

A46 Newark Bypass

TR010065/APP/6.6

6.6 Environmental Statement Habitat Regulations Assessment

APFP Regulation 5(2)(g)

Planning Act 2008

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

Volume 6

April 2024

Infrastructure Planning

Planning Act 2008

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

A46 Newark Bypass

Development Consent Order 202[x]

**ENVIRONMENTAL STATEMENT
HABITAT REGULATIONS ASSESSMENT**

Regulation Number:	Regulation 5(2)(g)
Planning Inspectorate Scheme Reference	TR010065
Application Document Reference	TR010065/APP/6.6
Author:	A46 Newark Bypass Project Team, National Highways

Version	Date	Status of Version
Rev 1	April 2024	DCO Application

Contents

1 Introduction	1
1.1 The purpose of this report	1
1.2 Overview of the Scheme	2
1.3 Scheme context.....	2
1.4 Scheme location.....	2
1.5 Scheme description.....	3
1.6 The Applicant	4
1.7 The Habitat Regulations Assessment process	4
2 The Scheme	6
2.1 Introduction	6
2.2 Description of the scheme.....	6
2.3 Mainline.....	6
2.4 Junctions	7
2.5 Local roads.....	10
2.6 Floodplain compensation areas	10
2.7 Structures.....	11
2.8 Drainage.....	12
2.9 Road lighting	13
2.10 Land take	14
3 Assessment methodology.....	15
3.1 Guidance.....	15
3.2 Habitat Regulations Assessment Process.....	16
3.3 Screening (Stage 1) Methodology.....	18
3.4 In-combination assessment methodology	20
3.5 Appropriate Assessment (Stage 2) Methodology	21
3.6 Consultation to date	21
4 Screening (Stage 1).....	26
4.1 Identification of European Sites.....	26
4.2 Assessment of likely significant effects	28
4.3 Assessment of in-combination effects	28
5 Appropriate assessment (Stage 2)	49
5.1 Introduction	49

5.2 Entrapment/isolation of lamprey (within Farndon East and Farndon West FCA).....	49
5.3 Temporary severance of migratory routes (via artificial light spill).....	50
5.4 Assessment of the Scheme alone.....	51
5.5 Assessment of the Scheme in-combination	52
6 Summary and conclusions.....	53
A. Appendix: Planning Inspectorate screening matrices	54
B. Appendix: Study area search distances for HRA – Local Impact Area	58
C. Appendix: Study area search distances for HRA – Wider Impact Area	59
D. Appendix: Citations/data sheets for each European Site	60
E. Appendix: Indicative Sherwood ppSPA boundary.....	61
F. Appendix: Traffic flow scenarios.....	62

Glossary

Term	Definition
Affected road network	The affected road network is made up of all roads that trigger the traffic screening criteria and adjoining roads within 200m (as defined by the Design Manual for Roads and Bridges standard for assessing the effects from changes to air quality (LA 105)).
Competent Authority	In relation to applications for Nationally Significant Infrastructure Projects (NSIPs), the relevant Secretary of State is the Competent Authority for the purposes of the Habitat Regulations.
De-minimis	Effects considered to be 'trivial' and those that have no appreciable effect on the site.
European Sites(s)	A site that forms part of the national site network in accordance with Regulation 3 of the Habitats Regulations and proposed Special Areas of Conservation, potential Special Protection Areas and proposed and listed Ramsar sites in accordance with Government policy.
Order Limits	Order Limits are the limits shown on the works plan within which the authorised project may be carried out. It defines the maximum area of land required both temporarily and permanently to construct, operate and maintain the scheme.
In-combination	An in-combination effect is an effect on a European Site that arises from the combination of the predicted effects of the scheme (which may or may not be significant) with effects from other plans or projects. The assessment of in-combination effects considers those projects or plans which: <ul style="list-style-type: none"> • projects that are under construction; • permitted application(s) not yet implemented; • submitted application(s) not yet determined; • all refusals subject to appeal procedures not yet determined; • projects on the Planning Inspectorate's National Infrastructure Programme of Projects; and • projects identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited and a degree of uncertainty may be present.
Likely significant effects (LSEs)	Under the Habitat Regulations a significant effect is likely if: <ul style="list-style-type: none"> • It cannot be excluded, in that it is capable of having an effect, on the basis of objective information; and • It is likely to undermine the European Site's conservation objectives.
National Site Network	Includes both inshore and offshore marine areas in the UK and comprises: <ul style="list-style-type: none"> • Special Areas of Conservation and Special Protection Areas designated under the Conservation of Habitats and Species Regulations 2017 before exit day (from the EU) • Special Areas of Conservation and Special Protection Areas designated under the Conservation of Habitats and Species Regulations 2017 after exit day (from the EU).
Ramsar site	A wetland site of international importance as listed under the Convention on Wetlands of International Importance 1971 (as amended in 1982 and 1987).
The scheme	As detailed in Section 1.2, the proposed A46 Bypass works, comprising: <ul style="list-style-type: none"> • On-line widening for the majority of its length between Farndon Roundabout and the A1 (including the creation of new structures to accommodate widening at existing viaducts). • A new section of off-line dual carriageway proposed between the western and eastern sides of the A1.
Trans-Midlands Trade Corridor	A strategic movement corridor; identified as evidence supports that industries along this corridor are not only linked but also are dependent upon the strategic transport infrastructure. The corridor is largely defined by the A46, part of the Strategic Road Network, which runs for over 250 kilometres from the M5 at Tewkesbury to Grimsby

Term	Definition
	and on to Hull via the A15; although there are also some important rail links which mirror the corridor connecting a number of major towns and cities.

1 Introduction

1.1 The purpose of this report

- 1.1.1 The A46 Newark Bypass (“the Scheme”) meets the criteria to be considered as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 and thus requires an application for the grant of a Development Consent Order (DCO). The Scheme has been screened as requiring an Environmental Impact Assessment (EIA) and an Environmental Statement (ES) (**TR010065/APP/6.1**) has been prepared to accompany the application for a DCO. The purpose of this report is to inform a Habitats Regulations Assessment (HRA) to be undertaken by the Secretary of State for Transport in accordance with The Conservation of Habitats and Species Regulations 2017 (as amended) (‘Habitats Regulations’) to determine whether ‘the Scheme is likely to have significant effects on any European Site, either alone or in-combination with other plans or projects’.
- 1.1.2 Under Regulation 3 of the Habitats Regulations, the term national site network refers to the network of sites in the United Kingdom’s territory consisting of sites designated either:
- (a) immediately before exit day formed part of Natura 2000;
 - or
 - (b) at any time on or after exit day are European Sites, European marine sites and European offshore marine sites for the purposes of any of the retained transposing regulations’
- 1.1.3 “Natura 2000” means the European network of Special Areas of Conservation, and Special Protection Areas under the old Wild Birds Directive or the new Wild Birds Directive, provided for by Article 3(1) of the Habitats Directive (network of Special Areas of Conservation: Natura 2000).
- 1.1.4 With reference to the Planning Inspectorate’s Advice Note 10¹ which addresses Habitats Regulation Assessment, the term ‘European Site(s)’ has been used throughout this assessment when referring to national site network sites and Ramsar sites, either individually or collectively, for ease of expression.
- 1.1.5 Several appendices accompany this report and contain supporting information to further inform the HRA, to be undertaken by the

¹ Infrastructure Planning Commission (2022) Advice Note 10: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects [online] available at: [Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk/advice-note-ten-habitats-regulations-assessment-relevant-to-nationally-significant-infrastructure-projects/) (last accessed December 2023).

Secretary of State. The appendices of this report comprise the following:

- Appendix A: Planning Inspectorate screening matrices
- Appendix B: Study area search distances for HRA – local impact area
- Appendix C: Study area search distances for HRA – wider impact area
- Appendix D: Citations / data sheets for each European Site
- Appendix E: Indicative Sherwood Forest Possible Potential Special Protection Area (ppSPA) boundary
- Appendix F: Traffic flow scenarios

1.2 Overview of the Scheme

1.3 Scheme context

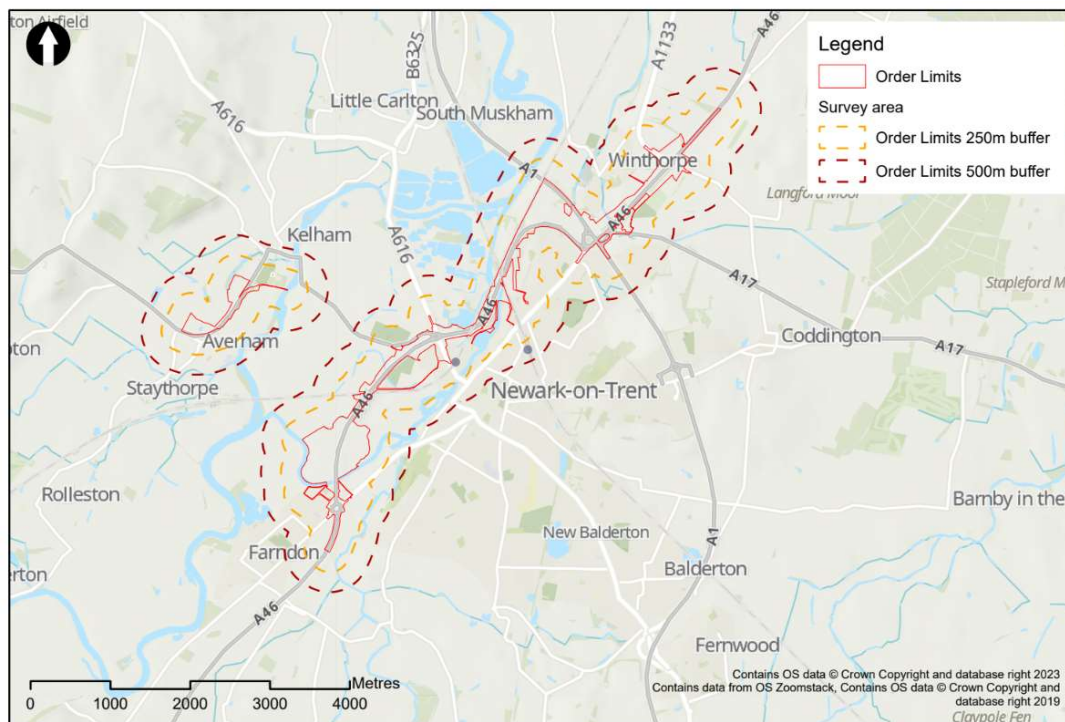
- 1.3.1 The existing A46 forms part of the strategic Trans-Midlands Trade Corridor between the M5 in the south-west and the Humber Ports in the north-east.
- 1.3.2 The existing stretch of A46 between the Farndon Junction, to the west of Newark-on-Trent and the A1 to the east of Newark-on-Trent, is the last remaining stretch of single carriageway between the M1 and A1 and consequently queuing traffic is a regular occurrence, often impacting journey time reliability.
- 1.3.3 Further details on the need for the Scheme are contained within the Case for the Scheme (**TR010065/APP/7.1**).

1.4 Scheme location

- 1.4.1 The Scheme will provide a dual carriageway on the A46 between Farndon and Winthorpe in Nottinghamshire. The Farndon roundabout is located at the western extent of the Scheme where the B6166 Farndon Road joins the existing A46. The Winthorpe junction is located at the eastern extent where the A1133 joins the existing A46. Along its route, it crosses the A617 and the B6326, at the Cattle Market junction, and the A1 between the Friendly Farmer and Brownhills roundabouts. Figure 1.1 below shows the Order Limits of the Scheme.
- 1.4.2 The Scheme would be situated within the county boundary of Nottinghamshire County Council and within the administrative boundary of Newark & Sherwood District Council.
- 1.4.3 The Scheme crosses the River Trent twice, the Nottingham to Lincoln railway line twice, and the East Coast Main Line once.
- 1.4.4 The existing A46, currently a single carriageway, is elevated on embankments due to the low-lying floodplain of the River Trent. This

floodplain is located to the west of the A46 for the majority of the affected length, along with a section at the southern end on the eastern side of the A46. Several roundabouts form key junctions along the route, linking local A roads. Road infrastructure is softened by roadside vegetation in places and the River Trent is a strong natural influence within an otherwise built-up landscape. To the north of the A46, farmland dominates, interspersed with small-scale settlements. To the south of the A46, the town of Newark-on-Trent forms a notable urban settlement.

Figure 1.1: Order Limits



1.5 Scheme description

- 1.5.1 The section of the A46 that is to be upgraded is approximately 6.5 kilometres (approximately 4 miles) in length. The Scheme comprises on-line widening for the majority of its length between Farndon roundabout and the A1. A new section of offline dual carriageway is proposed between the western and eastern sides of the A1 before the new dual carriageway ties into the existing A46 to the west of Winthorpe roundabout. The widening works include earthwork widening along the existing embankments, and new structures where the route crosses the Nottingham to Lincoln and East Coast Main Line railway lines, River Trent, Brownhills Link and the A1.
- 1.5.2 A detailed description of the Scheme can be found in Chapter 2 (The Scheme) of the ES (**TR010065/APP/6.1**) and at Section 2 of this report.

1.6 The Applicant

- 1.6.1 'The Applicant' of this Scheme is National Highways. The Applicant is appointed and licensed by the Secretary of State for Transport as the strategic highways company for England and is responsible for operating, maintaining and improving the strategic road network in England. The network is made up of England's motorways and all-purpose trunk roads (the major A- roads), and the existing A46 is part of the trunk road network for which the Applicant is responsible. Following construction of the Scheme, the Applicant will be responsible for operating, maintaining and, under its general statutory powers in respect of the latter, improving the new route of the A46.

1.7 The Habitat Regulations Assessment process

- 1.7.1 There is a requirement under the Habitats Regulations to determine if a plan or project may have an adverse impact on a site designated under the same (or preceding Regulations) prior to any consent or permission being determined. The process of undertaking this assessment is known as a Habitats Regulations Assessment (HRA). As required under Regulation 63, the assessment is undertaken by the Secretary of State in relation to an order granting development consent, based upon information provided within this report and supporting appendices, representations made by Natural England and, where the Secretary of State considers it appropriate, taking the opinion of the general public.
- 1.7.2 The Habitats Regulations include measures to establish and maintain a network of sites protecting habitats which in themselves are valuable and the species they support. These sites form a network that across Europe is known as Natura 2000, and domestically also known collectively as European protected sites. Within the UK, this network consists of Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), together with proposed SPAs (pSPAs) and candidate SACs (cSACs) and possible SACs (pSACs). This network also extends to marine environments, with wetland sites of international importance (Ramsar sites) also treated equally within this assessment framework. These sites are collectively referred to in this document as 'European Sites'.
- 1.7.3 The Habitats Regulations have been amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, due to the UK's exit from the EU. The effect of these amendments is largely related to terminology/wording. Requirements and processes remain the same, as protection levels remain unchanged. As such

existing EU guidance² and preceding case law from the European Court of Justice (ECJ)^{3 4 5} remains valid as a source of direction and interpretation of the requirements of the legislation, although it should be noted that much case law has now been incorporated into guidance and/or best practice.

² Managing Natura 2000 Sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE (European Communities 2020).

³ Landelijke Vereniging tot Behoud van de Waddenzee/ Nederlandse Vereniging tot Bescherming van Vogels, European Court of Justice, Case C-127/02 'Waddenzee 2002'.

⁴ Sweetman et al v An Bord Pleanala, European Court of Justice, Case C-258/11 'Sweetman 2011'.

⁵ People over Wind/Sweetman v Coillte Teorante, European Court of Justice Case C-323/17 'People over Wind 2017'.

2 The Scheme

2.1 Introduction

- 2.1.1 The section of the A46 that is to be upgraded is approximately 6.5 kilometres (approximately 4 miles) in length. The Scheme comprises on-line widening for the majority of its length between Farndon roundabout and the A1. A new section of offline dual carriageway is proposed between the western and eastern sides of the A1 before the new dual carriageway ties into the existing A46 to the west of Winthorpe roundabout. The widening works include earthwork widening along the existing embankments, and new structures where the route crosses Nottingham to Lincoln and East Coast Main Line railway lines, River Trent, Brownhills link and the A1.

2.2 Description of the scheme

- 2.2.1 The Scheme layout has been designed in accordance with the Design Manual for Roads and Bridges (DMRB), which contains information about current design standards relating to the design, assessment and operation of motorway and all-purpose trunk roads in the United Kingdom. Further details are contained within the Scheme Design Report (**TR010065/APP/7.5**). The DCO application contains a number of plans that illustrate the design for the Scheme. The General Arrangement Plans (**TR010065/APP/2.5**) provide an overview of the Scheme design. Engineering Plans and Sections for new structures are also contained within the DCO application (**TR010065/APP/2.6**).

2.3 Mainline

- 2.3.1 The provision of a dual carriageway for a distance of 6.5 kilometres (approximately 4 miles) to provide two traffic lanes in both directions.
- 2.3.2 At its south-western limits, the dual carriageway ties in with the northern arm of the existing Farndon Roundabout which already has two lanes entering and exiting the roundabout. Travelling north-eastwards, the route follows the alignment of the existing A46 for a length of 2.5 kilometres. Over this length the existing A46 would remain in place as the new southbound carriageway and the road would be widened to the north-west, away from Newark-on-Trent, to form the new northbound carriageway. Retaining the existing A46 in place over this section would allow the existing vegetation on the eastern side of the road to be retained.

- 2.3.3 At the point where the new dual carriageway ties back into the existing A46, the existing dual carriageway would be retained up until Winthorpe Roundabout at the north-eastern extents of the Scheme. This includes retention of the existing central reserve and vegetation within it. Where the dual carriageway approaches Winthorpe Roundabout there would be localised widening to tie in with existing routes and the modified Winthorpe Roundabout.

2.4 Junctions

- 2.4.1 There are four new junctions that would be provided as part of the Scheme; Farndon Roundabout, Cattle Market Junction, Brownhills Junction and Winthorpe Roundabout. These are shown on the General Arrangement Plans (**TR010065/APP/2.5**) and described further below.

Farndon Roundabout

- 2.4.2 The only amendments proposed by the Scheme to the five-arms of this roundabout would be to widen the entries from the A46 from two to three lanes. This would largely be constructed within the footprint of the existing road as the existing entry is slightly wider than needed, but would require some small scale, localised widening to accommodate the extra lane.
- 2.4.3 A third lane would also be provided on the east and west sides of the circulatory of the roundabout, with traffic signals on the A46 arms of the roundabout which will improve flows for both A46 and local traffic. This would largely be constructed by modifying the road markings within the existing roundabout footprint as the existing circulatory is wider than required for two lanes. Some widening would however be required on the inside of the northern quadrant to facilitate the traffic signals that would be installed at this location and the spiralised road markings where the lanes reduce from three lanes to two in this location.

Cattle Market Junction

- 2.4.4 As part of the Scheme the existing Cattle Market Roundabout would be enlarged in size to form a gyratory, with the mainline elevated over the top to separate local traffic and A46 mainline traffic. Northbound and southbound slip roads would be provided to allow traffic to pass between the roundabout and mainline. The northbound off-slip and southbound off-slip would be two lanes with taper diverges, widening to three lanes at the entry to the new gyratory. The northbound on-slip and southbound on-slip would be single lane slip roads with taper merges and two lanes at the exit from the roundabout.
- 2.4.5 The roundabout itself would be elongated to accommodate these slip roads and the gyratory widened to provide a third lane on the north

and south sides of the gyratory, it would be partially signalised to improve traffic flows. The elongation would be mainly to the south, with slight widening also to the north and east. The mainline would then pass over the centre of the new gyratory. The existing culvert beneath the roundabout would be extended to accommodate the widened earthworks.

