommended looking at Interim Advice Note 61/05 (Guidance for Undertaking Environmental Assessment for Sensitive Ecosystems in Internationally Designated (Nature Conservation Sites and SSSIs)) which provides information about nitrogen deposition as well as Nitrogen Oxides (NOx) emissions at the local scale.'

2.25 Interim Advice Note 61/05 states:

'If there are no Designated Sites within 200m of an affected road, there is no need to proceed further with this air quality assessment. 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, the site 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.'

2.26 Within the boundary of Oxford City, the section of the A40 that bisects the Northern Gateway is more than 200m from the boundary of the Oxford Meadows SAC. Outside the city boundary, the A40 runs adjacent to the Oxford Meadows SAC. The A34 provides the boundary of Oxford City and this bisects the Oxford Meadows SAC at Pixey/ Yarnton Mead.

2.27 Since the HRA for the Core Strategy was prepared, a district/shared energy scheme has been proposed as part of policy NG9 of the Northern Gateway AAP. Depending on the scheme's size, location, type of fuel etc., this could also have an impact on air quality in the area. Oxfordshire County Council and Oxford City Council generally support the use of locally-produced biomass heating schemes, and a district/shared biomass boiler could be appropriate for the site. However this would need to be assessed as part of a separate, later appropriate assessment. Given the uncertainty, policy NG9 has been changed to include the proviso:

'A district/shared energy scheme will be delivered at the Northern Gateway subject to an Appropriate Assessment showing that this would not have a significant air quality impact on the integrity of the Oxford Meadows SAC.'

2.28 The HRAs of the neighbouring authorities of Cherwell and South Oxfordshire both screened out 'in-combination' impacts on air quality based on the (then) most up to date evidence, and so Oxford City Council's initial HRA Screening Report also screened out 'in-combination' air quality impacts. However, several respondents to the Northern Gateway AAP Options Consultation suggested that 'in-combination' air quality impacts should be looked at as part of the appropriate assessment. The City Council has reviewed these comments and has undertaken an assessment of 'in-combination' impacts on air quality. The results of this can be found from paragraph 3.11 of this report.

Balanced Hydrological Regime

2.29 The HRA for the Oxford Core Strategy states that:

'...three main sources of water to the meads have been identified to support the plant communities on the Oxford Meadows SAC. These are direct rainfall, surface water and groundwater flowing in from outside the area. Any one of these sources, or a

⁷ English Nature (16 May 2006) letter to Runnymede Borough Council 'Conservation (Natural Habitats & c.) Regulations 1994, Runnymede Borough Council Local Development Framework

combination, may contribute to the soil water, which supports the plant communities on the meads⁸.

- 2.30 The HRA for the Core Strategy ruled out the likelihood of impacts on the SAC from surface water and direct rainfall. It explained that the abstraction licence for Farmoor Reservoir at present does not impact on the SAC, and no increases to this licence are proposed. As such the amount of surface water is likely to remain throughout the Core Strategy period.
- 2.31 Groundwater recharge is a hydrologic process where water moves downward from surface water to groundwater. The Second Terrace Gravels on which Oxford is built appears to be a source of groundwater recharge⁹.
- 2.32 A Preliminary hydro-geological review was undertaken in 2009 by Peter Brett Associates to assess the potential and direct effects of the Northern Gateway on the adjacent designated conservation areas (including the Oxford Meadows SAC). The report described the geo-environmental setting of the Northern Gateway site and provided a desk-based analysis of the geology and hydrogeology; and the groundwater vulnerability and hydrology.
- 2.33 In terms of the underlying geology, the report found that the majority of the site was on Oxford Clay with Terrace Deposits on the south-west edge of the site, and a narrow band of Alluvium along the south-west edge. The report considered that development over on within the impermeable Oxford Clay layer would be unlikely to significantly impact the hydro-geological and groundwater regime and its surrounding areas, including nature conservation sites.
- 2.34 Additional ground investigations have been carried out to determine the underlying geology and the impacts on the hydrological regime at the Oxford Meadows to support the HRA for the Northern Gateway. The findings of this investigation are discussed starting at paragraph 3.31 of this report.

Water Quality

- 2.35 Water quality issues were considered by the HRA for the Core Strategy, which resolved the issues of potential pollution through effluents from wastewater treatment works and potential groundwater pollution. The Sites and Housing Plan proposed some new sites on the North Oxford gravel terrace. The HRA for the Sites and Housing Plan noted that pollution of groundwater at these sites could impact on the water quality of the SAC. However, through additions to policy wording in the plan it was possible to ensure that these sites would not have an adverse impact on the water quality which supplies the SAC. It was also concluded that Sustainable Drainage should be used to ensure that the quality of groundwater would not be adversely affected.
- 2.36 The Core Strategy states at paragraph 3.4.40 that:
'The Council will require the [Northern Gateway] Area Action Plan to be supported by a full hydrological risk appraisal to demonstrate that there will be no change in the hydrological regime of Oxford Meadows SAC, in terms of water quantity or quality. This will form part of an Appropriate Assessment which will be undertaken for the Area

⁸ Direct quote from the HRA for the Oxford Core Strategy which references the following: A. Dixon (2005) The Hydrology of Oxford Meadows

⁹ Eyles, A. R., (1986) An Investigation into the geology and groundwater of the Summertown-Radley river terrace, Oxford, Undergraduate thesis, Coventry (Lancaster) Polytechnic.

Action Plan to meet the requirements of the Habitats Regulations. The current groundwater recharge will be maintained, including the incorporation of sustainable urban drainage systems, such as porous surfacing, grassy swales and infiltration techniques.'

- 2.37 The Core Strategy Policy states the following on Sustainable Drainage:
'Development proposals will be expected to incorporate sustainable drainage systems or techniques'.
- 2.38 Water quality is linked to the balanced hydrological regime and as such the same policies have been screened out or taken forward to the appropriate assessment stage.

Recreational Impacts

- 2.39 The Core Strategy states at paragraph 3.4.42 that:
'The [Northern Gateway] Area Action Plan must also be supported by an assessment to show that there will not be any effect on the integrity of the SAC from recreational pressure arising from the development.'
- 2.40 Natural England agreed at a meeting in September 2011 that *A. Repens* (creeping marshwort) is not particularly sensitive to trampling. However it is sensitive to dog-fouling. The Sites and Housing Plan HRA screened non-residential uses (and student accommodation) out of the assessment process. This is because only new homes are likely to lead to an increase in dog-walkers at the Oxford Meadows SAC.
- 2.41 Public consultation undertaken as part of the Oxford Green Spaces Study¹⁰ found that residents of Oxford are generally willing to walk approximately 1900m to large green spaces. As the Northern Gateway site is within 1900m from the SAC, it was assessed for recreational impacts (under potential 'in-combination' impacts) as part of the HRA for the Sites and Housing Plan. This HRA concluded that 200 new homes provided at Northern Gateway would not lead to 'in-combination' impacts alongside the Sites and Housing Plan.
- 2.42 The Northern Gateway provides for more residential development than was assessed in the HRAs for the Core Strategy and Sites and Housing Plan. An assessment of the impacts of the 500 homes to be provided as part of the Northern Gateway AAP has been undertaken. The results of that assessment can be found starting at paragraph 3.39. All other AAP policies that do not involve a quantum of residential development or quantum of open space have been screened out of the assessment in relation to recreational impacts.

Other Plans and Programmes (in-combination impacts)

- 2.43 In line with the precautionary principle, Oxford City Council has considered impacts that could be caused in-combination with other plan areas. The plans and programmes shown at Table 2.2 have been considered in relation to the HRA of the Northern Gateway AAP.

¹⁰ Oxford City Green Spaces Study (2005) Scott Wilson

Table 2.2 Other plans and programmes with potential 'in combination' impacts

Policy, Plan, Strategy/ Initiative	Proposals	Potential 'in combination' impacts?
Oxfordshire Minerals and Waste Core Strategy Proposed Submission	Consultation on Draft Core Strategy in early 2014.	The HRA concluded that a conclusion of no likely significant effects on the Oxford Meadows SAC could not be reached in respect of land in the Eynsham/ Cassington/ Yarton area with respect to hydrological impacts (groundwater flow to the SAC).
Oxford's Local Plan (includes Core Strategy/ Barton AAP/ West End AAP/ Sites and Housing Plan)	8,000 new homes and 11-13,000 new jobs by 2026.	HRA ruled out impact on SAC subject to further work to be undertaken to support the Northern Gateway AAP presented in Section 3.
Cherwell Local Plan (Examination)	The examination into Cherwell's Local Plan (which proposed 16,750 homes and 155 hectares of employment land by 2031) was suspended in June 2014 so that the authority had the opportunity to publish modifications to the plan involving increased housing delivery in order to meet in full Cherwell's Objectively Assessed Need. This is likely to involve an increase from an average of 670 to 1140 homes per annum.	Current evidence shows this is unlikely to have an impact on Oxford Meadows SAC. Cherwell's HRA for their Local Plan will need to be updated to reflect increased housing numbers.
South Oxfordshire Core Strategy (Adopted)	5,000 new jobs and 11,487 homes by 2027. In early stages of reviewing Core Strategy to provide sites for up to 5,900 new homes in addition to those already allocated.	Current evidence shows unlikely to have an impact on Oxford Meadows SAC. HRA will need to be updated to reflect increased housing numbers.
Vale of White Horse Local Plan 2031 (update)	SHMA identifies a need for up to 20,560 homes in the Vale of White Horse up to 2031. Consultation has been undertaken on need to find additional sites for 7,430 more homes than previously envisaged.	Current evidence shows unlikely to have an impact on Oxford Meadows SAC. HRA will need to be updated to reflect increased housing numbers.
West Oxfordshire Draft Local Plan October 2012	Draft Plan provides for 5,500 new homes and up to 10,000 jobs. Progress on Local Plan paused to take account of findings of SHMA in 2014. SHMA suggests a housing	Current evidence demonstrates that the Local Plan is unlikely to have an adverse impact on Oxford Meadows SAC in terms of recreational impacts and air quality.

