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Executive Summary

Purpose of this Report

National Grid Electricity Transmission plc (here on referred to as National Grid) is making an application for development consent to reinforce the transmission network between Bramford Substation in Suffolk, and Twinstead Tee in Essex. The Bramford to Twinstead Reinforcement ('the project') would be achieved by the construction and operation of a new electricity transmission line over a distance of approximately 29km (18 miles), the majority of which would follow the general alignment of the existing overhead line network.

A Habitats Regulations Assessment (HRA) refers to the assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if a plan or project may affect the protected features of a European designated site before deciding whether to undertake, permit or authorise it. This report presents the HRA undertaken for the project, which comprises Stage 1: Screening and Stage 2: Appropriate Assessment.

Stage 1: Screening

The Stour and Orwell Estuaries SPA and Ramsar site is located approximately 5.72km south-east of the Order Limits and is hydrologically connected to the project via a series of rivers. The European sites provide habitats for an important assemblage of wetland birds in the non-breeding season and support internationally important numbers of wintering and passage wildfowl and waders. The European sites also hold several nationally scarce plants and British Red Data Book invertebrates.

The following potential pathways to pollution effects upon the European sites were identified during the screening process:

- The underground cables would be installed using a trenchless crossing at the River Stour and River Box and bridges would be installed for temporary access over the watercourses during construction. The trenchless crossing at the River Box and River Stour may require drill pits and ground water dewatering within the floodplain, as the pits may extend below the bed of the river.
- Several unnamed watercourses that drain to the River Box and River Stour would be crossed (temporarily culverted) by the project for construction access and for cabling.
- Above ground infrastructure (CSE compounds and the GSP substation) would be located within the catchments of the River Box and River Stour.
- The existing 132kV overhead line and pylons (located in proximity of water courses) would be removed during construction with a new 400kV overhead line installed to connect with the underground cable sections.

No likely significant effects have been identified on the Stour and Orwell Estuaries SPA and Ramsar from the project in relation to habitat loss, habitat or species fragmentation or disturbance to species (i.e. displacement).

In the absence of good practice measures, the project could have a likely significant effect on the European sites via changes to surface water quality and groundwater through potential pollution

and sedimentation incidents on watercourses during construction, which are crossed and subsequently discharge into the Stour and Orwell Estuaries SPA and Ramsar. It is feasible that such incidents could result in habitat degradation and indirectly in reduction in species density within the SPA/Ramsar. As such, these were taken forward for further assessment to Stage 2: Appropriate Assessment.

Stage 2: Appropriate Assessment

Good practice measures set out within the Code of Construction Practice and secured through Requirement 4 of the draft Development Consent Order (**application document 3.1**), would disrupt the pathways to effect and reduce the likelihood of an incidence occurring, such that the potential impact upon surface water quality and groundwater at the European sites (through pollution and sedimentation incidents) is avoided. With implementation of these measures there is no effect on surface water quality or groundwater. Therefore, there is no feasible risk of surface water pollutants or sedimentation alone or acting in combination with other plans and projects reaching the European sites.

1. Introduction

1.1 Overview

- 1.1.1 National Grid Electricity Transmission plc (here on referred to as National Grid) is making an application for development consent to reinforce the transmission network between Bramford Substation in Suffolk, and Twinstead Tee in Essex. The Bramford to Twinstead Reinforcement ('the project') would be achieved by the construction and operation of a new electricity transmission line over a distance of approximately 29km (18 miles), the majority of which would follow the general alignment of the existing overhead line network.
- 1.1.2 The reinforcement would comprise approximately 18km of overhead line (consisting of approximately 50 new pylons, and conductors) and 11km of underground cable system (with associated joint bays and above ground link pillars).
- 1.1.3 Four cable sealing end (CSE) compounds would be required to facilitate the transition between the overhead and underground cable technology. The CSE would be within a fenced compound, and contain electrical equipment, support structures, control building and a permanent access track.
- 1.1.4 Approximately 27km of existing overhead line and associated pylons would be removed as part of the proposals (25km of existing 132kV overhead line between Burstall Bridge and Twinstead Tee, and 2km of the existing 400kV overhead line to the south of Twinstead Tee). To facilitate the overhead line removal, a new grid supply point (GSP) substation is required at Butler's Wood, east of Wickham St Paul, in Essex. The GSP substation would include associated works, including replacement pylons, a single circuit sealing end compound and underground cables to tie the substation into the existing 400kV and 132kV networks.
- 1.1.5 Some aspects of the project, such as the underground cable sections and the GSP substation, constitute 'associated development' under the Planning Act 2008.
- 1.1.6 Other ancillary activities would be required to facilitate construction and operation of the project, including (but not limited to):
- Modifications to, and realignment of sections of existing overhead lines, including pylons;
 - Temporary land to facilitate construction activities including temporary amendments to the public highway, public rights of way, working areas for construction equipment and machinery, site offices, welfare, storage and access;
 - Temporary infrastructure to facilitate construction activities such as amendments to the highway, pylons and overhead line diversions, scaffolding to safeguard existing crossings and watercourse crossings;
 - Diversion of third-party assets and land drainage from the construction and operational footprint; and
 - Land required for mitigation, compensation and enhancement of the environment as a result of the environmental assessment process, and National Grid's commitments to Biodiversity Net Gain.

