The Lake Lothing (Lowestoft) Third Crossing Order 201[*]

Document 6.5: Habitats Regulations Assessment Report

Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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FOREWORD

This Habitats Regulations Assessment Report relates to an application ('the Application') submitted by Suffolk County Council ('the Applicant') to the Secretary of State (through the Planning Inspectorate) for a Development Consent Order ('DCO') under the Planning Act 2008.

If made by the Secretary of State, the DCO would grant development consent for the Applicant to construct, operate and maintain a new bascule bridge highway crossing, which would link the areas north and south of Lake Lothing in Lowestoft, and which is referred to in the Application as the Lake Lothing Third Crossing (or 'the Scheme').

This Habitats Regulations Assessment Report has been prepared in accordance with the requirements of section 37(3)(d) of the Planning Act 2008 and regulation 5(2)(g) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('the APFP Regulations'), and in compliance with relevant guidance.

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Abbreviations

ABP	Associated British Ports
AN10	Advice Note 10: HRA, Planning Inspectorate 2015
CoCP	Code of Construction Practice
cSAC	Candidate Special Area of Conservation
EA	Environment Agency
EC	European Community
EEC	European Economic Community
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
MAGIC	Multi-Agency Geographic Information for the Countryside
NNNPS	National Networks National Policy Statement
NSER	No Significant Effects Report
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
pSPA	Proposed Special Protection Area
SAC	Special Area of Conservation
SCC	Suffolk County Council
SPA	Special Protection Area
SuDS	Sustainable Drainage System
UK	United Kingdom

1 Introduction

1.1 The Scheme

1.1.1 The scheme involves the construction, operation and maintenance of a new bascule bridge highway crossing linking the areas north and south of Lake Lothing in Lowestoft, hereafter referred to as the Lake Lothing Third Crossing ("the Scheme").

1.1.2 The Scheme would provide a new single-carriageway road crossing of Lake Lothing, consisting of a multi-span bridge with associated approach roads, and would comprise:

- an opening bascule bridge over the Port of Lowestoft, in Lake Lothing;
- on the north side of Lake Lothing, a bridge over Network Rail's East Suffolk Line, and a reinforced earth embankment joining that bridge, via a new roundabout junction, to the C970 Peto Way, between Rotterdam Road and Barnards Way; and
- on the south side of Lake Lothing, a bridge over the northern end of Riverside Road including the existing access to commercial property (Nexen Lift Trucks) and a reinforced earth embankment (following the alignment of Riverside Road) joining this bridge to a new roundabout junction with the B1531 Waveney Drive.

1.1.3 The Scheme would be approximately 1 kilometre long and would be able to accommodate all types of vehicular traffic as well as non-motorised users, such as cyclists and pedestrians.

1.1.4 The opening bascule bridge design would allow large vessels to continue to use the Port of Lowestoft.

1.1.5 A new control tower building would be located immediately to the south of Lake Lothing, on the west side of the new highway crossing, to facilitate the operation of the opening section of the new bascule bridge.

1.1.6 The Scheme would also entail the following changes to the existing highway network:

- the closure of Durban Road to vehicular traffic at its junction with Waveney Drive;
- the closure of Canning Road at its junction with Riverside Road, and the construction of a replacement road between Riverside Road and Canning Road to the west of the Registry Office; and
- a new access road from Waveney Drive west of Riverside Road, to provide access to property at Riverside Business Park;
- improvements to Kimberley Road at its junction with Kirkley Run; and
- part-signalisation of the junction of the B1531 Victoria Road / B1531 Waveney Drive with Kirkley Run;
- the provision of a pontoon for use by recreational vessels, located to the east of the new highway crossing, within the Inner Harbour of Lake Lothing; and

- works to facilitate the construction, operation and maintenance of the Scheme, including the installation of road drainage systems; landscaping and lighting; accommodation works for accesses to premises; the diversion and installation of utility services; and temporary construction sites and access routes.

1.1.7 The works required for the delivery of the Scheme are set out in Schedule 1 to the draft DCO (application document reference 3.1), where they are referred to as "the authorised development", with their key component parts being allocated reference numbers, which correspond to the layout of the numbered works as shown on the Works Plans (application document reference 2.4). The General Arrangement Plans (application document reference 2.2) illustrate the key features of the Scheme.

1.1.8 Plate 1 below provides a diagrammatic representation of the Scheme:

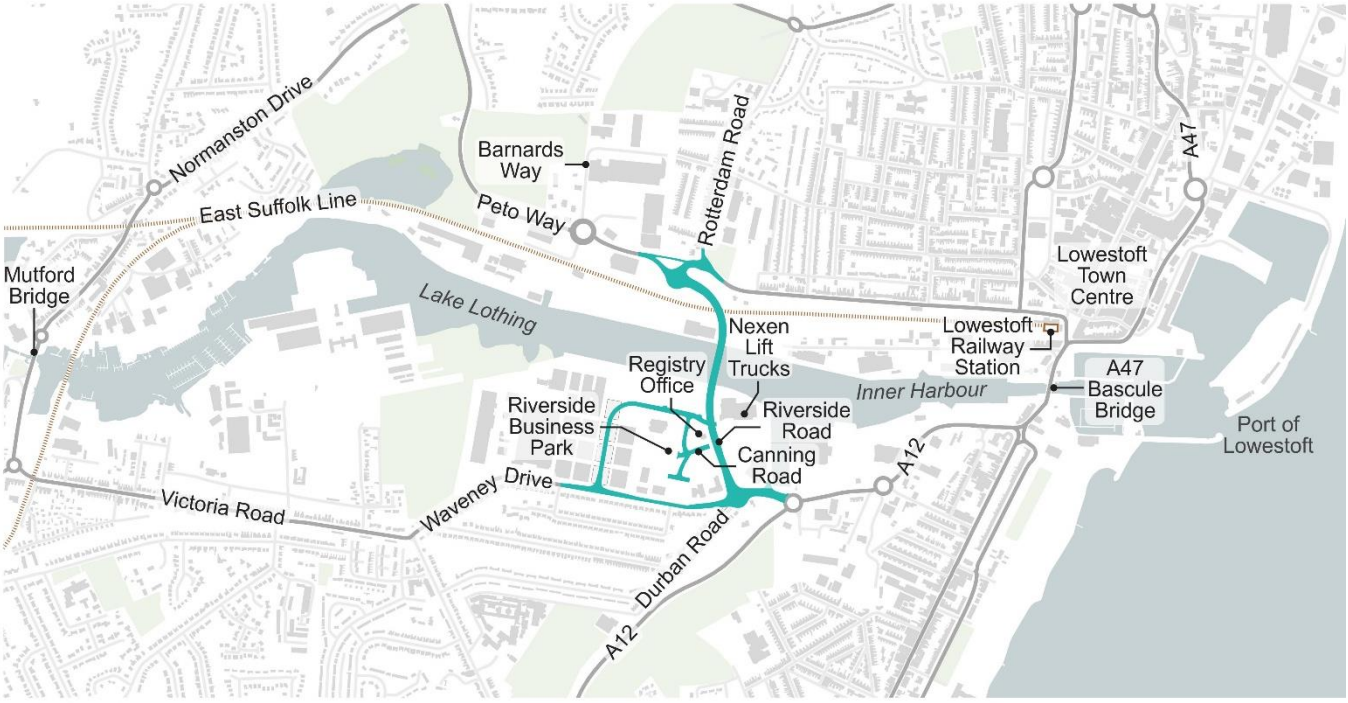

Plate 1: Location of the Scheme in Lowestoft

1.2 Purpose of this report

1.2.1 This report provides a screening assessment of the Scheme in relation to the requirements of the Habitats Regulations[1]. This report has been prepared by WSP on behalf of the Applicant. The report has been produced with reference to current Planning Inspectorate Advice 10[2] relevant to Nationally Significant Infrastructure Projects ('AN10').

1.2.2 This report examines Natura 2000 sites (comprising sites of European importance, comprising Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites) within the vicinity of the Scheme, in order to assess whether the Scheme would be likely to have a significant effect on those sites and their integrity or the ecological resources for which they have been designated. The report examines these ecological resources in the context of the Scheme in order to advise the competent authority determining the proposal as to the necessity of appropriate assessment of the Scheme with respect to the requirements of the Habitats Regulations. The report concludes with a recommendation to the competent authority regarding the permissibility of the Scheme.

1.3 Data Sources

1.3.1 Ecological data informing this report has been obtained from consultation with statutory and non-statutory bodies with responsibility for nature conservation, specifically Natural England, the Environment Agency and Suffolk Wildlife Trust. Information concerning the extent and location of Natura 2000 sites within the vicinity of the Scheme has been taken from the MAGIC database maintained by Natural England at http://www.magic.gov.uk/ and citation sheets for those sites held by JNCC. Incidental information from ecological surveys undertaken in association with the Lake Lothing proposals has also informed the appraisal.

1.3.2 The Natura 2000 sites considered within this study are those located within 30km of the Scheme for which potential effect pathways might exist. Following consultation with Natural England additional sites were selected for inclusion in the appraisal. The sites therefore include all sites that have the potential to be affected by the Scheme either directly by operations or activities that occur within designated sites or via effect pathways.