Policy, Plan, Strategy/ Initiative	Proposals	Potential 'in combination' impacts?
	target in the order of 635-685 homes per annum is needed, compared to previous target of 306 homes per annum.	
Chiltern Railways Evergreen 3 project (now known as East West Rail Phase 1)	Rail project	<p>Scheme results in the permanent loss of 13m² from the margins of the Oxford Meadows SAC. This loss is not predicted to affect the integrity of the SAC.</p> <p>Air emissions may affect habitats including those with the Oxford Meadows. An approach involving the monitoring of vegetation has been agreed with Natural England, to identify any habitat changes, and to ensure that timely measures can be taken, if necessary to prevent adverse effects on the integrity of the Oxford Meadows SAC¹¹.</p>
Oxford Flood Risk Management Strategy	Flooding improvements across Oxford and surrounds.	<p>Report suggests that there may be impacts on Oxford Meadows SAC from flood risk management and water resource plans. There are some uncertainties regarding operation of a flood storage area and potential impacts on Oxford Meadows SAC. To address these uncertainties, the Environment Agency is recommending further research. If this work shows that there would be significant impacts to designated nature conservation sites which could not be mitigated or compensated for, then the flood storage area will not be implemented. However there are no likely significant impacts on the SAC from current water abstraction activities¹².</p>

Key environmental considerations and likely effects of the AAP on the Oxford Meadows SAC

2.44 The Core Strategy set out the findings of its HRA in relation to the Northern Gateway at paragraphs 3.4.40-42. These paragraphs are quoted in full below:

'3.4.40 The Council will require the Area Action Plan to be supported by a full hydrological risk appraisal to demonstrate that there will be no change in the hydrological regime of Oxford Meadows SAC, in terms of water quantity or quality. This will form part of an Appropriate Assessment which will be

¹¹ Chiltern Railways (Bicester to Oxford Improvements) Order Environmental Statement NTS January 2010

¹² Page 39 of report and confirmed in *Supporting Guidance: Habitats Directive:(Appendix 21) Proforma for Stage 3 Assessment of Adverse Effect on Site Integrity – Review of Consents* (Environment Agency, 11/07/05)

undertaken for the Area Action Plan to meet the requirements of the Habitats Regulations. The current groundwater recharge will be maintained, including the incorporation of sustainable urban drainage systems, such as porous surfacing, grassy swales and infiltration trenches.

3.4.41 The Area Action Plan must also be supported by more detailed air quality modelling and analysis to show that there will not be any localised adverse effects on the integrity of the SAC resultant from construction or increased road trips on roads within 200m of European sites.

3.4.42 The Area Action Plan must also be supported by an assessment to show that there will not be any effect on the integrity of the SAC from recreational pressure arising from the development’.

2.45 Table 2.3 shows the key environmental considerations that are likely to give rise to significant effects as a result of policy areas in the Northern Gateway AAP. Table 2.4 shows the likely effects of the AAP on the Oxford Meadows SAC and the likely magnitude, nature, location and extent of any impact.

2.46 In summary the AAP components (or policies) screened into the appropriate assessment are as follows:

Air Quality:

- Mix of Uses (NG2)
- Suite of Transport policies (NG4-6)
(Energy and resources (NG9) was eliminated from further assessment as it will require a later, separate HRA, and the AAP could also proceed without a district/shared energy scheme)

Balanced Hydrological Regime/ water quality

- Mix of Uses (NG2)

Recreational Pressure

- Mix of Uses (NG2)
- Design and Amenity (NG7)

2.47 In the case of the balanced hydrological regime/ water quality, a precautionary approach was taken and all uses were screened into the assessment. Paragraph 3.31 onwards details results of the investigative work undertaken to support this HRA.

Table 2.3 Key environmental considerations that are likely to give rise to significant effects as a result of policy areas in the Northern Gateway AAP

Policy	Categorisation of the effects of the policy	If the policy has no effect, then reasons why	Key environmental considerations likely to give rise to significant effects
MP1 Model Policy	A	General policy designed to take account of the NPPF and to take a positive and pro-active approach to planning	n/a
NG1 Green Belt	A	Policy sets out results of highly focussed inner Green Belt boundary review: Land bounded by A40, the A34 embankment, Joe White's Lane, and the rear of properties along Godstow Road is excluded from the Green Belt and is allocated for development. Parcel of land at Pear Tree Farm is retained within the Green Belt	n/a issues relating to the balanced hydrological regime and recreation pressure discussed in relation to the mix of uses.
NG2 Mix of Uses	D	Policy sets out amounts of development for all uses at the site <ul style="list-style-type: none"> • Up to 90,000m2 of employment development • Up to 500 new homes • Local scale retail (2,500m2 gross internal floorspace) • Hotel with leisure facilities (up to 180 bedrooms) etc. 	Possible impacts on SAC: <i>Air Quality; Balanced Hydrological Regime; Recreational Pressure</i>
NG3 Employment	A	Policy setting out the criteria for the type of employment needed at the Northern Gateway	n/a
NG4 Sustainable Travel	A	Policy seeking high quality pedestrian and cycle links, crossings and footpaths throughout the site	Possible Impacts on SAC : <i>Air Quality</i>
NG5 Highway Measures	D	Policy setting out road improvements required to mitigate impacts of development	
NG6 Car Parking	A	Policy setting out parking standards across the site	
NG7 Design and Amenity	E	Policy setting out design standards, air and noise quality for residential properties and open space for residential properties	Possible Impacts on SAC: <i>Recreational pressure</i>
NG8 Oxford Meadows SAC	A	New policy to ensure that there is no adverse impact on the integrity of the Oxford Meadows SAC.	
NG9 Energy and Resources	B	Policy supporting district heating and on-site renewable energy	Possible Impacts on SAC: <i>Air Quality</i> , to be covered in a later project HRA
NG10 Phasing and Implementation	A	Policy requiring the submission of a phasing strategy to support the outline planning application and a Construction Environmental Management Plan to support the Reserved Matters application	
NG11 Delivery of Infrastructure	A	Policy to ensure that the infrastructure needed to make the site acceptable in planning terms is delivered in a timely manner.	

Table 2.4 Possible impacts of the Northern Gateway AAP on European Sites

Nature	Policies likely to have an impact on the Oxford Meadows SAC	Magnitude	Duration	Location	Conclusions
Air Quality	NG2 – Mix of Uses NG5 – Highway Measures NG9 – Energy and resources	The AAP proposes 90,000m ² of employment floorspace, 500 homes and other complementary uses. The AAP proposes road improvements (including new roads). The AAP site has several link roads within 200m of the SAC The AAP proposes that a district/ shared energy scheme will be delivered at Northern Gateway, if a separate HRA shows that this can be done without significant impacts on the integrity of the SAC	Throughout the plan period	Less than 500m from the SAC	See Section 3.1
Balanced Hydrological Regime (Groundwater)	NG2 – Mix of Uses	Low – two small portions of the site are not on Oxford Clay	Within the plan period	Less than 500m from the SAC	See Section 3.2
Water Quality (Groundwater)	NG2 – Mix of Uses	Low – two small portions of the site are not on Oxford Clay	Within the plan period	Less than 500m from the SAC	See Section 3.2
Recreational Pressure	NG2 – Mix of Uses NG7 – Design & Amenity	The AAP proposes 500 houses. Additional recreational pressure from residents on SAC.	Throughout the plan	Less than 500m from the SAC	See Section 3.3

3. Appropriate Assessment

Air Quality

- 3.1 The following section discusses the likely air quality impacts of the traffic from Northern Gateway AAP on the Oxford Meadows SAC.

Baseline Situation: 2013

- 3.2 Most of the air pollution at the Oxford Meadows SAC is, and will continue to be, due to background/baseline air pollution. The current baseline situation was analysed through a desk study and air pollution monitoring¹³; and the future baseline situation was modelled¹⁴ based on the transport modelling carried out by the County Council (which includes background growth in traffic, growth associated with other development proposals in the wider Oxfordshire area and the whole quantum of development as set out in the AAP) and industry standard assumptions about the level of emissions from traffic in the future for example.
- 3.3 Background NO_x levels at the Oxford Meadows SAC, are predicted to reduce between 2014 and 2030, although this will need to be monitored to assess whether these predictions are realised in practice.
- 3.4 A monitoring campaign was instigated in order to provide information on existing air quality within the area and help to verify the air quality model that will be used to predict the impacts of the proposed development. Figure 3.1 shows the location of the diffusion tubes, as well as the ecological receptors (transects E1-E4 and E6). An air quality model was then built to predict the future air quality baseline (without development) at a range of distances from the roads near the relevant ecological receptors, namely points on the Oxford Meadows SAC. Concentrations of nitrogen, nitrogen oxides and acid depositions were predicted up to 200m within the Oxford Meadows SAC.
- 3.5 The predicted baseline concentrations using the air quality model at the ecological receptors, in 2013 are shown in Table 3.1.

