

**Habitats Regulation Assessment of the Site Specific
Allocations & Policies Document, Wymondham Area
Action Plan, Long Stratton Area Action Plan and
Cringleford Neighbourhood Development Plan,
undertaken for South Norfolk Council**

October 2013



Natural Environment Team

Habitats Regulation Assessment of the Site Specific Allocations and Policies Document, the Wymondham Area Action Plan, the Long Stratton Area Action Plan and the Cringleford Neighbourhood Development Plan

Executive Summary

- As required by the Conservation of Habitats and Species Regulations 2010, before deciding to give consent or permission for a plan or project which is likely to have a significant effect on a European site, either alone or in combination with other plans or projects, the competent authority is required to make an appropriate assessment of the implications for that site in view of that site's conservation objectives.
- This document is a record of the Habitats Regulation Assessment of the Sites Allocation Document, undertaken for South Norfolk Council. Additionally, proposed development at Wymondham, as described in the emerging Wymondham Area Action Plan, at Long Stratton, as described in the emerging Long Stratton Area Action Plan and proposed housing in the parish of Cringleford, guided by the emerging Cringleford Draft Neighbourhood Plan, are assessed
- Three groups of plans are reviewed with respect to their conclusions with respect to potential in-combination effects. These are plans for The Greater Norwich Development Partnership, Great Yarmouth Borough Council, Breckland District Council, and The Broads Authority including local development plans and the Tourism Strategy.
- An initial scoping exercise identified the main potential impacts from development sites within the South Norfolk are with issues relating to water abstraction and water disposal and levels of recreational disturbance. The Habitats Regulations Assessment relates to Special Protection Areas, Special Areas of Conservation and Ramsar Sites.
- The GNDP water cycle study (Scott Wilson, 2010) fully assessed the potential impacts of water abstraction and water disposal and as such, they are not addressed in detail in the current work. The suitability of this approach was agreed with Natural England (NE reference: 83415). Since the publication of the original water study, further processes relating to water abstraction were undertaken, which are summarised here.
- Nine International Sites that were not scoped-out at initial stage are subjected to tests of likely significance relating to potential impacts from recreational disturbance: Norfolk Valley Fens, The Broads SAC & Ramsar Site/Broadland SPA; Breckland SPA and Breckland SAC; The River Wensum SAC; Redgrave & South Lopham Fens Ramsar/ Waveney and Little Ouse Valley Fens SAC.
- Having completed the Stage 1 test, it is considered that there is sufficient confidence for significant effects to be unlikely and an Appropriate Assessment is not required for disturbance effects on any of the International Sites. Therefore it is concluded that there is no need to undertake further stages of the HRA process.

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for South Norfolk Council

October 2013

1. INTRODUCTION

This is a record of the Habitats Regulation Assessment of the Site Specific Allocations and Policies Document, the Wymondham Area Action Plan, the Long Stratton Area Action Plan and the Cringleford Neighbourhood Development Plan, undertaken for South Norfolk Council as the Planning Authority. The Assessment is required by Regulations 61 of the Conservation of Habitats and Species Regulations 2010, in accordance with the EC Habitat Directive (Council Directive 92/43/EEC) before the council as the 'competent authority' under the Regulations can permit development to proceed.

1.1 OVERVIEW

As required by the Conservation of Habitats and Species Regulations 2010 (hereafter Habitats Regulations), before deciding to give consent or permission for a plan or project which is likely to have a significant effect on a European site, either alone or in combination with other plans or projects, the competent authority is required to make an appropriate assessment of the implications for that site in view of that site's conservation objectives.

This document has been prepared by the Environment Team at Norfolk County Council on behalf of South Norfolk Council and provides a Habitats Regulations Assessment and Appropriate Assessment for the Site Specific Allocations & Policies Document, the Wymondham Area Action Plan, the Long Stratton Area Action Plan and the Cringleford Neighbourhood Development Plan. The purpose of this document is to assess the likely impacts, effects and mitigation associated with the allocation of sites in these four documents that may be required within the formal context of the Habitats Regulations.

The Site Allocations Document being assessed

Site allocations in South Norfolk are proposed for 53 settlements ranging from Norwich fringe parishes (e.g. Easton, Costessey), to main towns (Diss, Harleston), key service centres (Hethersett, Loddon/Chedgrave) and service

villages as detailed in the Joint Core Strategy (JCS). For draft Site Allocations Document see <http://www.south-norfolk.gov.uk/planning/4620.asp>

The town of Wymondham is not included in the Site Specific Allocations and Policies Document, as proposed growth will be guided by an Area Action Plan. However for the purposes of the HRA work, proposed development in Wymondham as described in the draft Wymondham Area Action Plan (WAAP) is included in this study and report. The WAAP for Wymondham will guide development in the town up to 2026 in line with the need to provide at least 2,200 new homes and 20 hectares of employment land as allocated in the Joint Core Strategy. The Pre-Submission version of the WAAP allocates 2,200 dwellings. Public consultation on the draft WAAP was completed in March 2013 and the final version of the WAAP will be subject to public examination in autumn 2013. For details on the WAAP see <http://www.south-norfolk.gov.uk/planning/1952.asp>.

In the parish of Long Stratton, proposed growth will be guided by an Area Action Plan. Proposed development as described in the draft Long Stratton Area Action Plan (LSAAP) is included in this study and report. The emerging LSAAP will guide development in the town up to 2026 in line with the need to provide a minimum of 1800 new homes and local employment opportunities. Public consultation on the draft AAP was completed in July 2013 and the final version of the LSAAP will be subject to public examination in 2014. For details on the LSAAP see <http://www.south-norfolk.gov.uk/planning/4954.asp>

Housing growth in the Parish of Cringleford will be guided by the Cringleford Draft Neighbourhood Development Plan (NDP). The Joint Core Strategy allocates a minimum of 1,200 new dwellings to the parish up to 2026, and the Examination version of the NDP allocates 1,200 dwellings. This is in addition to the 1,000 homes already approved by SNC (at Round House Park). This plan is subject to independent examination in the autumn of 2013. For details of the NDP see <http://www.south-norfolk.gov.uk/planning/5736.asp>.

A separate Habitats Regulations Assessment of the South Norfolk Development Management Policies Document has been prepared. It is available to view at <http://www.south-norfolk.gov.uk/democracy/default.aspx?id=13503.xml> (Appendix 14 of item 07). The conclusion of this HRA is that significant effects on any international sites are unlikely and that there is no need to undertake further stages of the HRA process.

1.2 LEGISLATION & PLANNING POLICY

The need for an appropriate assessment originally arose under the requirements of the EC Habitats Directive (92/43/EEC) and its implementation in the UK under the Conservation (Natural Habitats &c.) Regulations 1994. The Conservation of Habitats and Species Regulations 2010 were published and consolidated the legislation, updated and incorporated the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 (the 1994 Regulations).

On 25 July 2012, Defra laid “The Conservation of Habitats and Species (Amendment) Regulations 2012” before Parliament. These Regulations came into force on 16 August 2012.

Regulation 61(5) states that “In the light of the conclusions of the assessment, and subject to regulation 62 (considerations of overriding public interest), the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site “. Regulation 61(6) also states “In considering whether a plan or project will adversely affect the integrity of the site, the authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given.”

International sites covered by the Habitat Regulations

The Habitats Regulations Assessment relates to Special Protection Areas (SPAs), Special Areas of Conservation (SAC) and Ramsar Sites.

SPAs

SPAs are sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), more commonly known as the Birds Directive. They are classified for rare and vulnerable birds, listed in Annex I of the Birds Directive, and for regularly occurring migratory species. Regulation 8 of the 2012 Regulations substitutes regulation 9 of the 2010 Regulations, to provide that public bodies must exercise their conservation functions specifically so as to comply with the Birds Directive.

SACs

SACs are classified in accordance with EC Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Article 3 of this Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive.

SPAs and SACs are known as the Natura 2000 network and are commonly referred to as ‘European Sites’.

Ramsar Sites

Ramsar Sites are sites qualifying under the International Convention on Wetlands of International Importance, 1971, known as the Ramsar Convention (amended by the Paris Protocol, 1992). Ramsar Sites are not protected in UK law by the Birds and Habitats Directives; however parliament has decreed that, unless otherwise specified, procedures relating to SPAs and SACs will also apply to Ramsar Sites. This was reiterated in the National Planning Policy Framework

(DfCLG, 2012). Thus, in this report, the term 'International Sites' is used to refer to Ramsar sites as well as SACs and SPAs.

Appropriate assessment:

An appropriate assessment is a decision by a 'competent authority', in this case South Norfolk Council, as to whether the proposed plan or project can be determined as not having an adverse effect on the integrity of any European sites.

An adverse effect on integrity is one that prevents the site from maintaining the same contribution to favourable status for the relevant feature or features, as it did when the site was qualifying. Only where a plan or project can be determined by the competent authority as not having an adverse effect on site integrity can it be allowed to proceed. The favourable conservation status of the site is defined through the site's conservation objectives and it is against these objectives that the effects of the plan or project must be assessed.

1.3 THE ASSESSMENT PROCESS & METHODOLOGY PROCESS

The Appropriate Assessment process is outlined below. This involves evidence gathering followed by three stages:

Evidence Gathering: Collation of documentation relating to the plan. Collecting information on relevant European sites, their conservation objectives and characteristics.

Stage 1: The 'test of likely significant effect'. Establishing whether a plan is 'likely to have a significant effect' on a European site, and therefore requiring the Appropriate Assessment.

Stage 2: Assessment of whether there is an effect on site integrity. This is potentially a two-stage process, with a consideration of whether there are likely to be effects, followed if necessary by a detailed consideration of site-specific factors.

Stage 3: Reassessment. If there is an effect on site integrity then the project should be reassessed with the inclusion of compensation and a repeat of stage 2 should then be completed.

1.4 EVIDENCE GATHERING

Data on the project proposals are taken from the South Norfolk Council's Draft Site Allocation document (April 2013 iteration). Identification of European sites was undertaken utilising the databases held by Norfolk Biodiversity Information Service (the County Records Centre for Biological and Geographical records, hereafter referred to as NBIS) and the online Multi-Agency Geographic

Information for the Countryside database (hereafter referred to as MAGIC; www.magic.gov.uk). Data on the European sites, including qualifying features were taken from the Joint Nature Conservation Committee website (www.jncc.gov.uk); data on the component SSSIs, primarily the condition assessment, were taken from the Natural England website (www.naturalengland.org.uk).