1.1.7 Further details on the project can be found in the Environmental Statement (ES) Chapter 4: Project Description (**application document 6.2.4**).

1.2 Purpose of this Report

1.2.1 A Habitats Regulations Assessment (HRA) refers to the assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if a plan or project may affect the protected features of a European designated site before deciding whether to undertake, permit or authorise it.

1.2.2 This HRA Report presents the assessment undertaken for the project, which comprises Stage 1: Screening and Stage 2: Appropriate Assessment. It builds on the Draft HRA Screening Report published at the Scoping stage (**application document 6.5.2**) and also in the Preliminary Environmental Information Report (National Grid 2022). Natural England has also been issued with a draft version of the HRA Report and their feedback has been incorporated within this version for application. Further details can be found in Section 2.8 of this report.

1.3 Structure of this Report

1.3.1 The following chapters are set out as follows:

- Chapter 2: Methodology. This sets out the methodology used to undertake the assessment;
- Chapter 3: Scope of Assessment. This outlines the scope and objectives of the report and how the European sites were identified and a summary of the qualifying features of the Stour and Orwell Estuaries Special Protection Area (SPA) and Ramsar;
- Chapter 4: Previous Bird Survey and Desk Study. This summarises the previous survey data available for the assessment;
- Chapter 5: Stage 1: Screening. This identifies the potential for likely significant effects upon European sites;
- Chapter 6: Stage 2: Appropriate Assessment. This comprises the appropriate assessment of impacts that could not be screened out in the Stage 1: Screening;
- Chapter 7: Conclusion. This provides the summary statements regarding the European sites considered in this report;
- References: This contains the reference list supporting the assessment;
- Appendix A: Screening Matrices: This contains the Planning Inspectorate Screening Matrices;
- Appendix B: Integrity Matrices: This contains the Planning Inspectorate Appropriate Assessment Matrices;
- Appendix C: Stour and Orwell Estuaries SPA Natura 2000 Data Sheet;
- Appendix D: Stour and Orwell Estuaries Ramsar Information Sheet; and
- Figures: This contains the figures supporting the assessment.

2. Methodology

2.1 Habitats Regulations Assessment (HRA)

2.1.1 This HRA Report follows guidance provided by the European Commission in 2001. It also follows guidance set out within Advice Note Ten (Planning Inspectorate, 2017 and 2022 update) which provides a framework for the assessment of implications for European sites of Nationally Significant Infrastructure Projects (NSIP). The latter outlines a three-stage process for HRA, which comprises:

- Stage 1: Screening – the purpose of this Stage is to screen the project to see if it will have a significant effect on the European site’s conservation objectives (alone or in combination with other projects or plans). If one or more likely significant effects were likely to occur, it would then be necessary to proceed to HRA Stage 2;
- Stage 2: Appropriate Assessment – assess the implications of the proposal for the qualifying features of the European site, in view of the site’s conservation objectives, and identify ways to avoid or minimise any effects; and
- Stage 3: Derogation – consider if proposals that would have adverse effects on the integrity of a European site qualify for an exemption. There are three tests to this stage to be followed in order: consider alternative solutions; consider Imperative Reasons of Overriding Public Interest (IROPI); and secure compensatory measures. Each test must be passed in sequence for a derogation to be granted.

2.1.2 The HRA Report produced for the project covers HRA Stage 1: Screening (presented in Chapter 5) and Stage 2: Appropriate Assessment (presented in Chapter 6). Stage 2 is only triggered where one or more likely significant effects have been identified at Stage 1 (in the absence of mitigation).