- 2.4.6 The new A617 and A616 arms would maintain the two lane entry and single lane exit, however, the existing structure would need be widened to the west to accommodate the highway tie into the enlarged roundabout. This would allow the existing eastern kerb line and footpath to remain in place and avoid the need to widen the Grade II listed “Causeway Arches 500 metres north-west of level crossing” (known collectively as Smeaton’s Arches) on the eastern side.
- 2.4.7 A third lane would be provided on the northbound entry from the Great North Road to the roundabout which would require widening of the existing road to the west. A second lane has also been added to the exit from the roundabout. This second lane would continue for around 200 metres down to the junction with Kelham Road to provide greater capacity for queuing traffic when the railway level crossing is closed and to prevent traffic from queuing back onto the A46 mainline. To accommodate the second lane the widening would largely be to the west of the Great North Road, allowing the existing kerb line and footpath on the eastern side to remain in place. There would however be some localised widening to the east of Great North Road on the immediate exit from the roundabout.
- 2.4.8 A walking and cycling route would be provided through the junction with signalised crossings on the eastern slip roads.
- 2.4.9 The existing private maintenance access on the south-western side of Cattle Market Roundabout would be closed for safety reasons, with alternative access provided from Kelham Road.

Brownhills Junction

- 2.4.10 To the west of the A1 a new grade separated Brownhills Junction would be provided to maintain local access from the A46 and to provide a link from the A46 to the A1 and A17. This is required as the new dual carriageway would now bypass the existing Brownhills and Friendly Farmer Roundabouts which previously provided that access.
- 2.4.11 The Brownhills Junction would consist of a new southbound on-slip from the existing Brownhills Roundabout, and a new northbound off-slip linking to a new roundabout that is located to the west of the A1 and north of the new dual carriageway. The new roundabout would provide local access to the businesses/properties in that location and would be connected to the existing Brownhills Roundabout via a new two-way link road.

- 2.4.12 The southbound on-slip would be a single lane with a parallel merge and two lanes from the exit of Brownhills Roundabout. As far as possible this slip road would utilise the existing A46 and retain the vegetation along this corridor. A narrow widening would be required where the new on-slip joins the A46 within the grass verge, requiring a small retaining wall to retain the existing vegetation. The new eastbound off-slip would be a single lane with an auxiliary diverge and one lane on the entry to the new roundabout. This slip road would be formed on earthworks with 1:2 side slopes to minimise the impact on the flood zone. The new roundabout would be formed in earthworks with 1:2.5 side slopes. The level of the roundabout has been set such that it matches that of the existing A1 and to avoid it flooding. The roundabout needs to be lit for road safety reasons but these would be smaller than 10 metre high lighting columns to reduce light pollution to adjacent properties.
- 2.4.13 The new link road between the new roundabout and the existing Brownhills Roundabout would be a single lane in each direction, widening to three lanes on the approach to Brownhills Roundabout as per the existing entry. A right turn would be provided from part way along the southbound on-slip which would provide the access from Brownhills Roundabout to the new roundabout.

Winthorpe Roundabout

- 2.4.14 As part of the Scheme, Winthorpe Roundabout would be enlarged and partially signalised, with the Friendly Farmer link traffic passing through the centre of the roundabout in a through-about layout. Eastbound and westbound slip roads would be provided to allow traffic to merge and diverge between the mainline and the roundabout.
- 2.4.15 To achieve this the A46 would be widened on the approach to the roundabout to accommodate the tie-in to the larger roundabout, the addition of traffic signals, and to provide three lanes on both approaches. Two lanes would be maintained on each of the exits to the A46. The A1133 would also be realigned to the south-west to provide compliant deflection as it approaches the roundabout, with two lanes maintained on the approach and a single lane on the exit. Drove Lane would also be locally widened to accommodate the tie-in to the larger roundabout and to provide two lanes on the entry. A single lane would be maintained on the exit from the roundabout.
- 2.4.16 A new single carriageway link named the 'Friendly Farmer Link' would be constructed to the south of the dual carriageway that provides a link between Winthorpe Roundabout and Friendly Farmer Roundabout. There would be two lanes from the exit of Winthorpe Roundabout to this link and three lanes at the entry which would be controlled by traffic signals. The right-hand two lanes would pass through the centre of the roundabout to provide access to the A46 northbound only, whereas the left-hand lane would provide access to

the circulatory of the roundabout to allow access to the A1133 and Drove Lane. This would be provided with additional signage to ensure users are in the correct lane on approach to the roundabout.

- 2.4.17 The circulatory of the roundabout would vary between two and five lanes. This would require clear signage and road markings so that the roundabout is clear to understand for users. This would include the addition of a new signage gantry over the south-eastern portion of the circulatory where the circulatory splits to four lanes. The height of this gantry would be around 8 metres high as it needs to provide 6.45 metre clearance for high loads.

2.5 Local roads

- 2.5.1 Connections to all local roads in the vicinity of Farndon, Cattle Market and Winthorpe Junctions would be retained, with the new junction layouts being designed to accommodate them as discussed in the section above. This includes Fosse Road, Farndon Road, the A617, the A616, the Great North Road, Drove Lane and the A1133.
- 2.5.2 In addition, a new single carriageway link named the 'Friendly Farmer Link' would be provided between the Friendly Farmer Roundabout and the new enlarged roundabout at Winthorpe. This would be constructed on low level earthworks with 1:2.5 side slopes and would be separated from the dual carriageway by a road restraint system with anti-dazzle louvres on the top to prevent glare from the opposing carriageways.
- 2.5.3 The existing Brownhills Roundabout would be impacted slightly by the Scheme, however no works would be undertaken other than potential changes to traffic signs, road markings and highway lighting.
- 2.5.4 The existing Friendly Farmer Roundabout would also be impacted by the Scheme. Works to this roundabout would include a minor realignment to the eastbound approach from Brownhills and to the arm that would become the Friendly Farmer Link. In addition, there would be potential changes to traffic signs, road markings and highway lighting.

2.6 Floodplain compensation areas

- 2.6.1 The widened embankment for the A46 carriageway passes through land that is within the floodplain for the River Trent. By using this land, the Scheme has the potential to increase flood risk elsewhere unless mitigation is provided. This mitigation would include three floodplain compensation areas which would seek to provide an equivalent volume of floodplain storage in the local catchment by excavating land at similar elevations to that which would be displaced by the Scheme.

- 2.6.2 To demonstrate that the floodplain compensation areas are effective, analytical flood modelling has been carried out to quantify impacts caused by the Scheme, identify flood mitigation measures and optimise the floodplain compensation areas. Three areas have been identified for floodplain compensation. These are being referred to as the Kelham and Averham floodplain compensation area (FCA), Farndon West FCA and Farndon East FCA the locations of which are shown on the General Arrangement Plans (**TR010065/APP/2.5**). Further information on the FCAs are detailed within Appendix 13.2 (Flood Risk Assessment) of the ES Appendices (**TR010065/APP/6.3**).
- 2.6.3 The floodplain compensation areas are designed to fit sympathetically into the surrounding landscape with shallow slopes back to existing ground levels with mixed grass seed planting. The design philosophy of the floodplain compensation areas is to ensure the land can continue to be used by the landowner. This would be possible for much of the land at the Kelham and Averham FCA, where the infrequency of flooding means that the land can be returned to arable use. It is proposed that Farndon East and West FCAs would become a wetland habitat. The northern part of Farndon West FCA would become floodplain grazing marsh. These features are shown on Figure 2.3 (Environmental Masterplan) of the ES Figures (**TR010065/APP/6.2**).

2.7 Structures

- 2.7.1 A range of structures including overbridges, underbridges, retaining walls, culverts, Closed Circuit Television (CCTV) masts, a variable message sign and a sign gantry would be installed as part of the Scheme. The primary structures along the new dual carriageway are detailed below and are shown within the Structures General Arrangement Drawings (**TR010065/APP/2.6**).
- 2.7.2 **Windmill Viaduct** – A new three span structure would be built alongside the existing, this would be similar visually to the existing, there would be a gap between the structures to allow both the inspection and maintenance to take place safely in the future. The bridge would be supported on bored concrete piles.
- 2.7.3 **Nottingham to Lincoln Railway Line Western Crossing** – A new structure would be built alongside the existing, which would be very similar visually to the existing. There would be a gap between the structures to allow both to be inspected and maintained safely in the future. The bridge would be supported on bored concrete piles.
- 2.7.4 **Cattle Market East** – The bridge would be a single span structure supported on bored concrete piles.
- 2.7.5 **Cattle Market West** – This bridge would be similar in structural form to Cattle Market Junction East.

- 2.7.6 **Nottingham to Lincoln Railway Line Eastern Crossing** – The existing bridge would be widened to the north to accommodate the additional width required for the dual carriageway. The form would match the existing, with a new steel parapet installed to the northern side of the bridge on the widened section. The bridge would be supported on bored concrete piles.
- 2.7.7 **Nether Lock Viaduct** – A new structure would be built alongside the existing, this would be very similar visually to the existing. There would be a gap between the structures to allow both to be inspected and maintained safely in the future. The bridge would be supported on bored concrete piles.
- 2.7.8 **Nether Lock Railway Crossing** – A new structure would be built alongside the existing, this would be a longer span than the existing to avoid the existing Lincoln line railway chord. There would be a gap between the structures to allow both to be inspected and maintained safely in the future. The bridge would be supported on bored concrete piles.
- 2.7.9 **Brownhills Junction Bridge** – This bridge would be identical in structural form to the Cattle Market Junction structures with a single span supported on bored concrete piles or a spread concrete foundation. This span would be longer than required to provide an open feel for walkers and cyclists using the walking/cycling route below.
- 2.7.10 **A1/A46 crossing** – A single span structure would be provided to pass over the existing A1 slip roads and the A1 mainline carriageway. The bridge would be supported on bored concrete piles or a spread concrete foundation.
- 2.7.11 To allow the new A1/A46 crossing to be constructed, there is a need for the existing Slough Dyke to be re-aligned and moved approximately 10 metres east to facilitate the installation of the new bridge west abutment. The channel profile (cross-sectional dimensions, and nature of riparian habitat) would be reinstated to match the existing channel. Scour protection will be provided in the vicinity of the western abutment. This is anticipated to consist of buried gabion baskets made up in-situ, filled with imported stone and covered with topsoil.

2.8 Drainage

- 2.8.1 Consultation with the Environment Agency, Nottinghamshire County Council (the Lead Local Flood Authority), Newark & Sherwood District Council and the Trent Valley Internal Drainage Board has shaped and influenced the drainage design and the assessment of flood risk, with an allowance for the effects of climate change included in the design.

- 2.8.2 As road drainage for the Scheme would discharge into networks maintained separately by the Applicant and the local authorities, the drainage design has accordingly been split into two networks:
- Local road drainage – which would be adopted by Nottingham County Council (other than Cattle Market Roundabout that will discharge into the Applicant's system).
 - Road drainage for the strategic road network – which would be operated and maintained by the Applicant.
- 2.8.3 The surface water would be collected from the carriageway and conveyed to existing outfalls or to newly formed attenuation areas prior to outfalling into water courses and rivers. Water would generally be conveyed to the attenuation areas and outfalls along a network of swales located at the bottom of the widened embankments. Where this is not feasible then this would be conveyed within an underground piped network.
- 2.8.4 The swales and attenuation areas would be designed to clean the highway runoff water prior to discharge, removing silt and debris and where required removing water borne chemicals such as zinc and copper. Some existing ditches would be modified or realigned to accommodate the Scheme.
- 2.8.5 New culverts would be provided across the A617 at Kelham to connect the Kelham and Averham FCA to the River Trent flood zone. Several existing culverts located along the existing A46 would require extending as a result of the Scheme.

2.9 Road lighting

- 2.9.1 Road lighting incorporated into the design of the Scheme reflects the level of safety required for road users.
- 2.9.2 Lighting would be installed or modified at the following locations across the Scheme:
- Farndon Roundabout
 - Cattle Market Junction
 - Brownhills and Friendly Farmer Junctions including the slip roads into the Esso interchange
 - Winthorpe Roundabout
 - The single carriageway link between Friendly Farmer and Winthorpe
- 2.9.3 The requirements for road lighting at these locations has been determined based on increasing safety for all road users, the design of which has sought to minimise adverse impacts and effects on the following:
- Nocturnal species (for example bats)

- The existing landscape and visibility from nearby properties and dwellings after dark
- The setting of features associated with the historic environment (for example listed buildings)

2.9.4 The approach to the existing lighting on the dual carriageway between Friendly Farmer and Winthorpe Roundabout will be considered during detailed design using the DMRB TA501 (Road Lighting Appraisal). If the removal of existing light at these locations is safe and beneficial to environmental receptors, they will no longer be included in the design.

2.10 Land take

2.10.1 The Order Limits defines the maximum area of land required both temporarily and permanently to construct, operate and maintain the Scheme, the extents of which are illustrated on Figure 1.1 (Order Limits) within Section 1 of this report.

3 Assessment methodology

3.1 Guidance

3.1.1 The following guidance documents have been referred to when undertaking this assessment:

- Habitats Regulation Assessment Advice Note 10: Habitat Regulations Assessment relevant to nationally significant infrastructure projects⁶
- Design Manual for Roads and Bridges (DMRB) LA 115 'Habitats Regulations assessment (formerly HD44/09)'⁷.
- Design Manual for Roads and Bridges (DMRB) LA 108 'Biodiversity' (formerly IAN 130/10)⁸
- Natural England's 'Habitats regulations assessments: protecting a European site' guide⁹.

3.1.2 Specific advice notes are provided in relation to DCO applications on the Planning Inspectorate website (i.e. Habitats Regulation Assessment Advice Note 10). As such, there are often overlapping requirements for the DCO application documents when considering the Planning Inspectorate advice notes and other relevant standards and guidance (e.g., Design Manual for Roads and Bridges (DMRB)). For example, with reference to this Scheme, two HRA screening matrices are required; one based on the Planning Inspectorate guidance and one based on the DMRB guidance.

3.1.3 DMRB screening matrices can be found in Section 4 of this report. These tables present the information required to support the assessment of Likely Significant Effects (LSEs) on European Sites.

3.1.4 The Planning Inspectorate's screening matrices can be found in Appendix A. These can be cross-referenced with the DMRB screening matrices and detail the evidence to support the assessment of LSEs. These are a requirement of the Planning Inspectorate's Advice Note 10.⁶

⁶ Infrastructure Planning Commission (2022) Advice Note 10: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects [online] available at: [Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk/advice-note-ten-habitats-regulations-assessment-relevant-to-nationally-significant-infrastructure-projects/) (Last accessed December 2023).

⁷ Highways England (2020) Design Manual for Roads and Bridges (DMRB) LA 115 'Habitats Regulations assessment (formerly HD44/09)'. Revision 1. [online] available at: <https://www.standardsforhighways.co.uk/dmrbs/search/e2fdab58-d293-4af7-b737-b55e08e045ae> (Last accessed December 2023).

⁸ Highways England (2020) Design Manual for Roads and Bridges (DMRB) LA 108 'Biodiversity (formerly IAN 130/10)'. Revision 1. [online] available at: <https://www.standardsforhighways.co.uk/search/af0517ba-14d2-4a52-aa6d-1b21ba05b465> (Last accessed December 2023).

⁹ Natural England (2021) Habitats regulations assessments: protecting a European site. [online] available at: [Habitats regulations assessments: protecting a European site - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site) (Last accessed December 2023)

3.2 Habitat Regulations Assessment Process

- 3.2.1 The Scheme is a plan or project that is not directly connected with, or necessary to the management of a European Site, therefore HRA is required.
- 3.2.2 The HRA process consists of three stages, the need for each stage being informed by the outcome of the preceding one, to ensure an iterative and objective assessment.
- 3.2.3 The HRA process first considers whether the Scheme will give rise to any LSEs upon any European Sites (Stage 1) and, if so, goes on to consider whether these will adversely affect the integrity of any European Sites (Stage 2). Under the Habitats Regulations an effect is considered likely if:
- It cannot be excluded, in that it is capable of having an effect, on the basis of objective information.
 - It is likely to undermine the Scheme's conservation objectives.
- 3.2.4 If the conclusion of Stage 1 Screening is that there will be no LSEs on any features of a European Site, there is no requirement to undertake further stages. Similarly, if the Stage 2 Appropriate Assessment concludes there will be no adverse effect on integrity of the European Site, then the assessment is concluded. The HRA stages are summarised within Table 3-1 below.

Table 3-1: HRA stages

Stage	Description
Screening (Stage 1)	This is the process which identifies the potential effects of the plan or project on the European Sites and considers if these are likely to be significant. Screening is an iterative process and before moving to Stage 2 it can be repeated if required. The description of the project shall not include mitigation measures that are introduced to avoid harm to the European Site or to avoid LSEs. If the Screening (Stage 1) identifies that the project or plan, alone or in-combination, may have LSEs on a European Site and/or its qualifying features, or if there is uncertainty, the Competent Authority must undertake an Appropriate Assessment (Stage 2) of the implications for that site in view of that site's conservation objectives.
Appropriate Assessment (Stage 2)	This stage involves the consideration of the predicted adverse effects of the project or plan either alone, or in-combination with other projects or plans, on the integrity of the European Site with respect to the site's structure, function, and conservation objectives. Additionally, where mitigation has been proposed to avoid or minimise LSEs, this stage includes assessment of the likely effectiveness of any mitigation applied. A key outcome of the Appropriate Assessment is to identify whether the integrity of the European Site(s) is likely to be adversely affected by the plan/project.
Derogation	If no suitable alternative solutions are available, Stage 3 requires an

Stage	Description
(Stage 3)	assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (“IROPI”), it is considered that the project or plan should proceed. In making this assessment, it is important to recognise that it will be appropriate to the likely scale, importance, and impact of the proposed project. If it is impossible to avoid or mitigate the adverse impact, it must be demonstrated that there is IROPI.

Mott MacDonald, 2023

- 3.2.5 This assessment has been undertaken in an iterative and objective manner following the above stages, with reference to best practice guidance and relevant case law^{10 11 12}.
- 3.2.6 For this assessment, effects during the construction and operational phases are considered appropriate and have been scoped-in to the assessment. Decommissioning is not an integral planned element of the proposed Scheme and effects associated with decommissioning have therefore been scoped-out of this assessment. It is highly unlikely that the Scheme would be demolished after its design life, as the improvements would have become an integral part of the strategic and local road networks. The same approach has also been adopted within Chapter 8 (Biodiversity) of the ES (**TR010065/APP/6.1**). In the unlikely event of the Scheme needing to be demolished, this would conform to the statutory process in place at that time, including any requirements for further assessment (e.g., HRA or Environmental Impact Assessment).
- 3.2.7 The term ‘de-minimis’ has been used in relation to an impact that has no appreciable potential effect on a European Site and is thereby excluded from further assessment.
- 3.2.8 The HRA report contains the following:
- A summary table of all European Sites and qualifying features and each pathway of effect considered at each HRA Stage (screening, Appropriate Assessment (AA)/Imperative Reasons of Overriding Public Interest (IROPI), and the derogations, as applicable), for each phase of the Proposed Development (i.e. construction and operation) – see Section 4 and Appendix A of this report;
 - A copy of the citation/Natura 2000 data sheet for each European Site – see Appendix D of this report;

¹⁰ Landelijke Vereniging tot Behoud van de Waddenzee/ Nederlandse Vereniging tot Bescherming van Vogels, European Court of Justice, Case C-127/02 ‘Waddenzee 2002’.