In addition, a scientific literature search was undertaken using publically available search engines, grey literature reports and academic databases to utilise relevant research work.

Definition of 'Site Integrity'

Based on definitions within Article 1 of the Habitats Directive and following English Nature (2004), now Natural England, site integrity is defined as:

For habitats:

- Their range and area must be stable or increasing;
- The species structure and functions necessary for long-term maintenance of the habitat exist and are likely to continue to exist for the foreseeable future; and
- The status of the typical species is considered to be favourable.

For species:

- The population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and
- The natural range is stable and likely to continue to be, and there is and will probably continue to be a sufficiently large habitat to maintain its population on a long term basis.

To help identify likely effects and potential mechanisms that could affect site integrity, English Nature (1999, 2004) proposed a checklist of questions. For the assessment to conclude that there are no adverse effects then it is necessary to show that:

- The area of Annex I habitats (or composite features) will not be reduced;
- There will be no direct effect on the population of the species for which the site was Qualifying or classified;

- There will be no indirect effects on the populations of species for which the site was Qualifying or classified due to loss or degradation of their habitat (quantity/quality);
- There will be no changes to the composition of the habitats for which the site was Qualifying (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time); and
- That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was Qualifying or classified.

If it is concluded that one or more of the above is not met, or if there is uncertainty, then it is necessary to consider further site-specific factors in order to reach a decision. The key site-specific factors that need to be considered when forming judgments on site integrity (English Nature, 2004) are:

- Scale of impact,
- Long term effects and sustainability,
- Duration of impact and recovery/reversibility,
- Dynamic systems,
- Conflicting feature requirements,
- Off-site impacts, and
- Uncertainty in cause and effect relationships and a precautionary approach.

Mitigation versus Compensatory Measures

It is generally accepted that there are three types of interacting measures to reduce impacts. The first two, avoidance and reduction, are grouped together as mitigation. In addition, there are compensatory measures. The European Commission (2007, p10) present the distinction as:

“Mitigation measures are those measures which aim to minimise, or even cancel, the negative impacts on a site that are likely to arise as a result of the implementation of a plan or project. These measures are an integral part of the specifications of a plan or project”, and

Compensatory measures in the strict sense are independent of the project (including any associated mitigation measures). They are intended to offset the

negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 Network is maintained.”

Tyldesley, 2011, (p13) summarises this succinctly: “*Mitigation* (avoidance and reduction) *measures (are) built into the project and form(ing) part of the project as proposed or applied for*” whereas compensatory measures are those which “*do not already form part of the project but may be applied as additional conditions or restrictions*”.

1.5 CONSULTATION

The competent authority must consult the appropriate nature conservation body, currently Natural England, and have regard to any representations made by that body. Consultation with a number of organisations has been undertaken. Informal conversations regarding the approach were undertaken with Natural England at the start of the process and confirmation of the appropriateness of methodology and the other plans, policies and programmes that should be considered was confirmed in an email 13 May 2013 (NE ref 83415).

Discussions on the approach and specific issues with Senior Planning Officers from the RSPB were held on 10 May 2013 at the Thorpe Road Offices. Informal discussions with spatial planners and conservation officers of the Broads Authority were held in May 2013 with a formal round-table discussion on 10 June 2013. Formal comments from the Broads Authority were sent in an email on 27 June 2013.

2. IN COMBINATION EFFECTS

2.1 OVERVIEW

It is a requirement of the Habitats Regulations to undertake an in-combination assessment of plans and projects. A project or plan that affects a European site in some way, but where these effects are unlikely to be significant, may be significant when considered in combination with other plans. There are a number of plans prepared for neighbouring local authorities which may act in combination with the Site Specific Allocations and Policies document, the Wymondham Area Action Plan, the Long Stratton AAP and the Cringleford Neighbourhood Development Plan to result in impacts on the integrity of sites.

Three groups of plans are reviewed with respect to their conclusions with respect to potential in-combination effects. These are plans for

- The Greater Norwich area (Broadland, Norwich and South Norfolk districts), of which South Norfolk Council LPA is a part;
- Great Yarmouth Borough Council;
- Breckland District Council, and
- The Broads Authority (including local development plans and the Tourism Strategy (Broads Authority, 2011)).

2.2 GREATER NORWICH DEVELOPMENT AREA Joint Core Strategy (Mott Macdonald, 2010)

As described by Mott Macdonald, the 2009 Joint Core Strategy (JCS) consultation report was subject to a Stage 1 Test of Likely Significant Effects and the following JCS policies were identified as having the potential to have significant effects on European and Ramsar designated sites:

- Policy 3: Energy and Water (which underpins Policies 10 & 12);
- Policy 4: Housing (which underpins Policies 10 & 12);
- Policy 6: Access and transportation;
- Policy 10: Location for major new or expanding communities, and;
- Policy 12: The remainder of the Norwich urban area, including the fringe parishes.

The Stage 2 Appropriate Assessment considered that all the above policies with the exception of Policy 6 were likely to have a significant impact, on the basis that the relevant schemes would be considered at the project level and not directly related to JCS policies.

Two main issues were considered potentially significant: hydrological issues and impacts from human disturbance. With regards to hydrological issues, measures are underway *“towards a resolution of the longer term water resource requirement”* (Anglian Water, Environment Agency and Natural England, 2010).

Increased disturbance was assessed as a potentially significant impact of policy 4 (with any in-combination disturbance impacts from policy 12 covered under policy 4). As described for policy 4, site integrity may be impacted from: *“In-combination impacts associated with area-wide growth, resulting in increased visitor pressure on European designated sites in combination with growth in neighbouring local authority areas.”* The identified International Sites were:

- Broads SAC; Broadland Ramsar & SPA;
- Breckland SPA & SAC;
- Great Yarmouth North Denes SPA;
- Winterton – Horsey Dunes SAC; and
- North Norfolk Coast SAC, SPA & Ramsar.

2.3 BROADS AUTHORITY AREA

Core Strategy (Broads Authority, 2006)

The Habitats Regulations Assessment for the Core Strategy concluded that none of the policies presented a significant risk to site integrity. Specifically it concluded that *“any risks will be prevented by the Holistic interpretation of Core Strategy policies, using Core Strategy Policy 2 for sites designated with*

European and National Importance". Core Strategy Policy 2 states that: "*policies will take into account National & European designated conservation sites*".

The most relevant Core Strategy Policies (CS) to which this applies are CS 2 (protecting and enhancing new water space), CS 4 (creation of new resources), CS 9 (sustainable tourism), CS 10 (tourist and recreation development), CS 14 (additional moorings), CS 15 (safe navigation), CS 16 and CS 17 (accessing The Broads in a sustainable manner) and CS 19 (sustainable locations for medium/larger visitor developments).

Two sites were identified as possibly at risk of impacts namely Breydon Water SPA and Ramsar Site (CS 10); and The Broads SAC/ Ramsar Site/ Broadland SPA (CS 10, CS 16 and CS 17). For both sites CS 2 is identified as the key policy for justifying site-by-site assessment of impacts.

Development Management Policies (Wildfrontier Ecology, 2011)

For the Broads Development Management Policies, the HRA assessment was undertaken as an iterative process. Revisions to the wording and the subsequent strengthening of some policies resulted in the conclusion that impacts on site integrity were unlikely. However, if a proposal is considered in the context of a given policy to have an effect on an internationally designated site then it will need to be considered against the Habitats Directive and a project level Appropriate Assessment will need to be undertaken.

Site Specific Policies (Interim Draft HRA) (Wildfrontier Ecology, 2012)

An assessment of the 'finer scale' policies within the Broads Authority concluded that significant effects on site integrity were possible for The Broads SAC, Broadland SPA and Winterton – Horsey Dunes SAC and Great Yarmouth North Denes SPA. The draft policies of possible concern were those potentially resulting in disturbance or hydrological issues at the named settlements of Cantley, Brundall, Great Yarmouth marina, Horning and Oulton Broad. Non-settlement draft policies with potential impacts were those relating to management works at Horsey and St Benet's Abbey. In each case, minor revisions to the wording of individual draft policies resulted in a revised assessment where no impact on site integrity was concluded.

Tourism Strategy (Broads Authority 2011)

The Tourism Strategy for The Broads has not been subject to a HRA (confirmed by email from an officer from the Broads Authority 29 January 2013). The Tourism Strategy aspires that by the year 2015 there will be increased visitors to the Broads, with proportionally more in the southern Broads and with more visitors out of season. Ecotourism is recognised as a major product and market opportunity, and the strategy aspires that there is tangible evidence that overall environmental quality has further increased with the support of tourism.

With particular relevance to the current HRA work for the South Norfolk Council Site Allocation documents, the Tourism Strategy makes reference to local residents (as opposed to visitors from outside the area). In particular, an area for action included a desire to raise local residents' awareness of the Broads product (p42). It states that the *"continuing importance of the day visitor market has been highlighted in this strategy. Business can be generated not only from residents in and around the area but also from their visiting friends and relatives. It is believed that local awareness of Broads products and experiences is still quite patchy."*

Also relevant in the current HRA work are the aims of the Tourism Strategy to:

- Strengthen visitor awareness of opportunities in the peripheral parts of the Broads by providing good information about what can be found at the end of each waterway and how it may differ from the busier, more congested parts, by encouraging further development of relevant product in the upper reaches, for example by canoe, by providing trails and guided walks and wildlife trips and by taking care to manage the scale and distribution of new activity in sensitive areas, with appropriate advice from conservation managers.
- Monitor proposed improved or promoted access to ensure adequate protection is in place to safeguard Qualifying and important wildlife habitats and species.

2.4 GREAT YARMOUTH BOROUGH COUNCIL

Waterfront Area Action Plan and Core Strategy of the Great Yarmouth Local Development Framework

As reported by Grant (2010) in the HRA of the Waterfront Area Action Plan, the Core Strategy identified the following likely significant effects:

- Recreational pressures from increased numbers of visitors to Winterton-Horsey Dunes SAC, Great Yarmouth North Denes SPA and Breydon Water SPA/Ramsar;

- Urban effects, such as litter and lighting, on Winterton-Horsey Dunes SAC and Great Yarmouth North Denes SPA; and
- Surface run-off resulting in a deterioration of water quality in watercourses, which in turn could have an effect on the Broads SAC and Broadlands SPA/Ramsar and Breydon Water SPA/Ramsar.