¹³ Preliminary Air Quality Assessment (2014) PBA www.oxford.gov.uk/northerngateway

¹⁴ Preliminary Air Quality Assessment (2014) PBA www.oxford.gov.uk/northerngateway

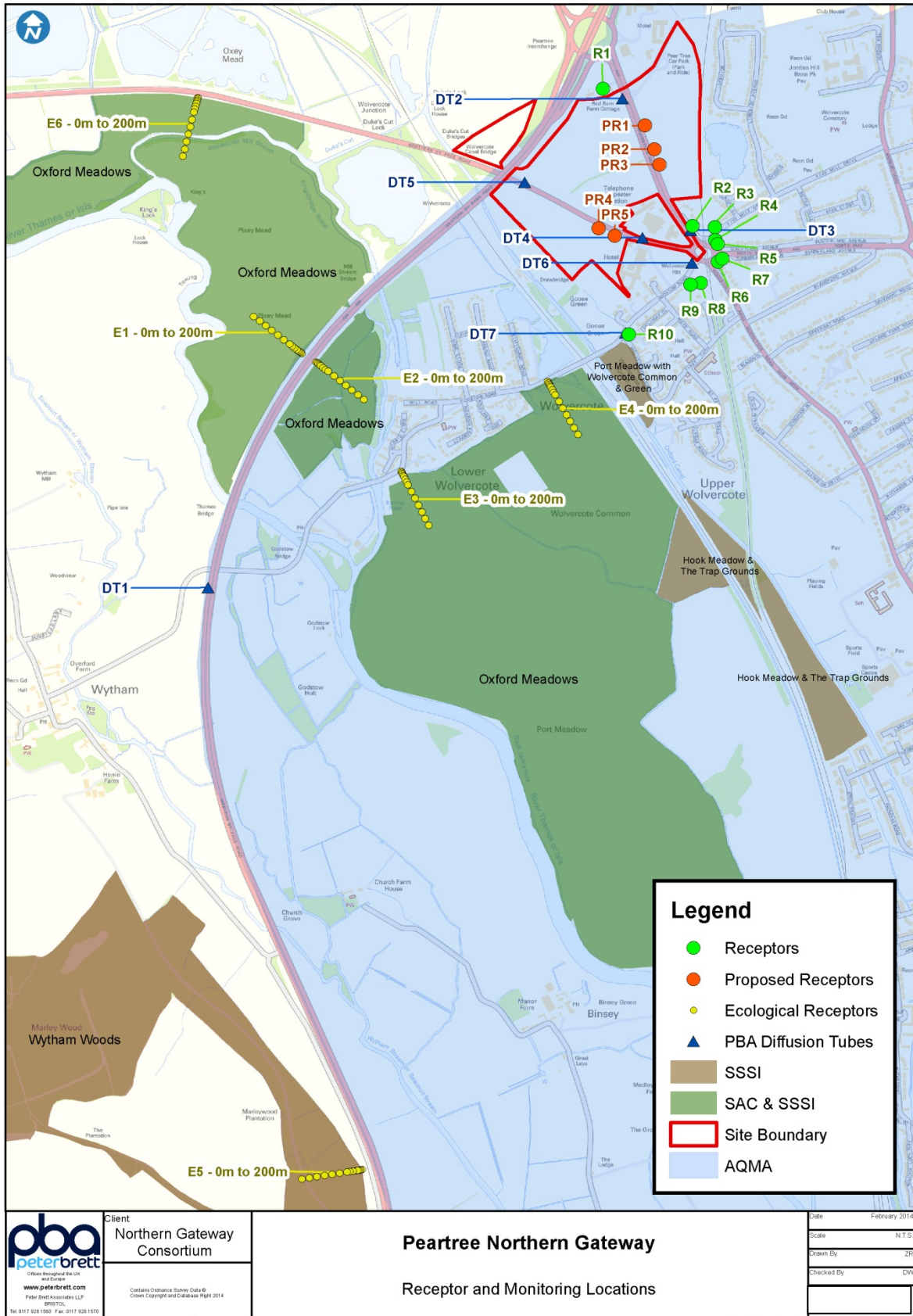


Figure 3.1 Locations of diffusion tubes and ecological receptors. The relevant receptors for this report are receptors E1-E4 and E6.

Receptor	Distance from kerb (m)	Total NO _x (µg/m ³)	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keqN/ha/yr)
Oxford Meadows SAC Transect E1				
E1 0m	20	58.3	19.7	1.40
E1 5m	25	54.1	19.4	1.39
E1 10m	30	50.9	19.2	1.37
E1 15m	35	48.4	19.1	1.36
E1 20m	40	46.3	18.9	1.35
E1 30m	50	43.2	18.7	1.33
E1 40m	60	41.0	18.6	1.32
E1 50m	70	39.2	18.5	1.31
E1 75m	95	36.3	18.3	1.30
E1 100m	120	34.4	18.1	1.29
E1 125m	145	33.2	18.0	1.28
E1 150m	170	32.3	18.0	1.28
E1 175m	195	31.6	17.9	1.28
E1 200m	220	31.0	17.9	1.27
Oxford Meadows SAC Transect E2				
E2 0m	7	82.8	21.2	1.51
E2 5m	12	72.9	20.6	1.47
E2 10m	17	66.0	20.2	1.44
E2 15m	22	61.0	19.9	1.42
E2 20m	27	57.2	19.6	1.40
E2 30m	37	51.7	19.3	1.37
E2 40m	47	47.9	19.0	1.36
E2 50m	57	45.2	18.9	1.34
E2 75m	82	40.7	18.6	1.32
E2 100m	107	38.1	18.4	1.31
E2 125m	132	36.3	18.3	1.30
E2 150m	157	35.0	18.2	1.29
E2 175m	182	34.1	18.1	1.29
E2 200m	207	33.4	18.0	1.29
Oxford Meadows SAC Transect E3				
E3 0m	0	32.3	18.0	1.28
E3 5m	5	31.3	17.9	1.27
E3 10m	10	31.0	17.9	1.27
E3 15m	15	30.7	17.9	1.27
E3 20m	20	30.6	17.8	1.27
E3 30m	30	30.4	17.8	1.27
E3 40m	40	30.3	17.8	1.27
E3 50m	50	30.2	17.8	1.27
E3 75m	75	30.0	17.8	1.27
E3 100m	100	29.8	17.8	1.27
E3 125m	125	29.7	17.8	1.27
E3 150m	150	29.6	17.8	1.27
E3 175m	175	29.5	17.8	1.27
E3 200m	200	29.4	17.8	1.26
Oxford Meadows SAC Transect E4				
E4 0m	0	27.6	18.0	1.28
E4 5m	5	26.7	17.9	1.27
E4 10m	10	26.3	17.9	1.27

Receptor	Distance from kerb (m)	Total NO _x (µg/m ³)	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keqN/ha/yr)
E4 15m	15	26.1	17.8	1.27
E4 20m	20	25.9	17.8	1.27
E4 30m	30	25.7	17.8	1.27
E4 40m	40	25.6	17.8	1.27
E4 50m	50	25.5	17.8	1.27
E4 75m	75	25.3	17.8	1.27
E4 100m	100	25.2	17.8	1.27
E4 125m	125	25.1	17.8	1.27
E4 150m	150	25.0	17.8	1.27
E4 175m	175	24.9	17.8	1.26
E4 200m	200	24.8	17.8	1.26
Critical Level / Load		30	20 - 30	0.856 – 4.856
Oxford Meadows SAC Transect E6				
E6 0m	11	45.1	18.7	1.33
E6 5m	16	41.7	18.5	1.31
E6 10m	21	39.6	18.3	1.30
E6 15m	26	38.2	18.2	1.30
E6 20m	31	37.1	18.1	1.29
E6 30m	41	35.7	18.0	1.28
E6 40m	51	34.8	18.0	1.28
E6 50m	61	34.1	17.9	1.28
E6 75m	86	33.1	17.8	1.27
E6 100m	111	32.5	17.8	1.27
E6 125m	136	32.1	17.8	1.27
E6 150m	161	31.9	17.8	1.26
E6 175m	186	31.7	17.7	1.26
E6 200m	211	31.5	17.7	1.26
Critical Level / Load		30	20 - 30	0.856 – 4.856

Table 3.1 Predicted air quality baseline concentrations at ecological receptors at the Oxford Meadows SAC
Exceedences highlighted in bold. For acid deposition, the existence of an exceedence has been determined using the Critical Load Function Tool available on the APIS website.

- 3.6 The baseline modelling for 2013 indicated that the critical level for nitrogen oxide concentrations was significantly exceeded at a number of locations within the Oxford Meadows SAC adjacent to the A34 and A40. This is shown in table 3.1. This is as a result of existing traffic levels on the roads and current vehicle emission levels and background concentrations. Nitrogen deposition rates are predicted to exceed the critical load within the Oxford Meadows SAC, but only for a distance of approximately 15m within the habitat, where it is adjacent to the A34. There are no predicted exceedences of acid deposition critical loads.

Baseline Situation: 2026

- 3.7 Modelling has been undertaken for a future baseline of 2026 without the development proposed in the Northern Gateway AAP in place; this is shown in Table 3.2. Predicted baseline concentrations and deposition rates in 2026 are predicted to be significantly lower than in 2013 due to improvements in background pollutant concentrations and vehicle emissions. This is despite robust assumptions being made in the model as to the future emissions profile of the vehicle fleet and background concentrations.