[1] Council Directive 92/43/EEC (1992) “on the conservation of natural habitats and of wild fauna and flora”, as transposed from EU to UK law by the Conservation of Habitats and Species Regulations 2010 (as amended).

[2] Advice Note 10: Habitats Regulations Assessment, Version 8. The Planning Inspectorate, 2017

2 The Habitats Directive and Habitats Regulations

2.1 Introduction

2.1.1 The Habitats Directive (hereinafter "the Directive") establishes the requirement for Habitats Regulations Assessment (HRA) process in Article 6(3) and 6(4); i.e., the full process of impact assessment undertaken to determine the effects of plans or projects on Natura 2000 sites:

Article 6(3):

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

Article 6(4):

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

2.1.4 *Where the site concerned hosts a priority natural habitat type and/or priority species, the only considerations which may be raised are those relating to human health or public safety, of beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest*.'

2.1.5 The Directive is transposed into national statute through the Conservation of Habitats and Species Regulations 2010, hereby referred to as the 'Habitats Regulations'.

2.1.6 Natura 2000 sites are those of European Community importance and consist of Special Areas of Conservation (SACs), which are designated under the Directive, and Special Protection Areas (SPAs), which are designated under the Conservation of Wild Birds Directive (2009/147/EC) as specified in paragraph 1.4 of AN10. Although Ramsar sites are not legislated under European legislation, the National Planning Policy Framework and Planning Practice Guidance consider that they should be afforded the same level of consideration and protection as SACs and SPAs. Regard has been had to these documents together with the National Networks National Policy Statement (NNNPS). Paragraphs 4.22 to 4.25 of the NNNPS specifically address the approach to undertaking HRA for NSIPs such as the Scheme.

2.2 The HRA process

2.2.1 The purpose of HRA is to assess the likely significant effects of a project, in combination with the effects of other plans and projects, with respect to the conservation objectives of European nature conservation sites, also known as the Natura 2000 network, and to ascertain whether that project would be likely to affect the protection or integrity of such a site.

2.2.2 Guidance for undertaking HRAs was issued by the European Commission in 2001[3], and Natural England is yet to issue further specific guidance. The European Commission guidance has therefore been used as the basis of this assessment. In summary, the HRA process should include the following steps, the requirement for each being dependent upon the outcomes of the preceding stage. This process has been further informed by AN10:

- Stage 1 – Screening;
- Stage 2 – Appropriate assessment;
- Stage 3 – Assessment of alternative solutions;
- Stage 4 – Consideration of imperative reasons of overriding public interest; and
- Stage 5 – Consideration of compensatory measures.

2.2.3 These stages form the context of the current report with details of the procedure of the screening stage provided in Section 3.

2.2.4 Stage 1 of the process is intended to identify whether the project is 'likely to have a significant effect' on a European site, and is referred to as 'screening'. If the screening process identifies likely significant effects on Natura 2000 sites, Stage 2 of the HRA needs to be completed. Stage 2 considers likely significant impacts in greater detail, including consideration of mitigation measures where these may be applied to avert an effect on the integrity of the Natura 2000 sites concerned. If information is not sufficient to confirm that an adverse impact upon the site's integrity cannot be ruled out, then Stage 3 is undertaken to investigate alternative solutions. If there are no alternative solutions that have a lesser effect upon the Natura 2000 site(s) in question, the project can only be implemented if there are '*imperative reasons of overriding public interest*', as detailed in Article 6(4). In essence, the work at each Stage determines whether subsequent stages of the HRA process are required in determining whether a project may proceed. Where a project must be carried out for imperative reasons of overriding public interest (IROPI) compensatory measures must be secured.

[3] Assessment of plans and projects significantly affecting Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2001.

2.2.5 In accordance with the Habitats Regulations, HRA is required when, in view of a European site's objectives, a project:

- is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other projects and/or plans); and
- is not directly connected with or necessary to the management of the site.

2.2.6 In addition, Regulation 61(5) of the Habitats Regulations places an emphasis on competent authorities to only approve projects in which impacts on a European site have been 'ascertained'. It is important that this precautionary principle is applied to any screening assessment. A case ruling (Waddenzee case C-127/02) states that '*any plan or project not directly connected with or necessary to the management of the site, is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information that it will have significant effects on that site, either individually or in combination with other plans or projects*'.

2.2.7 Therefore, if sufficient information is not available or where there is an element of doubt and further research is needed, in accordance with the precautionary principle and EC Guidance, the HRA should proceed to Stage 2 of the assessment.

3 Screening Methodology

3.1 Process

3.1.1 Although the legal context of HRA is set by the 2010 Regulations, as consolidated and updated in 2017[4], there is no standardised method for conducting the screening process. For the purposes of this report, the European Commission guidance and AN10 have been used. In summary, this approach comprises the following steps:

- Determining whether the Scheme is directly connected with the management of the site;
- Providing a description of the Scheme and key impact pathways;
- Describing the relevant Natura 2000 sites including their qualifying features, threats, and key ecosystem factors (conservation objectives), and an identification of the likely effects of the Scheme upon Natura 2000 sites; and
- Where likely effects have been identified, determining the likely significance of those effects.

3.2 Conservation objectives

3.2.1 The Directive states that the purpose of conservation is the maintenance of biodiversity. This statement does not allow for any form of biodiversity loss, and has a presumption in favour of increasing the value and stock of biodiversity through implementation of applicable Regulations. The Guidance states that the Natura 2000 data form requires that:

'…*all Annex I habitat types present on a site and all Annex II species occurring at the site should be mentioned in the appropriate place in the data form. This information forms the basis for a Member State establishing the site's conservation objectives'*

3.2.2 The conservation objectives are therefore normally associated with these Annex I and II species and habitats which form the reasons for the site's designation; the qualifying features and primary reasons for selection.

3.3 Assessment of likelihood and significance of effects

3.3.1 The assessment of significance should be made in relation to the specific features and environmental conditions of the site concerned taking particular account of its conservation objectives (EC 2000). There is no one measure of significance, but the EC Guidance suggests the likelihood of changes to relevant indicators should be used to establish changes in these conservation objectives.

3.3.2 For the assessment of significance of likely impacts upon the conservation objectives of each site identified, the following impacts and significance criteria have therefore

[4] The Conservation of Habitats and Species Regulations, 2017 No.1012

been considered:

- Loss of habitat area – including percentage of loss;
- Fragmentation – considering duration or permanence, level in relation to original extent;
- Disturbance – considering duration or permanence, distance from site;
- Population density – including timescale for replacement;
- Air quality – including change in nitrogen deposition rates;
- Water resource – involving likely changes in quantity; and
- Water quality – involving changes in flora and fauna.

3.3.3 In combination effects are addressed in Section 6.12.

3.4 Outcomes

3.4.1 The outcomes of this report are an assessment of the effects of the Scheme in isolation and in-combination, on Natura 2000 sites, their integrity and their qualifying features and conservation objectives. Where sufficient detail exists for such an assessment to be made, either of two outcomes has been made:

- It can be objectively concluded that there are not likely to be significant effects on the Natura 2000 site; or
- The information provided either suggests that significant effects are likely or that sufficient uncertainty remains to indicate that further Appropriate Assessment and hence further stages of the HRA process should be undertaken.

3.4.2 The Applicant can confirm that this HRA report has been prepared with regard to the recent People Over Wind CJEU decision (April 2018).

4 Description of the Scheme

4.1 Location

4.1.1 The Scheme is shown in Figure 5.1 of the Environmental Statement (application document reference 6.3).

4.1.2 Lake Lothing is a large saltwater lake which separates the town of Lowestoft in a north-south direction. At its widest point, it spans 180m and forms the Inner Harbour of the Port of Lowestoft. The area is broadly defined by a mixture of commercial and residential properties which flank both the north and south of the water body.

4.1.3 The main transport links in the area include the A146 which links Lowestoft to Norwich, the A47 which runs towards Great Yarmouth and the A12 which runs southwards towards Ipswich and Felixstowe.

4.1.4 Running almost in parallel to the northern edge of the Lake and Denmark Road, the East Suffolk Line serves Lowestoft railway station. The East Suffolk Railway Line crosses Lake Lothing at its western end adjacent to the A1177 at Mutford Bridge.

4.2 The Scheme

4.2.1 The Scheme comprises a new single lane carriageway on a bascule bridge over Lake Lothing connecting Peto Way in the north with Waveney Drive to the south, thus allowing strategic traffic an alternative route around the town centre.

4.2.2 The following will be required in the construction stage of the Scheme:

- Use of floating barges to construct bridge piers and bridge deck;
- Creation of coffer dams;
- Piling of foundations;
- Site compounds on each side of the Lake for storage and delivery of materials;
- Loading areas for materials and workforce for constructing main bridge piers and deck;
- Temporary working space to construct the works;
- Working space to divert Statutory Undertakers apparatus affected by the works;
- Diversion of access roads to maintain access to local businesses in the Riverside Business Park;
- Limited 24 hour construction;
- Temporary road closures and diversions;
- Site offices/workshops associated with the construction; and
- Parking for workforce and staff with approximately 100 employed at the peak of construction.

4.3 The Route

4.3.1 The Scheme is approximately 1km in length. It starts at a new junction on Peto Way, between Rotterdam Road and Barnards Way, and spans both the East Suffolk Line and Lake Lothing on a north-south alignment.