The HRA of the Waterfront Area Action Plan concluded that there could be possible impacts on site integrity from water quality and hydrology of The Broads SAC/Broadlands SPA/Ramsar and Breydon Water SPA/Ramsar. It also recognised potential impacts from recreation on the dunes at Winterton-Horsey Dunes SAC and disturbance at Breydon Water SPA/Ramsar and disturbance to nesting little tern at Great Yarmouth North Denes SPA.

The Consultation Draft of the HRA of the Great Yarmouth Local Plan Core Strategy (Footprint Ecology & David Tyldesley & Associates, 2012) detailed and up-dated assessment of current and future recreational use of on the Winterton-Horsey Dunes SAC, Breydon Water SPA/Ramsar and Great Yarmouth North Denes SPA including a full discussion of visitor surveys and potential impacts.

2.5 BRECKLAND DISTRICT COUNCIL

Core Strategy and Development Control Development Plan Document

In considering the implications of the Breckland Core Strategy and Development Control Policies document for European sites, an Appropriate Assessment was undertaken (Liley D. *et al.*, 2008). The document concludes that

“A number of policies within this proposed Core Strategy and Development Control Policies document were considered to have significant effects that would be likely, or that a precautionary approach would need to be taken as it could not be determined that particular plan policies would not have a significant effect upon any European site. In light of the findings of the Habitats Regulations Assessment, it was recognised that mitigation measures must be put in place to remove any significant effects or likely significant effects that the plan may have on European sites. Mitigation measures included amendments made to policies to remove elements that could have an effect, or to require other actions that can eliminate any effects. The policies in this document that have an effect on European sites have been amended to ensure that the qualifying features are not harmed, as well as considering other measures that will be necessary. These mitigation measures are incorporated throughout the document where necessary. In some cases, the mitigation measures necessary have in themselves had a significant role in shaping the final direction of the Core Strategy as well as particular policies.”

In particular, the potential for new development to lead to disturbance on breeding birds was recognised. To ensure that there are no significant effects on European habitats and species a policy was created to ensure that new development will only be permitted within 1,500m of SPAs that are suitable for stone curlew if it can be demonstrated, through an appropriate assessment under the Habitats Regulations, that there will be no adverse impact on the qualifying features. Beyond the SPA boundary, on other land suitable for stone curlew or where they are present, a 1,500m development restriction buffer operates. These are areas where there have been five nesting attempts or more since 1995 or where other conditions are suitable, such as soil type. In these areas development may also be acceptable providing alternative land outside the SPA can be secured to mitigate any potential effects.

3. CHARACTERISING POTENTIAL IMPACTS

3.1 INTRODUCTION

The main potential impacts identified in relation to development sites within the South Norfolk are with issues relating to water abstraction and water disposal and levels of recreational disturbance. These are discussed below.

Water abstraction and water disposal

In the Habitats Regulations Assessment of the Joint Core Strategy, hydrological issues were assessed. The GNDP water cycle study (Scott Wilson, 2010) fully assessed the potential impacts of water abstraction and water disposal. As such, they are not addressed in detail in the current HRA work here. The suitability of this approach was agreed with Natural England in early consultations and confirmed in an email of 13 May 2013 (NE reference: 83415).

Since the publication of the original Mott MacDonald (2010) HRA, further planning and legal processes were undertaken, which have been summarised by Anglian Water, Environment Agency and Natural England (2012) as follows:

“In brief, (the Appropriate Assessment) concluded that it was highly unlikely that the (Joint Core Strategies) JCS policies would have a significant direct or indirect impact on European and Ramsar designated sites. However, the report highlighted some areas of uncertainty regarding potential in combination and cumulative effects associated with water resources, water quality, water efficiency, growth and tourism on such sites, because of the dependence on the effectiveness and implementation of mitigation measures and actions required to avoid adverse impact on site integrity.” The mitigation measures suggested were:

- *The implementation of green infrastructure developments*
- *The allocation of green space to protect specific natural assets and designated sites to be implemented through area action plans.*
- *The implementation of water infrastructure improvements (for water resources and waste water treatment) and water efficient measures as recommended in the water cycle study, enforced through Anglian Water's Water Resource Management Plan in ensuring that sufficient water supplies can be made available to meet planned growth and as supported by the position statements issued by Anglian Water, Natural England and the Environment Agency "In the short term, Anglian Water has demonstrated that their existing licensed resources supplying the Greater Norwich area are sufficient to serve projected development beyond the current AMP which ends in 2015, while capping abstractions at Costessey below historic levels. This has been established through an addendum to the original HRA.*

While a solution to the longer term water resources issue has not been finalised, the process is progressing as agreed, and Anglian Water has submitted a document outlining a range of potential solutions. This is currently subject to discussions with the other bodies.

Under the circumstances, all parties agree that the conclusion of the Habitats Regulations Assessment dated February 2010 remains unchanged, subject to the progress noted above in working towards a resolution of the longer term water resource requirement."

As such, potential impacts of water abstraction and water disposal are not considered in the information towards an Appropriate Assessment presented in this document.

Disturbance

Of principal importance to this assessment are trampling effects on vegetation and the disturbance of birds, both on breeding birds and those that winter in the East of England.

The most visible impact on most habitats is direct trampling effects, destroying vegetation, preventing re-growth and compressing soils. Related mechanisms include nutrient enrichment from dog fouling and even irresponsible behaviour such as fires and littering.

Assessing the potential impacts from recreational disturbance is not straightforward. Species react differently to one another; effects may vary seasonally and in different weather and relating the behaviour of individual animals to population integrity is complicated. Furthermore data on human visitor

numbers and usage across all months and all areas of International Sites will always be deficient. Some of the issues relating to recreational disturbance have been succinctly summarised by Ecology Consultancy (2013) and are included in Box 1 below.

Box 1: Recreational disturbance from housing growth – Problems in assessing impact on biodiversity (from Ecology Consultancy, 2013).

The significance of disturbance is one of the 100 key policy questions for ecological research (Sutherland *et al.*, 2006). A key question in disturbance research is how to scale individual impacts to the population level, which is required when establishing effects on site integrity. The interpretation of disturbance effects is potentially confounded by a range of factors including differences in behavioural responses among species, the impact on individual condition or 'fitness' and consequent impacts on survival and reproduction. Effects are also dependant on the availability of alternative feeding areas and resource availability and weather (Goss-Custard *et al.*, 2006).

Among the factors that confound the interpretation of observational studies of disturbance is the potential difference among species in their responses. Thus, some bird species may fly away or leave an area when disturbed but others may remain but nevertheless feed at a lower rate, with impacts on individual fitness. Some studies may interpret such an absence of an obvious response as tolerance or habituation to disturbance, while the opposite may be true (Gill *et al.*, 2001a).

Thus, in reviewing the impacts of disturbance on birds a precautionary approach should be applied, with an appreciation of the interplay of factors and difficulties in the scaling from behaviour to individual and population level effects.

Projecting increases in disturbance in relation to housing is difficult. Although some work has shown a correlation between housing and visitor numbers (e.g. Jones *et al.*, 2003) the predictive models work well for the numbers of visitors arriving by foot but are much less able to show links between housing numbers and density and visitors arriving by car (Liley *et al.*, 2006). A myriad of factors would be expected to determine the numbers of visitors, including general factors such as the weather and economic conditions, more regional factors such as road and rail accessibility, and local factors such as the proximity of toilets and other facilities. The availability and/or introduction of alternative facilities that may displace visitor numbers is also a key issue, particularly in ensuring that estimates of visitor impact are made on a consistent basis.

Even with an understanding of the actual and projected numbers of visitors, the disturbance experienced by individual birds will vary according to local conditions, possibly including proximity, sight lines and the feeding quality of habitats. Generally, however, disturbance which limits food accessibility at critical times of the year, particularly for open-habitat dwelling bird species, as well as disturbances on the breeding grounds, are the most disturbing types of activity.

Generally, however, visitors to wetland reserves can be appropriately managed by the use of spatial and temporal zoning of activities, screening at sensitive locations and visitor management policies that reflect the site specific conditions and the species potentially affected. Details are provided in Kirby *et al.* (2004). The RSPB and Wildlife Trusts successfully integrate visitors and nature conservation across a broad range of sites in the UK. Further, the proximity of the disturbance source and its type, substantially affects a bird species response to that disturbance. Disturbance from vehicles along roads adjacent to sites of bird interest may be generally habituated for whereas people walking through an open area can cause significant disturbance to certain species that rely on open habitats with good sight-lines, but this type of disturbance is far less disturbing than someone using a shotgun, for example (see Hill *et al.*, 1997).

3.2 SCOPING OF SITES

The International Sites considered within the scoping exercise are those identified in the HRA produced for the Joint Core Strategy (Mott MacDonald, 2010). It identified housing delivery and associated disturbance as being a potential impact for the following sites:

- The Broads SAC; Broadland SPA and The Broads Ramsar Site;
- Breckland SPA & SAC;
- Great Yarmouth North Denes SPA;
- Winterton – Horsey Dunes SAC;
- North Norfolk Coast SPA, SAC and Ramsar Site.

Although these are the sites listed in HRA for the JCS, there are other sites that are near to the South Norfolk District boundary or are within 10km of settlements with Site Allocations in the Site Allocation Document. All such sites are considered in this scoping exercise.

International sites within South Norfolk:

It should be recognised that in comparison to the rest of the county, the district of South Norfolk has very few international sites, and none are entirely within the district boundary (Figure1). Most of the Norfolk International Sites are not continuous but are comprised of a number of separate 'component units'. Four small component units of The Broads SAC/Broadland SPA are within South Norfolk between Surlingham and Loddon with two other very small component units near Geldeston on the District's southern boundary. The River Wensum SAC forms the northern boundary of the district in the area near Costessey although for most of this section the SAC designation is mostly confined to the river channel rather than the wider floodplain.

The HRA work for the JCS did not include the Norfolk Valley Fens SAC, a large group of around 20 component units dispersed widely through the county. Two component units of the Norfolk Valley Fens SAC are within South Norfolk, Coston Fen near Runhall and Florden Common.

International sites outside the District:

The majority of The Broads SAC/Broadland SPA/Ramsar sites are to the north of the South Norfolk District being north of the River Yare between Great Yarmouth and Stalham in North Norfolk. Some small component units are associated with the River Waveney to the west of Lowestoft. Breydon Water SPA is to the east of the district.

The extensive Breckland SPA/SACs are located to the south-west of the district in Breckland area of Norfolk and Suffolk with the nearest component units approximately 10 km from the boundary alongside the A11 (Bridgham and Brettenham Heath SSSI, Weeting Heath SSSI, Stanford Training Area SSSI,

Cranberry Rough SSSI) and around 7km from the South Norfolk District boundary near to Diss (Breckland Forest SSSI).