2.2 Identifying Impact Pathways

2.2.1 The process for identifying pathways to potential significant effects is based on the screening criteria detailed within the Design Manual for Roads and Bridges (DMRB) guidance (LA 115 Habitats Regulations Assessment; Highways England *et al.*, 2020). Although designed for highways schemes, the screening criteria are considered suitable and transferable for assessing other types of large linear projects. This guidance identified that potential effects may occur where a project meets any of the following criteria:

- The project is located less than or equal to 2km of any European site (including candidate and potential sites);
- The project is located less than or equal to 30km of any Special Area for Conservation (SAC) (including candidate and potential sites), where bats are one of the qualifying interests;
- The project crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as a European site;
- The project has a potential hydrological or hydrogeological linkage to a European site containing a ground water dependent terrestrial ecosystem;
- The project has an affected road network within 200m of European sites;

- The project overlaps with impact risk zones of underpinning Sites of Special Scientific Interest (SSSI); and
- There is existence of ecological connectivity with European sites beyond the screening criteria.

2.3 Identifying Potential Functionally Linked Habitat

- 2.3.1 Functionally linked land is a term used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a SAC, SPA or Ramsar site has been designated (Bowland Ecology, 2021).
- 2.3.2 A desk study was undertaken to review the potential for functionally linked habitat for bird species in proximity of the project. This included comparing the baseline ecological conditions for each of the qualifying bird species (desk study and survey data) with the five-year average recorded for the Stour and Orwell estuaries (core counts incorporating low tide counts from BTO WeBS Report Online). The project is considered of sufficient distance (5.72km) from the European sites that functionally linked habitat does not need to be considered for other, comparatively immobile, species groups.
- 2.3.3 A one percent threshold was used to identify the presence of potential functionally linked habitat within proximity of the project. However, this threshold is not considered absolute and is interpreted in the context of the number and frequency of peak counts (i.e. regularity of usage) above one percent. In order to be considered functionally linked an area would likely have continued, regular records of qualifying bird species presence that indicates a dependency upon that habitat.

2.4 Measures to Avoid Likely Significant Effects

- 2.4.1 The identification of pathways to likely significant effects and the Stage 1: Screening in this report includes embedded measures that are integral to the design, which would avoid potential impacts to European designated sites. These include the proposed trenchless crossings for installing the underground cables beneath the River Stour and River Box. The trenchless crossings would reduce works required at the River Stour and Box to avoid the pathway between construction activities and the European designated sites downstream.
- 2.4.2 The project has also identified a number of good practice measures relating to biodiversity e.g. sediment and pollution control, which are included within the Code of Construction Practice (CoCP) (**application document 7.5.1**). The CoCP forms Appendix A to the Construction Environmental Management Plan (CEMP) (**application document 7.5**) which is secured through Requirement 4 of the draft DCO (**application document 3.1**).
- 2.4.3 The good practice measures have not been included in the Stage 1: Screening. However, they can be taken into account in the Stage 2: Appropriate Assessment. This is in accordance with case law i.e. People Over Wind and Sweetman v Coillte Teoranta (C-323/17), but is different to that presented within the ES, where good practice measures are included prior to the assessment being undertaken.

2.5 Sources of Information

2.5.1 Table 2.1 outlines the data sources that have been used to inform the baseline information presented within this HRA Report.

Table 2.1 – Sources of Information

Data source	Data/information provided
Natural England Open Data Geoportal	Location and extent of European designated sites, and habitat maps
Multi-Agency Geographic Information for the Countryside (MAGIC) website	SSSI Impact Risk Zones, OS maps and aerial imagery
Joint Nature Conservation Committee (JNCC) website	Natura 2000 data forms
Natural England website	Conservation objectives for European sites
Project survey reports	UK habitats (UKHab) survey based on field survey in 2021, 2022 and aerial imagery where land access was not provided. Presence and distribution / likely absence of key bird species associated with the European sites identified in: <ul style="list-style-type: none"> Suffolk Connections Ornithological Assessment. (The Environmental Partnership (TEP), 2011); and Breeding Bird Survey. Prepared for National Grid (TEP, 2012).
Local Record Centre data	Species records from Suffolk Biological Information Services (SBIS), Essex Wildlife Trust and Essex Field Club (EFC) (2021 and update from June 2022).
British Trust for Ornithology (BTO)	Bird Atlas 2007-11; Breeding Bird Survey Data (2006–2019); English Winter Bird Survey data (2018–2019); BirdTrack data (2012–2021); and BTO WeBS Report Online (2022).

2.6 Matrices

2.6.1 Matrices based on the template set out in Appendix A and Appendix B in Advice Note Ten (Planning Inspectorate, 2017) are provided in Appendix A: Screening Matrices and Appendix B: Integrity Matrices.

2.7 In-combination Assessment

2.7.1 A requirement of the HRA is to examine the potential for a plan or project to have a significant effect either alone or in-combination with other plans and projects. The in-combination assessment process is undertaken in Stage 2: Appropriate Assessment where likely significant effects cannot be ruled out. Those potential impacts screened out in Stage 1: Screening are considered *de minimis* and therefore incapable of contributing to any potentially significant in-combination effect.

