4 Habitat Regulations Assessment

4.1 Introduction

The need for Habitat Regulations Assessment (HRA)[7] is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by Regulation 48 of the Conservation (Natural Habitats &c) Regulations 1994 (amended 2007). The ultimate aim of HRA is to "*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*" (Habitats Directive, Article 2(2)). This aim relates to habitats and species, not the European sites themselves, although the sites have a significant role in delivering favourable conservation status.

4.1.1 The legislative basis

Habitats Directive 1992, Article 6 (3) states that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment *of its implications for the site in view of the site's conservation objectives."*

Regulation 48 of the Conservation (Natural Habitats &c. Regulations) 1994 (amended 2007**)** states that:

"*A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … shall make an Appropriate Assessment of the implications for the site in view of that sites conservation objectives*".

4.1.2 Greater Norwich Water Cycle Study

The Greater Norwich Water Cycle Study will relate to the RSS for the East of England (RSS14) in that the context for the WCS is set by RSS14. RSS14 has been subject to its own Habitat Regulations Assessment (HRA). This identifies that there is possibly "The risk of significant effects on the River Wensum SAC, the Broads SAC and Broadland SPA and Ramsar Site ……. arising from water supply and water quality." While a formal HRA may not be required for the Water Cycle Study, it is considered necessary for audit purposes to have documented evidence that an HRA process has been undertaken, at least to the degree of determining that the study is unlikely to lead to significant adverse effects upon European sites[8].

The three main ways in which the Study could lead to such an effect are:

- Insufficient raw water capacity within existing abstraction licences to supply new settlements, leading to levels of abstraction that reduce freshwater inputs to hydrologically sensitive European sites to a damaging degree;

[7] Also known as Appropriate Assessment
[8] Colloquially known as the Likely Significant Effect test – essentially a risk assessment, utilising existing data, records and specialist knowledge

- Insufficient STW capacity ('headroom') to cope with the increased volume of effluent requiring treatment, leading to lower levels of treatment and associated deterioration in water quality in receiving watercourses; and
- Insufficient capacity within existing discharge consents to allow for the expected increase in treated sewage effluent volume released into receiving watercourses, leading to a damaging increase in nutrient inputs (causing eutrophication) and a damaging increase in scour and erosion of downstream European sites due to substantially greater flow volumes.

It is reasonable to assume that these adverse effects will be most acute where points of abstraction for the treatment of effluent discharge are local (taken for the purposes of this study to be within 3 km) to hydrologically sensitive European sites, since European sites at greater distances are likely to be supplied by a greater range of freshwater sources. All of the potential impacts identified above are taken into account in the constraints analysis in developing this Strategy, such that significant adverse effects should be unlikely by design.

4.2 European Sites

Two European sites have been considered within this appraisal. Nutrient enrichment of both the River Wensum and the Yare Broads and Marshes has been highlighted as a concern by the Environment Agency in the Review of Consents process (see Section 3.3.3). More specifically, current (measured) and future (modelled) phosphate concentrations at these sites have been shown to be elevated above appropriate standards for these habitats. Further, it has been demonstrated that a number of Environment Agency consented discharges are implicated in exceeding of standards. These two sites are discussed in Appendix F.

4.3 Policy Area Evaluation

The following table sets out an evaluation of the likely significant effects of the potential development upon the two European sites identified above.

Table 4-1: European Site Assessment per Policy Area

Identification	Policy Area	European site assessment
NPA1	North East Sector (inside the NNDR)	This area is serviced by a number of sewage pumping stations, which pump sewage to Whitlingham STW. This STW is currently responsible for excessive phosphate discharge into the River Yare thus affecting the Yare Broads & Marshes SSSI, which is a component part of the Broadlands SAC. As such, any new development in this location will require phosphate reduction techniques such as phosphate stripping to be incorporated into sewage treatment. It may be necessary to explore new technologies, to increase the effectiveness of phosphate stripping at this STW.