A component unit of the Waveney and Little Ouse Valley Fens SAC is located near to the District Boundary near Diss (Redgrave and Lopham Fen SSSI). This site is partly in Breckland DC area and partly in Mid Suffolk DC and is also a Ramsar site.

The North Norfolk Coast international sites are >40km from the district boundary at the nearest point, whilst the Benacre to East Bawents SAC/SPA are approximately 10km to the south.

A full list of International Sites in and around South Norfolk District is listed in Table 1.

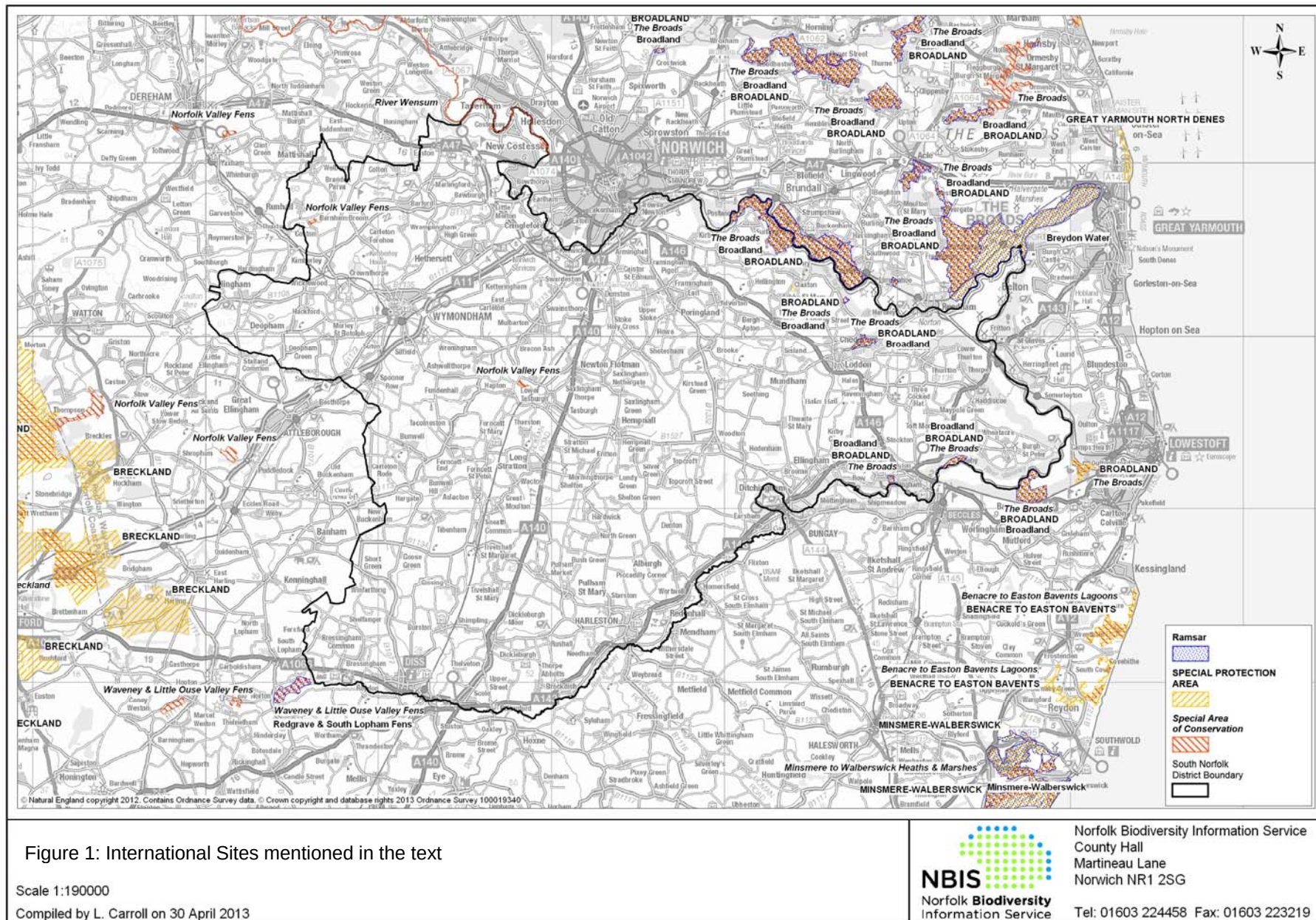


Table 1: International Sites with component units in or near South Norfolk District Boundary

Site name	Status	Summary of designated features	Vulnerabilities (from Mott Macdonald, 2008)
The Broads	Ramsar	Wetland habitats, plants birds, and other animals.	None cited, but probably as for SAC with disturbance likely to be a factor. Estimates of tourist numbers to the Broads and environs are estimated at 6.9 million p.a. of which 84% are day visitors (Broads Authority, 2011)
The Broads	SAC	Wetland vegetation, plants and other animals.	Sea level rise, abstraction reducing flows in northern rivers, eutrophication from sewage and agricultural runoff
Broadland	SPA	Wetland birds.	None cited, but probably as for The Broads SAC with disturbance likely to be a factor. Estimates of tourist numbers to the Broads and environs are estimated at 6.9 million p.a. of which 84% are day visitors (Broads Authority, 2011)
River Wensum	SAC	Aquatic vegetation and animals.	Development on flood plain, agricultural eutrophication and run-off, abstraction, non-native species
Norfolk Valley Fens	SAC	Wetland vegetation and plants; invertebrates	Reduction in management and groundwater abstraction
Breydon Water	SPA	Wetland and estuarine birds	Disturbance to a high tide roost of wading birds, drainage of wet grassland, 'pressure' from development of Great Yarmouth
Breydon Water	Ramsar	Wetland and estuarine birds	None cited, but probably as for the SPA Great Yarmouth
North Denes	SPA	Breeding little terns	Reduced accretion, predators and disturbance from people and dogs
Winterton – Horsey Dunes	SAC	Dune habitats and great crested newts	Cessation of erosion and accretion due to sea defences, beach feeding with inappropriate sand, water abstraction and visitors causing disturbance, erosion & fires
Breckland	SPA	Heathland birds	Nitrogen deposition, egg collecting.
Breckland	SAC	Heathland vegetation and	Reduction in grazing and cutting,

		habitats; Breckland meres and alluvial forest; great crested newt and barbastelle bat	nitrogen deposition, recreation, groundwater abstraction
Redgrave & South Lopham Fens	Ramsar	Wetland habitat and a spider	None cited, but probably as for the Waveney and Little Ouse Valley Fens
Waveney and Little Ouse Valley Fens	SAC	Wetland vegetation; Desmoulin's whorl snail	Loss of traditional management, water abstraction
Benacre to East Bawents	SPA	Wetland birds	Sea level rise and erosion.
Benacre to East Bawents Lagoons	SAC	Coastal lagoon habitat and alluvial forest	None cited, but probably as for the SPA
The Wash and North Norfolk Coast	SAC	Coastal and marine habitats and vegetation; common seal, grey seal and otter	Sea level rise, storm surges, erosion, abstraction and disturbance from tourism
North Norfolk Coast	SAC	Coastal and marine habitats and vegetation; common seal, otter and great crested newt and petalwort	Sea level rise, storm surges, erosion, abstraction and disturbance from tourism
North Norfolk Coast	SPA	Wetland and coastal birds	Sea level rise, storm surges, erosion, abstraction and disturbance from tourism
North Norfolk Coast	Ramsar	Coastal and marine habitats and vegetation; birds and other animals	Sea level rise, storm surges, erosion, abstraction and disturbance from tourism

3.3 SCOPING-OUT OF INTERNATIONAL SITES

The HRA work for the JCS concluded that growth proposed in the strategy could have an impact on International Sites as a result of disturbance from recreation. However proposed new dwellings are not evenly distributed throughout the Greater Norwich Area. Many of the site allocations where growth is proposed are a considerable distance from any International Site. This is particularly true in South Norfolk District where the International Sites are at the fringes of, or beyond, the district boundary. As the distance an International Site is from a settlement increases, the potential impact from recreational pressure from home owners in that settlement is likely to decrease. It should be possible to scope out International Sites based on their distance from Site Allocations.

In the first stage of the screening process a 40km radius was used to identify International Sites that are unlikely to be impacted from development in South Norfolk. This distance is twice that used as a buffer in the HRA of the Breckland Core Strategy (Liley *et al.*, 2008; p 10), a distance determined from experience of visitor survey work in relation to designated sites in the New Forest. The distance is similar to the 50km cut-off as the distance travelled by day-visitors used by

Liley (2008) in assessing housing impacts on the North Norfolk Coast, although he acknowledged that housing further away may be relevant. Although in-combination effects with housing plans with other areas is possible, guidance is taken from Mott MacDonald (2010, p18) and consideration is predominantly given to neighbouring local authorities. Using this approach, the North Norfolk International Sites can be scoped out. This is considered reasonable as the North Norfolk Coast is a major tourist destination which receives many staying visitors. Residents from South Norfolk will be likely to make a small contribution to day visitors given drive times to the coast and the proposed growth in the north of the county (North Norfolk DC, Norwich City, Broadland DC, Breckland DC and Kings Lynn and West Norfolk BC).

Clearly it is not just distance from an International Site that will determine the potential impact of recreational disturbance. The size of an existing settlement and its proposed proportional growth will also be a factor. In South Norfolk, the number of proposed new homes in many smaller settlements is very small; the Site Allocation Document states that 10 Service Villages in the Norwich Policy Area (NPA) and 32 other Service Villages will all have between 10 – 20 new dwellings.

For settlements with small numbers of site allocations or few proposed new dwellings, a distance of 5km is used to scope-out International Sites that are unlikely to be impacted from development. This distance was selected from that recommended from work by Natural England (2006) and is based on a number of studies undertaken in Southern England (Bracknell Forest Council (2011).

As a scoping exercise to identify which International Sites are potentially at risk, the criterion for a site to be scoped-out is that it is likely to be unattractive to visitors from South Norfolk at least in relative terms. This may be via a combination of isolation by distance in absolute terms, the low relative increase in the numbers of visitors compared to those attributable to nearer conurbations or the absence of reasonable attractions for recreational users from South Norfolk.