¹¹ Sweetman et al v An Bord Pleanala, European Court of Justice, Case C-258/11 ‘Sweetman 2011’.

¹² People over Wind/Sweetman v Coillte Teorante, European Court of Justice Case C-323/17 ‘People over Wind 2017’.

- A copy of the conservation objectives for all European Sites for which LSE have not been excluded and have been carried forward to HRA Stage 2 – see Table 4-1 within this report;
- A plan of the European Site(s) potentially affected in relation to the Proposed Development (as required to be submitted with the DCO application in accordance with Regulation 5(2)(l)(i) of the APFP Regulations) – see Appendix B and Appendix C of this report;
- A statement which identifies (with reasons) whether significant effects are considered to be likely in respect of European Sites in devolved administrations or within EEA States – see sections 4 and 5 of this report;
- Details of consultation held with the relevant ANCBs (including those in devolved administrations and/or relevant bodies in EEA States, where applicable), including any agreements made between the Applicant and the ANCBs; and,
- Cross references to relevant draft DCO requirements, development consent obligations and any other mechanisms proposed to secure measures relied upon in the AA and derogation cases (as applicable), including the identification of any factors that might affect the certainty or efficacy of their implementation – see sections 4 and 5 of this report.

3.3 Screening (Stage 1) Methodology

- 3.3.1 With reference to the DMRB standard on HRA (LA 115⁷), a search has been undertaken for all European Sites within 2 kilometres of the Scheme and, where bats are a qualifying feature of a European Site, within 30 kilometres of the Scheme. A search was also undertaken for receptors within the Impact Risk Zone for Sites of Special Scientific Interest (SSSIs) with reference to Natural England guidance. The searches were undertaken using the Defra's MAGIC.gov website¹³.
- 3.3.2 Information gathered to inform the screening included the identification of:
- Any SPA, pSPA, SAC, cSAC, pSAC and Ramsar sites, including any marine or marine elements of these sites, meeting the search criteria listed in 3.3.3
 - Potential effects resulting from the Scheme or in combination with other plans and projects
 - The Zone of Influence (ZoI) of these effects, noting this may extend some distance from the site itself, it is not confined to activities on or adjacent to the site
 - Any viable pathways for the project to the receptor (European Site itself or functionally linked land)

¹³ Department for Environment, Food & Rural Affairs. Magic Maps [online]. Available at: <https://magic.defra.gov.uk/> (Last accessed December 2023).

- The qualifying features of the designated site(s) in question
- The conservation objectives of the designated site, including any site sensitivities given within any supplementary advice, site improvement plan, or equivalent document published by the relevant nature conservation body.

3.3.3 A source-pathway-receptor approach has been undertaken at Stage 1 to identify potential adverse effects from changes to air quality and surface water and groundwater hydrology. Sites within the following buffers have been identified (see Appendices B and C of this report):

- European Sites within 200 metres of the air quality Affected Road Network (ARN). The ARN includes parts of the road network which are identified as likely to be affected by changes in air quality as a result of changes in traffic flows due to the Scheme. These comprise all roads that trigger the traffic screening criteria outlined in DMRB LA 105¹⁴.
- European Sites that have surface water hydrological connectivity within 1 kilometre of the Scheme (DMRB LA 113¹⁵).
- European Sites containing Groundwater Dependent Terrestrial Ecosystem (GWDTEs) which have groundwater hydrological and hydrogeological connectivity within 1 kilometre of the Scheme (LA 113¹⁵).
- Any known areas of habitat outside of European Site boundaries, which play an important role in supporting the European Site and its features of interest (functionally linked land).

3.3.4 The above information has been reviewed in respect of each qualifying feature and potential development effect/impact pathway to inform an assessment of any LSEs.

3.3.5 Potential impacts considered are:

- Areas where there would be land take and habitat removal for the works (including functionally linked land/habitats)
- Areas where there is a risk of altering the hydrodynamic regime or a reduction in water quality
- Areas where there is a risk of an increase in air, noise, vibration and light pollution
- Areas where there is physical disturbance to international designated sites and/or their designated interest features

¹⁴ Highways England (2019) Design Manual for Roads and Bridges (DMRB) LA 105 'Air quality' (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15). Revision 0. [online] available at: <https://standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90> (Last accessed December 2023).

¹⁵ Highways England (2020) Design Manual for Roads and Bridges (DMRB) LA 113 'Road drainage and the water environment' (formerly HD 45/09). Revision 1. [online] available at: <https://standardsforhighways.co.uk/search/d6388f5f-2694-4986-ac46-b17b62c21727> (Last accessed December 2023).

- 3.3.6 In line with relevant case law^{16 17 18}, this assessment has been undertaken in the absence of mitigation (including measures embedded into the Scheme where these are intended for the avoidance of effects upon a designated site).

3.4 In-combination assessment methodology

- 3.4.1 A review of the following resources has been undertaken to identify projects or plans which could result in a LSE(s) upon any European Sites, in-combination with the Scheme:
- On-shore NSIPs and proposed NSIPs within the 'Yorkshire and the Humber' and 'East Midlands' regions (as listed on the Planning Inspectorate website),¹⁹ where potential effects upon the European Sites listed in Section 4 were identified by the appropriate consultant, Natural England and/or the Competent Authority.
 - Projects or plans within the Newark & Sherwood District, located within 2 kilometres of the River Trent.
 - Projects or plans within 2 kilometres of the Humber Estuary SAC/Ramsar.
- 3.4.2 Planning applications within East Lindsey District Council are not included within the in-combination assessment. The East Lindsey District Planning portal does not offer a 'map search' function, nor an option search for applications subject to a HRA. As such, it was considered impractical to undertake a manual search of all planning applications within the East Lindsey District. The East Lindsey District Council boundary is located 34 kilometres north-east of the Scheme and the location of projects which would have been considered within the in-combination assessment are over 70 kilometres from the Scheme. This limitation is discussed further in Section 5 of this report.
- 3.4.3 A thorough search of each relevant local planning portal was searched for projects and plans which could impact upon the European Sites in-combination with the Scheme as far as practicably possible. This search was reliant on the proper working of these portals, lying outside the control of the assessing ecologist.
- 3.4.4 Other than the reference to East Lindsey District Council above, the assessing ecologists are not aware of any further issues or

¹⁶ Landelijke Vereniging tot Behoud van de Waddenzee case/ Nederlandse Vereniging tot Bescherming van Vogels, European Court of Justice, Case C-127/02 'Waddenzee 2002'.

¹⁷ Sweetman et al v An Bord Pleanála, European Court of Justice, Case C-258/11 'Sweetman 2011'.

¹⁸ People over Wind/Sweetman v Coillte Teorante, European Court of Justice Case C-323/17 'People over Wind 2017'.

¹⁹ Planning Inspectorate (2023) National Infrastructure Planning [online]/ Available at: <https://infrastructure.planninginspectorate.gov.uk/> (Lasted accessed December 2023).

restrictions to the identification of projects and plans for the in-combination assessment.

3.5 Appropriate Assessment (Stage 2) Methodology

- 3.5.1 Where a plan or project is likely to, or has the potential to, give rise to LSEs upon a European Site, an assessment must be made of the implications on the integrity of that site in view of that site's structure, function and conservation objectives and taking into account any site-specific supplementary advice or site improvement plan.
- 3.5.2 Where mitigation measures are to be applied to eliminate or reduce any effects identified in screening, these may be considered within the AA stage. Potential effects on site integrity may be direct or indirect and are dependent on the relationship between the source (proposed options' actions) and the receptor (the qualifying features of the European Site(s)). The significance of an impact is relative to the sensitivity, existing condition and conservation status of the qualifying features of the site and the scale of the impact in space and time.
- 3.5.3 Potential effects on the integrity of the European Site(s) would be evaluated with respect to the scale, extent and nature of the impact, for example the area of habitat affected, changes in hydrodynamics, potential changes in species distribution, and the duration of the impact.
- 3.5.4 Further to the HRA Stage 1 screening assessment, the HRA Stage 2 AA would include the following:
- A review of the sites identified at Stage 1 and confirm any additions or exclusions.
 - Identification of the aspects of the Scheme that may significantly impact the conservation objectives of the European Site(s).

3.6 Consultation to date

- 3.6.1 As discussed in Section 1 of this report, the Scheme is classified as a NSIP and a DCO application is required, which is supported by an Environment Statement (ES) (**TR010065/PP/6.1**). Regulation 10(1) of the EIA Regulations allows a person who proposes to make an application for an order granting development consent to ask the Secretary of State to state in writing its opinion as to the scope and level of detail of the information to be provided in the ES. The scoping process is undertaken by the Planning Inspectorate on behalf of the Secretary of State. An Environmental Scoping Report²⁰ was produced

²⁰ National Highways (September 2022) A46 Newark Bypass Environmental Scoping Report [online] available at: [TR010065-000002-A46N - Scoping Report.pdf \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk/tr010065-000002-A46N-Scoping-Report.pdf) (Last accessed December 2023).

for the Scheme and submitted to the Inspectorate in September 2022. The Scoping Opinion (**TR010065/APP/6.10**) was received from the Inspectorate on 21 October 2022.

- 3.6.2 As part of the Scoping Opinion, Newark & Sherwood District Council confirmed their acceptance of the HRA approach detailed within the Scoping Report. The approach detailed in the Scoping Report requires the assessment of the Scheme in accordance with the following sources and with all receptors (designated sites, habitats and species) scoped-in to the assessment:
- DMRB LA 108 Biodiversity²¹ and LA 115 Habitats Regulations assessment⁷.
 - Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK; and,
 - CIEEM Sources of Survey Methods²² (now withdrawn).
- 3.6.3 The approach detailed in 3.6.2 has been followed within this assessment. CIEEM Sources of Survey Methods has since been superseded by the CIEEM Good Practice Guidance for Habitats and Species²³ which has been used instead.
- 3.6.4 A technical note issued to Natural England at the option selection stage of the Scheme²⁴, identified no European Sites meeting the screening criteria. Natural England raised comments on this earlier assessment in relation to assessing whether there could be in-combination effects on European Sites from changes in air quality and therefore, an initial review of a regional traffic model (including other committed development) was used to inform a review of changes in air quality associated with the Affected Road Network (ARN) for the design at the earlier stage. No European Sites were found to be present within 200 metres of the ARN but it was stated within the technical note that once the preferred route and commencement of Preliminary Design stage of the Scheme was underway, analysis of expected traffic changes on modelled roads within 200 metres of European Sites would be carried out. It was agreed that at this point, where required, a comprehensive review of other plans and projects that may be relevant to an in-combination assessment would be undertaken. Now that a preferred route option is available, analysis of the potential effects of air pollution upon relevant European Sites has been included within this report.

²¹ National Highways (2020) DMRB LA 108 – Biodiversity. Revision 1 [online] available at: <https://www.standardsforhighways.co.uk/search/af0517ba-14d2-4a52-aa6d-1b21ba05b465> (Last accessed December 2023).

²² Chartered Institute of Ecology and Environmental Management (CIEEM) (2016) Sources of Survey Methods (SoSM) [online – now withdrawn].

²³ Chartered Institute of Ecology and Environmental Management (CIEEM) (2021) Good Practice Guidance for Habitats and Species [online]. Available at: [Good-Practice-Guide-2023-edit.pdf \(cieem.net\)](#) (Last accessed December 2023).

²⁴ Regional Investment Programme A46 Newark Northern Bypass PCF Stage 2 Habitats Regulations Assessment 27/04/21, Ref: HE551478-ATK-EBD-XX-RP-LE-000002.

3.6.5 Comments provided by Natural England as part of the Scoping Opinion (dated 10 October 2022)²⁵ stated:

“The A46 Newark Bypass NSIP is unlikely to adversely impact any European or internationally designated nature conservation sites or nationally designated sites and has not triggered an Impact Risk Zone.”

No further comments were provided by Natural England in the Scoping Opinion with regards to HRA.

3.6.6 To support the DCO Application process, Statutory Consultation was undertaken for the Scheme between October and December 2022. A Preliminary Environmental Information Report (PEIR)²⁶ and a non-technical summary (NTS)²⁷ of the PEIR were published for statutory consultation and were available for both prescribed consultees and the general public to comment on. Further details on the statutory consultation undertaken can be found in the Consultation Report **(TR010065/APP/5.1)** and the Consultation Report Annexes **(TR010065/PP/5.2)**.

3.6.7 Comments provided by Natural England as part of their statutory consultation response (dated 12 December 2022) in relation to the Sherwood ppSPA stated:

“Natural England would welcome the opportunity to review the Affected Road Network used to scope the assessment of impacts from traffic emissions. This is likely to be submitted with the ES and will provide greater understanding of what designated sites could be impacted by the proposed scheme. Natural England agree with the assessment methodology section however the study area does indicate that impacts to the habitat that supports populations of nightjar and/or woodlark present in the Sherwood Forest area will be considered, although the PEIR does state that an updated ARN will be used to produce the ES. Nightjar and Woodlark present in Sherwood are estimated to be nationally significant according to surveys in 2004 and 2006, impacts to habitat as a result of atmospheric pollutions generated during the construction and/or the operational phase may need to be considered in line with the Birds Directive.²⁸”

²⁵ Natural England (2022) *Environmental Impact Assessment Scoping consultation under Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulation 11, Proposal: Scoping consultation for Environmental Statement, Location: A46 Newark Bypass* [online] Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010065/TR010065-000029-Natural%20England.pdf> (Last accessed December 2023).

²⁶ National Highways (2022). Preliminary Environmental Information Report [online] available at: [Preliminary Environmental Information Volume 1 Main Report.pdf \(citizenspace.com\)](#) (Last accessed December 2023).

²⁷ National Highways (2022). Non-Technical Summary [online] available at: [Preliminary Environmental Information Volume 3 NonTechnical Summary.pdf \(citizenspace.com\)](#) (Last accessed December 2023).

²⁸ Natural England (2022), Natural England's comments in respect of A46 Newark Bypass, promoted by National Highways.

- 3.6.8 Consideration of the potential for effects upon the Sherwood Forest ppSPA (indicative ppSPA boundary located approximately 17 kilometres west of the Scheme) has therefore been included within this report. While the status of the Sherwood Forest ppSPA remains unconfirmed, no defined boundary exists for the site. As such, the assumed boundary for the purposes of the assessment comprises the Important/Core Areas shown in Appendix E, as recommended by the relevant Natural England advice note²⁹. This assessment has used the updated ARN to assess the impacts of atmospheric pollutants on designated sites during operation.
- 3.6.9 Comments provided by the Environment Agency as part of their statutory consultation response in relation to the Humber Estuary SAC stated:
- “The potential flood compensation area around Kelham and Averham needs to ensure there is no detrimental impact to the river habitat as it is an incredibly important area for fish and fish spawning, including protected species such as lamprey. The Humber SAC is downstream but functionally linked as the lamprey move up river to spawn. Any change to habitat or water quality would need an HRA. It sounds however that the compensation area is most likely in the floodplain rather than works to the river itself but it this is something that will need to be considered due to the importance of the area.”
- 3.6.10 Consideration of the potential for effects upon habitats and/or water quality of the River Trent, which acts as a functionally linked habitat to the Humber Estuary SAC and Ramsar (which also cites lamprey), has therefore been included within this report.
- 3.6.11 A meeting with Natural England was held 3 May 2023, to provide feedback on the results of the ‘Report to inform HRA’. Natural England have raised no objections to the methodology, mitigation and results of Stages 1 and 2 of the HRA process presented to them.
- 3.6.12 A meeting with the Environment Agency was held 5 May 2023 to provide feedback on the results of the ‘Report to inform HRA’. As above, the methodology, mitigation and results of Stages 1 and 2 of the HRA process were presented. Advice was provided by the Environment Agency on seasonality of fish breeding and migration in the River Trent and the natural re-profiling of ditches.
- 3.6.13 A further meeting with the Environment Agency on 20 June 2023 involved discussions regarding the requirement for works near a main river. This included discussions relating to the inclusion of fish escape passages within the Farndon East FCA wetland design (now relevant to Farndon West FCA). Outcomes of the discussion included a confirmed Environment Agency preference for more ‘natural’ channel

²⁹ Natural England (2014) *Advice Note to Local Planning Authorities regarding the consideration of likely effects on the breeding population of nightjar and woodlark in the Sherwood Forest region*. [online] available at: [Natural England's Advice Notes on the Sherwood ppSPA \(mansfield.gov.uk\)](https://www.naturalengland.org.uk/Advice-Notes-on-the-Sherwood-ppSPA) (Last accessed December 2023).

profiles for the proposed fish escapes (to reflect the location of these features lower in the river catchment and to offer great biodiversity interest) and for all pools/ponds to be connected back to the River Trent (to avoid entrapment of fish during flood events).

- 3.6.14 Continued discussions are being held with the Environment Agency and will draw on shared knowledge and lessons learned from previous schemes to inform the implementation of mitigation measures into the detailed design. Proposed mitigation measures associated with the protection of the Humber Estuary Ramsar/SAC and/or lamprey are common practice and do not require any untested or bespoke methods. The Environment Agency (Fisheries, Biodiversity and Geomorphology teams) have raised no objections to these proposed mitigation measures or the initial Farndon East wetland area design (which is now to be implemented in Farndon West FCA), including the provision of fish escape passages into the River Trent. Following consultation with the Environment Agency, the specific number, location and design of fish escape passages will be finalised during detailed design and the proposals will be tested in the fluvial hydraulic model to assess the potential impact to receptors.

4 Screening (Stage 1)

4.1 Identification of European Sites

- 4.1.1 A search for European Sites using the criteria outlined in the methodology identified the following:
- 4.1.2 There are no European Sites within 2 kilometres of the Scheme.
- 4.1.3 There are no European Sites where bats are a qualifying feature within 30 kilometres of the Scheme.
- 4.1.4 There are no European Sites that are hydrologically connected within 1 kilometre of the Scheme.
- 4.1.5 There are no European Sites within 200 metres of the Scheme's air quality Affected Road Network (ARN).
- 4.1.6 There are no European Sites containing GWDTEs which have groundwater hydrological and hydrogeological connectivity within 1 kilometre of the Scheme
- 4.1.7 The absence of any European Sites meeting the above criteria from within these search zones are illustrated within Appendix B and Appendix C.
- 4.1.8 Three European Sites were identified with hydrological connectivity (functionally linked land) to the site (via the River Trent) and the information is listed in the Table 4-1 below (citations provided within Appendix D). As such, the Humber Estuary SAC and Ramsar site have been scoped into this assessment.