4.3.2 On the southern side of the Lake, the new crossing follows the line of Riverside Road, rising from a remodelled junction at the intersection of Riverside Road and Waveney Drive. Local roads which presently connect directly to Riverside Road will be served in the main from the New Access Road that will connect to Waveney Drive via a new T Junction.

4.4 Structures and Earthworks

4.4.1 A new bascule (lifting) bridge will be constructed to allow the passage of vessels within the Inner Harbour. When closed, the bridge will have a clearance of 12m above the highest astronomical tide level which will enable smaller boats to pass under the bridge. The new bridge will be a single carriageway with raised verges, footways and a cycleway linked to existing networks.

4.4.2 A series of fenders will be provided within the Lake to provide protection to the bridge piers against impact from ships. These will be provided on both approaches to the bridge.

4.5 Main Junction Arrangements

4.5.1 On the northern bank, a new roundabout will be installed to the west of the current Denmark Road roundabout to connect the Scheme with the existing localised road network. Heading south towards Lake Lothing, the new road layout will link into the construction of a new embankment which connects to the elevated bascule bridge, enabling users of the crossing to span the Lake and connect into the new road layout on the southern bank.

4.5.2 On the southern shore, the new crossing will follow the line of Riverside Road, initially at a high level, descending to a new roundabout/signalised junction at the intersection of Riverside Road and Waveney Drive, west of the Lings Motor showroom. Local roads which presently connect directly to Riverside Road would be served in the main from a new connection to Waveney Drive.

4.6 Drainage

4.6.1 Drainage arrangements for the new carriageway will consist of combined kerb drainage units and kerb and gulley arrangements. New drainage will outfall into existing drainage systems via a Sustainable Drainage System (SuDS), as set out in the Drainage Strategy (Appendix 18B of the Environmental Statement).

4.7 Lighting

4.7.1 The full extent of the carriageway of the Scheme will be lit with feature lighting of the bridge structure developed during detailed design. Discussions will continue with Associated British Ports and Network Rail to ensure their requirements are considered and a suitable design developed, pursuant to their protective provisions in the DCO.

4.8 Landscaping

4.8.1 The Scheme includes landscaping to soften the appearance of the Scheme at the tie-ins and to integrate with the wider townscape. These are set out in the Landscaping Plans, which are secured through the DCO.

4.9 Construction Programme

4.9.1 Subject to planning approval, it is anticipated construction of the Scheme would commence in late 2019 and take approximately two years to complete.

4.10 Construction Activities

4.10.1 Construction of the scheme will involve the following key activities:

- Site establishment, clearance and preparation;
- Diversion of Statutory Undertaker's equipment;
- Establishment of contractor's site compounds;
- Levelling and major and minor earthworks using scrapers, bulldozers and dump trucks;
- Piling at structure locations;
- The import and export of material (fill, spoil and road stone) to establish the carriageway;
- The use of generators, temporary machinery and lighting;
- Construction vehicle movements to deliver and dispose of materials;
- The requirement for temporary diversions and position of temporary access restrictions;
- Possible de-watering activities; and
- Restoration of temporarily used sites on completion.

4.11 Operation and Maintenance

4.11.1 During the operational stage of the Scheme there is the potential for the dredging regime that is undertaken within the navigation channel by ABP in their role as Statutory Harbour Authority, to be altered. There is also the potential for the disturbance and mobilisation of sediment within Lake Lothing that is not disturbed at present.

4.11.2 Sediment modelling (ES Appendix 17C) has, however, shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no effect on ecological resources associated with any Natura 2000 site.

4.12 Land Take

4.12.1 There will be no land take from within any Natura 2000 sites.

4.13 Proximity to Natura 2000 Sites

4.13.1 The nearest existing Natura 2000 site to the Order limits for the Scheme is the Outer Thames Estuary Special Protection Area (SPA), located approximately 1.3km east of the Order limits, along the coast of Norfolk and Suffolk, extending into the Southern North Sea. The Southern North Sea candidate Special Area of Conservation (cSAC) also starts at this location.

4.13.2 Other European sites are located approximately 2.4km west of the Order limits, centred on OS grid reference TM 507 923, along the southern bank of Oulton Broad: The Broads Special Area of Conservation (SAC) which is also designated as Broadland Ramsar Site and Broadland Special Protection Area (SPA). These designated sites comprise numerous areas of wetland habitat throughout North Suffolk and Norfolk, including four discrete areas, located along the banks of Oulton Broad and the River Waveney, to the west (with the three more distant areas centred on TM 474 909, approximately 5.5km west of the proposed bridge location, centred on TM 433 927, approximately 9.8km west of the proposed bridge location and centred on TM 396 916, approximately 14km west of the proposed bridge location.

4.13.3 There are significant barriers between the Scheme and The Broads SAC / Broadland Ramsar / Broadland SPA, including numerous residential and industrial areas, the A1117, Mutford Lock and a train line, which mean that there will be no loss of habitat from these European designated sites arising from the Scheme. Likewise there will be no habitat losses from within the Outer Thames Estuary SPA and the Southern North Sea cSAC, due to their distance from the Scheme.

4.14 Pollution

4.14.1 Measures to avoid the contamination of Lake Lothing during construction will be incorporated into the construction programme and project design, in line with best practice pollution prevention guidelines (PPGs), and would be agreed with the Environment Agency (EA) prior to construction. These measures have been informed by the assessment within the Environmental Statement and are included in the interim Code of Construction Practice (CoCP) which forms the framework for the full CoCP that will be prepared by the Contractor and secured as a requirement.

4.14.2 Emissions associated with construction machinery / vehicles are not expected to have a significant effect on local air quality.

4.14.3 A surface water drainage strategy will be prepared as part of the full CoCP for the construction phase to ensure that site drainage is controlled and that no contaminated runoff is allowed to enter the water.

4.14.4 All fuels, oils and chemicals would be stored on an impermeable base, bunded and secured. To protect aquatic ecosystems, construction activities in, and near, Lake Lothing would be restricted and managed in accordance with EA guidance. This will be secured through the full CoCP.

5 Description of European Designated Sites

5.1 Sites within screening assessment scope

5.1.1 This assessment has considered the following Natura 2000 sites:

- The Broads SAC: UK0013577;
- Broadland SPA: UK9009253;
- Broadland Ramsar: UK11010;
- Southern North Sea pSAC (No EU code assigned at present);
- Outer Thames Estuary SPA: UK9020309 and Outer Thames Estuary pSPA Extension;
- Benacre to Easton Bavents SPA; and
- Alde-Ore Estuary SPA.

5.1.2 The locations of the above sites, other than Alde-Ore Estuary SPA, are shown in Figure 1 along with the location of the Scheme. Alde-Ore Estuary is located over 30km from the Scheme, but it has been included in this screening report at the request of Natural England and the Secretary of State in their scoping opinion to the EIA process.

5.2 The Broads SAC: UK0013577

5.2.1 This 5889.43ha site is located approximately 2.4km west of the Order limits, centred on OS grid reference TM 507 923.

Qualifying features - Annex I habitats that are the primary reason for site selection

5.2.2 **3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.** The Broads is the richest area for charophytes (stoneworts) in Britain with twenty species having been recorded, which represents over 65% of the British flora.

5.2.3 **3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation.** The Broads in East Anglia contain several examples of southern natural eutrophic lakes. Although artificial, having arisen from peat digging in medieval times, these lakes and the ditches in areas of fen and drained marshlands support relict vegetation of the original Fenland flora, and collectively this site contains one of the richest assemblages of rare and local aquatic species in the UK.

5.2.4 **7140 Transition mires and quaking bogs.** The Broads contain examples of transition mire in a flood plain in the south-eastern part of the UK, where the habitat is rare.

5.2.5 **7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae * Priority feature.** This flood plain mire site in East Anglia has the largest example of calcareous fens in the UK and possibly the largest occurrence in the EU outside Sweden.

5.2.6 **7230 Alkaline fens.** The Broads is one of two sites selected for Alkaline fens in East Anglia, in eastern England, where a main concentration of lowland fen occurs.

5.2.7 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) * Priority feature. The complex of sites in the Broads of East Anglia contains the largest blocks of alder *Alnus glutinosa* wood in England.

Qualifying features – present as a qualifying feature, but not a primary reason for selection of this site

5.2.8 **6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae).** Purple moor-grass meadows.

Annex II species that are a primary reason for selection of this site

5.2.9 **1016 Desmoulin`s whorl snail *Vertigo moulinsiana.*** The Broads is the main stronghold of Desmoulin's whorl snail *Vertigo moulinsiana* in East Anglia and is one of several sites selected in this part of its range. Several large populations are known, associated with standing and flowing water and ditch systems. This is a very important area for its wetland invertebrate fauna, and many Red Data Book and Nationally Scarce species occur here.

5.2.10 **1903 Fen orchid *Liparis loeselii*.** The Broads in eastern England provide representation of the Fenland form of fen orchid in the eastern part of its UK range. Three small populations of var. *loeselii* are known to occur on this site, and 242 plants were found in 1996.

5.2.11 **4056 Ramshorn snail *Anisus vorticulus.*** This species occurs across a range of sites in southern and eastern England. The Broads is one of the three main population centres for this species in the UK.