2.7.2 The following criteria is used to identify plans and projects where in-combination effects could occur:

- Planning Applications: 1km search area around the project comprising:

- Applications for ‘major development’ (as defined by the Town and Country Planning (General Development Procedure) (England) Order 2010);
- Application types - EIA Scoping Request, Full, Outline, Reserved Matters, Change of Use, Certificate of Lawfulness, Prior Notifications, Listed Building Consents;
- Timeframe - applications submitted since January 2013; and
- Application status - all applications that have been submitted no matter the status. Applications that have been refused/withdrawn have also be included. Applications to discharge conditions/ vary a permission are not included unless they could have a material impact e.g. extensions to timeframes.
- Applications for Development Consent under the Planning Act: 50km around the project that have been submitted or approved since January 2013; and
- Sites allocated in relevant Local Development Plans.

2.7.3 If required, project specific criteria would also be applied e.g. where potential surface water and hydrogeology impacts from other plans and projects could occur on the same hydrological connections with the European sites as the project.

2.7.4 Minor planning applications have been excluded from the assessment, as these relate to developments of small scale and local importance. These developments are highly unlikely to give rise to significant cumulative environmental effects over and above the project in isolation.

2.7.5 The list of plans and projects where in-combination effects could occur was fixed for the application on the 31 January 2023 to allow the HRA to be finalised for submission within the application for development consent.

2.8 Consultation

2.8.2 A draft version of a HRA Screening Report was presented in the Scoping Report Appendices (**application document 6.5.2**) and also in the Preliminary Environmental Information Report (National Grid, 2022). This concluded that the project was unlikely to result in likely significant effects due to good practice measures outlined within the CoCP (**application document 7.5.1**) and the dilution effect over the large intervening distance (5km) between the project and the designated site.

2.8.3 Natural England responded during the statutory consultation to say that good practice measures could be considered mitigation, which should not be included following the People Over Wind ruling by the Court of Justice of the European Union. Relevant extracts from the response are provided below.

‘On the basis of information provided, Natural England’s advice is that this proposed development may contain (or require) measures intended to avoid or reduce the likely harmful effects on a European site(s) which cannot be taken into account when determining whether or not a plan or project is likely to have a significant effect on a site and requires an appropriate assessment (following the People Over Wind ruling by the Court of Justice of the European Union)...

For this reason, we advise that on the basis of the information supplied that the application may have a likely significant effect on the site(s). These measures therefore need to be formally checked and confirmed via an appropriate assessment, in accordance with the

Conservation of Habitats and Species Regulations 2017 (as amended). These measures, and any additional measures that can avoid or reduce any likely harmful effects, can be considered as part of the appropriate assessment, to determine whether a plan or project will have an adverse effect on the integrity of the European site....

We consider that should suitable mitigation measures of best practice be secured at the Appropriate Assessment stage through both the CoCP and [Construction Environmental Management Plan] CEMP, we consider that based on the information provided to date that the proposal would be unlikely to result in adverse effects on the integrity of any of the sites in question’.

- 2.8.4 Following Natural England’s written response, the report has been updated accordingly with likely significant effects for potential changes in surface water quality taken forward to the appropriate assessment stage.

3. Scope of Assessment

3.1 Identification of European Sites

- 3.1.1 The HRA includes all European sites where it has been identified that there could be a potential pathway to effect from the project. No European sites lie wholly or partly within 2km of the Order Limits (see Section 2.2). No SAC where bats are one of the qualifying interests is located within 30km of the Order Limits.
- 3.1.2 The Order Limits intersect the River Stour and River Box in sections where underground cable sections are proposed; and the River Brett and Belstead Brook along sections where overhead line is proposed. All of these rivers enter the Stour and Orwell Estuaries SPA and Ramsar sites, which are located approximately 5.72km south-east of the Order Limits (Figure 1). A description of these sites and their qualifying features is given below. The Natura 2000 Data Sheet for the Stour and Orwell Estuaries SPA is provided in Appendix C. The Information Sheet on the Stour and Orwell Estuaries Ramsar is provided in Appendix D.
- 3.1.3 No further European sites are hydrologically connected to the project. The European sites that have been screened into the assessment are listed in Table 3.1 and are shown on Figure 1: European Designated Sites.