Receptor	Distance from kerb (m)	Total NO _x (µg/m ³)	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keqN/ha/yr)
Oxford Meadows SAC Transect E1				
E1 0m	20	30.7	18.5	1.31
E1 5m	25	29.1	18.3	1.31
E1 10m	30	27.8	18.2	1.30
E1 15m	35	26.8	18.2	1.29
E1 20m	40	26.0	18.1	1.29
E1 30m	50	24.8	18.0	1.28
E1 40m	60	23.9	18.0	1.28
E1 50m	70	23.2	17.9	1.28
E1 75m	95	22.1	17.8	1.27
E1 100m	120	21.3	17.8	1.27
E1 125m	145	20.9	17.7	1.26
E1 150m	170	20.5	17.7	1.26
E1 175m	195	20.2	17.7	1.26
E1 200m	220	20.0	17.7	1.26
Oxford Meadows SAC Transect E2				
E2 0m	7	40.7	19.1	1.36
E2 5m	12	36.7	18.9	1.34
E2 10m	17	33.9	18.7	1.33
E2 15m	22	31.9	18.5	1.32
E2 20m	27	30.4	18.4	1.31
E2 30m	37	28.2	18.3	1.30
E2 40m	47	26.7	18.2	1.29
E2 50m	57	25.6	18.1	1.29
E2 75m	82	23.9	18.0	1.28
E2 100m	107	22.8	17.9	1.27
E2 125m	132	22.1	17.8	1.27
E2 150m	157	21.6	17.8	1.27
E2 175m	182	21.3	17.8	1.27
E2 200m	207	21.0	17.8	1.26
Oxford Meadows SAC Transect E3				
E3 0m	0	23.0	17.9	1.27
E3 5m	5	21.5	17.8	1.27
E3 10m	10	20.9	17.7	1.26
E3 15m	15	20.6	17.7	1.26
E3 20m	20	20.4	17.7	1.26
E3 30m	30	20.2	17.7	1.26
E3 40m	40	20.0	17.7	1.26
E3 50m	50	19.9	17.7	1.26
E3 75m	75	19.8	17.7	1.26
E3 100m	100	19.7	17.7	1.26
E3 125m	125	19.6	17.6	1.26
E3 150m	150	19.5	17.6	1.26
E3 175m	175	19.5	17.6	1.26
E3 200m	200	19.5	17.6	1.26
Oxford Meadows SAC Transect E4				
E4 0m	0	20.9	17.9	1.28
E4 5m	5	19.3	17.8	1.27
E4 10m	10	18.8	17.8	1.26

Receptor	Distance from kerb (m)	Total NO _x (µg/m ³)	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keqN/ha/yr)
E4 15m	15	18.5	17.7	1.26
E4 20m	20	18.3	17.7	1.26
E4 30m	30	18.0	17.7	1.26
E4 40m	40	17.9	17.7	1.26
E4 50m	50	17.8	17.7	1.26
E4 75m	75	17.6	17.7	1.26
E4 100m	100	17.5	17.7	1.26
E4 125m	125	17.4	17.7	1.26
E4 150m	150	17.3	17.6	1.26
E4 175m	175	17.3	17.6	1.26
E4 200m	200	17.2	17.6	1.26
Critical Level / Load		30	20 - 30	0.856 – 4.856
Oxford Meadows SAC Transect E6				
E6 0m	11	27.8	18.1	1.29
E6 5m	16	26.2	18.0	1.28
E6 10m	21	25.2	17.9	1.28
E6 15m	26	24.5	17.9	1.27
E6 20m	31	24.0	17.8	1.27
E6 30m	41	23.3	17.8	1.27
E6 40m	51	22.8	17.7	1.26
E6 50m	61	22.5	17.7	1.26
E6 75m	86	22.1	17.7	1.26
E6 100m	111	21.8	17.7	1.26
E6 125m	136	21.6	17.6	1.26
E6 150m	161	21.5	17.6	1.26
E6 175m	186	21.4	17.6	1.26
E6 200m	211	21.3	17.6	1.26
Critical Level / Load		30	20 - 30	0.856 – 4.856

Table 3.2 Predicted baseline concentrations at ecological receptors at the Oxford Meadows SAC in 2026

Exceedences highlighted in bold. For acid deposition, the existence of an exceedence has been determined using the Critical Load Function Tool available on the APIS website.

- 3.8 The predictions from these assumptions will need to be monitored over time to assess whether they are realised in practice. 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). There are no predicted exceedences of the nitrogen or acid deposition critical loads.

Possible Impacts of the Northern Gateway

- 3.9 The main sources of air pollution from Northern Gateway would be 1. traffic, and 2. the district/shared energy scheme. Details of the latter are still unclear in terms of size, location, type of fuel etc., and will not become clear until after the adoption of the AAP. Oxfordshire County Council and Oxford City Council generally support the use of locally-produced biomass heating schemes, and a district/shared biomass boiler could be appropriate for the site. However this would need to be assessed as part of a separate, later appropriate assessment at the outline planning stage.

Receptor	Distance from kerb (m)	Total NO _x (µg/m ³)	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keqN/ha/yr)
Oxford Meadows SAC Transect E1				
E1 0m	20	31.3	18.5	1.32
E1 5m	25	29.6	18.4	1.31
E1 10m	30	28.3	18.3	1.30
E1 15m	35	27.2	18.2	1.30
E1 20m	40	26.4	18.1	1.29
E1 30m	50	25.1	18.1	1.29
E1 40m	60	24.2	18.0	1.28
E1 50m	70	23.5	17.9	1.28
E1 75m	95	22.2	17.8	1.27
E1 100m	120	21.5	17.8	1.27
E1 125m	145	21.0	17.7	1.26
E1 150m	170	20.6	17.7	1.26
E1 175m	195	20.3	17.7	1.26
E1 200m	220	20.1	17.7	1.26
Oxford Meadows SAC Transect E2				
E2 0m	7	41.8	19.2	1.37
E2 5m	12	37.6	18.9	1.35
E2 10m	17	34.7	18.7	1.33
E2 15m	22	32.6	18.6	1.32
E2 20m	27	31.0	18.5	1.32
E2 30m	37	28.7	18.3	1.30
E2 40m	47	27.1	18.2	1.30
E2 50m	57	26.0	18.1	1.29
E2 75m	82	24.1	18.0	1.28
E2 100m	107	23.0	17.9	1.28
E2 125m	132	22.3	17.8	1.27
E2 150m	157	21.8	17.8	1.27
E2 175m	182	21.4	17.8	1.27
E2 200m	207	21.1	17.8	1.27
Oxford Meadows SAC Transect E3				
E3 0m	0	23.7	18.0	1.28
E3 5m	5	22.0	17.8	1.27
E3 10m	10	21.3	17.8	1.27
E3 15m	15	20.9	17.7	1.26
E3 20m	20	20.6	17.7	1.26
E3 30m	30	20.3	17.7	1.26
E3 40m	40	20.2	17.7	1.26
E3 50m	50	20.1	17.7	1.26
E3 75m	75	19.9	17.7	1.26
E3 100m	100	19.8	17.7	1.26
E3 125m	125	19.7	17.7	1.26
E3 150m	150	19.6	17.6	1.26
E3 175m	175	19.6	17.6	1.26
E3 200m	200	19.5	17.6	1.26
Oxford Meadows SAC Transect E4				
E4 0m	0	21.6	18.0	1.28
E4 5m	5	19.8	17.8	1.27
E4 10m	10	19.1	17.8	1.27

Receptor	Distance from kerb (m)	Total NO _x (µg/m ³)	Nitrogen Deposition (kgN/ha/yr)	Acid Deposition (keqN/ha/yr)
E4 15m	15	18.7	17.8	1.26
E4 20m	20	18.5	17.7	1.26
E4 30m	30	18.2	17.7	1.26
E4 40m	40	18.0	17.7	1.26
E4 50m	50	17.9	17.7	1.26
E4 75m	75	17.7	17.7	1.26
E4 100m	100	17.6	17.7	1.26
E4 125m	125	17.5	17.7	1.26
E4 150m	150	17.4	17.7	1.26
E4 175m	175	17.3	17.6	1.26
E4 200m	200	17.3	17.6	1.26
Critical Level / Load		30	20 - 30	0.856 – 4.856
Oxford Meadows SAC Transect E6				
E6 0m	11	28.2	18.1	1.29
E6 5m	16	26.5	18.0	1.28
E6 10m	21	25.4	17.9	1.28
E6 15m	26	24.7	17.9	1.27
E6 20m	31	24.2	17.8	1.27
E6 30m	41	23.5	17.8	1.27
E6 40m	51	23.0	17.7	1.26
E6 50m	61	22.7	17.7	1.26
E6 75m	86	22.1	17.7	1.26
E6 100m	111	21.9	17.7	1.26
E6 125m	136	21.7	17.7	1.26
E6 150m	161	21.5	17.6	1.26
E6 175m	186	21.4	17.6	1.26
E6 200m	211	21.4	17.6	1.26
Critical Level / Load		30	20 - 30	0.856 – 4.856

Table 3.3 Predicted future concentrations with Northern Gateway development at ecological receptors at the Oxford Meadows SAC

Exceedences highlighted in bold. For acid deposition, the existence of an exceedence has been determined using the Critical Load Function Tool available on the APIS website.

- 3.10 Table 3.3 shows the predicted future concentrations with the development proposed in the Northern Gateway AAP in 2026.
- 3.11 The Northern Gateway development makes only a small additional contribution to concentrations of NO_x and nitrogen, and acid deposition. Where the NO_x concentrations critical level is exceeded, the contribution of the development is predicted to be between 2.0% and 3.6% of the critical level. Whilst this is above the 1% criterion for insignificance¹⁵, the physical extent of the exceedence is not increased and remains within 5m and 30m of the habitat north and south of the A34 respectively. Predicted concentrations with the development in 2026 are approximately 50% of the baseline concentrations in 2013. The contribution of the development to nitrogen and acid deposition is less than 1% and is therefore insignificant, and no critical loads are predicted to be exceeded.