Qualifying features - Annex II species present as a qualifying feature, but not a primary reason for site selection

5.2.12 1355 Otter Lutra lutra.

Vulnerability

5.2.13 The most important negative impacts and activities with high effect on the site as listed on the Natura 2000 Standard Data Form for the Broads SAC are as follows:

- M01 Changes in abiotic conditions;
- H02 Pollution to groundwater (point sources and diffuse sources); and
- I01 Invasive non-native species.

5.2.14 All of the above impacts and activities are liable to occur both inside and outside the SAC

Conservation objectives

5.2.15 With regard to the SAC and the natural habitats and / or species for which the site has been designated and subject to natural change; it should be ensured that the integrity of the site is maintained or restored as appropriate, and ensured that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats and habitats of qualifying

species;

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

5.3 Broadland SPA: UK9009253

5.3.1 The SPA is located approximately 2.4km west of the Scheme, centred on OS grid reference TM 507 923.

Qualifying features

5.3.2 The site is used regularly by 1% or more of the GB population of the following species in any season:

- Bittern Botaurus stellaris (10-15%);
- Bewick's swan Cygnus columbianus bewickii (8.6%);
- Whooper swan Cygnus cygnus cygnus (1.8%);
- Marsh Harrier Circus aeruginosus (16%);
- Hen harrier Circus cyaneus (3%); and
- Ruff Philomachus pugnax (6.4%).

5.3.3 The site is used regularly by 1% or more of the biogeographic population of the following regularly occurring migratory species in any season:

- Wigeon Anas penelope (1.34% of north-west European population);
- Gadwall Anas strepera (0.96%); and
- Shoveler Anas clypeata (<1%).

5.3.4 Data are most recent 5yr peak means taken from Natural England Broadland SPA citation sheet 2014 at: http://publications.naturalengland.org.uk/publication/5310905998901248.

Vulnerability

5.3.5 The most important negative impacts and activities with high effect on the site as listed on the Natura 2000 Standard Data Form for the Broadland SPA are as follows:

- M02 Changes in abiotic conditions;
- H02 Pollution to groundwater (point sources and diffuse sources); and
- I01 Invasive non-native species.

5.3.6 All of the above impacts and activities are liable to occur both inside and outside the SPA.

Conservation objectives

5.3.7 With regard to the SPA and the individual species and / or assemblage of species for which the site has been classified and subject to natural change; it should be ensured that the integrity of the site is maintained or restored as appropriate, and ensured that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The population of each of the qualifying features; and
- The distribution of the qualifying features within the site.

5.4 Broadland Ramsar: UK11010

5.4.1 The site is located approximately 2.4km west of the Scheme, centred on grid reference TM 507 923.

Qualifying features - Annex I habitats that are the primary reason for site selection

5.4.2 Broadland is a low-lying wetland complex straddling the boundaries between east Norfolk and northern Suffolk. The area includes the river valley systems of the Bure, Yare and Waveney and their major tributaries. The open distinctive landscape comprises a complex and interlinked mosaic of wetland habitats including open water, reedbeds, carr woodland, grazing marsh and fen meadow. The region is important for recreation, tourism, agriculture and wildlife.

Ramsar Criteria Applied to the Designation of the Site: Ramsar Criterion 2:

5.4.3 The site supports a number of rare species and habitats within the biogeographical zone context, including Habitats Directive Annex I and Annex II features as listed above in The Broads SAC description of key features.

Ramsar Criterion 6: Species/populations occurring at levels of international importance:

Species with peak counts in winter:

- 196 individuals of Bewick's swan Cygnus columbianus bewickii (North-western Europe) representing an average of 2.4% of the GB population (5 year peak mean 1998/9-2002/3);
- 6769 individuals of wigeon Anas penelope (North-western Europe) representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3);
- 545 individuals of gadwall Anas strepera (North-western Europe) representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3); and

- 247 individuals of shoveler Anas clypeata (North-western and Central Europe) representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3).

Species with peak counts in winter

5.4.4 The Species/populations identified subsequent to designation for possible future consideration under Criterion 6:

- 4,263 individuals of pink-footed goose Anser brachyrhynchus (Greenland, Iceland/UK) representing an average of 1.7% of the population (5 year peak mean 1998/9-2002/3); and
- 1,007 individuals of greylag goose Anser anser anser (Iceland/UK, Ireland) representing an average of 1.1% of the population (Source period not collated).

Vulnerability

5.4.5 No factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects reported on Broadland Ramsar Wetlands Information Sheet.

Conservation objectives

5.4.6 Information is not readily available so the following is based on conservation objectives for Broadland SPA which mostly covers the same land area and location as Broadland Ramsar and is also primarily designated for its bird interest.

5.4.7 With regard to the Ramsar and the individual species and / or assemblage of species for which the site has been classified and subject to natural change; it should be ensured that the integrity of the site is maintained or restored as appropriate by maintaining or restoring:

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The population of each of the qualifying features; and
- The distribution of the qualifying features within the site.

5.5 Southern North Sea cSAC (No EU code assigned at present)

5.5.1 A 3,695,766ha site located approximately 1.3km east of the Scheme, running along the coast and out into the Southern North Sea.

Key features

5.5.2 The Southern North Sea cSAC is the largest of five possible and candidate SACs proposed for the conservation of harbour porpoise within UK coastal waters.

5.5.3 The qualifying feature of the site is the Directive's Annex II species:

- Harbour porpoise Phocoena phocoena.

Vulnerability

5.5.4 Activities occurring within/near to the Southern North Sea site to which the harbour porpoise is considered sensitive include:

- Commercial fisheries (with harbour porpoise bycatch);
- Contamination caused by discharge/run-off from land-fill, terrestrial/ offshore industries;
- Anthropogenic underwater sound caused by shipping, oil and gas drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys and recreational boating activity;
- Death or injury by collision caused by shipping or recreational boating activity; and
- Removal of target (prey) species by commercial fisheries.

Conservation objectives

5.5.5 To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise.

5.5.6 To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:

- The species is a viable component of the site;
- There is no significant disturbance of the species; and
- The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

5.6 Outer Thames Estuary SPA: UK9020309 and pSPA Extension

5.6.1 The existing Outer Thames Estuary SPA is located approximately 1.3km east of the Scheme running along the coast and out into the southern North Sea. Three extension areas are proposed, at Foulness, Minsmere and the Rivers Yare and Bure. The nearest extension area is located 11km north of the Scheme, along the Rivers Yare and Bure near Great Yarmouth.

Key features

5.6.2 The primary reason for the selection of the existing site (Article 4.1 Qualification (2009/147/EC) is that over winter the area regularly supports 38% of the red-throated diver *Gavia stellata* (North-western Europe - wintering) population in Great Britain peak mean over the period 1989-2006/07. The site also supports little tern *Sternula albifrons* and common tern *Sterna hirundo* foraging areas.

5.6.3 The Outer Thames Estuary SPA is being considered by Natural England for site extension to offer new protection for little tern *Sternula albifrons* and common tern *Sterna hirundo* foraging areas enhancing the protection already afforded to their

feeding and nesting areas in the adjacent coastal SPAs (Foulness SPA, Breydon Water SPA and Minsmere to Walberswick SPA).

Vulnerability

5.6.4 The most important negative impacts and activities with high effect on the site as listed on the Natura 2000 Standard Data Form for the Outer Thames Estuary SPA are as follows:

- D03 Shipping lanes, ports, marine constructions (inside and outside SPA);
- C03 Renewable abiotic energy use (inside and outside SPA);
- H03 Marine water pollution (inside and outside SPA); and
- F02 Fishing and harvesting aquatic resources (inside SPA).

Conservation objectives

5.6.5 With regard to the SPA and the individual species and / or assemblage of species for which the site has been classified and subject to natural change; it should be ensured that the integrity of the site is maintained or restored as appropriate, and ensured that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The population of each of the qualifying features; and
- The distribution of the qualifying features within the site.

5.7 Benacre to Easton Bavents SPA: UK9009291

5.7.1 This coastal site is located approximately 7.2km south of the Scheme at its closest point. The site comprises shingle beach in the north and low cliffs further south around a natural brackish lagoon separated from the sea by a shingle bar, reed-fringed on the landward side and then grading into deciduous woodland on the rising ground behind. The site includes unimproved meadows that serve as grazing marshland, divided by ditches rich in water plants and invertebrates. The area supports important populations of breeding birds, particularly those associated with reedbed and shingle beach habitats. The reedbeds also support important numbers of Bittern *Botaurus stellaris* in winter. Little Terns *Sterna albifrons* feed substantially outside the SPA in adjacent marine waters.

Key features

During the breeding season:

5.7.2 The site qualifies for selection as an SPA because of supporting the following species during the breeding season:

- Bittern Botaurus stellaris, 1 individual representing at least 5.0% of the breeding

population in Great Britain (Count as at 1998);

- Little tern Sterna albifrons, 53 pairs representing at least 2.2% of the breeding population in Great Britain (Count as at 1997);
- Marsh harrier Circus aeruginosus, 6 pairs representing at least 3.8% of the breeding population in Great Britain (5 year mean 1993-1997).