An element of opinion is used in assigning this criterion, based on the available information on visitor activity. For example, work by Dolman *et al.* (2008) in Breckland who undertook a survey of visitors actually using semi-natural areas as opposed to more formal tourist attractions determined that 43% of visitors were from within 5km and another 20% from 5-10km. Given the very small number of settlements in South Norfolk that are within this distance from the Breckland International Sites and against the proposed 9000 housing allocation for the Breckland District Council, it is unlikely that visitors from the majority of South Norfolk settlements will contribute significant numbers of visitors in relative or absolute terms. An exception may be Wymondham. The WAAP indicates that the Town of Wymondham will provide at least 2,200 new homes and 20 hectares of employment land and access from Wymondham to the Breckland International Sites is reasonable, as the A11 provides a relatively direct route.

However the distance from South Wymondham to the nearest unit of the Breckland International Site (Breckland Forest SSSI/SAC at Bridgham) is in excess of 20km, a distance that the work by Dolman (2008) indicates would result in few visitors.

The presence or absence of facilities for visitors will also affect the magnitude of potential impacts. Factors that make sites less attractive include limited car parking and the absence of toilets, cafes and other facilities. Some International Sites in Norfolk are highly managed by NGOs and actively encourage visitors. Sites like Strumpshaw Fen (RSPB) and Hickling (Norfolk Wildlife Trust) are heavily promoted and have the infrastructure capacity to take more recreational use. In 2011 there were 28,000 visitors to RSPB Strumpshaw Reserve (Visit England, 2012). Potential adverse impacts on such promoted sites from growth are limited and additionally they encourage visitors away from more vulnerable areas of International Sites.

In Norfolk, special measures are taken by conservation organisations for some bird species that are vulnerable to disturbance. For example, in the Breckland SPA, several nature reserves owned by the Norfolk Wildlife Trust, together with other land with 'open' access, are closed to visitors when stone curlew *Burhinus oedichnemus* are breeding. This access restriction is stringently enforced and is considered effective, not least because there has been a steady increase in the population in eastern England from fewer than 100 pairs in 1985 to circa 280 pairs today (RSPB, 2013) and the stone curlew was moved from the 'Birds of Conservation Concern' red list to amber list in 2009. Breeding colonies of other species are carefully warded, for example the little terns *Sterna albifrons* at Great Yarmouth North Denes by the RSPB and volunteers. These specific measures designed to reduce disturbance have been taken into account in the scoping exercise.

Local factors are also important. A site that is accessible by a direct, fast road may be an attractive draw to visitors such as dog walkers, even if the absolute distance between the site and a settlement is quite great. It should also be remembered that the topography of Norfolk can influence the accessibility of sites. Two locations either side of a Norfolk river can be a few tens of metres apart but drive time between the two points may be in excess of 45 minutes.

The International Sites scoped-out by these criteria are shown in Table 2.

Table 2: The International Sites scoped-out in Stage 1 of the HRA process

Site Name	Status	Justification
SCOPED OUT		
Great Yarmouth North Denes	SPA	Additional numbers of residents in South Norfolk will be minor relative to proposed housing allocations of 4000 in the Great Yarmouth Borough Council area. Further, in the context of Great Yarmouth as a major tourist resort additional visitor pressure is unlikely to contribute significantly. In 2008 there were 1.3 million staying visitors and 3.7 million day visitors (GYBC 2009). The presence of the designated feature – a colony of little terns – is advertised by the local tourism website and is protected by RSPB volunteers (Enterprise GY, 2012).
The Wash and North Norfolk Coast SAC		Largely to the west part of the North Norfolk coast, this site is scoped-out on the basis of distance and that substantial parts are managed as nature reserves with subsequent controls on visitor access.
The North Norfolk Coast	SAC	A major tourist area. Residents from South Norfolk will be likely to make a small contribution to day visitors given drive times to the coast and the proposed growth in the north of the county (North Norfolk DC, Norwich City, Broadland DC, Breckland DC and Kings Lynn and West Norfolk BC)
The North Norfolk Coast	SPA	A major tourist area. Residents from South Norfolk will be likely to make a small contribution to day visitors given drive times to the coast and the proposed growth in the north of the county (North Norfolk DC, Norwich City, Broadland DC, Breckland DC and Kings Lynn and West Norfolk BC)
The North Norfolk Coast	Ramsar	A major tourist area. Residents from South Norfolk will be likely to make a small contribution to day visitors given drive times to the coast and the proposed growth in the north of the county (North Norfolk DC, Norwich City, Broadland DC, Breckland DC and Kings Lynn and West Norfolk BC)
Winterton – Horsey Dunes	SAC	Part of a major tourist area but with very limited facilities. The site is distant from most South Norfolk Settlements with other larger housing schemes closer in Broadland District Council area and Great Yarmouth Area. The HRA work for the Gt Yarmouth Core Strategy concluded that it was “unlikely proposed development of such a scale as to have an effect will be sufficiently close to the site for effects to occur at significantly increased levels” (Footprint Ecology, 2012).
Breydon Water	SPA	Part of a major tourist area but with very limited facilities and distant or inaccessible from settlements in South Norfolk with substantial growth proposed in Gt Yarmouth and Lowestoft. The HRA work for the Gt Yarmouth Core Strategy concluded that access levels will continue to be low and will therefore have no significant disturbance effect on the SPA (Footprint Ecology & David Tyldesley, 2012)
Breydon Water	Ramsar	Part of a major tourist area but with very limited facilities and distant or inaccessible from settlements in South Norfolk with substantial growth proposed in Gt Yarmouth and Lowestoft. The HRA work for the Gt Yarmouth Core Strategy concluded that access levels will continue to be low and will therefore have no significant disturbance effect on

		the Ramsar Site (Footprint Ecology & David Tyldesley, 2012)
Benacre to East Barents	SPA	Distant from settlements in the Site Allocations and with other larger housing schemes closer at Great Yarmouth, Lowestoft and Beccles. The HRA work for the Gt Yarmouth Core Strategy assessed the cumulative growth as not likely to cause impacts (Footprint Ecology & David Tyldesley, 2012)
Benacre to East Barents Lagoons	SAC	Distant from settlements in the Site Allocations and with other larger housing schemes closer at Great Yarmouth, Lowestoft and Beccles. The HRA work for the Gt Yarmouth Core Strategy assessed the cumulative growth as not likely to cause impacts (Footprint Ecology & David Tyldesley, 2012)
NOT SCOPED-OUT		
Norfolk Valley Fens	SAC	Component units likely to be unattractive to visitors in the main, lacking sophisticated facilities and attracting visitors only from a very small local catchment. The component units within South Norfolk are Coston Fen – a private site with no visitor access - and Flordon Common. The latter site is open access common land but facilities for visitors are few, with limited parking and it is not promoted as a site to access. However, the component unit of Flordon Common SSSI cannot be scoped out.
Breckland	SAC	Distant from the most of the South Norfolk Settlements with available data showing some 63% of visitors from within 10km. Additional numbers of residents from Site Allocations likely to be minor relative to proposed housing allocations in the Breckland DC area. Some parts include visitor facilities but majority of site remote from facilities. However, some settlements have reasonable or good road access to the SAC – Diss (A1066; 200 dwellings) and settlements on A11 including Hethersett (1000 dwellings), Wymondham (2,200 dwellings) and Cringleford (1,200) although these last two are not part of the Site Allocation Document. The probable increase in size of these settlements means the component units near to South Norfolk District (Bridgham and Brettenham Heath SSSI and units of Breckland Forest SSSI) cannot be scoped out.
Breckland	SPA	Distant from the most of the South Norfolk Settlements with available data showing some 63% of visitors from within 10km. Additional numbers of residents from Site Allocations likely to be minor relative to proposed housing allocations in the Breckland DC area. Some parts include visitor facilities but majority of site remote from facilities. However, some settlements have reasonable or good road access to the SPA – Diss (A1066; 200 dwellings) and settlements on A11 including Hethersett (1000 Dwellings), Wymondham (2,200 dwellings) and Cringleford (1,200) although these last two are not part of the Site Allocation Document. The probable increase in size of these settlements means the component units near to South Norfolk District (Bridgham and Brettenham Heath SSSI and units of Breckland Forest SSSI) cannot be scoped out.

The Broads	SAC	Part of a major tourist area, the site is distant from most South Norfolk Settlements with other larger housing schemes closer in Broadland District Council area and Great Yarmouth Area. However four SSSI component units are close to settlements in South Norfolk – Loddon & Chedgrave (100–200 dwellings) - so cannot be scoped out.
Broadland	SPA	Part of a major tourist area, the site is distant from most South Norfolk Settlements with other larger housing schemes closer in Broadland District Council area and Great Yarmouth Area. However four SSSI component units are close to settlements in South Norfolk (Loddon & Chedgrave <200 dwellings) - so cannot be scoped out.
The Broads	Ramsar	Part of a major tourist area, the site is distant from most South Norfolk Settlements with other larger housing schemes closer in Broadland District Council area and Great Yarmouth Area. However four SSSI component units are close to settlements in South Norfolk (Loddon & Chedgrave <200 dwellings) - so cannot be scoped out.
River Wensum	SAC	Potentially used for recreation but facilities very limited. But due to proximity to growth in Costessey/Easton, the most southerly component units cannot be scoped out.
Redgrave & South Lopham Fens	Ramsar	Very small site, >5km distant from settlements with significant site allocations (Diss) and with little attraction to casual visitors and few facilities. But can not be scoped out given the probable number of new dwellings in Diss.
Waveney and Little Ouse Valley Fens	SAC	Very small component unit (Redgrave & South Lopham Fens), >5km distant from settlements with significant site allocations (Diss) and with little attraction to casual visitors and few facilities. But can not be scoped out given the probable number of new dwellings in Diss.

4. DESIGNATED FEATURES OF SITES NOT SCOPED-OUT

4.1 OVERVIEW OF SITES

Nine sites are not scoped-out for the HRA on the basis that Component Units are potentially close enough to settlements with Site Allocations Documents and likely to attract visitors:

- Norfolk Valley Fens
- The Broads SAC, The Broads Ramsar Site and the Broadland SPA;
- Breckland SPA and Breckland SAC;
- The River Wensum SAC;
- Redgrave & South Lopham Fens Ramsar/ Waveney and Little Ouse Valley Fens SAC

4.2 NORFOLK VALLEY FENS

Norfolk Valley Fens is a European Site comprising of a number of SSSI component units of valley-head spring-fed fens. Such spring-fed flush fens are very rare in the lowlands. Most of the vegetation is of the small sedge fen type, mainly M13 *Schoenus nigricans* – *Juncus subnodulosus* mire, but there are transitions to reedswamp and other fen and wet grassland types. The individual fens vary in their structure according to intensity of management and provide a wide range of variation. There is a rich flora, including grass-of-Parnassus *Parnassia palustris*, common butterwort *Pinguicula vulgaris*, marsh helleborine *Epipactis palustris* and narrow-leaved marsh-orchid *Dactylorhiza traunsteineri*. These are very ancient wetlands and several support strong populations of Desmoulin's whorl snail *Vertigo moulinsiana* and Narrow-mouthed whorl snail *Vertigo angustior* as part of a rich assemblage of Red Data Book and Nationally Scarce species in standing water habitat.