Table 4-1: European Sites identified using search criteria

Designated Site	Designation criteria	Conservation objectives	Distance
The Humber Estuary SAC	Annex I habitats including estuaries (1130) and mudflats and sandflats not covered by seawater at low tide (1140) are the primary reason for selection of this site. Annex II fish species (river lamprey <i>Lampetra fluviatilis</i> and sea lamprey <i>Petromyzon marinus</i>) are a qualifying feature and the River Trent could be used by breeding and migrating lamprey.	Ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the Favorable Conservation Status of its Qualifying Features, by maintaining or restoring: <ul style="list-style-type: none"> 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 	53 kilometres directly between the Order Limits and the European Sites and 75 kilometres via the channel of the River Trent.

Designated Site	Designation criteria	Conservation objectives	Distance
		habitats and habitats of qualifying species rely; <ul style="list-style-type: none"> ○ The populations of qualifying species; and ○ The distribution of qualifying species within the site. 	
The Humber Estuary Ramsar	The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. Fish species (river lamprey <i>Lampetra fluviatilis</i> and sea lamprey <i>Petromyzon marinus</i>) are a qualifying feature and the River Trent could be used by breeding and migrating lamprey.	N/A	
The Humber Estuary SPA	The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds in any season. In the non-breeding season, the area regularly supports 153,934 individual waterbirds	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: <ul style="list-style-type: none"> ○ 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 	63 kilometres directly between the Order Limits and the European Sites and 88 kilometres via the channel of the River Trent.

4.1.9 The Humber Estuary SAC and Ramsar have been scoped into this assessment for potential impacts on breeding and migrating lamprey.

4.1.10 Given the distance of the SAC/Ramsar from the Order Limits (53 kilometres directly between the Order Limits and the European Sites and 75 kilometres via the channel of the River Trent), the potential for impacts upon habitats cited under the SAC and Ramsar designations and for impacts upon all of the other qualifying species (grey seal *Halichoerus grypus*, various bird species and the non-breeding waterfowl assemblage) has been scoped out. The Humber Estuary SPA, designated for various bird species and the non-breeding waterfowl assemblage, has been scoped out for the same reason.

4.1.11 The indicative boundary for the Sherwood Forest ppSPA is located approximately 17 kilometres from the Scheme and over 200 meters from the ARN. As such, Sherwood ppSPA is considered unlikely to be directly impacted by the Scheme or by any changes to local air quality (typically considered to be within 200 metres or a road/the ARN, with reference to the DMRB LA 105). Furthermore, habitats within and adjacent to the Scheme area are considered to be largely unsuitable for the species which may form qualifying features of Sherwood Forest ppSPA (woodlark *Lullula arborea* and nightjar *Caprimulgus europaeus*), with suitable habitats restricted to small areas. No records of either woodlark or nightjar were returned within 2 kilometres of the Scheme by the local record centre and no observations of these species were made during breeding bird and wintering bird surveys. Further details are provided in Appendix 8.5 (Breeding Bird Technical Report) and Appendix 8.6 (Wintering Bird Technical Report) of the ES Appendices (**TR010065/APP/6.3**). The potential for impacts upon woodlark and nightjar, which may form qualifying features of Sherwood Forest ppSPA, have therefore been scoped out of this assessment.

4.2 Assessment of likely significant effects

- 4.2.1 The following Screening (Stage 1) information has been produced to assess the potential effects resulting from the construction and operation of the Scheme and to identify any LSEs on the Humber Estuary SAC/Ramsar and lamprey qualifying features. The screening exercise is based upon the tabular format provided within Design Manual for Roads and Bridges (DMRB) LA 115.⁷
- 4.2.2 The assessment includes an appraisal of the effects of any other plans or projects which, in-combination with the proposed development, might be likely to have a significant effect on the European Sites (Table 4-2).
- 4.2.3 Within the Screening (Stage 1), only general embedded mitigation for the Scheme (i.e., measures not directly adopted to mitigate impacts upon the SAC/Ramsar) have been included.

4.3 Assessment of in-combination effects

- 4.3.1 Please refer to the 'In-combination effects' section of Table 4-2 below for details of the projects or plans considered for in-combination effects and the relevant impact pathways for each project/plan.

Table 4-2: Stage 1 HRA screening matrix Humber Estuary SAC/Ramsar

Scheme		A46 Newark Bypass
European Site under consideration		Humber Estuary SAC/Ramsar
Date: June 2023	Author: JS	Verified: BC
Description of Scheme: Refer to Section 2.		
Describe any likely direct, indirect or secondary impacts of the Scheme (either alone or in-combination with other plans or projects) on the European Site by virtue of:		
Size and scale (road type and probable traffic volume)	<p>The Scheme description is provided in Section 2.</p> <p>During construction, traffic flows would increase due to the movement of works and staff vehicles. There would be a maximum of 131 two-way heavy-duty vehicle (HDV) annual average daily traffic (AADT) movements associated with the construction phase, on Winthorpe Road off the A46 northbound. Other roads would also experience temporary increases and decreases in traffic flows due to temporary traffic management (e.g., road closures and segregation of routes). The initial construction year would see the largest number of construction vehicle movement, followed by year two. Movements in years three and four would be 10%, or less, of the total number of construction vehicle movements along any given route.</p> <p>During operation, traffic flows are forecast to increase along the A46 due to the increased capacity, with increases of between 11,800 to 13,100 AADT between Farndon Roundabout and Brownhills Roundabout. Increased operational traffic flows are also forecast along the A17-A46-A617 route, with A17 increases of between 2,300 – 5,600 AADT; A46 increases between the Brownhills and Cattle Market roundabouts of 11,800 AADT; and A617 increases of 1,300 AADT. Reduced operational flows are forecast between the Friendly Farmer and Brownhills roundabout (-21,400 AADT) along the A1 east of Newark-on-Trent (-400 to -1,500 AADT), Newark Southern Link Road (-1,600 AADT) and along B-roads though Newark-on-Trent (-400 to -4,700 AADT). Refer to Appendix F for the traffic flow scenario figures for both 2028 and 2043.</p> <p>Increased traffic flows could local air quality within proximity of the ARN; however, the SAC/Ramsar is located 53 kilometres from the Scheme, far outside of the typical impact zone for air pollution (typically 200 metres, with reference to DMRB LA 105).</p>	
Land take	No permanent or temporary land take would be required from the SAC/Ramsar boundary.	
Distance from the European Site or key	At the closest point, the Order Limits are located 53 kilometres south from the boundary of the SAC /	

Scheme	A46 Newark Bypass
<p>features of the site (from edge of the Scheme assessment corridor)</p>	<p>Ramsar (75 kilometres downstream via the channel of the River Trent).</p> <p>The River Trent is functionally linked to the Humber Estuary SAC/Ramsar and could be used by lamprey species for breeding. The nearest known record of lamprey species (as available via NBN Atlas³⁰) is for river lamprey, located near the British Sugar Factory in 1999³¹ (within 250 metres of the Order Limits, assumed north of the Order Limits but this is unclear due to poor spatial resolution of the record). The most recent record of a lamprey species is for river lamprey in 2009,³² located 5 kilometres from the Scheme. No records of sea lamprey were provided by NBN Atlas within 10 kilometres of the Scheme and no records of lamprey species were provided by the Local Ecological Records Centre within 2 kilometres of the Scheme.</p> <p>Construction of a new viaduct structure adjacent to the existing Windmill Viaduct would include the extension of existing sheet piling along the riverbank (40 metres) and the creation of new foundations (no construction required within the river) for the new viaduct spans. Construction of a new viaduct structure adjacent to Nether Lock would also require piling for the creation of new foundations (no construction required within the river) for the new viaduct spans. Embedded mitigation measures for these works in close proximity to the River Trent include the installation of silt fencing and protective fencing along boundary of worksite and the waterway, to prevent pollution (e.g., sediment or building materials).</p> <p>The Environment Agency raised concerns associated with the potential impacts upon fish/fish spawning/fish migration, particularly protected species such as lamprey. Suitable habitat for lamprey spawning is likely to be present both up and down stream of the Scheme, with lamprey migrating upstream (through the Scheme area) to spawning ground. Lamprey migrate upstream during the night-time hours and seek refuge during the daytime. With piling works to be undertaken during the day, it is unlikely that migrating lamprey (during the night) would be subject to negative impacts and therefore,</p>

³⁰ NBN Atlas [online]. Available at: <https://nbnatlas.org/> (Last accessed December 2023).

³¹ Made available by the Environment Agency by Open Government Licence [online]. Available at: <https://records.nbnatlas.org/occurrences/d86713c1-20e2-411c-9f72-6aec69f196b0> (Last accessed December 2023).

³² Made available by the Environment Agency by Open Government Licence [online]. Available at: <https://records.nbnatlas.org/occurrences/4da6018d-c69e-40f9-83b8-d7b8e491585e> (last accessed December 2023).

Scheme	A46 Newark Bypass
	<p>negative impacts on the population associated with the SAC/Ramsar is also considered unlikely. Whilst lamprey are a low hearing sensitivity fish species, some disturbance would be encountered during the day, which could disturb resting adult lamprey (seeking refuge) and larval lamprey within fine sediment beds (if present). This impact is considered to be localised (to areas within proximity of Windmill Viaduct and Nether Lock Viaduct) and temporary, with lamprey (and other fish) likely relocating to other suitable refuges/habitat in adjacent areas. With regards to potential impacts upon spawning lamprey, the river areas within proximity of the proposed piling works are considered to be sub-optimal for lamprey spawning, due to the slow water flow and no favourable areas for spawning observed within or adjacent to these areas.</p> <p>No impacts upon the SAC/Ramsar would arise as a result of the proximity of works associated with the Scheme. Whilst a temporary and localised impact would occur along the functionally linked River Trent as a result of piling works, this would not alter the potential functionality of the River Trent as a lamprey migratory corridor and is unlikely to prevent lamprey from breeding/impact upon the lamprey population.</p>
<p>Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts)</p>	<p>No resources would be taken from, or in close proximity to, the boundary of the SAC/Ramsar. However, use of the River Trent (functionally linked habitat to the SAC/Ramsar) and the associated Old Trent Dyke is proposed to facilitate water runoff.</p> <p>The following general embedded mitigation measures have been designed into the Scheme:</p> <ul style="list-style-type: none"> • The design of river crossings has considered the interaction of the Scheme with the River Trent and other watercourses, including bed and bank substrate, to minimise the impact on fluvial systems where safe and practical to do so. • Where possible, the design would incorporate drainage into existing infrastructure such as outfalls, swales/ditches and culverted pipes. This would minimise the loss and damage to riparian and aquatic habitat, including disturbance of sediments and therefore reduce impacts to spawning fish. Where this is not possible, the absence of this measure is not considered to form a pathway for potential impacts upon the SAC/Ramsar. • Standard measures to prevent pollution would also be adopted, such as the use of silt fencing, cut-off drains, and baffles at discharge location.
<p>Emissions (e.g., polluted surface water runoff - both soluble and insoluble pollutants, atmospheric pollution)</p>	<p>Pollution (in general) and to groundwater sources are referenced as a vulnerability of the SAC/Ramsar within the citation documentation.</p> <p>Emissions considered relevant to this assessment are; air pollution from construction and operational</p>

Scheme	A46 Newark Bypass
	<p>vehicle movements, road runoff discharges and artificial lighting.</p> <p>Construction activities are likely to cause a localised and temporary reduction in air quality due to emissions from construction vehicles and localised congestion.</p> <p>Reduction in air quality is usually localised (to 200 metres) and given the distance of the SAC / Ramsar from the Order Limits (53 kilometres), no impacts upon the SAC / Ramsar as a result or air quality changes associated with the Scheme are anticipated.</p> <p>The Scheme design includes operational road runoff discharges into the River Trent and Old Trent Dyke; however, the following has been designed within the Scheme as general embedded mitigation measures:</p> <ul style="list-style-type: none"> • Prior to discharge into the Dyke/River, runoff from the Scheme would pass through swales and discharge into forebays, followed by attenuation basins, before then entering the watercourses (via controlled outflow). This system would function to settle out and filter any sediments, hydrocarbons, dissolved metals and contaminants (such as engine oil, brake fluids and antifreeze) that may be contained in the water. • Silt curtains would be used to reduce sediment deposition into the fluvial system. • Where technically feasible Sustainable Drainage Systems (SuDS) have been implemented to effectively manage pollution risk associated with road runoff. <p>The installation of bridge beams for the Nether Lock Viaduct and Windmill Viaduct would be undertaken during the night-time hours over a period of approximately two-weeks for each viaduct, to minimise the impact upon road and rail travel. This will require artificial task lighting which could result in artificial light spill upon the River Trent, potentially preventing night-time movement of lamprey.</p> <p>Artificial lighting, a mixture of static and task lighting, would be required to facilitate a safe working environment during night-time works for bridge beam installation. These works are to run for four consecutive working weeks (Monday to Friday) (two weeks per viaduct). Whilst embedded mitigation includes for directional lighting to “minimise light spill onto retained habitats”, this maintains a degree of uncertainty as to whether artificial light spill, albeit minimised, creates a ‘barrier’ of light across the width of the River Trent.</p> <p>The presence of artificial lighting could result in a barrier effect upon migrating and breeding lamprey, potentially preventing movement of lamprey during the night-time hours and in turn impacting upon the</p>

Scheme	A46 Newark Bypass
	<p>population size lamprey associated with the SAC/Ramsar.</p> <p>For the most part, no impacts on the SAC/Ramsar, or the qualifying features, are predicted as a direct or indirect result of emissions during construction and operational of the Scheme. However, the potential for artificial lighting spill during night-time bridge beam installation works remains and could present a barrier to movement of migrating lamprey and therefore at this stage a LSE cannot reasonably be discounted.</p>
<p>Excavation requirements (e.g., impacts of local hydrogeology)</p>	<p>Excavation would be required to create three new floodplain compensation areas (Kelham and Averham FCA, Farndon West FCA and Farndon East FCA), to mitigate for the loss of existing floodplain. These works would primarily be land-based works and whilst a small number of connections would need to be made to the existing watercourse network, no major works to the River Trent itself would be required. Excavated material from the Farndon East FCA, Farndon West FCA and Brownhills Borrow Pit would provide the structural fill to the widened embankments of the A46, therefore reducing the need to send material to landfill and import material from other locations. General excavation would also be required for embankment widening along the route of the Scheme.</p> <p>The Environment Agency raised concerns associated with the potential impacts upon fish/fish spawning/fish migration, particularly protected species such as lamprey. In the absence of mitigation, lamprey individuals could become trapped in Farndon East FCA and Farndon West FCA (due to the creation of deep pools at this site) when flood waters retreat, should flood events occur during the lamprey migration/breeding period and should lamprey be using the River Trent as a migratory route. This could therefore have a negative impact upon the population density of lamprey associated with the SAC/Ramsar.</p>
<p>Transportation requirements</p>	<p>Transportation of materials, site operatives and machinery would be required to facilitate construction works. This may result in increased congestion of routes within the Order Limits, as a result of additional vehicle movements and traffic management. Given the distance of the Scheme from the SAC/Ramsar, increased congestion of routes within and around the Order Limits is not considered to result in any potential pathways for LSE upon the SAC/Ramsar.</p> <p>For construction of the new Windmill Viaduct and Nether Lock Viaduct, a safety boat would be deployed in the River Trent during works above the River. This would include the use of a safety boat during the night-time hours. The boat would remain moored in-place and manned during the deck construction works, ready to mobilise should it be required to respond to an incident. The boat would not be constantly running or moving. It is not anticipated that this safety boat use would result in a</p>

Scheme	A46 Newark Bypass
	significant increase in boat movements, which could result in increased physical and noise disturbance upon lamprey.
Duration of construction, operation, etc	<p>Construction is currently programmed to commence in June 2025 (pre-commencement works), with main construction works beginning in August 2025. The anticipated completed date is November 2028.</p> <p>Whilst works (including piling works) may overlap with the lamprey migratory and spawning season, piling works will be undertaken during the daytime, which will avoid the migration of lamprey during the night-time hours. Whilst daytime piling works could result in disturbance of resting lamprey and any larval lamprey within suitable sediments (if present), these works will be temporary and localised, with fish species likely relocated to suitable habitat in adjacent areas. Given the absence of favourable areas for spawning observed within areas adjacent to piling works (as detailed earlier in this table under 'Distance from the European Site or key features of the site'), impacts upon spawning lamprey are considered unlikely.</p>
Description of avoidance and/or mitigation measures, including information on:	
Nature of proposals	<p>General embedded measures are incorporated into the Scheme to prevent, avoid and reduce the effects of the Scheme. These include protocols to prevent pollution of the fluvial system and prevent/reduce loss or disturbance of fluvial habitats, which are also considered relevant to this assessment.</p> <p>Best practice measures would also be employed during construction to avoid or reduce the impacts of the Scheme upon the fluvial system.</p> <p>The requirement for additional mitigation to combat possible LSEs has been identified within the boxes 'Emissions' (potential severance of lamprey migratory routes through artificial light spill) and 'Excavations Requirements' (potential entrapment or isolation of lamprey) and these will be addressed in the Appropriate Assessment (Stage 2), detailed in Section 5.</p>
Location	Measures would be provided throughout the extent of the Order Limits during construction and operation; however, these are largely associated with the River Trent (including Nether Lock and Windmill Viaduct) and adjacent habitats/works areas (e.g., Farndon East FCA, Farndon West FCA and drainage routes to the River Trent).
Evidence for effectiveness	The measures proposed are commonly used and implemented on similar road schemes, where the effectiveness of these measures has been proven.