¹⁵ Interim Advice Note 174/13 Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA207/07)

Possible 'in-combination' impacts

- 3.12 The City Council considers it pertinent to review other plans and programmes from neighbouring districts (where available) as this is in line with the precautionary principle. This section firstly addresses the planning documents within Oxford's Local Plan, and then the other planning documents discussed at Table 2.2.
- 3.13 The HRA for the Core Strategy looked at air quality impacts for the strategic sites. The Core Strategy HRA concluded that none of the policies in the Oxford 2026 Core Strategy were likely to have adverse effects on the integrity of the Oxford Meadows SAC with regard to the environmental requirements for the site.
- 3.14 The Inspectors referred to the HRA in their report for the Core Strategy. The Inspectors recommended the need for some further work at a more detailed planning stage for the Northern Gateway, to confirm that the Core Strategy would not have a significant impact on the Oxford Meadows SAC. That work is provided as part of this HRA.
- 3.15 The HRA for the Core Strategy stated that:
'Further air quality monitoring will be undertaken in support of the Northern Gateway Area Action Plan to assess if there would be any very specific localised impacts arising from the proposed Northern Gateway development...'
- 3.16 To recap, wording inserted into the text accompanying the adopted Core Strategy Policy CS6 (Northern Gateway) states:
'The Area Action Plan must also be supported by more detailed air quality modelling and analysis to show that there will not be any localised adverse effects on the integrity of the [Oxford Meadows] SAC resultant from construction or increased road trips within 200m of European sites'
- 3.17 An HRA was also undertaken for the Sites and Housing Plan. In respect of air quality impacts, this HRA considered the site of the Wolvercote Paper Mill, which is accessed along Godstow Road. Godstow Road runs past the northern edge of Port Meadow. The site was allocated in the Sites and Housing Plan for residential development (potentially around 200 residential units) and public open space. There are also some small scale employment and community facilities proposed.
- 3.18 The HRA for the Sites and Housing Plan worked out trip generation from the 200 homes (applying a mix of homes that complied with the Balance of Dwellings Supplementary Planning Document for strategic sites outside the city and district centres) and for the creation of 50 jobs. The HRA concluded that:
'Given the background trends... the additional traffic generated by the Wolvercote Paper Mill development is not nearly of such significance that it would have an adverse impact on air quality at the Oxford Meadows SAC.'
- 3.19 HRA screening was also undertaken for both the West End Area Action Plan and Barton Area Action Plan. The HRA Screenings concluded that neither of the Area Action Plans would have any adverse effect on the Oxford Meadows SAC.
- 3.20 In assessing 'in-combination' impacts for air quality, the City Council reviewed the HRAs of neighbouring districts, namely Cherwell, Vale of White Horse, West Oxfordshire and South Oxfordshire, together with the County Council's Minerals and Waste Plan in order to

ascertain whether there would be air quality impacts from these plans 'in-combination' with the Northern Gateway AAP that would have an adverse effect on the integrity of the Oxford Meadows SAC.

- 3.21 The HRA for the Cherwell Local Plan looked at predicted NO_x concentrations and Nitrogen Deposition rates within Cherwell's administrative boundary only. The Nitrogen Deposition rates showed a reduction from the baseline with the predicted growth in Cherwell: the HRA concluded that Nitrogen Deposition for all transects within the boundary of the Oxford Meadows SAC would be below the lower threshold of the Critical Load. In terms of NO_x, the Cherwell HRA noted a reduction from the 2009 base year to the 2030 base year: the HRA predicts that the Cherwell Local Plan would lead to small exceedences at the A34 and the A40. The Cherwell HRA considered these exceedences to not be significant.
- 3.22 The HRA for the West Oxfordshire Draft Local Plan recommends further work to determine the likely significance of air quality impacts on the Oxford Meadows SAC. The Plan has not yet reached proposed submission stage and as such it is in draft form.
- 3.23 The Vale of White Horse has undertaken a Habitat Regulations Assessment for its Housing Delivery Update. The original Local Plan Part 1 HRA published in March 2013 concluded that no significant effects would arise in terms of air quality on the Oxford Meadows SAC. The Vale of White Horse put in place a number of mitigation measures, in the form of policies in the plan which are designed to reduce congestion and encourage more sustainable modes of transport. The Vale of White Horse is updating transport modelling and assessment of potential effects of increased transport on air quality at European sites.
- 3.24 A Habitat Regulations Assessment was carried out for the Adopted South Oxfordshire Core Strategy in December 2012. The HRA for South Oxfordshire relies on the results of work undertaken by Cherwell to support their Core Strategy in 2010. The Cherwell (2010) study concluded that allocations in the Core Strategy in combination with development in the rest of Central Oxfordshire would not lead to any likely significant effects in relation to air quality at the Oxford Meadows SAC. South Oxfordshire has started some early work on their Local Plan 2031. As it is at an early stage, there is not yet any published HRA work and the adopted Core Strategy assessment has been used in relation to this assessment.
- 3.25 Oxfordshire County Council produced a Habitat Regulations Assessment Screening Report in 2011. The HRA Screening states that there will not be any significant increase in vehicle movements associated with mineral extraction.
- 3.26 In terms of Waste Sites, the HRA Screening Report for the Minerals and Waste Core Strategy identifies that a proposal for a residual treatment plant in the Abingdon/ Didcot/ Wantage/ Grove area, if located within 10km of... Oxford Meadows SAC... may require further screening and an appropriate assessment may be required "down the line". However, the strategy identifies a wide area for the possible location of this plant and the technology to be employed is not yet known. The report therefore concludes, given the best available information that there are no likely significant impacts on the integrity of the Oxford Meadows SAC.
- 3.27 As such, there is unlikely to be a deterioration of air quality associated with mineral extraction proposed in the plan. The HRA Screening therefore screened out air quality impacts in relation to the Oxford Meadows SAC concluding that no adverse effects were likely.

Conclusions

- 3.28 Overall, considering the robust and up-to-date nature of the Northern Gateway site-specific air quality assessment that has been carried out, the scale of the impact of development traffic, the limited physical extent of the exceedence of the critical level, and the significant improvement in NO_x concentrations in the future, it is considered highly unlikely that the development will have an adverse effect on the integrity of the SAC.
- 3.29 In terms of 'in-combination' impacts, a review of all Oxfordshire Districts' adopted or emerging Local Plans has been carried out. The result of this review is that there is unlikely to be, given the best available evidence, any significant in-combination effects in terms of air quality on the Oxford Meadows SAC.
- 3.30 It is important to note that the air quality model built for the Northern Gateway AAP took into account the most recent transport modelling data provided by Oxfordshire County Council. This includes forecast background traffic growth arising from the general increase in traffic; from planned growth elsewhere in Oxfordshire; and an allowance for additional traffic related to specific nearby developments at Wolvercote Paper Mill and the new Parkway Rail Station at Water Eaton.

3.2 Balanced Hydrological Regime (updated)

- 3.31 The following section discusses the likely impacts of the Northern Gateway AAP on the maintenance of a balanced hydrological regime at the Oxford Meadows SAC.

Baseline

- 3.32 An Interim Hydrological Summary Note was produced in June 2014¹⁶. This was published and consulted upon as part of the Proposed Submission Consultation for the Area Action Plan
- 3.33 The Interim Hydrological Note stated that, according to the geological map of the area, the majority of the AAP site lies directly on the impermeable Oxford Clay Formation, which has a very low infiltration potential: see Figure 3.2. River Terrace Deposits overlie the clay at a small portion of the site situated in the southern part of the Eastern Section, from the ground level to 1.2m depth. The River Terrace Deposits were found to comprise brown clay with little gravel. A very narrow strip of alluvium is recorded along the western part of the southern boundary of the site. The detailed ground investigations carried out in 2014¹⁷ (which comprised the sinking of 20 boreholes and excavation of 19 trial pits) revealed that the ground conditions are in general agreement with the published geological information and known history of the site. Alluvium was also encountered at 3 locations (Borehole CP1 and Trial Pits TP2 and TP09) at the western part of the Southern Section in an area where Alluvium is not recorded in the geological map.
- 3.34 Groundwater flows are imperceptible within the Oxford Clay Formation and are not likely to have significant contribution to the Oxford Meadows SAC. Groundwater entry was not observed within the River Terrace Deposits. However, the groundwater within the Alluvium on site is likely to be in hydrological continuity with the alluvial deposits beyond the site boundary. These soils are likely to have some contribution to the groundwater regime feeding the Oxford Meadows SAC.
- 3.35 A subsequent Full Hydrological Statement¹⁸ and the Interim Hydrological Note were both submitted as part of the Examination Library for the Northern Gateway. The conclusions in the Full Hydrological Statement backed up those made in the Interim Hydrological Summary Note.
- 3.36 The Full Hydrological Statement documented further boreholes that were dug to assess the hydrology of the part of the land to the South of the A40. This Statement found that there was an area that ran along the southernmost portion of this land which was not noted on the Geological Map. The Full Hydrological Statement called this section of land the Alluvial Ribbon.
- 3.37 The conclusion in the Full Hydrological Statement stated in paragraph 5.1 at page 12 that:

Overall, it is considered that groundwater flow from the Alluvial Ribbon is likely to have some contribution to the groundwater regime feeding the environmentally sensitive sites off site.

¹⁶ The Interim Hydrological Summary Note (June 2014) formed part of the evidence base to the Examination Library at CD4.23

¹⁷ *Ibid*

¹⁸ The Full Hydrological Statement (September 2014) formed part of the evidence base to the Examination Library at CD4.24

However, the recharge area of the Alluvial Ribbon on the site compared to the groundwater catchment of the river valley is miniscule and the overall contribution of the Alluvial Ribbon to the groundwater regime of the river valley as a whole is considered to be insignificant.