These alkaline fens are generally small in area and surrounded by intensively-farmed land. They are very vulnerable to reductions on the water table and a decrease in the volume of spring flows arising from groundwater abstraction. In recent decades scrub and woodland has spread due to the cessation of traditional cutting and grazing management and the drying-out of the fens. These sites are now largely isolated from the rural economy of which they were once a part, and in many instances this traditional management has become uneconomic.

Two component units are in the South Norfolk district boundary, Flordon Common SSSI and Coston Fen, Runhall SSSI.

Flordon Common SSSI

Flordon Common is a 10 hectare site situated in the valley of the River Tas on shallow fenland peats. Springs emerge on the valley-side bearing base-rich waters from the underlying chalk and in these areas species-rich calcareous fen has developed. On higher ground unimproved pasture is present. The Common continues to be managed in a traditional manner by light summer grazing and this has ensured the survival of many locally uncommon plants. A strong population of Narrow-mouthed whorl snail *Vertigo angustior* occurs in flushed grassland.

Natural England condition assessment (April 2013) states 79.4% of the area is in unfavourable recovering condition with the remaining area in favourable condition. The maintenance of water levels and a correct grazing regime are considered the most important factors in ensuring the site meets its conservation objectives.

The site is registered common land with unrestricted access and a public footpath skirts the southern boundary.

Coston Fen, Runhall SSSI

Coston Fen is a spring-line fen of 7.3 hectares situated on a slope of the Yare Valley along its upper reaches. There is movement of calcareous groundwater from a seepage zone along the top of the slope down to a collecting drain along the base, and this has resulted in the development of a wide diversity of open fen habitats, including a nationally rare calcareous mire community which is largely confined to East Anglia. The site supports a number of locally uncommon plants.

Natural England condition assessment (April 2013) states 100% of the area is in unfavourable no change condition. The reason for this condition appears to be related to water abstraction, with investigations ongoing.

The site is private and there are no public rights of way in the locality.

4.3 BRECKLAND SPA AND SAC

The Breckland of Norfolk and Suffolk lies in the heart of East Anglia on largely sandy soils of glacial origin. In the 19th century the area was termed a sandy waste, with small patches of arable cultivation that were soon abandoned. The continental climate, with low rainfall and free-draining soils, has led to the development of dry heath and grassland communities. Much of Breckland was planted with conifers through the 20th century, and elsewhere arable farming is the predominant land use. The remnants of dry heath and grassland that have survived these changes support heathland-breeding birds, where grazing by sheep and rabbits is sufficiently intensive to create short turf and open ground. These species have also adapted to live in forestry and arable habitats. Woodlark *Lullula arborea* and Nightjar *Caprimulgus europaeus* breed in recently

felled areas and open heath areas within the conifer plantations, while Stone Curlew *Burhinus oedicephalus* establishes nests on open ground provided by arable cultivation in the spring.

The designated features of the SPA are:

- Breckland Forest SSSI component units: breeding woodlark and nightjar, rare plants and invertebrates, geology
- Breckland Farmland SSSI component units: breeding stone curlew (population increasing)
- Breckland Heathland SSSIs (various sites): breeding stone curlew (population declining), nightjar and woodlark, grassland and heath habitats.

The designated features of the SAC are:

- Inland dunes, natural eutrophic lakes, dry heaths, alluvial forests and great crested newt.

There are 12 component SSSI in Breckland DC area, of which Bridgham & Brettenham Heaths SSSI is the nearest to South Norfolk. The SSSI is situated <10km to the north and east of Thetford is linked to East Wretham Heath SSSI and through this to the Stanford Training Area, thus forming the largest remaining block of Breckland heath. Cranberry Rough, Hockham SSSI is c10km from the South Norfolk boundary.

Bridgham & Brettenham Heaths SSSI

The site is 446 hectares of Breckland heather and grass heath. The soils are predominantly acid sands, heavily podsolised in places, but areas of surface chalk are present particularly to the east. Vegetation is mostly heather and acid grassland with considerable areas of bracken and some scrub. The site is part-owned by the Norfolk Wildlife Trust who manage access and close parts of the reserve when stone curlew are nesting.

The Natural England condition assessment states 13.0% of the area is in favourable condition with 87.0% unfavourable, recovering. Threats are nutrient deposition, run-off, scrub invasion and inappropriate recreation.

East Wretham Heath SSSI

The SSSI is 141 hectares of Breckland meres and grassland with its principle scientific interest being the two fluctuating meres, Ringmere and Langmere, supplied by chalk ground water. Secondary woodland and scrub are present. The site is owned by the Norfolk Wildlife Trust who manage access.

The Natural England condition assessment states 41.6% of the area is in favourable condition with 58.4% unfavourable, recovering. Threats are nutrient deposition, run-off, scrub invasion and inappropriate recreation.

Stanford Training Area SSSI

The SSSI covers 4681 hectares of extensive Breckland grassland and heath with mature woodland, carr woodland, streams and fluctuating meres. Stone curlew breed. The area is a live-firing zone and no public access is allowed.

The Natural England condition assessment states 41.8% of the area is in favourable condition with 37.4% unfavourable, recovering and 20.8% no change. Threats are lack of management of bracken and scrub invasion, poor heather and grazing management.

Cranberry Rough, Hockham SSSI

This SSSI is a basin mire of 81.4 hectares with swamp woodland with a network of ditches and pools. The site has a generally high and stable water table and a lack of pollution means it contains an exceptionally wide range of wetland plants, butterflies and other insects. The site is owned by the Norfolk Wildlife Trust.

The Natural England condition assessment states 21.6% of the area is in favourable condition with 78.4% unfavourable, recovering.

4.4 THE BROADS SAC AND RAMSAR SITE, BROADLAND SPA

The Broads International Sites form an extensive network along river valleys in east Norfolk and north Suffolk. The Broads SAC is comprised of 27 component units and the SPA from 26 component units; as understood the Ramsar site is comprised of 28 component sites.

Collectively the designated features cover vegetation, individual plant species, birds and other animals including invertebrates:

- Aquatic vegetation. Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; and natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.
- Fen vegetation. Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; alkaline fens; *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); transition mires and quaking bogs;
- Woodland. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- Plants. Fen orchid *Liparis loeselii* and other rare plants
- Animals. Otter, Desmoulin's whorl snail *Vertigo moulinsiana*, *Anisus vorticulus*, and other invertebrates
- Birds. Overwintering species (pink footed goose *Anser brachyrhynchus*, wigeon *Anas penelope*, shoveler *Anas clypeata*, gadwall *Anas strepera*, Bewick's swan *Cygnus columbianus*, whooper swan *Cygnus cygnus*, hen harrier *Circus cyaneus*, great bittern *Botaurus stellaris*, ruff *Philomachus*

pugnax); overwintering assemblage; breeding birds (marsh harrier *Circus aeruginosus*).

Four Component Units of The Broads SAC, The Broads Ramsar site and The Broadland SPA are in South Norfolk. These are all sites of Scientific Interest (SSSI):

- Hardley Flood SSSI
- Poplar Farm Meadows, Langley SSSI
- Ducan's Marsh, Claxton SSSI
- Yare Broads & Marshes SSSI (southern section only in South Norfolk)

Hardley Flood SSSI

Hardley Flood is an area of 48 hectares of shallow lagoons and reedbeds that act as a spillway for the River Chet. Breaches in the river-bank allow tidal waters to move freely between the river and the marsh. Soft muds are exposed at low tide and these attract a range of wading birds in spring and autumn while the reedbeds support nesting wildfowl and other fenland birds, including nationally important breeding populations of Shoveler, Pochard and Gadwall.

The unit is considered by Natural England to be in 100% Favourable Condition (April 1st, 2013). The maintenance of appropriate water levels is considered the most important factor in ensuring the important features of the SSSI are retained in favourable condition.

Access is limited to two public footpaths at the boundaries of the site. A long-distance trail, the Wherryman Way, runs adjacent to the river. The wetness of the area precludes further public use.

Poplar Farm Meadows, Langley SSSI

This site is a small spring-fed calcareous fen of 7.23 hectares situated on the edge of the flood-plain of the River Yare. The meadows are exceptionally diverse and several scarce and locally uncommon plants are present. Species-rich calcareous fens are virtually confined to East Anglia and this site is an unusual example with intergrading fen grassland communities. These rich communities are maintained by light summer grazing. The surrounding dykes contain clear spring-waters and support an interesting assemblage of water-plants.

The unit is considered by Natural England to be in 100% favourable condition (April 1st 2013). Grazing management is considered to be the most significant factor in ensuring the continued improvements in this site condition.

The site is privately owned and there is no public access.

Ducan's Marsh, Claxton SSSI

Ducan's Marsh is situated in the valley of a small tributary of the River Yare and is one of the richest areas of unimproved, wet valley grassland now remaining in East Norfolk. Springs emerge from the valley-side and species-rich fen and fen grassland communities have developed in the seepage zones. The plant communities include several uncommon species and are maintained by a traditional management of light summer grazing.

The unit is considered by Natural England to be in 100% recovering condition. The grassland has been surveyed annually since 2009 and little change has been noted in the important M13 plant community since 1986. Grazing management is considered to be the most significant factor in ensuring the continued improvements in this site condition.

The site is privately owned and there is no public access.

Yare Broads & Marshes SSSI

This is a composite site made up of two former separate SSSIs known as Surlingham & Rockland Broads, and Strumpshaw Fen & Buckenham Marshes, with additions. Substantial areas are managed as nature reserves by the RSPB and NNT. The Yare Broads and Marshes are a nationally important wetland site consisting of extensive areas of unreclaimed fen, carr woodland, open water and grazing marsh on shallow fenland peats. The site lies in the middle reaches of the River Yare and is one of the key Broadland sites with great botanical and ornithological interest. The species-rich fens, dykes and unimproved meadows hold an outstanding assemblage of plants including many rare species. An important community of breeding birds is found on the fens and includes most of the typical Broadland species. The only regular wintering flock of bean geese in England frequent the grazing marshes at Buckenham. A Broadland speciality, the swallowtail butterfly is also present in good numbers on the site.