Over winter:

- Bittern Botaurus stellaris, 2 individuals representing at least 2.0% of the wintering population in Great Britain (Count, as at 1998)

Vulnerability

5.7.3 Significant identified vulnerabilities of this site affecting internationally important populations of regularly occurring Annex 1 birds include:

- Physical damage (siltation, abrasion and extraction of materials);
- Non-physical disturbance (noise and visual);
- Biological disturbance (in particular, selective extraction of species by bait digging, wildfowling and fishing).

Conservation objectives

5.7.4 The conservation objectives for this site are, subject to natural change, to maintain in favourable conditions the habitats for the internationally important populations of the regularly occurring Annex 1 bird species listed above, in particular in respect of little tern:

- Shingle; and
- Shallow coastal waters

5.8 Alde-Ore Estuary SPA: UK9009112

5.8.1 36km to the south of the Scheme, the Alde-Ore Estuary is the estuarine complex of the rivers Alde, Butley and Ore, including Havergate Island and Orfordness. The site comprises a variety of habitats including intertidal mud-flats, saltmarsh, vegetated shingle (including the second-largest and best-preserved area in Britain at Orfordness), saline lagoons and semi-intensified grazing marsh. The Orfordness/Shingle Street land form is geomorphologically unique within the UK in combining a shingle spit with a cuspate foreland. The diversity of wetland habitat types present is of particular significance to the birds occurring on the site as these provide a range of opportunities for feeding, roosting and nesting within the site complex. At different times of the year, the site supports notable assemblages of wetland birds including seabirds, wildfowl and waders. As well as being an important wintering area for waterbirds, the Alde-Ore Estuary provides important breeding habitat for several species of seabird, wader and raptor. During the breeding season, gulls and terns feed substantially outside the SPA.

Key features

5.8.2 The site qualifies for the following species:

During the breeding season:

- Avocet Recurvirostra avosetta, 104 pairs representing at least 17.6% of the breeding population in Great Britain (5 year mean, 1990-1994);
- Little tern Sterna albifrons, 48 pairs representing at least 2.0% of the breeding population in Great Britain (5 count mean, 1993-4,1996-8);
- Marsh harrier Circus aeruginosus, 3 pairs representing at least 1.9% of the breeding population in Great Britain (5 year mean, 1993-1997);
- Sandwich tern Sterna sandvicensis, 169 pairs representing at least 1.2% of the breeding population in Great Britain (5 year mean 1991-1995).

Over winter:

- Avocet Recurvirostra avosetta, 766 individuals representing at least 60.3% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

5.8.3 This site also qualifies under Article 4.2 of the Directive (2009/147/EC) by supporting populations of European importance of the following migratory species:

During the breeding season:

- Lesser black-backed gull Larus fuscus, 21,700 pairs representing at least 17.5% of the breeding Western Europe/Mediterranean/Western Africa population (Count as at 1998);

Over winter:

- Redshank Tringa totanus, 1,919 individuals representing at least 1.3% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6).

Assemblage qualification: A seabird assemblage of international importance

5.8.4 The area also qualifies under Article 4.2 of the Directive (2009/147/EC) by regularly supporting at least 20,000 seabirds. During the breeding season, the area regularly supports 59,118 individual seabirds (Count period ongoing) including: herring gull *Larus argentatus*, black-headed gull *Larus ridibundus*, lesser black-backed gull *Larus fuscus*, little tern *Sterna albifrons*, and Sandwich tern *Sterna sandvicensis*.

Assemblage qualification: A wetland of international importance.

5.8.5 The area also qualifies under Article 4.2 of the Directive (2009/147/EC) by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 24,962 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: black-tailed godwit *Limosa limosa islandica*, dunlin *Calidris alpina alpina*, lapwing *Vanellus vanellus*, shoveler *Anas clypeata*, teal *Anas crecca*, wigeon *Anas penelope*, shelduck *Tadorna*

tadorna, white-fronted goose *Anser albifrons albifrons*, redshank *Tringa totanus*, and avocet *Recurvirostra avosetta*.

Vulnerability

5.8.6 The area is vulnerable to sea-level rise and coastal squeeze. These issues are being addressed through The Environment Agency Local Environment Action Plan, the estuary Management Plan and possibly managed retreat. Human disturbance from recreation is minimal as this is a reasonably robust system. Flood defence policy will need to take into account risks to the site from flooding and of flood control alleviation measures. Shooting is controlled through a management plan. A considerable part of the site is managed sympathetically by Suffolk Wildlife Trust, National Trust, Royal Society for the Protection of Birds and Natural England:

Conservation objectives

5.8.7 The conservation objectives for this site seek to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The population of each of the qualifying features; and
- The distribution of the qualifying features within the site.

6 Screening Assessment

6.1 Introduction

6.1.1 The Scheme is not being undertaken as part of the management of any of the Natura 2000 sites concerned.

6.2 Potential Effects

6.2.1 The assessment of potential effects is presented in the form of assessment matrices in accordance with AN10.

6.2.2 Potential effects upon the European sites which are considered within the assessment matrices are listed in Table 6-1 below:

Table 6-1 Effects considered within the screening matrices for each European site

Designation	Effects described in submission information	Presented in screening matrices as
The Broads SAC: UK0013577	• habitat loss	• habitat loss
	• displacement from noise • displacement from visual disturbance	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution
Broadland SPA: UK9009253	• habitat loss	• habitat loss
	• displacement from noise • displacement from visual disturbance	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution
Broadland Ramsar: UK11010	• habitat loss	• habitat loss
	• displacement from noise • displacement from visual disturbance	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution
Southern North Sea cSAC (No EU code assigned at present)	• habitat loss	• habitat loss
	• disturbance from noise • disturbance from vibration	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution
	• habitat loss	• habitat loss

Designation	Effects described in submission information	Presented in screening matrices as
Outer Thames Estuary SPA: UK9020309 and Outer Thames Estuary pSPA Extension	• displacement from noise • displacement from visual disturbance	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution
Benacre to Easton Bavents SPA	• habitat loss	• habitat loss
	• displacement from noise • displacement from visual disturbance	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution
Alde-Ore Estuary SPA	• habitat loss	• habitat loss
	• displacement from noise • displacement from visual disturbance	• displacement
	• sediment resuspension and deposition	• sediment resuspension
	• waterborne pollution • air pollution	• pollution

6.3 Screening Matrices

6.3.1 The European sites included within the screening assessment are:

- The Broads SAC;
- Broadland SPA;
- Broadland Ramsar;
- Southern North Sea cSAC;
- Outer Thames Estuary SPA and Outer Thames Estuary pSPA Extension;
- Benacre to Easton Bavents SPA; and
- Alde-Ore Estuary SPA.

6.3.2 Matrix Key:

✓ = Likely significant effect **cannot** be excluded
✗ = Likely significant effect **can** be excluded

C = construction
O = operation
D = decommissioning

6.4 HRA Screening Matrix: The Broads SAC

Name of European site and designation: The Broads SAC															
EU Code: UK0013577															
Distance to NSIP: 2.4 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
7140 Transition mires and quaking bogs	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
7230 Alkaline fens	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	✗[a]	✗[b]	✗[c]				✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]

Name of European site and designation: The Broads SAC															
EU Code: UK0013577															
Distance to NSIP: 2.4 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
1016 Desmoulin's whorl snail *Vertigo moulinsiana*	✗[m]	✗[n]	✗[o]	✗[p]	✗[q]	✗[r]	✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
1903 Fen orchid *Liparis loeselii*	✗[m]	✗[n]	✗[o]	✗[p]	✗[q]	✗[r]	✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
4056 Ramshorn snail *Anisus vorticulus*	✗[m]	✗[n]	✗[o]	✗[p]	✗[q]	✗[r]	✗[d]	✗[e]	✗[f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]
1355 Otter Lutra lutra	✗[s]	✗[t]	✗[u]	✗[v]	✗[w]	✗[x]	✗[y]	✗[e]	✗[z]	✗[g], ✓[aa]	✗[h], ✓[bb]	✗[l], ✓[cc]	✗[j]	✗[k]	✗[l]

Evidence:

6.4.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.4.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.4.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.4.4 [d] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is

present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources.

6.4.5 [e] Operation of the Scheme will not have an effect on sediment resuspension within Lake Lothing and will therefore not have any effect on the European site.

6.4.6 [f] Decommissioning of the Scheme may require works within Lake Lothing that would cause similar effects to those of construction (see above). For the same reasons, decommissioning would not give rise to adverse effects on the European site.

6.4.7 [g] There is no impact pathway from the Scheme to the European site by which water pollution arising from construction activities may travel. Air, noise and lighting pollution would impact only the immediate vicinity of construction works and would not have effects extending to the European site, which is 2.4km distant. The European site would therefore not be affected by pollution that may arise from construction works.

6.4.8 [h] There is no impact pathway from the Scheme to the European site by which water pollution arising from operational activities may travel. Air, noise and lighting pollution would affect only the immediate vicinity of the scheme and would not have effects extending to the European site, which is 2.4km distant. The European site would therefore not be affected by pollution that may arise from operation of the Scheme.

6.4.9 [i] There is no impact pathway from the Scheme to the European site by which water pollution arising during decommissioning may travel. Air, noise and lighting pollution would affect only the immediate vicinity of decommissioning works and would not have effects extending to the European site, which is 2.4km distant. The European site would therefore not be affected by pollution that may arise from decommissioning.