Scheme	A46 Newark Bypass
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	Measures would be secured and delivered through the powers and requirements contained within the draft DCO (TR010065/APP/3.1).
Characteristics of European Site	
A brief description of the European Site to be produced, including information on:	
Name of European Site and its EU code	Humber Estuary SAC (UK0030170)/Ramsar (UK11031)
Location and distance of the European Site from the proposed works	Located 53 kilometres north of the Scheme (75 kilometres via the channel of the River Trent).
European Site size	36,657.15 hectares/37987.8 hectares
Key features of the European Site including the primary reasons for selection and any other qualifying interests	<p>Humber Estuary SAC</p> <p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Estuaries • Mudflats and sandflats not covered by seawater at low tide <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time • Coastal lagoons • Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) • Embryonic shifting dunes • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) • Fixed coastal dunes with herbaceous vegetation (grey dunes) • Dunes with <i>Hippopha rhamnoides</i> <p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Not applicable <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Sea lamprey <i>Petromyzon marinus</i> • River lamprey <i>Lampetra fluviatilis</i> • Grey seal

Scheme	A46 Newark Bypass
	<p>Humber Estuary Ramsar</p> <p>Criterion 1</p> <ul style="list-style-type: none"> • Representative example of near natural estuary <p>Criterion 3</p> <ul style="list-style-type: none"> • Breeding colony of grey seals <p>Criterion 5</p> <ul style="list-style-type: none"> • Assemblages of non-breeding waterfowl <p>Criterion 6</p> <ul style="list-style-type: none"> • Internationally important populations of red knot <i>Calidris canutus</i> (breeding and non-breeding), common shelduck <i>Tadorna tadorna</i> (non-breeding), dunlin <i>Calidris alpina</i> breeding and non-breeding, black-tailed godwit <i>Limosa limosa</i>, redshank <i>Tringa totanus</i> (non-breeding), and bar-tailed godwit <i>Limosa lapponica</i> (breeding) <p>Criterion 8</p> <ul style="list-style-type: none"> • River lamprey • Sea lamprey
<p>Vulnerability of the European Site - any information available from the standard data forms on potential effect pathways</p>	<ul style="list-style-type: none"> • Changes in abiotic conditions • Industrial or commercial areas • Human induced changes in hydraulic conditions • Pollution in general and to groundwater (point sources and diffuse sources) • Abiotic (slow) natural processes • Disturbance to vegetation • Vegetation succession • Water diversion • Recreation • Coastal squeeze
<p>European Site conservation objectives</p>	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats

Scheme	A46 Newark Bypass
	<ul style="list-style-type: none"> • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site
Assessment criteria	
Describe the individual elements of the Scheme (either alone or in-combination with other plans or projects) likely to give rise to impacts on the European Site.	
<p>The Scheme risks potential impacts upon river and sea lamprey within the River Trent, which acts as functionally linked land to the Humber Estuary SAC/Ramsar.</p> <p>Artificial light spill during night-time works, to facilitate a safe working environment for bridge beam installation, risks potentially creating a barrier effect and preventing or restricting the migration of lamprey.</p> <p>Flooding of the Farndon East FCA and Farndon West FCA could result in the entrapment or isolation of lamprey individuals and prevent these individuals from migrating/breeding.</p> <p>Daytime piling works are considered unlikely to negatively impact upon migrating lamprey; however, a de-minimis level impact upon resting lamprey or larval lamprey (if present) could be encountered.</p> <p>In-combination effects from on-shore NSIPs, proposed NSIPs and other projects and plans could be encountered in association with these three impacts.</p> <p>Given the distance of the SAC/Ramsar from the Order Limits (53 kilometres directly between the Order Limits and the European Sites or 75 kilometres via the channel of the River Trent), the potential for impacts upon habitats cited under the SAC and Ramsar designations for the other qualifying species (grey seal, various bird species and the non-breeding waterfowl assemblage) has been scoped out.</p>	
Initial assessment	
The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:	

Scheme	A46 Newark Bypass
Reduction of habitat area	<p>No impact.</p> <p>There would be no land take from the SAC or Ramsar boundaries, nor any functional land (suitable for qualifying species) attributed to the SAC/Ramsar.</p>
Disturbance to key species	<p>De-minimis level impact.</p> <p>Piling works associated with the Scheme are considered unlikely to impact upon migrating lamprey; however, temporary and localised disturbance of resting and larval lamprey (if present) is possible.</p> <p>Artificial light spill associated with night-time bridge works risks creating a temporary 'barrier' to lamprey migration.</p>
Habitat or species fragmentation	<p>No temporary or permanent physical barriers to movement of lamprey would be created as a result of the Scheme; however, artificial light spill associated with night-time bridge works does risk creating a temporary and localised 'barrier' to lamprey migration.</p> <p>The Farndon East FCA and Farndon West FCA could trap lamprey individuals as flood waters recede, should flood events be encountered during the lamprey migration (November – May, inclusive) and breeding season, (March to May, inclusive).</p>
Reduction in species density	<p>Prevention of lamprey migration (via artificial light spill barriers or entrapment of individuals within the Farndon East FCA and Farndon West FCA) could impact upon species density of the lamprey populations associated with the SAC/Ramsar. However, artificial light use would be temporary, only encountered during bridge beam installation.</p>
Changes in key indicators of conservation value (e.g., water quality)	<p>Due to the distance of the SAC/Ramsar from the Order Limits and the embedded mitigation measures within the Scheme, it is not considered that the Scheme would result in adverse changes to key indicators or reduce the conservation value of the SAC/Ramsar.</p>
Climate change	<p>Climate change could impact upon habitats within the SAC/Ramsar due to changes in temperature and rainfall, for example.</p> <p>Whilst an overall increase in vehicle movements is anticipated within the operational Scheme, the works aim to reduce congestion (and idling vehicles) and enable more consistent traffic speeds and smoother journey conditions to be achieved, thereby reducing pollution levels.</p> <p>At least 50% of the Scheme would also be subject to speed restrictions or reductions to 50mph, which would contribute towards reduced emissions. Furthermore, air quality is expected to improve in the future, mainly due to reduced vehicle emissions, improved abatement technology and a shift towards cleaner energy.</p>

Scheme	A46 Newark Bypass
	<p>Drainage design and the assessment of flood risk within the Scheme has allowed for the effects of climate change meaning it is not expected to change the hydraulic regime in the catchment.</p> <p>It is not considered that the Scheme would result in significant adverse impacts upon or changes to the SAC/Ramsar as a result of impacts of climate change.</p>
Describe any likely impacts on the European Site as a whole in terms of:	
Interference with the key relationships that define the structure of the site	<p>Structure is taken to correspond to the distribution and abundance of habitats that support the qualifying features of the SAC and Ramsar site.</p> <p>Due to the absence of impact pathways as a result of the Scheme, no interference with the structure of the SAC and Ramsar site is predicted.</p>
Interference with key relationships that define the function of the site	<p>Function is taken to mean the capacity of the SAC and Ramsar sites to support the species for which it is designated.</p> <p>Temporary and localised fragmentation of migratory routes (the River Trent) and the potential of isolation of lamprey individuals (within Farndon East FCA and Farndon West FCA) could impact upon the ability for these species to migrate and breed.</p>
Indicate the significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	No LSEs.
Disturbance to key species	No LSEs for the Scheme alone.
Habitat or species fragmentation	Possibility for LSEs associated with the temporary and localised fragmentation of migratory habitat (the River Trent) and the fragmentation/isolation of individual lamprey (within Farndon East FCA and Farndon West FCA).
Loss	Possibility for LSEs through the loss of lamprey individuals.
Fragmentation	No LSEs associated with fragmentation of the SAC or Ramsar sites.
Disruption	No LSEs associated with disruption of the SAC or the Ramsar sites.
Disturbance	No LSEs associated with disturbance of the SAC or the Ramsar sites.
Change to key elements of the site	No LSEs.
Describe from the above those elements of the Scheme, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	

Scheme	A46 Newark Bypass		
Scheme effects			
<p>The possible impact of noise/vibration disturbance (as a result of piling works) upon resting lamprey and larval lamprey (if present) is considered to be de-minimis and unlikely to impact upon migrating lamprey and, in isolation, the conservation objectives of the SAC/Ramsar.</p> <p>Entrapment/isolation of individuals within the Farndon East FCA and Farndon West FCA during periods of flooding is possible and sufficient uncertainty remains such that a LSE occurring cannot be discounted. Light spill during bridge beam installation could create a barrier to lamprey migration and a LSE cannot be ruled out.</p> <p>Possible impacts associated with fish entrapment/isolation, temporary fragmentation of migratory routes and noise/vibration disturbance are considered further within the assessment of in-combination effects.</p>			
In-combination effects			
<p>The potential for in-combination effects upon lamprey is detailed for each relevant Nationally Significant Infrastructure Projects (NSIP) and potential NSIP below. As detailed in Section 5, non-NSIPs have not been detailed within the below table as the potential for in-combination effects is considered unlikely.</p> <p>In-combination effects associated with noise/vibration disturbance are considered unlikely to occur, given the de-minimis level impact upon migrating lamprey within the Scheme. Whilst there is a risk of disturbance of resting lamprey or larval lamprey (if present) during the daytime, these impacts would be localised and as lamprey are a low hearing sensitivity fish species, the impacts are not considered to be significant. These works are therefore not considered likely to contravene the conservation objectives of the Humber Estuary SAC/Ramsar.</p> <p>Consideration of the potential for in-combination effects of fish entrapment/isolation and severance of migratory routes are discussed further in Section 5, owing to the sufficient uncertainty of LSEs upon lamprey.</p>			
NSIP Projects and impact pathways relevant to the in-combination assessment			
Project	Distance from SAC/Ramsar	Relevant impact pathways (to lamprey)	Scope for in-combination effects
Able Marine Energy Park and Material Change 1/Change 2	Located within SAC/Ramsar boundary	<ul style="list-style-type: none"> Noise disturbance 	Yes
Immingham Eastern Ro-Ro Terminal	Located within SAC/Ramsar boundary	<ul style="list-style-type: none"> Disturbance through noise and vibration Toxic and non-toxic contamination 	Yes
Immingham Green Energy	Located within	<ul style="list-style-type: none"> Disturbance through noise and vibration 	Yes

Scheme		A46 Newark Bypass		
Terminal	SAC/Ramsar boundary	<ul style="list-style-type: none"> Changes in water and sediment quality during operation 		
North Lincolnshire Green Energy Park	0.10 kilometres	None - lamprey screened out. Considered unlikely to be affected significantly by piling associated with the project.	No	
Viking CCS Pipeline	0.20 kilometres/1.29 kilometres	Currently at pre-application stage. No impact pathways have yet been identified as part of the application, however, destruction/disturbance of lamprey marine habitat and disturbance of individuals is possible.	Possible	
Humber Low Carbon Pipelines	0.31 kilometres	To date, only a scoping report has been submitted; however, the following potential pathway has been identified: <ul style="list-style-type: none"> Pollution of the River Ouse or Humber during construction or decommission. 	Possible	
Keadby 3 Carbon Capture Power Station	1.30 kilometres	<ul style="list-style-type: none"> Visual and noise/vibration disturbance Water quality Entrapment 	Yes	
Drax Re-power	6.00 kilometres	<ul style="list-style-type: none"> Hydrological changes (quality/flow) 	Yes	
Tween Bridge Solar Farm	6.20 kilometres	To date, only an Environmental Impact Assessment scoping report has been submitted. The scoping assessment states that statutory designated sites over 2 kilometres from the site will be 'scoped out' of the assessment. A scoping response by Natural England highlighted the potential for hydrological connection between the project site and the SAC, and for consideration to be given to potential hydrological changes and water quality.	Potential	
Drax Bioenergy with Carbon Capture and Storage Project	6.40 kilometres	Noise/vibration disturbance screened out due to distance of the SAC (6.4 kilometres) from the project site.	No	
Continental Link Multi-Purpose Interconnector	Within 9.00 kilometres	Currently at pre-application stage. No impacts pathways have yet been identified as part of the application, however, destruction/disturbance of lamprey marine habitat and disturbance of individuals is possible.	Possible	

Scheme		A46 Newark Bypass		
Non-NSIP Projects located within 2 kilometres of the Humber Estuary SAC / Ramsar and impact pathways relevant to the in-combination assessment				
Planning Reference	Local Authority	Description	Relevant impact pathways (to lamprey)	Scope for in-combination effects
18/01515/FULM	Newark & Sherwood	Hydroelectric generation plant and associated infrastructure	No disruption to migrating or foraging lamprey was anticipated after Stage 1 Screening but the following pathways were taken to Stage 2 Appropriate Assessment: <ul style="list-style-type: none"> Increased suspension of sediments in the water column Potential disruption of spawning during construction works Potential to introduce invasive species and pathogens to the site Potential harm from dewatering Potential mortality from pollution incidents Potential reduced capacity for fish passage during construction works Potential injury or mortality through downstream passage via the Kaplan turbines. 	Yes
18/02895/STPLF	East Riding of Yorkshire	Construction of a tidal flood defense	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
21/03132/STPLF		Erection of 115 dwellings and associated works	<ul style="list-style-type: none"> Water pollution Changed water chemistry 	Yes
23/00564/STPLF		Change of use for provision of two sports pitches, with associated works	<ul style="list-style-type: none"> Water pollution Changed water chemistry 	Yes
23/00101/PLF		Erection of a raised platform to site Principal Supply Point (PSP) container and	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No

Scheme		A46 Newark Bypass		
		associated infrastructure		
23/00488/PLB		Alterations to barrette including replacement of steel panels with new straps to be installed at all rib locations	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
21/03800/STVARE		10 year extension of the use of 14 wind turbines	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
22/01990/STPLFE		Construction of sub-surface cable route from Drax Power Station to Fraisthorpe Coastline	<ul style="list-style-type: none"> Water contamination 	Yes
22/02118/STPLFE		Planning Permission for the construction of a Relief Road from Thorpe Road to Station Road	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2023/233	North Lincolnshire	Planning permission for the creation of coastal grazing marsh on arable land	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2021/1359		Planning permission to construct a 10MW solar farm with associated access, landscaping and infrastructure	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2022/1482		Planning permission to erect two single-storey units with potential for sub-division to a maximum of six units, use Class B2 General Industry and B8 Storage or distribution with trade counter, parking and service area	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2021/2151		Outline planning permission for a residential development	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No

Scheme		A46 Newark Bypass		
		of up to 390 dwellings with associated infrastructure, and with appearance, landscaping, layout and scale reserved for subsequent consideration		
PA/2021/2257		Planning permission to create a lorry park with associated car parking, fencing, external lighting columns and landscaping	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2022/1482		Planning permission to erect two single-storey units with potential for sub-division to a maximum of six units, use Class B2 General Industry and B8 Storage or distribution with trade counter, parking and service area	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2023/234		Planning permission to repair and reconstruct the bullnose of the dock to improve navigation and to deepen and widen the dock to increase the time window for ship access	<ul style="list-style-type: none"> • Direct loss of intertidal habitat • Impacts to water quality • Indirect damage from construction activities • Increased suspended sediment loadinds and seabed deposition 	Yes
PA/2023/502		Full planning application for enabling works on land east of Rosper Road, Killingholme	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
PA/2021/1525		Planning permission to erect a monopole manufacturing facility	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	
PA/2022/1223		Hybrid application	Potential for any LSEs upon lamprey ruled out at	

Scheme		A46 Newark Bypass			
		comprising full planning permission for the construction of a hardstanding area for external level storage with landscaping, drainage, access and associated works, and outline planning permission to erect 26,096m ² floor space for industrial/storage and distribution, (Use Class B2/Use Class B8) including ancillary offices (Use Class E)	Stage 1 Screening.		
PA/2023/422		Planning permission for the construction and operation of a post-combustion carbon capture plant	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No	
PA/2023/421		Planning permission for the construction and operation of a post-combustion carbon capture plant,	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No	
DM/0068/22/OUT	North East Lincolnshire	Outline application to erect 93 dwellings	<ul style="list-style-type: none"> Water pollution / contamination 	Yes	
DM/0696/19/FUL		Erection of 225 dwellings with access off Midfield Road and Andrew Road	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No	
DM/1109/22/FUL		Demolition and removal of all existing buildings and structures on site	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No	
DC/750/12/EMA		Local Development Order to provide outline consent for B1, B2 and B8 uses in relation to Renewables	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No	

Scheme		A46 Newark Bypass		
		Industries and particularly operations and maintenance opportunities servicing the North Sea Wind Farms		
DM/0539/23/FUL		Erection of an onshore aquaculture farm (Sui Generis) with associated water extraction and effluent discharge from and to Grimsby Docks	<ul style="list-style-type: none"> Water pollution / contamination 	Yes
DM/1022/21/FUL		Demolition of existing ambient warehouse, loading dock, coldstore 2 and maintenance garage, and erection of replacement building for B2/B8 and ancillary office floorspace under use Class E	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/1126/14/FUL		Erection of Lifeboat Station, slipway and associated works	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DC/730/07/IMM		Outline application with access and layout details for mixed B1, B2, B8 industrial park with ancillary A3, A4, A5 units	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/0105/18/FUL		Hybrid application seeking outline consent with access, landscaping and scale to be considered for the development of a 62ha Business Park	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/0099/18/FUL		Change of use from arable fields to mitigation area for a quality habitat area for	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No

Scheme		A46 Newark Bypass		
		Special Protection Area (SPA) birds		
DC/1007/11/FRE		Erection of plant/structures and ancillary equipment associated with the proposed enhanced digestion Scheme, including the demolition of 3 items of existing equipment within the sludge treatment centre	<ul style="list-style-type: none"> Water pollution / contamination 	Yes
DM/0723/17/FUL		Erection of two storey building for new custody suite, ancillary offices, store and associated car parking	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/1071/22/FUL		Rock revetment repair and reinforcement along a 4.5km section of the Humber Estuary	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/0104/16/FUL		Replacement of existing obsolete power generation equipment with new, containerised, gas engine generators, to act as a reserve generation site	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/1103/22/FUL		Proposed tyre pyrolysis plant including 20m high flue, associated buildings, treatment and storage plant and tanks	<ul style="list-style-type: none"> Water pollution Noise and vibration disturbance 	Yes
DM/0195/17/FUL		Erection of industrial building and adjoined two-storey office/control room to create power plant	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DM/0329/18/FUL		Erection of industrial building and adjoined two-storey	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No

Scheme		A46 Newark Bypass		
		office/control room to create power plant		
DC/303/07/IMM		DC/303/07/IMM S.36 Application for integrated 65MWE electricity generating station fueled by biomass processing refinery	<ul style="list-style-type: none"> Water pollution 	Yes
DM/0664/19/FUL		Development of a sustainable transport fuels facility, including various stacks up to 80m high	<ul style="list-style-type: none"> Water pollution Direct loss / damage to habitat 	Yes
DM/1070/18/FUL		Construction of an energy from waste facility of up to 49.9MWe gross capacity including emissions stack(s)	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
DC/685/11/IMM		Construction of a dissolved Acetylene manufacturing plant	Potential for any LSEs upon lamprey ruled out at Stage 1 Screening.	No
Outcome of screening stage		Sufficient uncertainty remains regarding the impacts of artificial light spill and the entrapment/isolation of lamprey individuals.		
Are the appropriate statutory environmental bodies in agreement with this conclusion?		Conclusions of this assessment have been presented to both Natural England and the Environment Agency (see section 3 of this report). However, formal acceptance of this assessment has yet to be received.		

5 Appropriate assessment (Stage 2)

5.1 Introduction

- 5.1.1 The Stage 1 screening assessment was unable to exclude the possibility of the potential for LSEs upon the Humber Estuary SAC/Ramsar. Therefore, further assessment is required at Stage 2 to assess the impact on the conservation objectives of this area. The qualifying features and conservation objectives are discussed in Table 4-1, above.
- 5.1.2 The following impacts were considered to potentially give rise to LSEs upon river lamprey and sea lamprey; qualifying species under the SAC and Ramsar designations:
- Entrapment/isolation of lamprey (Farndon East FCA and Farndon West FCA)
 - Temporary severance of migratory routes along the river for breeding (as a result of artificial light spill)
- 5.1.3 Avoidance and mitigation measures associated with these impacts are detailed in the sections below.
- 5.1.4 All other potential impacts were considered unlikely to give rise to LSEs, given the absence of pathways or the embedded mitigation/nature of the proposed works associated with the Scheme.

5.2 Entrapment/isolation of lamprey (within Farndon East and Farndon West FCA)

- 5.2.1 During the operational phase, flooding of the Farndon East FCA and Farndon West FCA could result in entrapment/isolation of lamprey individuals, should a flood event occur during the lamprey migration or breeding period.
- 5.2.2 This could contravene conservation objectives associated with maintaining the population and distribution of qualifying species of the Humber Estuary SAC/Ramsar (i.e., river and sea lamprey), and could constitute a LSE.
- 5.2.3 To mitigate for this potential LSE, fish escape passages are proposed within both the newly created Farndon East FCA and Farndon West FCA (due to the creation of deep pools at this site). For lamprey (during times of migration or breeding) and any other fish which may enter the Farndon East FCA or Farndon West FCA during flood events, these passages would provide a direct escape route back to the River Trent and prevent/reduce the risk of entrapment. The fish

escape passage design would incorporate the Environment Agency's recommendation of a naturalised shape and measure a minimum of 0.5 metres wide and 0.3 metres deep, where possible. The specific number, location and design of fish escape passages will be finalised during detailed design, and the proposals will be tested in the fluvial hydraulic model to assess the potential impact to receptors. These details are provided in Table 3-2 Register of Environmental Actions and Commitments (REAC) of the First Iteration Environmental Management Plan (EMP) (TR010065/APP/6.5). The pools within Farndon West FCA would be excavated to a maximum depth of 2-3 metres below ground level to provide stable thermal properties for the survival of fish until the next flood event, should individuals not use the fish escape passage as flood water recedes. Similarly, the lake proposed in Farndon East FCA would be excavated to a maximum depth of 4 metres.