Surlingham and Rockland Broads are the sections of the SSSI which are within the boundary of South Norfolk. Strumpshaw RSPB reserve and Buckenham Marshes are north of the River Yare (the district boundary) and access from South Norfolk to these sites is restricted to distant river crossings.

Overall, 69% of the SSSI is considered by Natural England to be in favourable condition, with 14.7% in favourable recovering and just 1.7% in unfavourable and declining condition.

In the section south of the river, access is limited to public rights of way and nature trails, mostly along the river bank and adjacent to Rockland Broad. In places there are boardwalks to allow access at wetter times and to protect sensitive vegetation. A long-distance trail, the Wherryman Way, runs adjacent to the site. Water skiing is permitted on the river at various points in the area.

4.5 RIVER WENSUM SAC

The River Wensum SAC is designated from the headwaters near Fakenham downstream to Norwich, with the designated boundary in most parts restricted to the channel and banks but including adjacent marsh and fen in some parts of the valley. The southern limit of the designation is Costessey Mill.

Collectively the designated features cover vegetation, individual plant species, birds and other animals including invertebrates:

- Vegetation, both aquatic and bankside. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*); calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; and water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation.
- Animals. White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*; Desmoulin's whorl snail *Vertigo moulinsiana*; brook lamprey *Lampetra planeri*; and bullhead *Cottus gobio*.

Within South Norfolk there are six management units of the SSSI (units 38-43). Of these units, numbers 40-43 are considered by Natural England (March 1st 2013) to be in unfavourable recovering condition. These units are improving through restoration of the floodplain. Units 38-39 are considered to be in unfavourable, no change condition and the lack of improvement is due to their isolation from the river. The most significant impacts on the river quality relate to agricultural run-off whilst inappropriate grazing regimes are the most significant factors in hindering improvements in the floodplain.

In the relevant reaches of the river, the floodplain grasslands are private and access is limited to public rights of way which are largely on the fringes of the SSSI. There are no formal facilities for public use in the area within South Norfolk.

4.6 WAVENEY AND LITTLE OUSE VALLEY FENS/REDGRAVE & LOPHAM RAMSAR

Redgrave and Lopham Fens SSSI is a component unit of the Waveney and Little Ouse Valley Fens SAC and is a Ramsar site in its own right. It consists of an extensive area of spring-fed valley fen at the headwaters of the River Waveney. It supports several distinct fen vegetation types, ranging from *Molinia*-based grasslands, mixed sedge fen to reed-dominated fen. There are small areas of wet heath and carr woodland. The invertebrate fauna is extensive and is the only British locality for the fen raft spider *Dolomedes plantarius*. Desmoulin's whorl snail *Vertigo moulinsiana* is present. The site has been restored in an internationally recognised restoration project, costing approximately £3.4 million.

The site is owned and managed by the Suffolk Wildlife Trust. The reserve is open to the public all year round. It has an Education Centre which it uses to host family activity days, school trips and adult education courses. There is a picnic area, toilet facilities and there are three dedicated nature trails. The Natural England condition assessment states that 100.0% of the area is in unfavourable, recovering condition.

5 STAGE 1: TESTS OF LIKELY SIGNIFICANT EFFECTS

5.1 OVERVIEW

Following the methodology described above, each component unit of the International Sites that are not scoped-out are subject to tests of likely significance. The Stage 1: Test of Likely Significant Effect considers disturbance in relation to:

- Norfolk Valley Fens
- The Broads SAC, The Broads Ramsar Site and the Broadland SPA;
- Breckland SPA and Breckland SAC;
- The River Wensum SAC;
- Redgrave & South Lopham Fens Ramsar/ Waveney and Little Ouse Valley Fens SAC

5.2 SITE SPECIFIC TESTS OF LIKELY SIGNIFICANT EFFECTS

Norfolk Valley Fens

Two component units are in the South Norfolk district boundary, Coston Fen, Runhall SSSI and Flordon Common SSSI. Coston Fen is a private site without public access and therefore will not be subject to disturbance issues. Flordon Common is open access but Natural England condition assessment (April 2013) the site is favourable or unfavourable recovering condition. The maintenance of water levels and a correct grazing regime are considered the most important factors in ensuring the site meets its conservation objectives and the designated features are considered to be relatively insensitive to disturbance. Furthermore, the site is only ever likely to serve local recreational needs.

Therefore, it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on the Norfolk Valley Fens SAC.

Breckland SPA and Breckland SAC

None of the component SSSI units of the Breckland International Sites are in South Norfolk. Under the scoping criteria only the units closest to South Norfolk Boundary need to be tested for likely significant effects. The relevant units are Bridgham & Brettenham Heaths SSSI, East Wretham Heath SSSI, Stanford Training Area SSSI and Cranberry Rough, Hockham SSSI.

Of these sites, the first three have breeding birds as designated features and thus disturbance is a major threat to their site integrity. However, Bridgham & Brettenham Heaths and East Wretham Heath are managed by the Norfolk Wildlife Trust which strictly enforces a no public access policy during the breeding season for stone curlew. The Stanford Training Area SSSI has a total ban on public access at all times. Most of the stone curlew breeding population occurs outside of these sites on privately owned farmland. The restriction of access in Breckland is considered highly effective in minimising disturbance to stone curlew and the population of this species in Eastern England has been increasing steadily in recent years from fewer than 100 pairs in 1985 to circa 280 pairs today (RSPB, 2013). The stone curlew was moved from the 'Birds of Conservation Concern' red list to amber list in 2009. Given the distance to these sites from settlements in South Norfolk, and the proposed 9000 new homes in Thetford, it is unlikely that site integrity will be affected by site allocations in South Norfolk.

The Wymondham AAP indicates that the Wymondham will provide at least 2,200 new homes and 20 hectares of employment land. Access from Wymondham to the Breckland International Sites is reasonable, as the A11 provides a relatively direct route. The work by Dolman *et al.* (2008) in Breckland who undertook a survey of visitors actually using semi-natural areas as opposed to more formal tourist attractions determined that 43% of visitors were from within 5km and another 20% from 5-10km. The distance from South Wymondham to the nearest unit of the Breckland International Site (Breckland Forest SSSI/SAC at Bridgham) is in excess of 20km, and these units have no visitor facilities and the public are excluded during the breeding season for stone curlew. As such, it is considered that it is unlikely that site integrity will be affected by development in Wymondham as described in the draft Wymondham AAP.

The Long Stratton AAP indicates that Long Stratton will provide at least 1,800 new homes and 12 hectares of employment land. Access from Wymondham to the Breckland International Sites is not direct; visitors would need to drive across country to Attleborough, or up the A140 and then A47 to reach the A11. The work by Dolman *et al.* (2008) in Breckland who undertook a survey of visitors actually using semi-natural areas as opposed to more formal tourist attractions determined that 43% of visitors were from within 5km and another 20% from 5-10km. The distance from Long Stratton to the nearest unit of the Breckland International Site (Breckland Forest SSSI/SAC at Bridgham) is in excess of 20km, and these units have no visitor facilities and the public are excluded during the breeding season for stone curlew. As such, it is considered that it is unlikely that site integrity will be affected by development in Long Stratton as described in the draft Long Stratton AAP.

The Cringleford Draft Neighbourhood Development Plan indicates that 1,200 new dwellings will be allocated. This is in addition to the approved 1000 currently being delivered at Round House Park. Like Wymondham, the parish is situated on the A11 with relatively direct access to the same units of the Breckland International Site. But the distance to Breckland International Site from Cringleford is greater than that from Wymondham (>35km). As such, it is considered that it is unlikely that site integrity will be affected by development in Cringleford as described in the draft NDP.

Therefore, it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on the Breckland International Sites.

The Broads SAC and Ramsar Site, the Broadland SPA

The Broads is a major tourism area. Its international sites are variously comprised of 28 component sites, with a diverse array of wetland and aquatic habitats. Some areas – including component sites – receive substantial numbers of visitors and are subject to both land- and water-based recreational activities. Substantial parts are, however, without public access or with access restricted to public footpaths and/or by impassable terrain.

Four Component Units of The Broads SAC, The Broads Ramsar site and the Broadland SPA are in South Norfolk: Hardley Flood SSSI; Poplar Farm Meadows, Langley SSSI; Ducan's Marsh, Claxton SSSI and Yare Broads & Marshes SSSI (southern section only in South Norfolk). Of these sites, two Poplar Farm Meadows and Ducan's Marsh are private sites without public access and therefore will not be subject to disturbance issues.

At Hardley Flood SSSI, access is limited to two public footpaths at the boundaries of the site. A long-distance trail, the Wherryman Way, runs adjacent to the river. The wetness of the area precludes further public use. The unit is considered by Natural England to be in 100% Favourable Condition and the maintenance of appropriate water levels is considered the most important factor in ensuring the important features of the SSSI are retained in favourable condition and the designated features are considered to be relatively insensitive to disturbance. As access is restricted to the perimeter of the site and a Norfolk Trail already passes the site it is considered unlikely that there would not be an impact on site integrity. Therefore it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on this component unit.

The Yare Broads and Marshes SSSI is a larger unit than the other Broadland sites. The Strumpshaw RSPB reserve and Buckenham Marshes are north of the River Yare (the district boundary) and access from South Norfolk to these sites is restricted to distant river crossings. A car journey from Poringland in South Norfolk to Strumpshaw RSPB would cover a distance of 20km. It is considered

that there is sufficient confidence for significant effects from recreation to be considered unlikely on these sections north of the river as a result of development in South Norfolk.

Surlingham and Rockland Broads are the sections of the SSSI which are within the boundary of South Norfolk. These areas have botanical, ornithological and invertebrate interest and have some recreational opportunities, particularly water-based. The River Yare is navigable to Norwich around 5km west of the area and recreational river traffic can be heavy in summer, with public marinas and hire boat companies based in Brundall on the northern bank. Water skiing is permitted at various points of the river in the area. Land-based recreation is limited. The area includes:

- Surlingham Church Marsh RSPB reserve. Access is restricted to public rights of way, mostly along the river bank with very low key infrastructure limited to a viewing shelter overlooking open water pools and limited car parking at Surlingham Church. Additional permissive paths provide pedestrian access to a riverside pub which also has public moorings. The RSPB do not promote this site, instead encouraging access to the reserves on the northern side of the river where there are more facilities.
- Wheatfen Reserve (the Ted Ellis Reserve). Managed by the Ted Ellis Trust, this reserve is one of the few remaining tidal swamp fens on the River Yare. The reserve has limited facilities largely catering for naturalists and has a small car park and some waymarked paths.
- Rockland Broad and marshes. Managed by the RSPB and others, there is public car parking in Rockland St. Mary's near to pubs and public moorings at Rockland Staithe. There are no toilets or other facilities. A long-distance trail, the Wherryman Way, runs adjacent to the site on a surfaced path of a standard suitable for wheelchairs but access is not permitted elsewhere. A bird watching hide overlooking Rockland Broad can be accessed from the trail that also links other riverside pubs. Local wildfowling groups use Rockland Broad for shooting.