6.4.10 [j] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.4.11 [k] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.4.12 [l] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of

decommissioning would not change as a result of in-combination effects with any of these schemes.

6.4.13 [m] No habitats in the immediate vicinity of construction works are suitable to support this species. Suitable habitats within the European site would not be lost as a result of construction works.

6.4.14 [n] No habitats in the immediate vicinity of the Scheme are suitable to support this species. Operation of the Scheme would not affect this species within or outside the European site.

6.4.15 [o] No habitats supporting this species are present in the area that would be affected by decommissioning works. Decommissioning would not affect this species within or outside the European site.

6.4.16 [p] No habitats in the immediate vicinity of construction works are suitable to support this species. Displacement of this species would not occur as a result of construction.

6.4.17 [q] No habitats in the immediate vicinity of the completed Scheme are suitable to support this species. Displacement of this species would not occur as a result of operation of the Scheme.

6.4.18 [r] No habitats in the immediate vicinity of the completed Scheme are suitable to support this species. Decommissioning of the Scheme would not give rise to displacement of this species.

6.4.19 [s] Surveys undertaken for the Scheme have not identified any evidence of important otter habitat within the immediate vicinity of the Scheme. Construction works would not give rise to the loss of habitat that is important for otters within or outside the European site.

6.4.20 [t] Surveys undertaken for the Scheme have not identified any evidence of important otter habitat within the immediate vicinity of the Scheme. Operational activities would not give rise to the loss of habitat that is important for otters within or outside the European site.

6.4.21 [u] Surveys undertaken for the Scheme have not identified any evidence of important otter habitat within the immediate vicinity of the Scheme. Decommissioning would not give rise to the loss of habitat that is important for otters within or outside the European site.

6.4.22 [v] Construction of the Scheme would not prevent the movement of otters within the wider area and animals are not at risk of being trapped within open excavations or fenced areas. Construction works would not impede otters that may use the river for foraging or passage and therefore no disturbance likely to give rise to displacement of otters within the European site would occur.

6.4.23 [w] Operation of the Scheme would not impede the movement of otters in the wider area. The Scheme is sufficiently distant from the European site not to cause disturbance of otters within the European site that might give rise to displacement. When crossing the river, the Scheme is raised on a bridge which would not impede otter foraging or passage within the river and therefore there is no likely risk of displacement of otters from the European site as a result.

6.4.24 [x] Decommissioning of the Scheme would not prevent the movement of otters within the wider area and animals are not at risk of being trapped within open excavations or fenced areas. Decommissioning works would not impede otters that may use the river for foraging or passage and therefore no disturbance likely to give rise to displacement of otters within the European site would occur.

6.4.25 [y] Given that the water at Lake Lothing is currently highly turbid because of sediment loadings, and the Scheme would remain similarly turbid during construction activities, it is reasonable to assume that the effects of sediment resuspension during construction would not give rise to increased impedence of otter movements within the wider area. Sedimentation levels may have effects on the suitability of foraging areas for otters but are not known to impede otter movements along commuting routes. Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources.

6.4.26 [z] Decommissioning of the Scheme may require works within Lake Lothing that would cause similar effects to those of construction (see d and y above). For the same reasons, decommissioning would not give rise to adverse effects on otters that would affect their status within the European site.

6.4.27 [aa] Pollution from construction activities, in the absence of control measures, has the potential to adversely affect otters that are a qualifying feature of the European site and which may be present outside the site, and therefore have an effect on the integrity of the European site. In accordance with the People Over Wind decision, as the potential for such adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.4.28 [bb] Pollution from operational activities, in the absence of control measures, has the potential to adversely affect otters that are a qualifying feature of the European site and which may be present outside the site, and therefore have an effect on the integrity of the European site. In accordance with the People Over Wind decision, as the potential for such adverse effects on the integrity of the European site

cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.4.29 [cc] Pollution during decommissioning, in the absence of control measures, has the potential to adversely affect otters that are a qualifying feature of the European site and which may be present outside the site, and therefore have an effect on the integrity of the European site. In accordance with the People Over Wind decision, as the potential for such adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.5 HRA Screening Matrix: Broadland SPA

Name of European site and designation: Broadland SPA															
EU Code: UK9009253															
Distance to NSIP: 2.4 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
The site is used regularly by 1% or more of the GB population of the following species in any season:															
Bittern *Botaurus stellaris* (10-15%)	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Bewick's swan *Cygnus columbianus bewickii* (8.6%)	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Whooper swan *Cygnus cygnus cygnus* (1.8%)	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Marsh Harrier *Circus aeruginosus* (16%)	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Hen harrier *Circus cyaneus* (3%)	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Ruff *Philomachus pugnax* (6.4%)	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
The site is used regularly by 1% or more of the biogeographic population of the following regularly occurring migratory species in any season (% of north-west European population):															
Wigeon *Anas penelope* (1.34%)	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Gadwall *Anas strepera* (0.96%)	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]

Name of European site and designation: Broadland SPA															
EU Code: UK9009253															
Distance to NSIP: 2.4 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Shoveler *Anas clypeata* (<1%)	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]

Evidence:

6.5.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.5.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.5.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.5.4 [d] Noise and visual disturbance arising from construction activities have the potential to disturb qualifying bird species. However, as the European site is 2.4km from the Scheme birds within the European site would not be subject to disturbance from construction, operation or decommissioning works and would not be displaced from the site as a result of any of these activities.

6.5.5 [e] Resident species within the SPA do not use and are not dependent on habitats outside of the SPA in the vicinity of the Scheme, and any effects on habitats in the immediate vicinity of the Scheme, either from construction, operation or decommissioning, would not cause disturbance which would result in displacement of these species

6.5.6 [f] Migratory birds that are qualifying species for the SPA are similarly dependent on habitats within the SPA which would not be affected by the Scheme. Although it is possible that these species might be occasionally present in the vicinity of the Scheme, these species are not dependent on and do not regularly use this area. Any disturbance arising from construction, operation or decommissioning of the Scheme which would disturb such birds that might be occasionally present, would not give rise to significant effects on the assemblage of birds or these species and would not affect their status within the SPA. None of the habitats in the vicinity of the Scheme are of special importance for supporting these species.

6.5.7 [g] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site.

6.5.8 [h] Operation of the Scheme will not have an effect on sediment resuspension within Lake Lothing and will therefore not have any effect on the European site.

6.5.9 [i] Decommissioning of the Scheme may require works within Lake Lothing that would cause similar effects to those of construction (see above). For the same reasons, decommissioning would not give rise to adverse effects on the European site.

6.5.10 [j] There is no impact pathway from the Scheme to the European site by which water pollution arising from construction activities may travel. Air, noise and lighting pollution would affect only the immediate vicinity of construction works and would not have effects extending to the European site, which is 2.4km distant. The European site would not be affected by pollution that may arise from construction works.

6.5.11 [k] There is no impact pathway from the Scheme to the European site by which water pollution arising from operational activities may travel. Air, noise and lighting pollution would affect only the immediate vicinity of construction works and would not have effects extending to the European site, which is 2.4km distant. The European site would not be affected by pollution that may arise from operational activities.

6.5.12 [l] There is no impact pathway from the Scheme to the European site by which water pollution arising from decommissioning may travel. Air, noise and lighting pollution would affect only the immediate vicinity of construction works and would not have effects extending to the European site, which is 2.4km distant. The European site would not be affected by pollution that may arise from decommissioning.

6.5.13 [m] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.5.14 n In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.5.15 o In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.6 HRA Screening Matrix: Broadland Ramsar

Name of European site and designation: Broadland Ramsar															
EU Code: UK11010															
Distance to NSIP: 2.4 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar Criterion 2: The site supports rare species and habitats including Habitats Directive Annex I and Annex II features listed above in The Broads SAC description of key features.	For effects on Annex I and Annex II species listed in Broads SAC see 6.4 HRA Screening Matrix: The Broads SAC														
Ramsar Criterion 6: Wintering birds:															
Bewick's swan *Cygnus columbianus bewickii*	✗[a]	✗[b]	✗[c]	✗[d,e]	✗[d,e]	✗[d,e]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Wigeon *Anas penelope*	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Gadwall *Anas strepera*	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Shoveler *Anas clypeata*	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
For possible future consideration under Ramsar Criterion 6: Pink-footed goose *Anser brachyrhynchus*	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]
Greylag goose *Anser anser anser*	✗[a]	✗[b]	✗[c]	✗[d,f]	✗[d,f]	✗[d,f]	✗[g]	✗[h]	✗[i]	✗[j]	✗[k]	✗[l]	✗[m]	✗[n]	✗[o]

Evidence:

6.6.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.6.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.6.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.6.4 [d] Noise and visual disturbance arising from construction activities have the potential to disturb qualifying bird species. However, as the European site is 2.4km from the Scheme, birds within the European site would not be subject to disturbance from construction, operation or decommissioning works and would not be displaced from the site as a result of any of these activities.