- 5.2.4 Entrapment/isolation of lamprey within the Farndon East FCA and Farndon West FCA would only occur during the migration and breeding period for lamprey. The inclusion of these fish escape passages provides opportunities for lamprey to return to the River Trent; therefore, the potential for lamprey entrapment/isolation associated with the Scheme is considered to be sufficiently reduced and the residual impact upon lamprey considered to be negligible. As such, no LSE is anticipated with regards to lamprey entrapment/isolation within the Farndon East FCA and Farndon West FCA.

5.3 Temporary severance of migratory routes (via artificial light spill)

- 5.3.1 Artificial light spill during night-time works, to facilitate a safe working environment for bridge beam installation across four consecutive working weeks (Monday to Friday), risks potentially creating a barrier effect across the River Trent, therefore restricting or preventing the migration of lamprey. Lamprey migration season is March – May, inclusive.
- 5.3.2 Bridge beam installation is programmed to be undertaken consecutively for two weeks at each viaduct (total of four weeks) during May 2026. These works would therefore occur within the latter stages of the typical lamprey migration period and account for a third of this period. Seasonal variables in the year of construction could either delay or provide suitable conditions for early migration, or shorten or length the period of migration.
- 5.3.3 This would contravene conservation objectives associated with maintaining the population and distribution of qualifying species of the Humber Estuary SAC/Ramsar (i.e., river and sea lamprey) and the

function of the River Trent, as functionally linked habitat, to support lamprey migration. This could constitute a LSE.

- 5.3.4 Under the current works programme the bridge beam installations would be undertaken in two locations that could be bypassed by migrating lamprey by using the northern branch of the River Trent (the part of the river that passes through Kelham). With the opportunity for lamprey to use this available channel, the impacts to the lamprey as a result of the works are likely to be minimal, however, additional mitigation detailed below is considered best practice and would further lessen any impacts the artificial lighting may have on the river.
- 5.3.5 Additional mitigation, further to embedded mitigation, would “*minimise light spill onto retained habitats*”. The following is therefore recommended:
- Where artificial lighting is required during night-fall, the creation of artificial light spill barriers should be used where possible i.e., this could be undertaken on the river banks via temporary fencing in order to prevent spill on to the river.
 - Static and task lighting should be directed towards the areas of works and avoid direct illumination of the River Trent, where possible.
 - Where this is not possible, there may be restrictions to night working along the majority of the working width to minimise the requirement for artificial lighting to be used, thereby avoiding disturbance effects of artificial lighting on sensitive ecological features.
- 5.3.6 These details are provided in Table 3-2 REAC of the First Iteration EMP (TR010065/APP/6.5).
- 5.3.7 During beam installation at the new Nether Lock and Windmill Viaducts, with the addition of the above-listed mitigation measures, the potential for the severance of lamprey migratory routes associated with the Scheme is considered to be sufficiently reduced and the residual impact upon lamprey is considered to be negligible. As such, a LSE with regards to severance of lamprey migration routes can be ruled out.

5.4 Assessment of the Scheme alone

- 5.4.1 The mitigation measures detailed above, with regards to the entrapment/isolation of lamprey and temporary severance of migratory routes, are considered to prevent or sufficiently reduce the impact upon lamprey so as to achieve a negligible residual impact. Therefore, adverse impacts upon the integrity of the Humber Estuary SAC/Ramsar can be ruled out.

5.5 Assessment of the Scheme in-combination

- 5.5.1 Adverse impacts upon the integrity of the Humber Estuary SAC/Ramsar have been ruled out following the adoption of appropriate mitigation measures. As such, the adverse effects of the Scheme in-combination with any of the projects and plans detailed in Table 4-2 can also be ruled out.
- 5.5.2 As adverse impacts upon the integrity of the Humber Estuary SAC/Ramsar have been ruled out, the absence of possible in-combination projects from with the East Lindsey District Council area is not considered to be a significant limitation upon this assessment.

6 Summary and conclusions

- 6.1.1 The Screening (Stage 1) assessment identified the potential for LSEs associated with the temporary severance of lamprey migration routes (via artificial lighting) and the entrapment/isolation of lamprey individuals within the Farndon East FCA and Farndon West FCA, during flood events occurring within the lamprey migration and breeding period.
- 6.1.2 The DMRB screening matrix can be found in Section 4 of this report, while the Planning Inspectorate's screening matrices can be found in Appendix A.
- 6.1.3 An Appropriate Assessment (Stage 2) was undertaken with regards to the pathways with the potential to give rise to LSEs. Appropriate mitigation including more detailed control of artificial lighting during night-time bridge works and the inclusion of fish escape passages within Farndon East FCA and Farndon West FCA are considered to prevent, or sufficiently reduce, the impact upon lamprey, so as to achieve a negligible residual impact. No adverse impacts upon the integrity of the Humber Estuary SAC/Ramsar are therefore anticipated as a result of the Scheme.
- 6.1.4 Embedded measures and essential mitigation measures detailed within the Stage 1 Screening and Stage 2 Appropriate Assessment respectively are considered to achieve an overall negligible residual effect upon lamprey. Mitigation measures that are being pursued are common practice and do not require any untested or bespoke methods. LSEs associated within the Scheme, either alone or in-combination with any other projects or plans, can be ruled out. Therefore, there is not considered to be a requirement to proceed to Stage 3 (Derogation).

A. Appendix: Planning Inspectorate screening matrices

A.1.0.1 Potential effects upon the European Sites which are considered within this Habitat Regulations Stage 1 Report are as follows:

- A. Reduction of habitat area
- B. Disturbance to key species
- C. Habitat or species fragmentation
- D. Reduction in species density
- E. Changes in key indicators of conservation value (e.g., water quality)
- F. Climate change

A.1.0.2 The European Sites included within the screening assessment are:

- Humber Estuary Special Area of Conservation (SAC)
- Humber Estuary Ramsar

A.1.0.3 Evidence of likely significant effects on their qualifying feature is detailed within the footnotes to the screen matrices below Table A-2.

A.1.0.4 Matrix Key:

✓ = Likely significant effect cannot be excluded

× = Likely significant effect can be excluded

C = construction

O = operation

IC = in-combination

Scoped out of Stage 1 screening

Considered within Stage 1 screening and Stage 2 appropriate assessment

Appendix Table A-1: Humber Estuary SAC Planning Inspectorate’s screening matrix

Name of European Site: Humber Estuary SAC																		
EU Code: UK0030170																		
Distance to NSIP: 53 kilometres north																		
European Site features	Likely effects of NSIP																	
	A			B			C			D			E			F		
Effect (as listed above, page 54)	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC
Stage of development	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC
Annex I Habitats																		
Estuaries	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Mudflats and sandflats not covered by seawater at low tide	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Sandbanks which are slightly covered by sea water all the time	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Coastal Lagoons	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Salicornia and other annuals colonizing mud and sand	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Embryonic shifting dunes*	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Fixed coastal dunes with herbaceous vegetation (grey dunes) feature	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Dunes with <i>Hippopha rhamnoides</i>	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Annex II Species																		
Sea lamprey <i>Petromyzon marinus</i>	xb	xb	✓ h	✓ c	xd	✓ h	✓ e	xd	✓ h	✓ e	xd	✓ h	xf	xf	✓ h	xg	xg	✓ h
River lamprey <i>Lampetra fluviatilis</i>	xb	xb	✓ h	✓ c	xd	✓ h	✓ e	xd	✓ h	✓ e	xd	✓ h	xf	xf	✓ h	xg	xg	✓ h
Grey seal	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa

Appendix Table A-2: Humber Estuary Ramsar Planning Inspectorate’s screening matrix

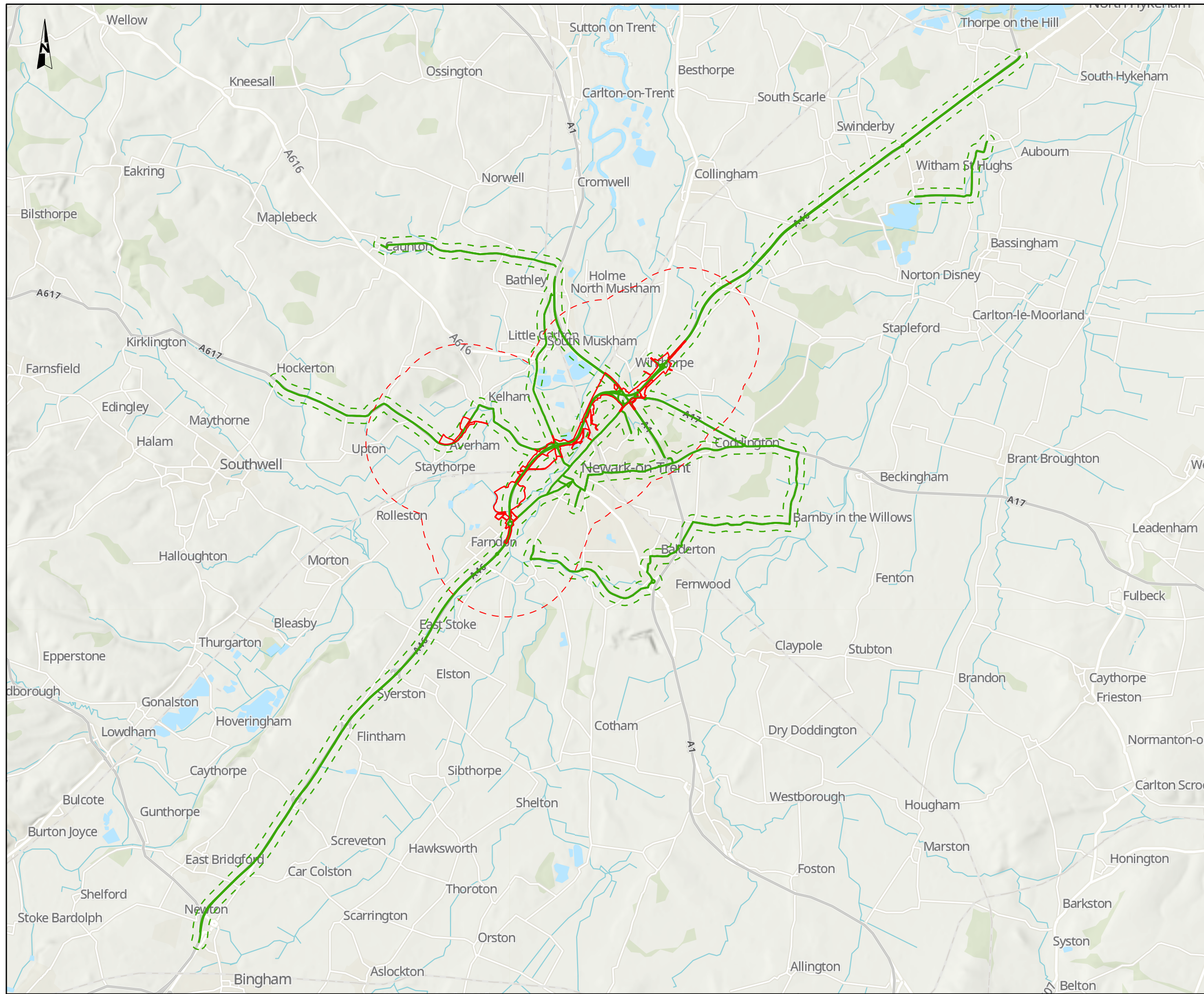
Name of European Site: Humber Estuary Ramsar																		
EU Code: UK11031																		
Distance to NSIP: 53 kilometres north																		
European Site features	Likely effects of NSIP																	
	A			B			C			D			E			F		
Effect (as listed above, page 54)	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC
Stage of development	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC	C	O	IC
Annex I Habitats																		
Criterion 1 – Representative example of near natural estuary	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Criterion 3 – Breeding colony of grey seals	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Criterion 5 – Assemblages of non-breeding waterfowl	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Criterion 6 – Internationally important populations of red knot (breeding and non-breeding), common shelduck (non-breeding), dunlin breeding and non-breeding, black-tailed godwit, redshank (non-breeding), and bar-tailed godwit (breeding)	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa	xa
Criterion 8 – River lamprey and sea lamprey	xb	xb	✓ h	✓ c	xd	✓ h	✓ e	xd	✓ h	✓ e	xd	✓ h	xf	xf	✓ h	xg	xg	✓ h

Planning Inspectorate’s Screening Matrices - Footnotes

- (a) Given the distance of the Special Area of Conservation (SAC) from the Order Limits (53 kilometres directly between the Order Limits and the European Sites and 75 kilometres via the channel of the River Trent), the potential for impacts upon habitats cited under the SAC designation or the other qualifying species (grey seal, various bird species and the non-breeding waterfowl assemblage) has been scoped out.
- (b) There would be no land take from the SAC/Ramsar boundaries, nor any functional land linked to these designated sites.

- (c) Artificial light spill associated with night-time bridge works does risk creating a temporary and localised 'barrier' to lamprey migration. The proposed Farndon East FCA and Farndon West FCA could trap lamprey individuals as flood waters recede, should flood events be encountered during the lamprey migration/breeding season.
- (d) No effects anticipated during this phase of the Scheme.
- (e) Prevention of lamprey migration (via temporary artificial light barriers or entrapment of individuals within Farndon East FCA and Farndon West) could impact upon species density of the lamprey populations associated with the SAC/Ramsar.
- (f) Due to the distance of the SAC/Ramsar from the Order Limits and the embedded mitigation measures within the Scheme, it is not considered that the Scheme would result in adverse changes to key indicators or reduce the conservation value of the SAC/Ramsar.
- (g) The Scheme would reduce congestion to enable more consistent speeds and smoother journey conditions. At least 50% of the Scheme route would see restrictions of reductions of speeds to 50 miles per hour, contributing towards reducing pollution levels. Drainage design and the assessment of flood risk within the Scheme has allowed for the effects of climate change meaning it is not expected to change the hydraulic regime in the catchment.
- (h) There is scope for in-combination effects upon lamprey species, following the identification of a number of projects and plans which could, in combination with the Scheme, adversely effect lamprey species.

B. Appendix: Study area search distances for HRA – Local Impact Area



NOTES
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KEY TO SYMBOLS

- Order Limits
- 2km buffer from Order Limits
- Affected Road Network (Air Quality)
- Affected Road Network (Air Quality) 200m buffer



P04	20/10/2023	FOURTH DRAFT	DT	BC	JB
REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D

CLIENT
 national highways

PURPOSE OF ISSUE
 DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
 TR010065

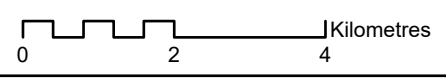
PROJECT TITLE
 A46 NEWARK BYPASS

DRAWING TITLE
 Appendix B
 Study Area Search Distances for HRA - Local Impact Area

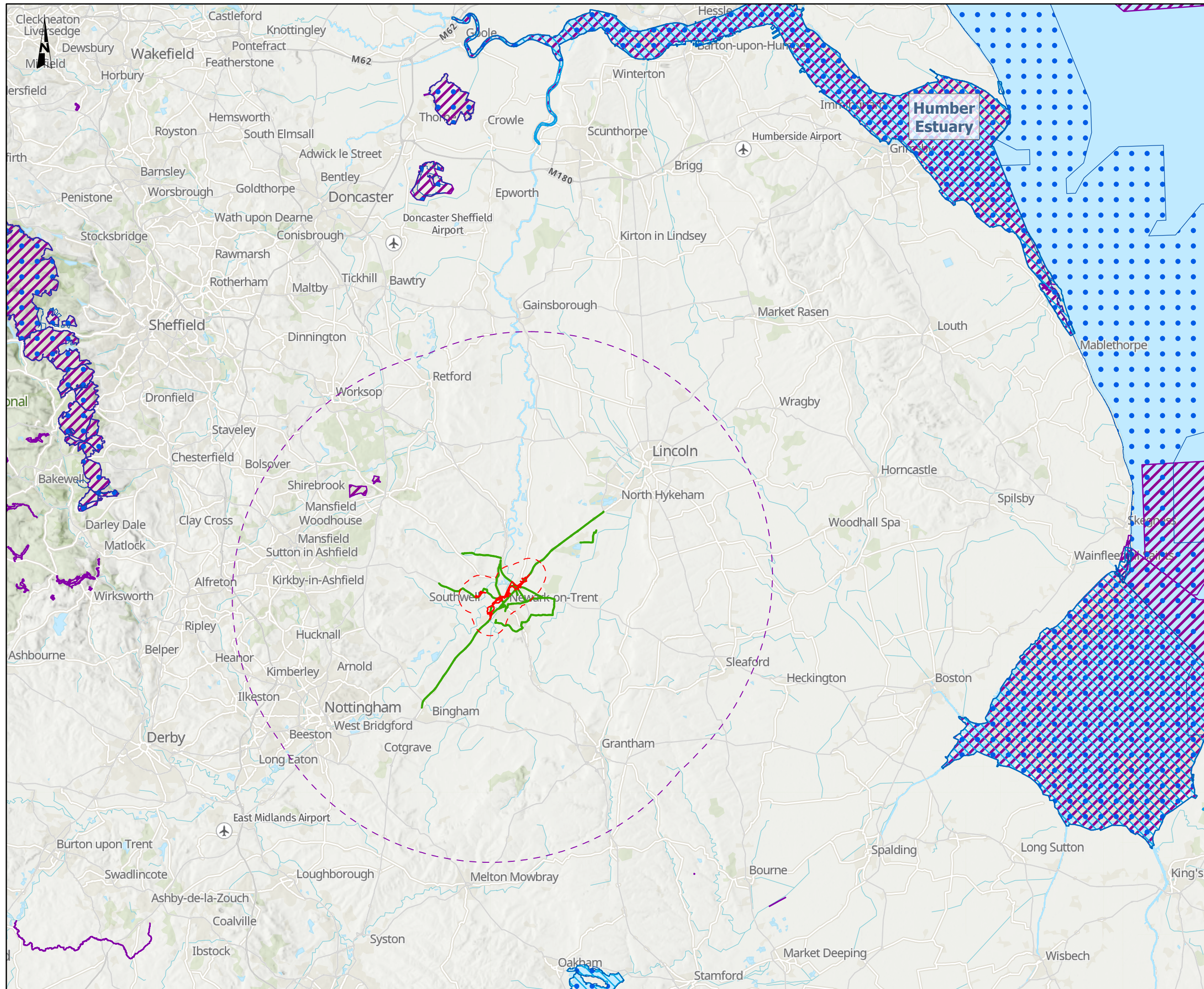
ORIGINAL SIZE A3 SCALE 1:100,000

DRAWING NUMBER HE PIN	ORIGINATOR SKAG	VOLUME EBD	PROJECT REF NO HE551478
CONWI_CONW	DR LE	00128	REVISION P04
LOCATION	TYPE	ROLE	NUMBER

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C. Appendix: Study area search distances for HRA – Wider Impact Area



NOTES
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- KEY TO SYMBOLS**
- Order Limits
 - 2km buffer from Order Limits
 - 30km buffer from Order Limits
 - Affected Road Network (Air Quality)
 - Special Protection Area
 - Ramsar
 - Special Area of Conservation



P04	20/10/2023	FOURTH DRAFT	DT	BC	JB
REV.	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D

CLIENT

PURPOSE OF ISSUE
 DCO APPLICATION

DEVELOPMENT CONSENT ORDER NUMBER
 TR010065

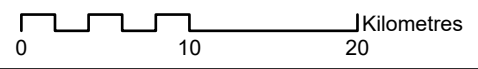
PROJECT TITLE
 A46 NEWARK BYPASS

DRAWING TITLE
 Appendix C
 Study Area Search Distances for HRA - Wider Impact Area

ORIGINAL SIZE A3 SCALE 1:450,000

DRAWING NUMBER HE551478	ORIGINATOR SKAG	VOLUME EBD	PROJECT REF NO. HE551478
LOCATION CONWI_CONW	TYPE DR	ROLE LE	REVISION P04
	NUMBER 00129		

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D. Appendix: Citations/data sheets for each European Site

EC Directive 79/409 on the Conservation of Wild Birds Special Protection Area (SPA)

Name: Humber Estuary

Unitary Authorities/Counties: City of Kingston-upon-Hull, East Riding of Yorkshire, Lincolnshire, North East Lincolnshire, North Lincolnshire

Component SSSIs: The SPA encompasses all or parts of the following Sites of Special Scientific Interest (SSSIs): Humber Estuary SSSI, North Killingholme Haven Pits SSSI, Saltfleetby-Theddlethorpe Dunes SSSI, and The Lagoons SSSI.