Possible Impacts of the Northern Gateway

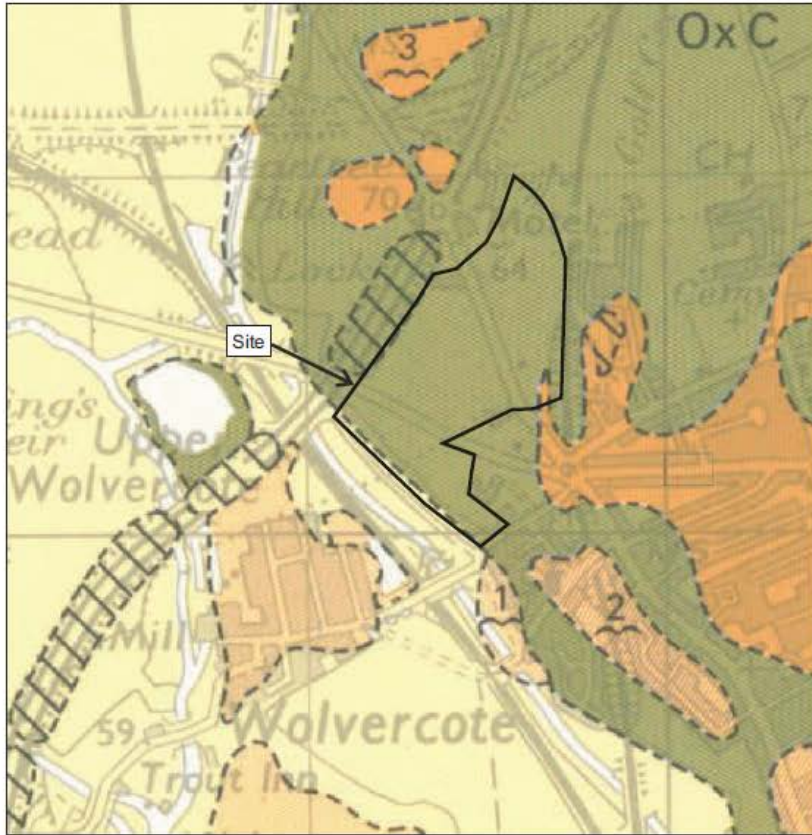
- 3.38 The Full Hydrological Statement concludes in terms of groundwater in the Alluvial Ribbon that the drainage strategy and design for the future development should consider carefully the impact of the proposed development on the groundwater regime if the proposed development includes the introduction of impermeable surfaces over that very small part of the site as defined as *Alluvial Ribbon*. Mitigation against potential changes in recharge and groundwater regime in terms of quality and quantity will be required to ensure that proposed development does not have an impact on the groundwater regime of the Oxford Meadows SAC.

Possible 'in-combination' Impacts

- 3.39 The HRA for the Sites and Housing Plan suggested that seven allocated sites had the potential to impact on groundwater flow and recharge, as these sites were all on or near the Gravel Terrace. The HRA for the Sites and Housing Plan suggested a suite of mitigation measures including the use of saved policies in the Oxford Local Plan 2001-2016; a requirement for project level assessment for the highlighted sites, should basement development be proposed; and the use of appropriate Sustainable Drainage systems to be provided in all the highlighted developments to ensure that the amount of surface water that is recharged to groundwater is maintained.

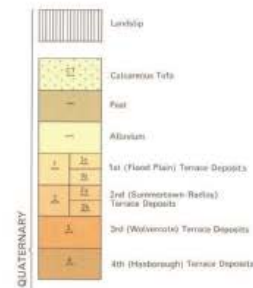
Conclusions

- 3.40 This assessment concludes that the site can be developed without any impact on the balanced hydrological regime at the Oxford Meadows SAC. There are two small areas of land within the Northern Gateway boundary that are not within the Oxford Clay Formation. This HRA recommends that the AAP precludes development on those areas of land until the applicant is able to submit evidence (as part of a planning application) to demonstrate conclusively that there would be no adverse impact on the integrity of the Oxford Meadows SAC from built development on those parcels of land. The AAP has included text to this effect in the section on drainage and has a policy on the conditions under which planning permission will be granted on the site in relationship to the SAC.
- 3.41 Additional wording was added to the Area Action Plan as part of a document entitled "Proposed Minor Post-Publication Changes (CD1.2)". These changes included new text in relation to the provision of a "buffer" between the development and a Local Wildlife Site (the meadow north of Goose Green and west of Joe White's Lane). The following wording was added to the second sentence of paragraph 7.13 at the time of the submission of the AAP (see page after figure 3.2)



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INDEX AND EXPLANATION OF DRIFT SYMBOLS AND COLOURS



GENERALIZED VERTICAL SECTION AND KEY TO SOLID SYMBOLS AND COLOURS

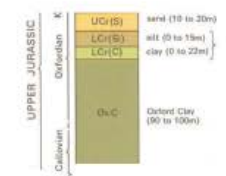


Figure 3.2 Geological map for the Northern Gateway

In particular, opportunities will be taken to create links between natural habitats, to join up wildlife corridors and to provide a buffer between development and the Local Wildlife Site (the meadow north of Goose Green and west of Joe White's Lane) to reduce disturbance effects and enhance its ecological value.

- 3.42 An additional benefit of the inclusion of the text about the wildlife buffer is that the buffer would be above the strip of Alluvial Ribbon and so in effect its presence precludes development on this area of the Site.

3.3 Recreational Impacts

3.43 The following section discusses the likely impacts associated with increased recreational pressure of the Northern Gateway AAP on the Oxford Meadows SAC. The Oxford Rare Plants Group has advised City Council officers that potential impacts of recreational pressure are dog-fouling on *A. repens* – creeping marshwort through direct fertilisation; and impacts on the lowland hay meadows are from trampling and dog-fouling.

Baseline Situation

3.44 Figure 3.3 shows a map of the Oxford Meadows SAC. It includes access points to Port Meadow and Wolvercote Common.

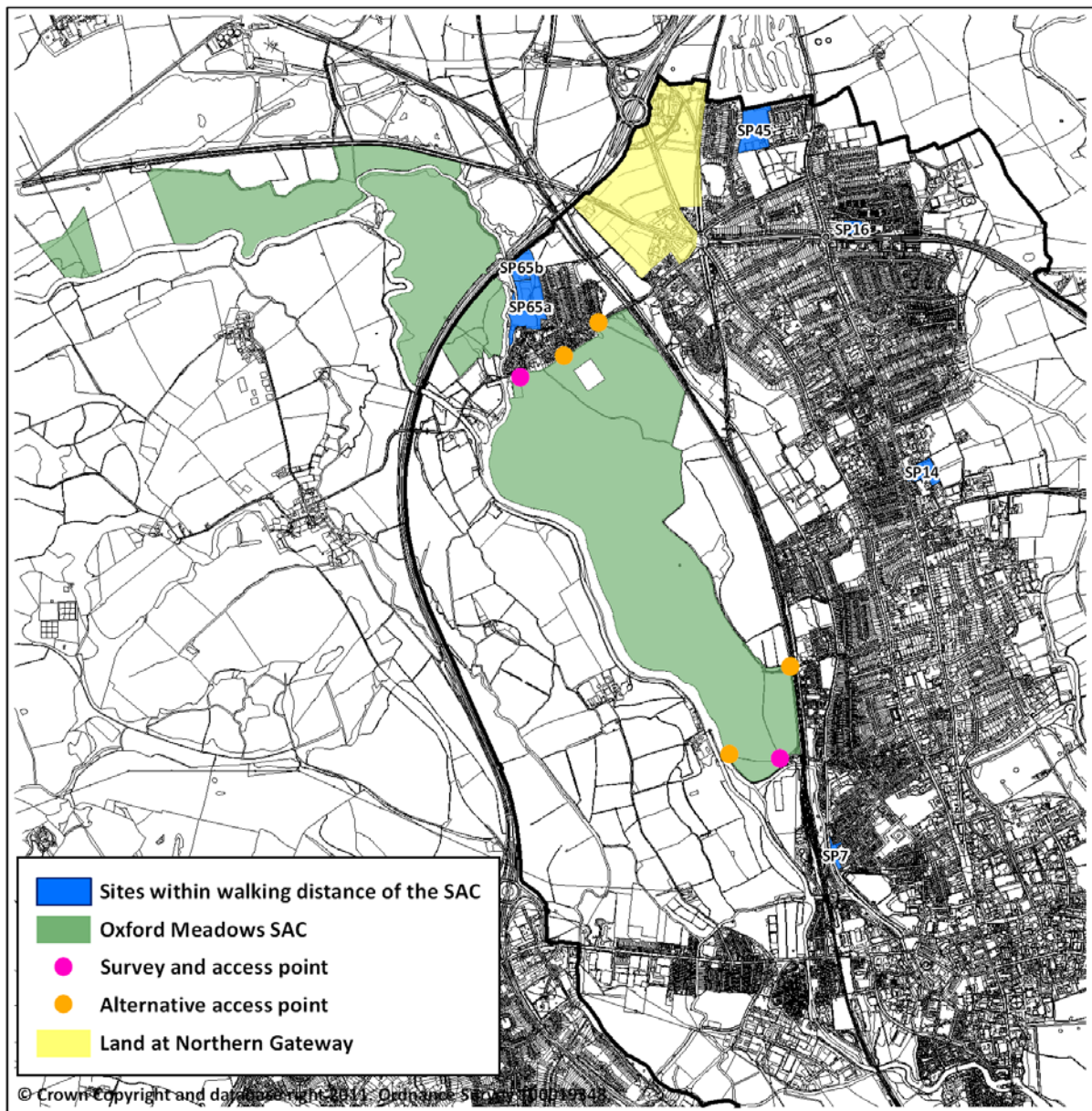


Figure 3.3 Housing developments and access points to Oxford Meadows SAC

- 3.45 The HRA for the Core Strategy assessed the implications of potential recreational impacts of the strategic sites on the integrity of the Oxford Meadows SAC. The HRA for the Core Strategy concluded that there would not be any likely significant adverse effects from allocating the strategic sites and also that it was likely that the 8,000 new dwellings proposed for Oxford as a whole would not be likely to have an adverse impact on the integrity of the Oxford Meadows SAC.
- 3.46 The HRA for the Sites and Housing Plan assessed the implications of recreational impacts of the specific Site Allocations on the integrity of the Oxford Meadows SAC. With the mitigation measures proposed, the HRA for the Sites and Housing Plan concluded that there would not be any likely significant adverse impacts on the integrity of the Oxford Meadows SAC. The HRA for the Sites and Housing Plan assessed the impacts of the plan 'alone and in-combination' with the Northern Gateway AAP (although it anticipated the Northern Gateway to have 200 dwellings as opposed to the 500 now proposed in the AAP).
- 3.47 The mitigation from the Sites and Housing Plan HRA in relation to the Northern Gateway AAP is:
- 'Northern Gateway should provide alternative recreation provision for dog-walking within the AAP boundary. Details of the exact location of housing, employment and green space at the Northern Gateway are not available at present. The Northern Gateway development will be brought forward through the planning process by way of an Area Action Plan. A separate HRA will be completed for this planning document.'*