6.6.5 [e] Resident species within the SPA do not use and are not dependent on habitats outside of the SPA in the vicinity of the Scheme, and any effects on habitats in the immediate vicinity of the Scheme, either from construction, operation or decommissioning, would not cause disturbance which would result in displacement of these species

6.6.6 [f] Migratory birds that are qualifying species for the SPA are similarly dependent on habitats within the SPA which would not be affected by the Scheme. Although it is possible that these species might be occasionally present in the vicinity of the Scheme, these species are not dependent on and do not regularly use this area. Any disturbance arising from construction, operation or decommissioning of the Scheme which would disturb such birds that might be occasionally present, would not give rise to significant effects on these species and would not affect their status within the SPA. None of the habitats in the vicinity of the Scheme are of special importance for supporting these species.

6.6.7 [g] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site.

6.6.8 [h] Operation of the Scheme will not have an effect on sediment resuspension within Lake Lothing and will therefore not have any effect on the European site.

6.6.9 [i] Decommissioning of the Scheme may require works within Lake Lothing that would cause similar effects to those of construction (see above). For the same reasons, decommissioning would not give rise to adverse effects on the European site.

6.6.10 [j] There is no impact pathway from the Scheme to the European site by which water pollution arising during construction may travel. Air, noise and lighting pollution would affect only the immediate vicinity of construction works and would not have effects extending to the European site, which is 2.4km distant. The European site would therefore not be affected by pollution that may arise from construction works.

6.6.11 [k] There is no impact pathway from the Scheme to the European site by which water pollution arising during operational activities may travel. Air, noise and lighting pollution would affect only the immediate vicinity of the Scheme and would not have effects extending to the European site, which is 2.4km distant. The European site would therefore not be affected by pollution that may arise from operational activities.

6.6.12 [l] There is no impact pathway from the Scheme to the European site by which water pollution arising during decommissioning may travel. Air, noise and lighting pollution would affect only the immediate vicinity of decommissioning works and would not have effects extending to the European site, which is 2.4km distant. The European site would therefore not be affected by pollution that may arise from decommissioning.

6.6.13 [m] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.6.14 [n] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.6.15 [o] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.7 HRA Screening Matrix: Southern North Sea cSAC

Name of European site and designation: Southern North Sea cSAC															
EU Code: (No EU code assigned at present)															
Distance to NSIP: 1.3 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Harbour porpoise *Phocoena phocoena*	✗[a]	✗[b]	✗[c]	✗[d]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✓[g]	✓[h]	✓[i]	✗[j]	✗[k]	✗[l]

Evidence:

6.7.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.7.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.7.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.7.4 [d] Vibration and underwater noise generated by construction activities has the potential to disturb harbour porpoise. Such works would be of temporary duration during construction only. Because of the large size of the European site which at its closest point to the site is 1.3km distant from the works, noise and vibration is not considered likely to disturb this species and would not give rise to their displacement from the site. Regardless, construction methods would follow the Statutory Nature Conservation Agency protocol for minimising the risk

of harm to individual marine mammals occurring as a result of piling noise[5].

6.7.5 [e] Operation and decommissioning works would not require piling and consequently there is no risk of vibration and underwater noise affecting harbour porpoise within the European site.

6.7.6 [f] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site.

6.7.7 [g] Air, noise and lighting pollution would affect only the immediate vicinity of construction works and would not have effects extending to the European site, which is 1.3km distant. However, there is a pathway by which water pollution arising from construction, in the absence of control measures, might reach the European site. In accordance with the People Over Wind decision, as the potential for adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.7.8 [h] Air, noise and lighting pollution would affect only the immediate vicinity of operation of the Scheme and would not have effects extending to the European site, which is 1.3km distant. However, there is a pathway by which water pollution arising from the Scheme, in the absence of control measures, might reach the European site. In accordance with the People Over Wind decision, as the potential for adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.7.9 [i] Air, noise and lighting pollution would affect only the immediate vicinity of decommissioning of the Scheme and would not have effects extending to the European site, which is 1.3km distant. However, there is a pathway by which water pollution arising from decommissioning, in the absence of control measures, might reach the European site. In accordance with the People Over Wind decision, as the potential for adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2:

[5] http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf

Appropriate Assessment.

6.7.10 [j] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.7.11 [k] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.7.12 [l] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.8 HRA Screening Matrix: Outer Thames Estuary SPA

Name of European site and designation: Outer Thames Estuary SPA															
EU Code: UK9020309															
Distance to NSIP: 1.3 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Wintering birds: Red-throated diver *Gavia stellata*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[f]	✗[g]	✓[h]	✓[i]	✓[j]	✗[k]	✗[l]	✗[m]

Evidence:

6.8.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.8.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.8.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.8.4 [d] Noise and visual disturbance arising from construction activities have the potential to disturb red-throated diver. However, as the European site is 1.3km from the Scheme at its closest point and this species will use the site for offshore fishing, red-throated diver within the European site would not be subject to disturbance from construction, operation or decommissioning works and would not be displaced from the site as a result of any of these activities.

6.8.5 [e] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site.

6.8.6 [f] Operation of the Scheme will not have an effect on sediment resuspension within Lake Lothing and will therefore not have any effect on the European site.

6.8.7 [g] Decommissioning of the Scheme may require works within Lake Lothing that would cause similar effects to those of construction (see above). For the same reasons, decommissioning would not give rise to adverse effects on the European site.

6.8.8 [h] Air, noise and lighting pollution would affect only the immediate vicinity of construction works and would not have effects extending to the European site, which is 1.3km distant. However, there is a pathway by which water pollution arising from construction, in the absence of control measures, might reach the European site. In accordance with the People Over Wind decision, as the potential for adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.8.9 [i] Air, noise and lighting pollution would affect only the immediate vicinity of the Scheme during operation and would not have effects extending to the European site, which is 1.3km distant. However, there is a pathway by which water pollution arising from the Scheme, in the absence of control measures, might reach the European site. In accordance with the People Over Wind decision, as the potential for adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.8.10 [j] Air, noise and lighting pollution would affect only the immediate vicinity of decommissioning works and would not have effects extending to the European site, which is 1.3km distant. However, there is a pathway by which water pollution arising from decommissioning, in the absence of control measures, might reach the European site. In accordance with the People Over Wind decision, as the potential for adverse effects on the integrity of the European site cannot be ruled out without consideration of the water pollution protection measures that are included as part of the drainage proposals for the Scheme, this matter must be considered within Stage 2: Appropriate Assessment.

6.8.11 [k] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.8.12 [l] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.8.13 [m] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.9 HRA Screening Matrix: Outer Thames Estuary pSPA Extension

Name of European site and designation: Outer Thames Estuary pSPA Extension															
EU Code: UK9020309															
Distance to NSIP: 11.0 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Little tern *Sternula albifrons*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Common tern *Sterna hirundo*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]

Evidence:

6.9.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.9.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.9.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.9.4 [d] Noise and visual disturbance arising from construction, operation or decommissioning would not extend to 11.0km from the Scheme. Qualifying species within the European site would not be subject to disturbance from construction, operation or decommissioning works and would not be displaced from the site as a result of any of these activities.

6.9.5 [e] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is

present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site during construction, operation or decommissioning.

6.9.6 [f] Air, water, noise and lighting pollution would be contained within the immediate vicinity of construction works and would not extend to 11.0km from the Scheme. The European site would not be affected by pollution that may arise from construction, operation or decommissioning activities.

6.9.7 [g] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.9.8 [h] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.9.9 [i] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.10 HRA Screening Matrix: Benacre to Easton Bavents SPA

Name of European site and designation: Benacre to Easton Bavents SPA															
EU Code: UK9009291															
Distance to NSIP: 7.2 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
During the breeding season:															
Bittern *Botaurus stellaris*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Little tern *Sterna albifrons*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Marsh Harrier *Circus aeruginosus*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Over winter:															
Bittern *Botaurus stellaris*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]

Evidence:

6.10.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.10.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.10.3 [c] Although details of decommissioning methods cannot be made at this stage, it is not necessary that decommissioning would require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.10.4 [d] Noise and visual disturbance arising from construction, operation or decommissioning would not extend to 7.2km from the Scheme. Qualifying species within the European site would not be subject to disturbance from construction, operation or decommissioning works and would not be displaced from the site as a result of any of these activities.

6.10.5 [e] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site during construction, operation or decommissioning.

6.10.6 [f] Air, water, noise and lighting pollution would be contained within the immediate vicinity of construction works and would not extend to 7.2km from the Scheme. The European site would not be affected by pollution that may arise from construction, operation or decommissioning activities.

6.10.7 [g] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.10.8 [h] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.10.9 i In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.11 HRA Screening Matrix: Alde-Ore Estuary SPA

Name of European site and designation: Alde-Ore Estuary SPA															
EU Code: UK9009112															
Distance to NSIP: 36.0 km															
European site features	**Likely effects of NSIP**														
Effect	*Habitat Loss*			*Displacement*			*Sediment Resuspension*			*Pollution*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
During the breeding season:															
Bittern *Botaurus stellaris*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Little tern *Sterna albifrons*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Marsh Harrier *Circus aeruginosus*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Over winter:															
Avocet *Recurvirostra avosetta*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Migratory species during the breeding season: Lesser black-backed gull *Larus fuscus*	✗[a]	✗[b]	✗[c]	✗[d,j]	✗[d,j]	✗[d,j]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Potential site extension for:															
Little tern *Sternula albifrons*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Common tern *Sterna hirundo*	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Seabird assemblage of international importance	✗[a]	✗[b]	✗[c]	✗[d]	✗[d]	✗[d]	✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]
Wetland of international importance	✗[a]	✗[b]	✗[c]				✗[e]	✗[e]	✗[e]	✗[f]	✗[f]	✗[f]	✗[g]	✗[h]	✗[i]

Evidence:

6.11.1 [a] Construction activities, including routes for movement of construction vehicles, would not occur within the European site. No habitats within the European site would be lost as a result of construction activities.