Site description: The Humber Estuary is located on the east coast of England, and comprises extensive wetland and coastal habitats. The inner estuary supports extensive areas of reedbed, with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. Parts of the estuary are owned and managed by conservation organisations. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. In summer, it supports important breeding populations of bittern *Botaurus stellaris*, marsh harrier *Circus aeruginosus*, avocet *Recurvirostra avosetta* and little tern *Sterna albifrons*.

Size of SPA: The SPA covers an area of 37,630.24 ha.

Qualifying species:

The site qualifies under **article 4.1** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Annex I species	Count and season	Period	% of GB population
Avocet <i>Recurvirostra avosetta</i>	59 individuals – wintering	5 year peak mean 1996/97 – 2000/01	1.7%
Bittern <i>Botaurus stellaris</i>	4 individuals – wintering	5 year peak mean 1998/99 – 2002/03	4.0%
Hen harrier <i>Circus cyaneus</i>	8 individuals – wintering	5 year peak mean 1997/98 – 2001/02	1.1%
Golden plover <i>Pluvialis apricaria</i>	30,709 individuals – wintering	5 year peak mean 1996/97 – 2000/01	12.3%
Bar-tailed godwit <i>Limosa lapponica</i>	2,752 individuals – wintering	5 year peak mean 1996/97 – 2000/01	4.4%
Ruff <i>Philomachus pugnax</i>	128 individuals – passage	5 year peak mean 1996-2000	1.4%
Bittern <i>Botaurus stellaris</i>	2 booming males – breeding	3 year mean 2000-2002	10.5%
Marsh harrier <i>Circus aeruginosus</i>	10 females – breeding	5 year mean 1998-2002	6.3%
Avocet <i>Recurvirostra avosetta</i>	64 pairs – breeding	5 year mean 1998 – 2002	8.6%
Little tern <i>Sterna albifrons</i>	51 pairs – breeding	5 year mean 1998-2002	2.1%

The site qualifies under **article 4.2** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:

Migratory species	Count and season	Period	% of subspecies/ population
Shelduck <i>Tadorna tadorna</i>	4,464 individuals – wintering	5 year peak mean 1996/97 – 2000/01	1.5% Northwestern Europe (breeding)
Knot <i>Calidris canutus</i>	28,165 individuals – wintering	5 year peak mean 1996/97 – 2000/01	6.3% <i>islandica</i>
Dunlin <i>Calidris alpina</i>	22,222 individuals – wintering	5 year peak mean 1996/97 – 2000/01	1.7% <i>alpina</i> , Western Europe (non-breeding)
Black-tailed godwit <i>Limosa limosa</i>	1,113 individuals – wintering	5 year peak mean 1996/97 – 2000/01	3.2% <i>islandica</i>
Redshank <i>Tringa totanus</i>	4,632 individuals – wintering	5 year peak mean 1996/97 – 2000/01	3.6% <i>britannica</i>
Knot <i>Calidris canutus</i>	18,500 individuals – passage	5 year peak mean 1996 – 2000	4.1% <i>islandica</i>
Dunlin <i>Calidris alpina</i>	20,269 individuals – passage	5 year peak mean 1996 – 2000	1.5% <i>alpina</i> , Western Europe (non-breeding)
Black-tailed godwit <i>Limosa limosa</i>	915 individuals – passage	5 year peak mean 1996 – 2000	2.6% <i>islandica</i>
Redshank <i>Tringa totanus</i>	7,462 individuals – passage	5 year peak mean 1996 – 2000	5.7% <i>britannica</i>

Bird counts from: Wetland Bird Survey (WeBS) database and *The Humber Estuary: A comprehensive review of its nature conservation interest* (Allen et al. 2003).

Assemblage qualification:

The site qualifies under **article 4.2** of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season:

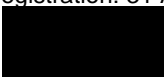
In the non-breeding season, the area regularly supports 153,934 individual waterbirds (five year peak mean 1996/97 – 2000/01), including dark-bellied brent goose *Branta bernicla bernicla*, shelduck *Tadorna tadorna*, wigeon *Anas penelope*, teal *Anas crecca*, mallard *Anas platyrhynchos*, pochard *Aythya ferina*, scaup *Aythya marila*, goldeneye *Bucephala clangula*, bittern *Botaurus stellaris*, oystercatcher *Haematopus ostralegus*, avocet *Recurvirostra avosetta*, ringed plover *Charadrius hiaticula*, golden plover *Pluvialis apricaria*, grey plover *P. squatarola*, lapwing *Vanellus vanellus*, knot *Calidris canutus*, sanderling *C. alba*, dunlin *C. alpina*, ruff *Philomachus pugnax*, black-tailed godwit *Limosa limosa*, bar-tailed godwit *L. lapponica*, whimbrel *Numenius phaeopus*, curlew *N. arquata*, redshank *Tringa totanus*, greenshank *T. nebularia* and turnstone *Arenaria interpres*.

Non-qualifying species of interest: The SPA is used by non-breeding merlin *Falco columbarius*, peregrine *F. peregrinus* and short-eared owl *Asio flammeus*, and breeding common tern *Sterna hirundo* and kingfisher *Alcedo atthis* (all species listed in Annex I to the EC Birds Directive) in numbers of less than European importance (less than 1% of the GB population).

Status of SPA:

- 1) Humber Flats, Marshes and Coast (Phase 1) SPA was classified on 28 July 1994.
- 2) The extended and renamed Humber Estuary SPA was classified on 31 August 2007.

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK9006111
Date of registration: 31 August 2007

Signed: 
On behalf of the Secretary of State for
Environment, Food and Rural Affairs

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Joint Nature Conservation Committee

Monkstone House

City Road

Peterborough

Cambridgeshire PE1 1JY

UK

Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948

Email: RIS@JNCC.gov.uk

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 31 August 2007

3. Country:

UK (England)

4. Name of the Ramsar site:

Humber Estuary

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

The boundary has been extended

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* ☐;
- ii) **an electronic format** (e.g. a JPEG or ArcView image) *Yes*
- iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* ☐;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

053 32 59 N 000 00 03 E

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Kingston-upon-Hull

The Humber Estuary is located on the boundary between the East Midlands Region and the Yorkshire and the Humber Region, on the east coast of England bordering the North Sea.

Administrative region: City of Kingston upon Hull; East Riding of Yorkshire; Humberside; Lincolnshire; North East Lincolnshire; North Lincolnshire

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 37987.8

Min.	-13
Max.	10
Mean	No information available

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Humber Estuary is the largest macro-tidal estuary on the British North Sea coast. It drains a catchment of some 24,240 square kilometres and is the site of the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (max 7.4 m) and approximately one-third of the estuary is exposed as mud or sand flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing saltmarsh backed in places by limited areas of grazing marsh in the middle and outer estuary. On the north Lincolnshire coast the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The Estuary regularly supports internationally important numbers of waterfowl in winter and nationally important breeding populations in summer.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 3, 5, 6, 8

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons.

It is a large macro-tidal coastal plain estuary with high suspended sediment loads, which feed a dynamic and rapidly changing system of accreting and eroding intertidal and subtidal mudflats, sandflats, saltmarsh and reedbeds. Examples of both strandline, foredune, mobile, semi-fixed dunes, fixed dunes and dune grassland occur on both banks of the estuary and along the coast. The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion on the tidal rivers of the Ouse and Trent. Wave exposed sandy shores are found in the outer/open coast areas of the estuary. These change to the more moderately exposed sandy shores and then to sheltered muddy shores within the main body of the estuary and up into the tidal rivers. The lower saltmarsh of the Humber is dominated by common cordgrass *Spartina anglica* and annual glasswort *Salicornia* communities. Low to mid marsh communities are mostly represented by sea aster *Aster tripolium*, common saltmarsh grass *Puccinellia maritima* and sea purslane *Atriplex portulacoides* communities. The upper portion of the saltmarsh community is atypical, dominated by sea couch *Elytrigia atherica* (*Elymus pycnanthus*) saltmarsh community. In the upper reaches of the estuary, the tidal marsh community is dominated by the common reed *Phragmites australis* fen and sea club rush *Bolboschoenus maritimus* swamp with the couch grass *Elytrigia repens* (*Elymus repens*) saltmarsh community. Within the Humber Estuary Ramsar site there are good examples of four of the five physiographic types of saline lagoon.

Ramsar criterion 3

The Humber Estuary Ramsar site supports a breeding colony of grey seals *Halichoerus grypus* at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad *Bufo calamita*.

Ramsar criterion 5

Assemblages of international importance:

153,934 waterfowl, non-breeding season

(5 year peak mean 1996/97-2000/2001)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Eurasian golden plover, *Pluvialis apricaria*

altifrons subspecies – NW Europe, W Continental Europe, NW Africa population

17,996 individuals, passage, representing an average of 2.2% of the population

(5 year peak mean 1996-2000)

Red knot, *Calidris canutus*

islandica subspecies

18,500 individuals, passage, representing an average of 4.1% of the population

(5 year peak mean 1996-2000)

Dunlin, *Calidris alpina*

alpina subspecies – Western Europe (non-breeding) population

20,269 individuals, passage, representing an average of 1.5% of the population
(5 year peak mean 1996-2000)

Black-tailed godwit, *Limosa limosa*

islandica subspecies

915 individuals, passage, representing an average of 2.6% of the population
(5 year peak mean 1996-2000)

Common redshank, *Tringa totanus*

britannica subspecies

7,462 individuals, passage, representing an average of 5.7% of the population
(5 year peak mean 1996-2000)

Common shelduck, *Tadorna tadorna*

Northwestern Europe (breeding) population

4,464 individuals, wintering, representing an average of 1.5% of the population
(5 year peak mean 1996/7-2000/1)

Eurasian golden plover, *Pluvialis apricaria*

altifrons subspecies – NW Europe, W Continental Europe, NW Africa population

30,709 individuals, wintering, representing an average of 3.8% of the population
(5 year peak mean 1996/7-2000/1)

Red knot, *Calidris canutus*

islandica subspecies

28,165 individuals, wintering, representing an average of 6.3% of the population
(5 year peak mean 1996/7-2000/1)

Dunlin, *Calidris alpina*

alpina subspecies – Western Europe (non-breeding) population

22,222 individuals, wintering, representing an average of 1.7% of the population
(5 year peak mean 1996/7-2000/1)

Black-tailed godwit, *Limosa limosa*

islandica subspecies

1,113 individuals, wintering, representing an average of 3.2% of the population
(5 year peak mean 1996/7-2000/1)

Bar-tailed godwit, *Limosa lapponica*

lapponica subspecies

2,752 individuals, wintering, representing an average of 2.3% of the population
(5 year peak mean 1996/7-2000/1)

Common redshank, *Tringa totanus brittanica* subspecies

4,632 individuals, wintering, representing an average of 3.6% of the population
(5 year peak mean 1996/7-2000/1)

Ramsar criterion 8

The Humber Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* between coastal waters and their spawning areas.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

153934 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

European golden plover , <i>Pluvialis apricaria apricaria</i> , P. a. altifrons Iceland & Faroes/E Atlantic	17996 individuals, representing an average of 2.2% of the population (1996-2000)
Red knot , <i>Calidris canutus islandica</i> , W & Southern Africa (wintering)	18500 individuals, representing an average of 4.1% of the population (1996-2000)
Dunlin , <i>Calidris alpina alpina</i> , W Siberia/W Europe	20269 individuals, representing an average of 1.5% of the population (1996-2000)
Black-tailed godwit , <i>Limosa limosa islandica</i> , Iceland/W Europe	915 individuals, representing an average of 2.6% of the population (1996-2000)
Common redshank , <i>Tringa totanus totanus</i> ,	7462 individuals, representing an average of 5.7% of the population (1996-2000)
Species with peak counts in winter:	
Common shelduck , <i>Tadorna tadorna</i> , NW Europe	4464 individuals, representing an average of 1.5% of the population (1996/7 to 2000/1)
European golden plover , <i>Pluvialis apricaria apricaria</i> , P. a. altifrons Iceland & Faroes/E Atlantic	30709 individuals, representing an average of 3.8% of the population (1996/7 to 2000/1)
Red knot , <i>Calidris canutus islandica</i> , W & Southern Africa (wintering)	28165 individuals, representing an average of 6.3% of the population (1996/7 to 2000/1)
Dunlin , <i>Calidris alpina alpina</i> , W Siberia/W Europe	22222 individuals, representing an average of 1.7% of the population (1996/7 to 2000/1)

Black-tailed godwit , *Limosa limosa islandica*, 1113 individuals, representing an average of 3.2% of the population (1996/7 to 2000/1)
Iceland/W Europe

Bar-tailed godwit , *Limosa lapponica lapponica*, 2752 individuals, representing an average of 2.3% of the population (1996/7 to 2000/1)
W Palearctic

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

See Sections 21/22 for details of noteworthy species

Details of bird species occurring at levels of National importance are given in Section 22

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	neutral, shingle, sand, mud, clay, alluvium, sedimentary, sandstone, sandstone/mudstone, limestone/chalk, gravel, nutrient-rich
Geomorphology and landscape	lowland, coastal, floodplain, shingle bar, intertidal sediments (including sandflat/mudflat), estuary, islands, cliffs
Nutrient status	eutrophic
pH	circumneutral
Salinity	brackish / mixosaline, fresh, saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Cleethorpes, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/cleethorpes.html) Max. daily temperature: 13.1° C Min. daily temperature: 6.4° C Days of air frost: 29.0 Rainfall: 565.4 mm Hrs. of sunshine: 1521.9

General description of the Physical Features:

The Humber estuary is approximately 70 km long from the limit of saline intrusion on the River Ouse at Boothferry to the estuary mouth at Spurn Head, where it enters the North Sea. The area of the estuary is approx. 365 km², and it has a width of 6.6 km at the mouth.

The Humber is a macro-tidal estuary with a tidal range of 7.4 m, the second-largest range in the UK and comparable to other macro-tidal estuaries worldwide. It is a shallow and well mixed estuary, with an average depth of 6.5m rising to 13.2 m at the mouth.

The Humber is the second-largest coastal plain estuary in the UK, and the largest coastal plain estuary on the east coast of Britain. Suspended sediment concentrations are high, and are derived from a variety of sources, including marine sediments and eroding boulder clay along the Holderness coast. This is the northernmost of the English east coast estuaries whose structure and function is intimately linked with soft eroding shorelines.

Upstream from the Humber Bridge, the navigation channel undergoes major shifts from north to south banks. This section of the estuary is noteworthy for extensive mud and sand bars, which in places form semi-permanent islands.

The estuary covers the full salinity range from fully marine at the mouth of the estuary (Spurn Head) to the limit of saline intrusion on the Rivers Ouse and Trent). A salinity gradient from north to south bank is observed in the outer estuary, due to the incoming tide flowing along the north bank, while the fresh water keeps to the south bank as it discharges to the sea. As salinity declines upstream, reedbeds and brackish saltmarsh communities fringe the estuary..

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Humber catchment covers an area of ca. 24,240 km², more than 20% of the land area of England. Average annual precipitation in the upland areas of the catchment is as much as 1000 mm. Average freshwater flow into the Humber estuary from the rivers is 250 m³s⁻¹, ranging from 60 m³s⁻¹ in drier periods to 450 m³s⁻¹ in wet periods. Peak flows of up to 1500 m³s⁻¹ have been recorded during floods. The rivers Trent and Ouse, which provide the main fresh water flow into the Humber, drain large industrial and urban areas to the south and west (River Trent), and less densely populated agricultural areas to the north and west (River Ouse). The Trent/Ouse confluence is known as Trent Falls.

On the north bank of the Humber estuary the principal river is the river Hull, which flows through the city of Kingston-upon-Hull, and has a tidal length of 32 km, up to the Hempholme Weir. The Hull provides only about 1% of the freshwater input to the estuary. On the south bank, the River Ancholme enters the Humber at South Ferriby, but the tide is excluded by a sluice and a tidal lock. Altogether, the total tidal length of rivers and estuary is 313 km.

There are several major urban centres within the river catchments. Nottingham, Leicester, and the West Midlands/Birmingham conurbation are drained by the Trent, the Leeds-Bradford area in West Yorkshire is drained by the Aire/Calder and the Sheffield/Rotherham/Doncaster area in South Yorkshire is drained by the Don. There are also large rural regions, whose populations are currently experiencing high population growth, while the urban areas are showing a small decline. The 1992 population for the Ouse catchment was 4.1 million, and for the Trent catchment was 7.1 million. The population of Humberside, which comprises North and North-east Lincolnshire, the East Riding of Yorkshire, and Kingston-upon-Hull (Hull), was just under 0.9 million. Land use around the estuary itself is 50-98% agricultural, within only two areas of high population/ industry – the major conurbation around Kingston-upon-Hull (Hull) on the north bank, and several large industrial areas around Grimsby/ Immingham/ Cleesthorpes on the south bank.