The nearest settlement with site allocations to the Surlingham/Rockland units of the International Site is Poringland which is approximately 10km away. This is further than the 5km used to scope-out International Sites recommended by Natural England (2006) that are unlikely to be impacted from development. Furthermore, the distance to Whitlingham Country Park is much the same, the route is easier, and the facilities more attractive. Given the limited attraction to these component units and low-key facilities and access limited to public rights of way, it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on this component unit.

Taking into account the features of all four component units in South Norfolk, it is considered that there is sufficient confidence for significant effects to be

considered unlikely and an Appropriate Assessment is not required for disturbance effects on the Broads SAC and Ramsar Site, the Broadland SPA complex.

River Wensum SAC

There are few visitor or recreation facilities along the River Wensum. Much of the designated area is in private ownership, with restrictions on access, fishing and canoeing. Public access to water is limited to a few locations, such as an informal access point near The Swan public house in Ringland. Footpaths run along the banks for limited sections. Furthermore, the designated features are considered to be relatively insensitive to disturbance, requiring actual water-based recreation for impacts to occur.

Given these restrictions on public access and its low attraction to visitors, it is considered unlikely that there would be an impact on site integrity. Therefore it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on the River Wensum SAC.

Redgrave & South Lopham Fens Ramsar/ Waveney & Little Ouse Valley Fens SAC

Redgrave and Lopham Fens SSSI is a component unit of the Waveney and Little Ouse Valley Fens SAC and is a Ramsar site in its own right. The reserve is open to the public all year round and has some visitor facilities including self-guided trails. The site is designated for its botanical and invertebrate features which are not considered vulnerable to disturbance. Given the distance to these sites from settlements in South Norfolk (Diss is c11km distant) and the relative lack of attractiveness to general visitors, it is unlikely that site integrity will be affected by site allocations in South Norfolk.

Therefore it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on the River Wensum SAC.

5.3 SUMMARY OF STAGE 1: TESTS OF LIKELY SIGNIFICANT EFFECTS

As discussed earlier, in comparison to the rest of the county, the district of South Norfolk has very few international sites, and none are entirely within the district boundary. Four small component units of The Broads SAC/Broadland SPA are within South Norfolk between Surlingham and Loddon with two other very small component units near Geldeston on the District's southern boundary. The River Wensum SAC forms the northern boundary of the district in the area near Costessey although for most of this section the SAC designation is mostly confined to the river channel rather than the wider floodplain.

The following International Sites were assessed:

- Norfolk Valley Fens
- The Broads SAC, The Broads Ramsar Site and the Broadland SPA;
- Breckland SPA and Breckland SAC;
- The River Wensum SAC;
- Redgrave & South Lopham Fens Ramsar/ Waveney and Little Ouse Valley Fens SAC

Having completed the Stage 1 test, it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required for disturbance effects on any of the International Sites.

As it is concluded that significant effects are unlikely there is no need to undertake further stages of the HRA process.

6. CONCLUSIONS

As it is considered that there is sufficient confidence for significant effects to be considered unlikely and an Appropriate Assessment is not required there is no need to undertake further stages of the HRA process.

The HRA work for the Greater Norwich JCS (Mott Macdonald, 2010) highlighted the need for the implementation of green infrastructure developments to offset the possibility of uncertainty regarding potential in combination and cumulative effects associated with water resources and tourism (recreation) on International Sites. Although this process has demonstrated that there is sufficient confidence for significant effects from the Site Allocations Document, Wymondham AAP, Long Stratton AAP and Cringleford Neighbourhood Development Plan on International Sites to be considered unlikely, it is reasonable to take a precautionary approach. As such it is recommended that green/recreation space is required for new developments by local policies.

7. REFERENCES

Anglian Water, Environment Agency & Natural England (2012). Joint Core Strategy for Broadland, Norwich and South Norfolk – Habitats Regulations Assessment Supplementary Note. Cover letter to an amended version of Mott MacDonald (2010).

Bracknell Forest Council (2011) Thames Basin Heaths Special Protection Area Avoidance and Mitigation Supplementary Planning Document Appendices

Broads Authority (2006) Appropriate Assessment of the Core Strategy – Submission Report. Under the Conservation (Natural Habitats, &C) (Amendment) (England and Wales) Regulations 2006. September 2006. Available from:
<http://www.broadsauthority.gov.uk/authority/consultations/core-strategy/submission-core-strategy-dpdconsultation.Html>

Broads Authority (2010) Broads Boat Census. Broads Authority, Norwich.

Broads Authority (2011) A Strategy and Action Plan for Sustainable Tourism in the Broads 2011 – 2015. Broads Authority, Norwich.

DfCLG (2012) National Planning Policy Framework. Department for Communities and Local Government, London.

Dolman, P., Lake, I. R. & Bertoncelj, I. (2008) Visitor Flow Rate and Recreational Modelling in Breckland. UEA, Norwich.

Ecology Consultancy (2013) Information to inform a Habitats Regulation Assessment: North Sprowston & Old Catton. Report for Beyond Green

English Nature (1999) Habitats Regulations Guidance Note. English Nature, Peterborough.

English Nature (2004) European Sites Guidance. English Nature, Peterborough.
European Commission (2007) Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Available from:
http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

Footprint Ecology & David Tyldesley & Associates (2012), Habitats Regulations Assessment of Great Yarmouth Local Plan Core Strategy, November 2012, Report for Great Yarmouth Borough Council

Gill, J.A., Norris, K. & Sutherland, W.J. (2001a) Why behavioural responses may not reflect the population consequences of human disturbance. Biological Conservation 97, 265-268.

Goss-Custard, J.D. (2008) National Cycle Network – Exe Estuary Cycleway. Update of the Appropriate Assessment of the subsections from Turf Lock to Powderham Church. Report to Devon County Council. Available from:
www.devon.gov.uk/plandoc_91_3396.pdf

Grant, G. (2010) Habitats Regulations Assessment of the Great Yarmouth Waterfront Area Action Plan. Further Preferred Options; October 2010. Available from:
www.greatyarmouth.gov.uk/view/GYBC110690

Great Yarmouth BC (2005) Core Strategy Development Plan Document 2021. Issues and Options. Great Yarmouth Borough Council, Great Yarmouth.

Great Yarmouth BC (2009) Great Yarmouth Profile. Available from:
http://www.enterpriseqy.co.uk/downloads/1/great_yarmouth_profile_2009%5B1%5D.pdf

Hill, D., Hockin, D., Price, D. Tucker, G. Morris, R. & Treweek, J. (1997). Bird disturbance: improving the quality and utility of disturbance research. *Journal of Applied Ecology* 34, 275-288.

Jones, A., Bateman, I. & Wright, J. (2003) Estimating Arrival Numbers and Values for Informal Recreational Use of British Woodlands. CSERGE / FC, Norwich.

Kirby, J., Davidson, N., Giles, N., Owen, M. & Spray, C. (2004). Waterbirds and Wetland Recreation Handbook: A review of Issues and Management Practice. The Wildfowl & Wetlands Trust. Slimbridge.

Liley, D (2008a). Development and the North Norfolk coast. Scoping Document on the Issues Relating to Access. Footprint Ecology, Dorset.

Liley, D. (2008b) Little Terns at Great Yarmouth. Disturbance to birds and implications for strategic planning and development control. Unpublished report commissioned by Great Yarmouth Borough Council and the RSPB. Footprint Ecology, Wareham, Dorset.

Liley, D., Hoskin, R., Lake, S. & Underhill-Day, J. (2009) Habitats Regulations Assessment of the Great Yarmouth Core Strategy.

Liley, D., Hoskin, R., Underhill-Day, J. & Tyldesley, D. (2008) Habitat Regulations Assessment: Breckland Council Submission Core Strategy and Development Control Policies. Breckland District Council, Dereham.

Liley, D., Jackson, D.B. & Underhill-Day, J.C. (2006) Visitor Access Patterns on the Thames Basin Heaths. English Nature, Peterborough.

Mott Macdonald (2010) Habitats Regulation Assessment. Joint Core Strategy for Broadland, Norwich and South Norfolk. Greater Norwich Development Partnership, Norwich.

Scott Wilson (2010) Greater Norwich Development Partnership. Stage 2b Water Cycle Study. Greater Norwich Development Partnership, Norwich.

Sutherland, W.J., Armstrong-Brown, S., Armsworth, P.R., Brereton, T., Brickland, J., Campbell, C.D., Daniel E. Chamberlain, D.E., Cooke, A.L., Nicholas K. Dulvy, N.K., Dusic, N.R., Fitton, M., Freckleton, R.P., Godfray, C., Grout, N., Harvey, H.J., Hedley, C., Hopkins, J.J., Kift, N.B., Kirby, J., Kunin, W.E., MacDonald, D.W., Marker, B., Naura, M., Neale, A.R., Oliver, T., Osborn, D., Pullin, A.S., Shardlow, M.E.A., Showler, D.A., Smith,

P.L., Richard J. Smithers, R.J., Jean-Luc Solandt, J.-L., Spencer, J., Spray, C.J., Thomas, C.D., Thompson, J., Webb, S.E., Yalden, D.W. & Watkinson, A.R. (2006) The identification of 100 ecological questions of high policy relevance in the UK. *Journal of Applied Ecology* 43, 617–627.

Tyldesley, D. (2011) Assessing projects under the Habitats Directive: Guidance for Competent Authorities. Report to the Countryside Council for Wales, Bangor
Wildfrontier (2011) Broads Authority Development Management Policies DPD. Appropriate Assessment (schedule of Proposed Minor Changes) – March 2011. Available at: <http://www.broads-authority.gov.uk/broads/live/search.html>

Wildfrontier (2012) Broads Authority Draft Habitats Regulations Assessment of Site Specific Policies. Broads Authority, Norwich.