6.11.2 [b] Operation of the Scheme does not require land take from the European site. No habitat loss from within the European site would occur as a result of operational activities.

6.11.3 [c] Although details of decommissioning methods cannot be made at this stage, decommissioning would not require land from the European site. Decommissioning of the Scheme would therefore not give rise to any loss of habitats from the European site.

6.11.4 [d] Noise and visual disturbance arising from construction, operation or decommissioning would not extend to 36.0km from the Scheme. Qualifying species within the European site would not be subject to disturbance from construction, operation or decommissioning works and would not be displaced from the site as a result of any of these activities.

6.11.5 [e] Sediment modelling has shown that there is no difference in the movement of sediment around Lake Lothing whether the Scheme is present or absent. As there will be no change in sediment transport, changes in sediment movements as a result of the Scheme will have no significant effect on ecological resources at the European site during construction, operation or decommissioning.

6.11.6 [f] Air, water, noise and lighting pollution would be contained within the immediate vicinity of construction works and would not extend to 36.0km from the Scheme. The European site would not be affected by pollution that may arise from construction, operation or decommissioning activities.

6.11.7 [g] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during construction would not change as a result of in-combination effects with any of these schemes.

6.11.8 [h] In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site during operation would not change as a result of in-combination effects with any of these schemes.

6.11.9 i In-combination effects of the Scheme are described at 6.12. The effects of the current Scheme on the European site as a result of decommissioning would not change as a result of in-combination effects with any of these schemes.

6.11.10 [j] Lesser black-backed gull is commonly associated with urban developments and human habitation in the UK and as such they do occur in roosts on buildings and structures around the Scheme. However, they are not susceptible to disturbance as they willingly colonise these areas, surviving and thriving under the conditions such environments create. Relatively low numbers of gulls compared to those using the European site occur in proximity to the Scheme. While construction activities may cause disturbance that might temporarily displace such birds from the vicinity of the Scheme, the effects of such minor displacement would not be expressed at the European site. Because of their tolerance to human activities, operation of the Scheme would not cause significant disturbance of this species. Effects of decommissioning would be similar to those of construction and would not give rise to significant effects on this species or the European site.

6.12 In-combination effects

6.12.1 The following other planned and proposed schemes exist within the area of the Scheme:

- Former Sanyo Site, School Road, Lowestoft (DC/15/2004/RG3);
- Brooke Peninsula And Jeld Wen mixed use development (DC/13/3482/OUT);
- Lowestoft Tidal Barrier;
- East Anglia Array Windfarm (East Anglia ONE and East Anglia THREE);
- Great Yarmouth Third River Crossing; and
- Sizewell C nuclear power station.

6.12.2 Of these developments the first two listed have planning permission, as does the first phase of the East Anglia Array (East Anglia ONE) which concluded that there would be no significant impact upon the integrity of any Natura 2000 site. The Tidal Barrier, Great Yarmouth Third River Crossing and the remaining phases of the East Anglia Array and Sizewell C are still in the pre-consent stage. These last four developments will be subject to their own HRA and will carry out an in-combination assessment at the time of the submission of their application.

6.12.3 In combination with other developments, the Scheme proposals are not likely to give rise to significant effects on Natura 2000 sites, their qualifying resources or conservation objectives. There are therefore no effects that would be such that, in combination with those from other developments, would cause such effects to arise.

7 Conclusion at HRA Stage 1

7.1.1 In the absence of consideration of water pollution control measures, the Scheme has the potential to affect the following European sites during construction, operation or decommissioning:

- The Broads SAC (effects on otters);
- Southern North Sea cSAC; and
- Outer Thames Estuary SPA.

7.1.2 The Scheme does not have the potential to give rise to other adverse effects on any European site, alone or in combination with other schemes.

7.1.3 On the basis that the possibility of occurrence of significant effects cannot be ruled out at the Screening stage, because measures that mitigate the effects of the Scheme cannot be considered at this stage of the HRA process, the assessment has continued to Stage 2: Appropriate Assessment.

8 Stage 2: Appropriate Assessment

8.1 Rationale

8.1.1 Further to the People Over Wind decision, consideration of measures included within a scheme which have the effect of reducing or mitigating the effects of that scheme on a European site cannot be considered within Stage 1: Screening but must instead be assessed with respect to the integrity of the site concerned at Stage 2: Appropriate Assessment.

8.1.2 In the absence of consideration of water pollution control measures, the Scheme has the potential to affect the following European sites during construction, operation or decommissioning:

- The Broads SAC (effects on otters);
- Southern North Sea cSAC; and
- Outer Thames Estuary SPA.

8.2 Pollution

8.2.1 The following measures would be incorporated within the Scheme design (see 4.14). These measures are standard pollution control measures that would be incorporated within the Scheme in accordance with good practice regardless of the presence of any European site, with the principal function of seeking to avoid the contamination of Lake Lothing. By virtue of this effect, they would also minimise the risk of adverse effects of pollution upon any European sites to which pathways for movement of polluting materials might exist, or effects on qualifying resources of such sites that may be present in the vicinity of the Scheme.

8.2.2 No exceptional measures intended specifically to provide protection of any European site from the effects of water pollution are proposed.

8.2.3 In all cases these measures would reduce pollution risk to an acceptable level.

Construction

8.2.4 Measures during construction will be incorporated into the construction programme and project design, in line with best practice pollution prevention guidelines (PPGs), and these would be agreed with the Environment Agency (EA) prior to commencement of construction activities. These measures have been informed by the assessment within the Environmental Statement and are included in the interim Code of Construction Practice (CoCP) which forms the framework for the full CoCP that will be prepared by the Contractor and secured as a requirement.

8.2.5 A surface water drainage strategy will be prepared as part of the full CoCP for the construction phase to ensure that site drainage is controlled and that no contaminated runoff is allowed to enter the water.

8.2.6 All fuels, oils and chemicals would be stored on an impermeable base, bunded and secured. To protect aquatic ecosystems, construction activities in, and near, Lake

Lothing would be restricted and managed in accordance with EA guidance. This will be secured through the full CoCP.

Operation

8.2.7 Pollution control measures within the Scheme design would be active throughout the Scheme's operational life as part of the Drainage Strategy secured through the DCO. These measures follow those within the Highways Agency Design Manual for Roads and Bridges and the Environment Agency's current advice on good practice. The measures would protect all potential receptors, in particular, Lake Lothing itself, from the effects of pollution from road runoff, which would be reduced to acceptable levels.

8.2.8 These measures would also provide appropriate protection against the unlikely event of pollution arising from spillage of materials onto the road carriageway, as for example might happen as a result of road traffic incidents. The level of protection provided is that recommended by the DMRB and Environment Agency.

Decommissioning

8.2.9 Measures put into place during the decommissioning of the Scheme would broadly follow those put in place during construction but would in any event follow standard good practice measures including those recommended by the Environment Agency.

8.3 Consideration of European sites

The Broads SAC

8.3.1 Possible adverse effects on the integrity of this European site, which could not be fully evaluated during Stage 1: Screening, are as follows:

- Displacement of individual otters that are a qualifying feature of the SAC when individual animals are in passage outside the European site.

8.3.2 With the inclusion of the pollution measures described above, during construction, operation and decommissioning of the Scheme, pollution risk would be reduced to an acceptable level. Risk of pollution affecting the passage of otters would be negligible, and would certainly not give rise to effects of sufficient magnitude to affect the integrity of the European site.

Southern North Sea cSAC

8.3.3 Possible adverse effects on the integrity of this European site, which could not be fully evaluated during Stage 1: Screening, are as follows:

- A pathway exists for pollution arising from the Scheme to enter the cSAC and thus give rise to adverse effects on the European site.

8.3.4 With the inclusion of the pollution measures described above, during construction, operation and decommissioning of the Scheme, pollution risk would be reduced to an acceptable level. Risk of pollution affecting any of the qualifying features of the European site, which is 1.3km distant from the site at its closest point, would be negligible. Water pollution from the Scheme would not give rise to effects of sufficient magnitude to affect the integrity of the European site.

Outer Thames Estuary SPA

8.3.5 Possible adverse effects on the integrity of this European site, which could not be fully evaluated during Stage 1: Screening, are as follows:

- A pathway exists for pollution arising from the Scheme to enter the SPA and thus give rise to adverse effects on the European site.

8.3.6 With the inclusion of the pollution measures described above, during construction, operation and decommissioning of the Scheme, pollution risk would be reduced to an acceptable level. Risk of pollution affecting any of the qualifying features of the European site, which is 1.3km distant from the site at its closest point, would be negligible. Water pollution from the Scheme would not give rise to effects of sufficient magnitude to affect the integrity of the European site.

9 Conclusion at HRA Stage 2

9.1.1 The Scheme, alone or in combination with any other plan or proposal, would not affect the integrity of any European site.