The area around the Humber estuary is low-lying, and much land-claim of wetlands and supratidal zones, as well as parts of the intertidal zone, was carried out in the past two centuries. The mid to

outer estuary (Humber Bridge to Spurn Point) changed from a region of low water erosion in the 19th century to one of accretion in the 20th century, nonetheless a net loss of intertidal zone of some 3000 ha has taken place since the mid-19th century. Around the estuary some 894 km² of land are below the 5 m contour, protected by extensive coastal defences. Most of the sediment entering the estuary comes from the North Sea, and a large part of it is believed to come from the continuing erosion of the Holderness Cliffs, which form the coastline to the north of the estuary mouth at Spurn Head. The estuary currently has approximately 1,775 ha of saltmarsh

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Sediment trapping

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
F	Estuarine waters	66.8
G	Tidal flats	26.4
H	Salt marshes	4.7
E	Sand / shingle shores (including dune systems)	0.8
7	Gravel / brick / clay pits	0.5
Q	Saline / brackish lakes: permanent	0.3
J	Coastal brackish / saline lagoons	0.3
Other	Other	0.1
9	Canals and drainage channels	0.01
Y	Freshwater springs	0.01

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Description

Much of the intertidal area of the Humber Estuary consists of mudflats with fringing saltmarsh. There are smaller areas of intertidal sand flats, and sand dunes. The saltmarsh is both eroding and accreting; although coastal squeeze is resulting in net losses, and cord grass *Spartina anglica* is a major colonising species. In areas of reduced salinity such as the Upper Humber there are extensive areas of common reed *Phragmites australis* with some sea club-rush *Bolboschoenus maritimus*. Mid-level saltmarsh tends to be much more floristically diverse, and in the higher level marsh with its dendritic network of drainage channels, salt pans and borrow pits grasses dominate with thrift *Armeria maritima* where the marsh is grazed by cattle and sheep. Extensive areas of eel grass *Zostera marina* and *Z. nolti* have been known to occur at Spurn Bight, although in recent years records are limited. Behind the sandflats of the Cleethorpes coast the mature sand-dune vegetation contains some locally and nationally rare species including chestnut flat sedge *Blysmus rufus*, bulbous meadow grass *Poa bulbosa* and dense silky-bent *Apera interrupta*. The sand dunes, which cap the shingle spit that forms Spurn Peninsula are dominated by marram grass *Ammophila arenaria* and patches of dense sea buckthorn *Hippophae rhamnoides*.

Ecosystem services

Aesthetic

Education

Food

Recreation

Storm/wave protection

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

None reported

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds**Species Information**

Species Information

Birds

Species currently occurring at levels of national importance:

Great bittern, *Botaurus stellaris**stellaris* subspecies – W Europe, NW Africa (breeding) population

2 booming males, breeding, representing an average of 10.5% of the GB population

(3 year mean 2000-2002)

Eurasian marsh harrier, *Circus aeruginosus*

Europe population

10 females, breeding, representing an average of 6.3% of the GB population

(5 year mean 1998-2002)

Pied avocet, *Recurvirostra avosetta*

Western Europe (breeding) population

64 pairs, breeding, representing an average of 8.6% of the GB population

(5 year mean 1998-2002)

Little tern, *Sterna albifrons**albifrons* subspecies, Western Europe (breeding) population

51 pairs, breeding, representing an average of 2.1% of the GB population

(5 year mean 1998-2002)

Dark-bellied brent goose, *Branta bernicla**bernicla* subspecies

2,098 individuals, wintering, representing an average of 2.1% of the GB population

(5 year peak mean 1996/7-2000/1)

Eurasian wigeon, *Anas penelope*

Northwestern Europe (non-breeding) population

5,044 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Common teal, *Anas crecca**crecca* subspecies, Northwestern Europe (non-breeding population)

2,322 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Common pochard, *Aythya ferina*

Northeastern & Northwestern Europe (non-breeding) population

719 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Greater scaup, *Aythya marila*

marila subspecies, Western Europe (non-breeding) population

127 individuals, wintering, representing an average of 1.7% of the GB population

(5 year peak mean 1996/7-2000/1)

Common goldeneye, *Bucephala clangula*

clangula subspecies, Northwestern & Central Europe (non-breeding) population

467 individuals, wintering, representing an average of 1.9% of the GB population

(5 year peak mean 1996/7-2000/1)

Great bittern, *Botaurus stellaris*

stellaris subspecies – W Europe, NW Africa (breeding) population

4 individuals, wintering, representing an average of 4.0% of the GB population

(5 year peak mean 1998/9-2002/3)

Hen harrier, *Circus cyaneus*

Europe population

8 individuals, wintering, representing an average of 1.1% of the GB population

(5 year peak mean 1997/8-2001/2)

Eurasian oystercatcher, *Haematopus ostralegus*

ostralegus subspecies

3,503 individuals, wintering, representing an average of 1.1% of the GB population

(5 year peak mean 1996/7-2000/1)

Pied avocet, *Recurvirostra avosetta*

Western Europe (breeding) population

59 individuals, wintering, representing an average of 1.7% of the GB population

(5 year peak mean 1996/7-2000/1)

Great ringed plover, *Charadrius hiaticula*

hiaticula subspecies

403 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Grey plover, *Pluvialis squatarola*

squatarola subspecies, Eastern Atlantic (non-breeding) population

1,704 individuals, wintering, representing an average of 3.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Northern lapwing, *Vanellus vanellus*

Europe (breeding) population

22,765 individuals, wintering, representing an average of 1.1% of the GB population

(5 year peak mean 1996/7-2000/1)

Sanderling, *Calidris alba*

Eastern Atlantic (non-breeding) population

486 individuals, wintering, representing an average of 2.3% of the GB population
(5 year peak mean 1996/7-2000/1)

Curlew, *Numenius arquata*

arquata subspecies

3,253 individuals, wintering, representing an average of 2.2% of the GB population
(5 year peak mean 1996/7-2000/1)

Ruddy turnstone, *Arenaria interpres*

interpres subspecies, Northeastern Canada & Greenland (breeding) population

629 individuals, wintering, representing an average of 1.3% of the GB population
(5 year peak mean 1996/7-2000/1)

Great ringed plover, *Charadrius hiaticula*

psammodytes subspecies

1,766 individuals, passage, representing an average of 5.9% of the GB population
(5 year peak mean 1996-2000)

Grey plover, *Pluvialis squatarola*

squatarola subspecies, Eastern Atlantic (non-breeding) population

1,590 individuals, passage, representing an average of 2.3% of the GB population
(5 year peak mean 1996-2000)

Sanderling, *Calidris alba*

Eastern Atlantic (non-breeding) population

818 individuals, passage, representing an average of 2.7% of the GB population
(5 year peak mean 1996-2000)

Ruff, *Philomachus pugnax*

Western Africa (non-breeding) population

128 individuals, passage, representing an average of 1.4% of the GB population
(5 year peak mean 1996-2000)

Whimbrel, *Numenius phaeopus*

islandicus subspecies

113 individuals, passage, representing an average of 2.3% of the GB population
(5 year peak mean 1996-2000)

Common greenshank, *Tringa nebularia*

Northwestern Europe (breeding) population

77 individuals, passage, representing an average of 5.5% of the GB population
(5 year peak mean 1996-2000)

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic

Aquatic vegetation (e.g. reeds, willows, seaweed)

Archaeological/historical site

Environmental education/ interpretation

Fisheries production

Livestock grazing

Non-consumptive recreation

Sport fishing
 Sport hunting
 Tourism
 Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+
Public/communal	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	
Cutting of vegetation (small-scale/subsistence)	+	
Fishing: commercial	+	+
Fishing: recreational/sport	+	+
Gathering of shellfish	+	+
Bait collection	+	+
Permanent arable agriculture		+
Permanent pastoral agriculture	+	+
Hunting: recreational/sport	+	+
Industrial water supply	+	+
Industry	+	+
Sewage treatment/disposal	+	+
Harbour/port	+	+

Flood control	+	+
Irrigation (incl. agricultural water supply)		+
Mineral exploration (excl. hydrocarbons)		+
Oil/gas exploration	+	+
Transport route	+	+
Domestic water supply		+
Urban development		+
Non-urbanised settlements		+
Military activities	+	+
Horticulture (incl. market gardening)		+

26. Factors (past, present or potential) adversely affecting the site’s ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Disturbance to vegetation through cutting / clearing	1	Reedbeds being cut and cleared on margins of pits associated with angling. Management agreements and enforcement to address.	+		
Vegetation succession	1	Lack of reedbed management leading to scrub encroachment. Management agreement to address.	+		
Water diversion for irrigation/domestic/industrial use	1	Abstraction causes reduced freshwater input. Review of consents well advanced but not yet implemented.	+	+	
Overfishing	2	Substantial lamprey by-catch in eel nets in River Ouse.		+	
Pollution – domestic sewage	1	Reduced dissolved oxygen in River Ouse is a barrier to fish migration. Review of consents well advanced but not yet implemented.	+	+	+
Pollution – agricultural fertilisers	1	Reduced dissolved oxygen in River Ouse is a barrier to fish migration. To be addressed through Catchment Sensitive Farming Initiatives and implementation of Water Framework Directive.	+	+	+
Recreational/tourism disturbance (unspecified)	1	Particularly illegal access by motorised recreational vehicles and craft. Control through management scheme.	+		

Other factor	1	Coastal squeeze causing loss of intertidal habitats and saltmarsh due to sea level rise and fixed defences. The Humber Flood Risk Management Strategy has been developed and is being implemented.	+		+

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Overfishing - Overfishing – to be considered through an ‘in-combination’ assessment of possible factors as part of the Review of Consents exercise.

Is the site subject to adverse ecological change? YES

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	+
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	+
Management agreement	+	+
Site management statement/plan implemented	+	
Area of Outstanding National Beauty (AONB)		+
Special Area of Conservation (SAC)	+	
IUCN (1994) category IV	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Fauna.

Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

Seal populations are monitored by the Sea Mammal Research Unit

Humber Wader Ringing Group

Spurn Bird Observatory

National Nature Reserve monitoring

Environment.

Institute of Estuarine & Coastal Studies, Hull: various
 Industrial Concerns: monitoring on behalf of companies such as Associated British Ports and BP
 Environment Agency monitoring: various
 Geomorphological studies associated with shoreline management planning
 National Nature Reserve monitoring

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.
 There are a four National Nature Reserves with associated facilities within the Ramsar site (Spurn, Far Ings, Donna Nook and Saltfleetby – Theddlethorpe Dunes) and a number of other visitor, information and/or education centres including the Spurn Bird Observatory, the Cleethorpes Discovery Centre, Water’s Edge and Far Ings. A wide range of Humber wide and area-specific information is available through a range of media (eg leaflets, displays, internet etc) including ‘Humber Estuary European Marine Site Codes of Conduct’ developed with a range of stakeholders to cover a range of recreational and educational activities and ‘Coastal Futures’ – a partnership project working with local communities affected by flood risk and associated issues including managed realignment includes proactive education work within schools.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.

Sailing: marinas at Brough, Winteringham, Hull, Grimsby and South Ferriby.
 Bathing etc: Cleethorpes (some 6m visitors/yr).
 Walking/Horse riding: throughout
 Beach fishing, match sea-fishing, non-commercial bait digging.
 Non-commercial samphire collection
 Wildfowling
 Tourist amusements: Cleethorpes.
 Bird watching: throughout but particularly at Blacktoft Sands RSPB reserve and the four National Nature Reserves.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.
 Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs,
 European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol,
 BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House,
 Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Site-relevant references

Site-relevant references

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STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the [REDACTED]

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the [SPA homepage](#) and [SAC homepage](#) on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

<https://jncc.gov.uk/>



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE UK0030170
SITENAME Humber Estuary

TABLE OF CONTENTS

- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code UK0030170	Back to top
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1.3 Site name

Humber Estuary

1.4 First Compilation date 2007-08	1.5 Update date 2015-12
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1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee
Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough
PE1 1JY
Email:

Date site proposed as SCI: 2007-08
Date site confirmed as SCI: 2008-12
Date site designated as SAC: 2009-12

National legal reference of SAC designation:

Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010
(<http://www.legislation.gov.uk/uksi/2010/490/contents/made>).

2. SITE LOCATION

[Back to top](#)

			784.46	0	G	C		B	C	C
2110			18.33	0	G	C		A	C	C
2120			14.66	0	G	C		B	C	C
2130	X		14.66	0	G	C		C	C	C
2160			65.98	0	G	C		B	C	C

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
F	1102	Alosa alosa			p				P	DD	D			
F	1103	Alosa fallax			p				P	DD	D			
M	1364	Halichoerus grypus			p	1800	1800	i		G	C	B	B	C
F	1099	Lampetra fluviatilis			p				P	DD	A	B	C	C
F	1095	Petromyzon marinus			p	251	500	i		M	B	C	C	C
M	1365	Phoca vitulina			p				P	DD	D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

4.1 General site character

Habitat class	% Cover
N03	4.4
N07	0.4
N04	0.4
N02	94.9
Total Habitat Cover	100.10000000000002

Other Site Characteristics

1 Terrestrial: Soil & Geology: shingle, sedimentary, sandstone, neutral, mud, sand, alluvium, clay 2 Terrestrial: Geomorphology and landscape: coastal, floodplain, lowland 3 Marine: Geology: gravel, mud, sedimentary, sand, sandstone/mudstone, clay, shingle, limestone/chalk 4 Marine: Geomorphology: shingle bar, lagoon, islands, estuary, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), cliffs

4.2 Quality and importance

Sandbanks which are slightly covered by sea water all the time for which the area is considered to support a significant presence. Estuaries for which this is considered to be one of the best areas in the United Kingdom. Mudflats and sandflats not covered by seawater at low tide for which this is considered to be one of the best areas in the United Kingdom. Coastal lagoons for which the area is considered to support a significant presence. Salicornia and other annuals colonising mud and sand for which the area is considered to support a significant presence. Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) for which the area is considered to support a significant presence. Embryonic shifting dunes for which the area is considered to support a significant presence. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares. Shifting dunes along the shoreline with *Ammophila arenaria* (?white dunes?) for which the area is considered to support a significant presence. Dunes with *Hippophae rhamnoides* for which the area is considered to support a significant presence. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares. Fixed dunes with herbaceous vegetation (?grey dunes?) for which the area is considered to support a significant presence. *Petromyzon marinus* for which the area is considered to support a significant presence. *Lampetra fluviatilis* for which the area is considered to support a significant presence. *Halichoerus grypus* for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	M01		B
H	E02		O
H	J02		B
H	H02		B
H	K01		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
H	D05		I
H	A02		I
H	B02		I
H	A04		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation

advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): <http://publications.naturalengland.org.uk/category/6490068894089216>

<http://publications.naturalengland.org.uk/category/3212324>

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

[Back to top](#)

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK01	1.8	UK04	100.0		

6. SITE MANAGEMENT

[Back to top](#)

6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No, but in preparation
<input checked="" type="checkbox"/>	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the [official European Union guidelines for the Standard Data Form](#) (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (<i>Spartinion maritimae</i>)	57
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with <i>Empetrum nigrum</i>	57
2150	Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)	57
2160	Dunes with <i>Hippophae rhamnoides</i>	57
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with <i>Juniperus</i> spp.	57
2330	Inland dunes with open <i>Corynephorus</i> and <i>Agrostis</i> grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	57
3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representativity	57
B	Good representativity	57
C	Significant representativity	57
D	Non-significant presence representativity	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code
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4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Scree, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

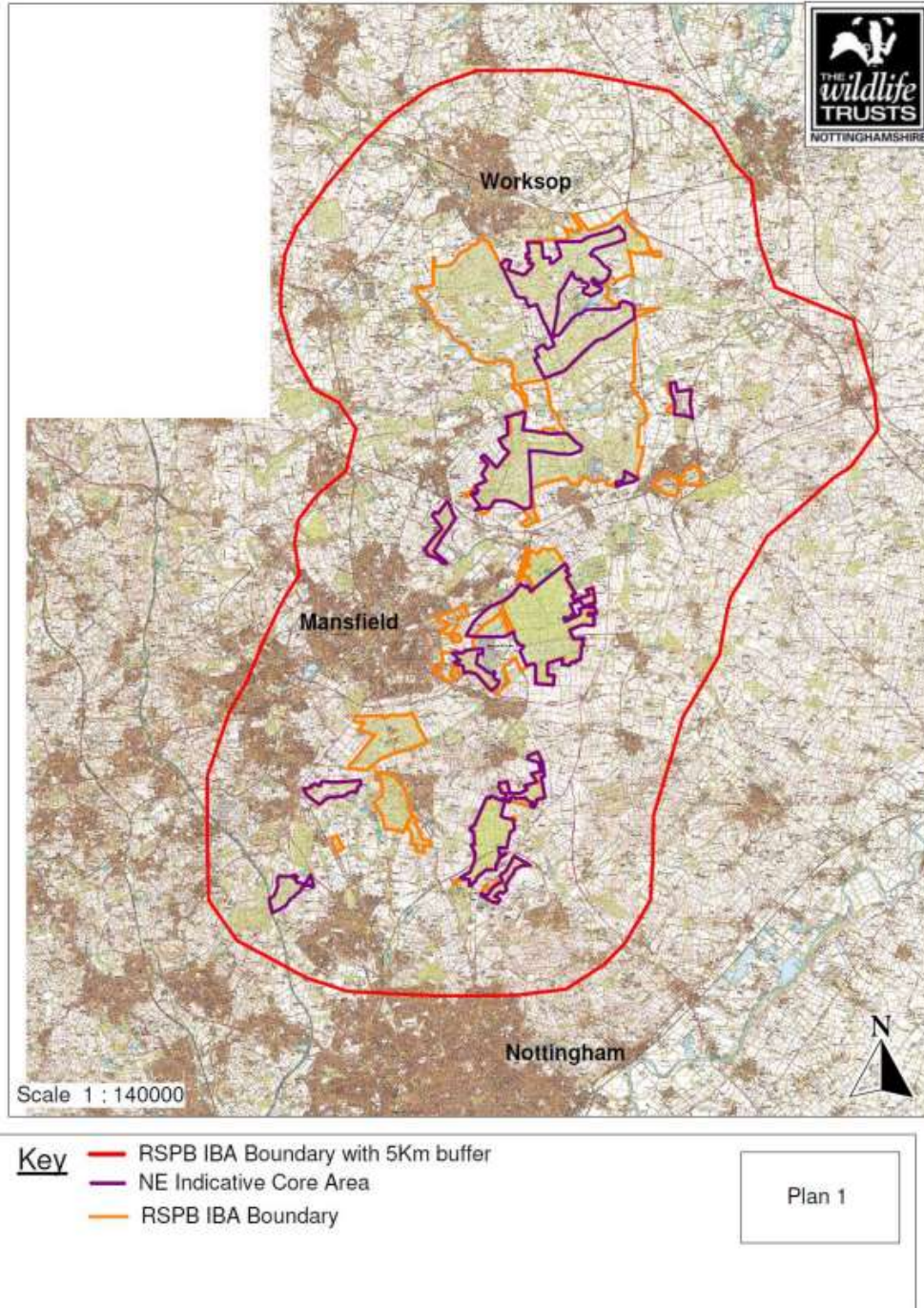
CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

E. Appendix: Indicative Sherwood ppSPA boundary³³



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³³ Natural England (2014) Advice Note to Local Planning Authorities regarding the consideration of likely effects on the breeding population of nightjar and woodlark in the Sherwood Forest region. [online]. Available at: <https://www.mansfield.gov.uk/downloads/file/482/natural-england-s-advice-notes-on-the-sherwood-ppspa-2014> (Last accessed December 2023).

F. Appendix: Traffic flow scenarios