Visitor Survey

- 3.48 Recreational pressure is an additive impact¹⁹. This means that any increase in recreational use of the SAC as a result of the Northern Gateway would be in addition to any current use. Natural England suggested that it would therefore be useful to find out what the current use of the Oxford Meadows SAC was in order to assess how any additional recreational pressure from development would be likely to impact the SAC. Natural England recommended that a visitor survey be undertaken to assess current recreational use of the Oxford Meadows SAC.
- 3.49 A visitor survey²⁰ was therefore conducted in October 2011. An on-site visitor survey and questionnaire for visitors arriving at the site was designed through discussions with Natural England and investigations of best practice examples. The methodology for the visitor survey and data analysis was agreed with Natural England prior to the commencement of the survey. At a meeting about the Northern Gateway HRA in January 2014, Natural England confirmed that the visitor survey was still considered current and as such could be used to support the Northern Gateway HRA. The survey results are shown in Appendix 1.
- 3.50 The visitor log from the survey recorded 1,099 people arriving at the site, excluding those who were interviewed. A total of 332 interviews were conducted, involving 533 people. This totals 1,652 visitors during the survey period. About three-quarters of visits were from within postcodes OX1 and OX2; 82% of visitors were permanent residents of Oxford; 56% walked to the SAC and 33% arrived by car. On average people visited the SAC 5.95 times per year. Walking and dog walking were the most popular activities, with 39% and 38.5% of respondents respectively citing that as the main purpose of their visit(see table 3.5). 39% of interviewees said that they come to the SAC daily, 31% once a week, and the remaining interviewees came less frequently.

¹⁹ Noted by Natural England at a meeting about Sites and Housing Plan HRA, 2011

²⁰ See Appendix 1

Table 3.5 Main purpose of visit as a percentage of those people interviewed (332)

	Dog-walking	Walking	Jogging/ running	Cycling	Outing with children/ family	Nature/ bird watching	Other
Total	38.5%	39%	6.5%	10.5%	1%	1%	3.5%

Impacts of the Northern Gateway AAP

3.51 The findings of this survey and the agreed methodology can be used to predict the future recreational visits to the SAC from new development at the Northern Gateway.

Table 3.6 Predicted recreational visits related to new residential development at the Northern Gateway

	Calculation/ reference	Result	
Total number of visitors over survey period	Taken from survey data	A	1,652
Percentage of visits over survey period from within postcode sectors OX1 and OX2	Taken from survey data	B	74%
Total number of visits per annum	See Table 1 (Appendix 2)	C	525,600
Total number of visits from within postcode sectors OX1 and OX2 per annum	C/B	D	388,944
Population of OX1 and OX2 postcode sectors	Taken from 2011 Census	E	65,318
Visits per annum per head of OX1 and OX2 population	D/E	F	5.95
New population arising from implementing the AAP	See Table 2 (Appendix 2)	G	1,200
Visits per annum arising from new population from Northern Gateway AAP	GxF	H	7,140
% of new visits relating to current total visitors	(H/C) x 100	I	1.36%

3.52 The new population arising from implementing the policies in the Northern Gateway AAP was calculated by taking planned new homes set out in the AAP (500) and multiplying by the household population stated in the 2011 Census (2.40 people per household). If the proportion of visitors to the SAC resulting from the Northern Gateway AAP increases by 1.36% (see Table 3.5), and 38.5% of these go there to walk their dog, then there would be a 0.52% increase in the number of visitors with dogs.

3.53 The nearest entrance to the Oxford Meadows SAC from the Northern Gateway AAP is 500m away, on Godstow Road. The populations of *A. repens* are situated away from the main access points to Port Meadow and Wolvercote Green.

3.54 The amount of parking provision at the Oxford Meadows SAC is limited. The City Council currently has no intentions to increase parking provision at the Oxford Meadows SAC. Indeed, although unrelated to planning, the City Council has introduced charges at the Walton Well Road car park and could potentially introduce charges at the Godstow Road Car Park. These measures could reduce the amount of recreational pressure by car on the Oxford Meadows SAC, not just from the Northern Gateway AAP but city-wide.

'In-combination' impacts

- 3.55 This section looks at the potential impacts of the Northern Gateway AAP ‘in-combination’ with other plans and projects.
- 3.56 The HRA for the Core Strategy considered the impacts of recreational pressure from the strategic sites on the Oxford Meadows SAC. It assessed those strategic sites within 1900m²¹ of the Oxford Meadows SAC – Northern Gateway, West End and land at Summertown - and concluded that recreational pressure as a result of the Oxford Core Strategy is unlikely to have a significant effect on the SAC.
- 3.57 The HRA for the Core Strategy stated, in relation to the Land at Summertown, that:
‘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.’
- 3.58 The HRA for the Core Strategy also considered the West End and concluded that enhancements to green spaces within the West End itself would provide some alternative recreation opportunities. It also noted that residents of the West End would be able to use extensive alternative areas of green space, including Grandpont Nature Park, Christchurch Meadows and the University Parks.
- 3.59 The HRA for the Sites and Housing Plan considered the impact of other possible development sites within 1,900m of the Oxford Meadows SAC. These sites are shown on Figure 3.3. The HRA suggested appropriate mitigation for each of these sites and this was written into the relevant policies in the Plan. Mitigation measures included the provision of dog-bins, information boards, and in the case of the Wolvercote Paper Mill, the provision of open space for dog-walkers to use as an alternative to the Oxford Meadows SAC. The HRA concluded that, with these site-specific mitigation measures in place, there would not be likely to be any adverse impacts on the Oxford Meadows SAC.
- 3.60 The area adjacent to the Oxford Meadows SAC outside of Oxford is Green Belt and flood plain and unlikely to be developed. The only housing development outside of the City boundary that may affect the SAC is at Tilbury Lane and Lime Road in Botley. This is now under construction. Given the distance from the SAC and the number of alternative sites for recreation nearby including Raleigh Park, it is unlikely that these developments would cause significant recreational pressure on the Oxford Meadows SAC.
- 3.61 For these reasons, there are unlikely to be ‘in combination’ recreational impacts with those of the Northern Gateway AAP.

Conclusions

- 3.62 This assessment shows that just over 1% of visits to the SAC would arise from the Northern Gateway. On this basis, the City Council considers that there will not be any adverse impacts on the integrity of the Oxford Meadows SAC in relation to recreational impacts from development at Northern Gateway. However, notwithstanding this, it is worth noting that

²¹ The ‘Oxford Green Spaces Study (2005) and the Green Spaces Strategy (2013) considered that people are willing to walk approximately 1,900m to important green spaces.

the AAP policy approach is to require 15% of the total site area as green public open space (including 15% of any parcel proposed for residential development), above the standard 10%. This approach will act to further ensure that there are attractive alternatives to the SAC to meet the recreational needs of new residents.

4. Conclusions

- 3.63 Considering each conservation objective in turn, a summary of the mitigation measures or changes to the Northern Gateway AAP is considered below:

Air Quality

- 3.64 Chapter 3.1 discusses the likely air quality impacts associated with the Northern Gateway AAP. This assessment concluded that considering the robust and up-to-date nature of the Northern Gateway site-specific air quality assessment that has been carried out, the scale of the impact of development traffic, the limited physical extent of the exceedence of the critical level, and the significant improvement in NOx concentrations in the future, it is considered highly unlikely that the development will have an adverse effect on the integrity of the SAC.
- 3.65 In terms of 'in-combination' impacts, a review of all Oxfordshire Districts' adopted or emerging Local Plans has been carried out. The result of this review is that there is unlikely to be, given the best available evidence, any significant in-combination effects in terms of air quality on the Oxford Meadows SAC.

Balanced Hydrological Regime

- 3.66 Chapter 3.2 discusses the likely impacts to the balanced hydrological regime at the Oxford Meadows SAC as a result of the policies within the Northern Gateway AAP.
- 3.67 The assessment concluded that the majority of the site can be developed without any impact on the balanced hydrological regime at the Oxford Meadows SAC. In fact there are only two small areas of land within the Northern Gateway boundary that are not on the Oxford Clay Formation.
- 3.68 The HRA recommends that the AAP should preclude development on those areas of land (outside of the Oxford Clay Formation) until the applicant is able to submit evidence (as part of a planning application) to demonstrate conclusively that there would be no adverse impact on the integrity of the Oxford Meadows SAC from built development on those parcels of land.
- 3.69 The AAP has included text to this effect in the section on drainage and has a policy on the conditions under which planning permission will be granted on the site in relationship to the SAC. The AAP also includes text in relation to a wildlife corridor/ buffer on the AAP site which would preclude development from the Alluvial Ribbon - the part of the AAP site with an element of hydrological connectivity with sensitive ecological sites in close proximity to the AAP area.

Recreational Impacts

- 3.70 Chapter 3.3 discusses the likely recreational impacts of the policies within the Northern Gateway AAP and includes an assessment of the impacts of increased visitor pressure on the Oxford Meadows SAC alone and in combination with other plans and projects.

- 3.71 The assessment shows that just over 1% of visits to the SAC would arise from the Northern Gateway. On this basis, the City Council considers that there will not be any adverse impacts on the integrity of the Oxford Meadows SAC in relation to recreational impacts from development at Northern Gateway. However, notwithstanding this, it is worth noting that the AAP policy approach is to require 15% of the total site area as green public open space (including 15% of any parcel proposed for residential development), above the standard 10%. This approach will act to further ensure that there are attractive alternatives to the SAC to meet the recreational needs of new residents.
- 3.72 Given the above assessments, mitigation measures, there are not likely to be any impacts on the Oxford Meadows SAC either alone or in combination with other plans or projects.

Appendix 1: Visitor Survey (updated from Sites and Housing Plan)

Introduction

A visitor survey of Oxford Meadows was commissioned to understand how the site is currently used by the population of Oxford and by visitors from outside the city.