Identification	Policy Area	European site assessment
NPA2	North East Sector (outside the NNDR)	Development in this area would require either a) upgrading of Rackheath STW or b) Redirecting flows to Whitlingham STW. Since the latter would increase phosphate issues in Broadlands SAC, the former is the environmentally preferred option for this site.
NPA3	East Sector (outside the NNDR)	As with NPA1, sewage from this area is pumped to Whitlingham STW. As such, any new development in this location will require further phosphate reduction techniques such as phosphate stripping to be incorporated into sewage treatment.
NPA4	North East and East Combination	This option would require further phosphate removal technology to be installed at Whitlingham STW in order for it to be possible to claim that the WCS is unlikely to result in significant adverse effects on European sites.
NPA5	South East Sector	Development in this area would require either a) upgrading of Poringland STW or b) redirecting flows to Whitlingham STW. Since the latter would increase phosphate issues in Broadlands SAC (unless sufficiently effective phosphate stripping could be incorporated), the former is the environmentally preferred option for this site.
NPA6	South Sector (A11-A140 outside A47)	This area is in the vicinity of Stoke Holy Cross STW, which has not been identified as being responsible for excessive phosphate discharges to Broadlands SAC. As such, no impacts on European sites are anticipated as a result of development in this location.
NPA7	South West Sector (A11-B1108)	Development in these areas will probably increase sewage loads being treated by Whitlingham STW. This will therefore contribute to phosphate loads in the Broadlands SAC and will thus require phosphate stripping.
NPA8	West Sector (River Yare to River Wensum)	This option is likely to require construction of a new STW – any such works would have to avoid discharging into the Rivers Yare or Wensum to ensure no adverse impact on European sites. Failing that, they would need to incorporate effective phosphate stripping technology.
NPA9	North West Sector (A1067 - NNDR)	This option is likely to require construction of a new STW – any such works would have to avoid discharging into the Rivers Yare or Wensum to ensure no adverse impact on European sites. Failing that, they would need to incorporate effective phosphate stripping technology.
NPA10	North Sector (North of Airport)	This option is likely to require construction of a new STW – any such works would have to avoid discharging into the Rivers Yare or Wensum to ensure no adverse impact on European sites. Failing that, they would need to incorporate effective phosphate stripping technology.

Identification	Policy Area	European site assessment
NPA11	Wymondham	This location is serviced by Wymondham STW, which is already releasing excessive phosphate into the River Yare. Development within this area will therefore contribute to phosphate loads in the Broadlands SAC and will thus require phosphate stripping.
CITY	Norwich City	Development in this area will probably increase sewage loads being treated by Whitlingham STW. This will therefore contribute to phosphate loads in the Broadlands SAC and will thus require phosphate stripping.
RPA1	Reepham	Development in this area will probably increase sewage loads being treated by Reepham STW. This will therefore contribute to phosphate loads in both the River Wensum SAC and Broadlands SAC and will thus require phosphate stripping.
RPA2	Aylsham	Development in this location would send sewage for treatment to Aylsham STW. This has not as yet been identified by the Environment Agency as contributing to deterioration in the water quality any European sites and is therefore currently considered unlikely to result in a significant adverse effect.
RPA3	Wroxham	Development in this area would increase sewage loads being treated at Bylaugh STW, thus increasing phosphate loading in the River Wensum SAC. Effective phosphorus stripping would therefore be required.
RPA4	Acle	Development in this location would send sewage for treatment to Acle-Damgate STW. This has not as yet been identified by the Environment Agency as contributing to deterioration in the water quality any European sites. Decoy Carr SSSI and Damgate Marshes SSSI (both part of the Broads SAC/Broadlands SPA) lie actually within the development area of Acle. The constraints of these environmental protection areas should be carefully considered when developing in this area.
RPA5	Hingham	Development in this location would send sewage for treatment to Wymondham STW. Wymondham STW is already releasing excessive phosphate into the River Yare. Development within this area will therefore contribute to phosphate loads in the Broadlands SAC and will thus require phosphate stripping.
RPA6	Diss	Development in this location would send sewage for treatment to Diss STW. This has not as yet been identified by the Environment Agency as contributing to deterioration in the water quality any European sites and is therefore currently considered unlikely to result in a significant adverse effect.

Identification	Policy Area	European site assessment
RPA7	Harleston	Development in this location would send sewage for treatment to Harleston STW. This has not as yet been identified by the Environment Agency as contributing to deterioration in the water quality any European sites and is therefore currently considered unlikely to result in a significant adverse effect..
RPA8	Loddon	Development in this location would send sewage for treatment to Sisland STW. This has not as yet been identified by the Environment Agency as contributing to deterioration in the water quality any European sites. Hardley Flood SSSI (part of the Broads SAC/Broadlands SPA) lies in close proximity to the northeast border of the development area boundary. Great care must therefore be taken in locating development in the vicinity of this hydrologically sensitive site.

It is not possible at this stage to conclude that development is unlikely to have a significant adverse effect on the Rivers Wensum and Yare (and therefore the River Wensum SAC and Broadlands SAC) as a result of exceedence of damaging levels of phosphate through a substantial increase in the volume of discharged treated sewage effluent. This is mainly due to the number of policy areas that are serviced by Whitlingham STW (5 policy areas in the East/North East, with options for 2 others) but is also related to the fact that even where phosphate stripping technology is in place (i.e. at Whitlingham), excessive levels of phosphate are still being discharged. Without further detailed consideration of the technical efficacy of phosphate stripping technology, it is impossible to definitively rule out significant impacts For similar reasons, Wymondham, Reepham and Wroxham (serviced by Bylaugh STW) also have the potential for significant effects on one or both of the European sites.

However, if the measures detailed in the tables above can be applied to each of those development locations and reasonable assurances obtained that the technology would be effective, it may be possible to conclude that the study will not have a significant adverse effect.