Methods used

Through discussions with Natural England and investigations of best practice examples an on-site visitor questionnaire with visitors arriving at the site was designed.

The survey was carried out:

- On 6 days including a range of weekend and weekday dates (Wednesday 26th October, Thursday 27th October, Saturday 29th October, Sunday 30th October, Friday 4th November and Saturday 5th November)
- Both within and outside of the school October half term (24-28th October 2011)
- For 4x 2 hour periods each day (e.g. 7-9am; 10am-12pm; 1-3pm; 4-6pm)
- At two locations one to the North, the Wolvercote car park (off Godstow Road) and to the South, the car park off Walton Well Road)

The survey questionnaire asked a series of 11 questions:

About you:

- Question 1: How many adults, children and dogs make up your group?
- Question 2: Which postcode have you travelled from to visit this site?
- Question 3: Which best describes you?

About today's visit:

- Question 4: How did you get here today?
- Question 5: How long have you spent/ will you be spending here today?
- Question 6: What is the main purpose of your visit today?

About other visits:

- Question 7: How often do you visit this site?
- Question 8: Do you tend to visit this site at a certain time of day?
- Question 9: What time of year do you visit this site?
- Question 10: Aside from this location do you visit any other places for similar purposes?
- Question 11: What facilities do you think are important to your enjoyment of open spaces in the Oxford area?

A visitor log was also kept to record those arriving at the site but were not interviewed.

Results

The visitor log recorded 1,099 people arriving at the site (this excludes those that were interviewed) and a total of 332 interviews were conducted, involving 533 people.

About you:

Question 1 – Size of group as percentage of all groups; percentage of all groups with 1 or more dogs (332)

	Alone	2	3	4	5+	Dog/s
Total	60%	28%	6%	3%	3%	38%

Question 1 – Age of visitors in group as a percentage of all those in interviewed groups (553)

	Under 18's	18-40	41-65	65+
Total	15%	33%	41%	11%

Question 2 – Postcode from which journey began as percentage of all interviews groups (331²²)

Oxfordshire postcodes	%	Outside Oxfordshire postcodes	%	Outside UK	%
OX1	15	B91	0.3	Australia	0.3
OX2	59	DT6	0.3	Belgium	0.3
OX3	5	GU11	0.3	Holland	0.3
OX4	5	HP13	0.3	USA	1.2
OX5	4	KT3	0.3	Total	2.1
OX7	0.3	LS17	0.3		
OX9	0.3	MK13	0.3		
OX13	0.6	N20	0.3		
OX14	1.2	N4	0.3		
OX16	0.3	RG14	0.3		
OX17	0.3	RM17	0.3		
OX20	0.3	SN1	0.3		
OX21	0.3	SW15	0.3		
OX28	0.3	WR13	0.3		
OX29	1	Bucks	0.3		
Total	91.9	Total	4.8		

Question 2 – Postcode from where journey started as percentage of interviews where full postcode was given (255)

	OX1						OX2								
	1	2	3	4	5	6	0	1	2	3	5	6	7	8	9
Total	4.7%	2%	0.8%	1.6%	4%	0.4%	20%	0.4%	2.4%	0.4%	0.8%	40%	2.3%	3%	0.8%

	OX3				OX4				OX5		OX7
	0	1	3	7	1	2	4	6	1	3	3
Total	0.8%	0.4%	1.6%	1.6%	2.4%	1%	1.5%	0.8%	3%	0.4%	0.4%

	OX13		OX14		OX20	OX21	OX29	
	1	6	2	3	0	6	8	9
Total	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%

Question 3 – Resident or visitor as percentage of interviews (332)

	Permanent resident of Oxford	Temporary resident of Oxford e.g. student	Resident elsewhere in Oxfordshire	Visitor/ holiday maker
Total	82%	7%	4%	7%

²² One person declined to give a postcode

About today's visit:**Question 4 – Mode of travel to arrive as percentage of interviews (332)**

	Walk	Cycle	Bus	Car	Other
Total	56%	9%	1%	33%	1%

Question 5 – Length of visit as percentage of interviews (332)

	Less than 1 hour	1-2 hours	2-3 hours	More than 3 hours
Total	77%	20%	3%	0%

Question 6 – Main purpose of visit as percentage of interviews (332)

	Dog walking	Walking	Jogging/running	Cycling	Outing with children/family	Nature/bird watching	Other
Total	38.5%	39%	6.5%	10.5%	1%	1%	3.5%

About other visits:**Question 7 – Frequency of visits as percentage of interviews (332)**

	Daily	Once a week	Once a month	Occasionally	Don't know/first visit
Total	39%	31%	11.5%	14%	4.5%

Question 8 – Time of visits as a percentage of interviews (332) more than one answer permitted

	Before 9am	Between 9am and 12pm	Between 12pm and 2pm	Between 2pm and 4pm	After 4pm	Don't know/first visit
Total	35%	42%	36%	45%	42%	8%

Question 9 – Season of visits as percentage of interviews (332) more than one answer permitted

	Spring	Summer	Autumn	Winter
Total	91%	93%	97%	87%

Question 10 – Aside from this location do you visit any other places for similar purposes?

Binsey Lane	1	Marston	1
Blackbird Leys	1	River corridor	7
Blenheim	1	Shotover	5
Botley Nature Reserve	1	South Parks	3
Canal Corridor	3	Sutton Courtenay	1
Christchurch Meadow	9	Trap Grounds	3
Cuttleslowe	2	University Parks	43
Donnington Bridge	1	Wytham Woods	2
Hinksey	1		

Question 11 – What facilities do you think are important to your enjoyment of open spaces in the Oxford area? (V=very important; Q=quite important; N=not important)

	Benches/ picnic tables			Litter bins			Dog bins			Information boards		
	V	Q	N	V	Q	N	V	Q	N	V	Q	N
Total	12%	17%	70%	38%	18.5%	43.5%	50%	11%	39%	10%	18%	72%

	Parking			Cycle Parking			Toilets		
	V	Q	N	V	Q	N	V	Q	N
Total	30%	10%	60%	6.5%	8.5%	85%	17%	18.5%	64.5%

	Signposted trails			Well-maintained paths			Length/ variety of tracks & paths			Wheelchair/ pushchair access		
	V	Q	N	V	Q	N	V	Q	N	V	Q	N
Total	13.5%	24%	62.5%	15%	31%	54%	15%	31%	54%	11%	11%	78%

	Views			Wildlife/ biodiversity			Range of habitats and landscapes e.g. woodland/ grassland			Access to water		
	V	Q	N	V	Q	N	V	Q	N	V	Q	N
Total	87.5%	8.5%	4%	88.5%	8.5%	3%	85%	9%	6%	77%	8%	15%

	Feeling of safety			Quietness/ not too busy			Ability to let dog off the lead		
	V	Q	N	V	Q	N	V	Q	N
Total	51.5%	15%	33.5%	41%	23%	36%	46%	2%	52%

Analysis

In order to interpret the survey data and project the total number of visitors to the site the following calculation was carried out. The methodology broadly follows that used by Bracknell Forest DC in the Thames Basin Heaths SPA analysis recommended by Natural England as best practice.

	Calculation/ reference	Result
Total number of visitors over survey period	Taken from survey data	A 1,652
Percentage of visits over survey period from within postcode sectors OX1 and OX2	Taken from survey data	B 74%
Total number of visits per annum	See Table 1	C 525,600
Total number of visits from within postcode sectors OX1 and OX2 per annum	C/B	D 388,944
Population of OX1 and OX2 postcode sectors	Taken from 2011 Census	E 65,318
Visits per annum per head of OX1 and OX2 population	D/E	F 5.95
New population arising from implementing the AAP	See Table 2	G 1,200
Visits per annum arising from new population from Northern Gateway AAP	GxF	H 7,140
% of new visits relating to current total visitors	(H/C) x 100	I 1.36%
New population arising from 'in-combination' impacts	See Table 3 below	J 2,180
Visits per annum arising from new population 'in combination'	FxJ	K 12,971
% of new visits	(K/C) x 100	L 2.5%

Table 1

Total number of visitors recorded leaving during this survey	1,652
Number of sites	2
Mean number of visitors leaving per site	826
No. of hours of surveying per site	48
Mean no. of people leaving per site per hour	17.2
Total hours in day (06:00 – 20:00)	14
Total people leaving site per day per access point	240
Mean number of people leaving per access point per year	87,600
Total number of access points within the SAC	6
Estimate of the total number of visits per year to the SAC	525,600

Table 2

Site	Number of units	Number of Residents
Northern Gateway	500	1,200

Table 3 'In-combination impacts'

Site	Number of units	Number of Residents
Northern Gateway	500	1,200
Sites and Housing Plan	408	980
Total	908	2,180

Points to be noted

The interviews were conducted in the Autumn and visitor access patterns may, as consequence, be different when compared to the rest of the year. The surveys included the school half-term period in order to reflect the difference between school holidays and term-time.

The surveys were carried out in a range of weather conditions including sunshine, cloudy, rain and mist with temperatures ranging between 6 and 14°C so are likely to have sampled a range of users.

Walkers and dog walkers are clearly the main user groups. The data shows that dog walkers visit more frequently than other users, many of them walking daily on the same site. As dogs need exercising on a daily basis, the dog walkers interviewed are therefore likely to represent a relatively constant sample of visitors, and usage would be likely to be similar throughout the year. During the winter, the proportion of dog-walkers to other users may well be higher as the numbers of people cycling, taking the children out, picnicking etc. would be likely to be less.

There are 6 access points to Oxford Meadows: Wolvercote car park, the right of way at the entrance to Wolvercote off Godstow Road, from the bridge at Aristotle Lane, Godstow Road, the bridge across the river from Binsey, and the car park off Walton Well Road. The two survey points that were selected are both car parks so it is possible that the survey results are slightly skewed towards arrivals by car although this does not seem to be particularly evident in the South car park.