Table 3.1 – European Sites in the Scope of This Screening Report

European Site	Approximate Distance from Order Limits
Stour and Orwell Estuaries Ramsar	5.72km south-east
Stour and Orwell Estuaries SPA	5.72km south-east

- 3.1.4 The project involves constructing, operating and decommissioning electricity infrastructure (pylons and overhead lines and underground cable construction) which require consultation with Natural England due to it falling within the Impact Risk Zones for the component SSSIs that make up the Stour and Orwell Estuaries SPA and Ramsar sites. As such, the bird species identified as qualifying features of the Stour and Orwell Estuaries SPA and Ramsar sites are included in the scope of the HRA. SSSI Impact Risk Zones of other coastal European sites supporting mobile bird species do not intersect with the project and are therefore not included.
- 3.1.5 No hydrological or hydrogeological linkage to a European site containing a groundwater dependent terrestrial ecosystem has been identified.
- 3.1.6 The Transport Assessment (**application document 5.7**) identifies that the potential adverse effects are restricted to the local road network and relevant connections with the strategic road network. With no likely adverse impact on traffic beyond the junctions with the A120, the A12 and A14, there is no pathway to effect on resulting air quality beyond this. There are no European sites within 200m of the local road network to the extent where it reaches junctions with the strategic road network.

3.2 Stour and Orwell Estuaries SPA and Ramsar

- 3.2.1 The Stour and Orwell Estuaries SPA and Ramsar is a wetland of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle

on the lower reaches (Natural England, 2014a). The European site designations are coincident with Cattawade Marshes SSSI, Orwell Estuary SSSI and Stour Estuary SSSI.

- 3.2.2 The site provides habitats for an important assemblage of wetland birds in the non-breeding season and supports internationally important numbers of wintering and passage wildfowl and waders. The site also holds several nationally scarce plants and British Red Data Book invertebrates.

Stour and Orwell Estuaries SPA

- 3.2.3 The conservation objectives for the SPA (Natural England, 2014b) are to '*ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:*

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

- 3.2.4 The qualifying features of the site are:

- (A046a) dark-bellied brent goose (*Branta bernicla bernicla*) (non-breeding);
- (A054) northern pintail (*Anas acuta*) (non-breeding);
- (A132) pied avocet (*Recurvirostra avosetta*) (breeding);
- (A141) grey plover (*Pluvialis squatarola*) (non-breeding);
- (A143) red knot (*Calidris canutus*) (non-breeding);
- (A149) dunlin (*Calidris alpina alpina*) (non-breeding);
- (A156) black-tailed godwit (*Limosa limosa islandica*) (non-breeding);
- (A162) common redshank (*Tringa totanus*) (non-breeding); and
- Waterbird assemblage of over 20,000 individuals. Species include great crested grebe (*Podiceps cristatus*); great cormorant (*Phalacrocorax carbo*); brent goose; common shelduck (*Tadorna tadorna*); Eurasian wigeon (*Anas penelope*); gadwall (*Anas strepera*); northern pintail; goldeneye (*Bucephala clangula*); common ringed plover (*Charadrius hiaticula*); grey plover; northern lapwing (*Vanellus vanellus*); red knot; dunlin; black-tailed godwit; Eurasian curlew (*Numenius arquata*); common redshank; and ruddy turnstone (*Arenaria interpres*).

Stour and Orwell Estuaries Ramsar

- 3.2.5 There is no specific information on conservation objectives provided as part of the Ramsar designation. The site is designated as a Ramsar as it meets the following criteria (JNCC, 2008):

- Ramsar criterion 2: Contains seven nationally scarce plants and five British Red Data Book invertebrates (see Table 3.2);
- Ramsar criterion 5: Assemblages of international importance (63,017 waterfowl – five-year peak mean 1998/99–2002/2003); and
- Ramsar criterion 6: Species populations occurring at levels of international importance (concurrent with species listed as SPA qualifying features).

Table 3.2 – Qualifying Plant and Invertebrate Species of the Stour and Orwell Estuaries

Ramsar Criteria	Scientific Name	Species Name
Nationally scarce plant species	<i>Puccinellia rupestris</i>	Stiff saltmarsh-grass
	<i>Spartina maritima</i> ;	Small cord-grass
	<i>Sarcocornia perennis</i>	Perennial glasswort
	<i>Limonium humile</i>	Lax-flowered sea lavender
	<i>Zostera angustifolia and Z. marina and Z. noltei</i>	Eelgrasses
British Red Data Book invertebrates	<i>Phaonia fusca</i>	A muscid fly
	<i>Haematopota grandis</i>	A horsefly
	<i>Arctosa fulvolineata and Baryphema duffeyi</i>	Spiders
	<i>Mercuria confusa</i>	Swollen spire snail

3.3 Site Vulnerabilities

3.3.1 The most important impacts and activities with high effect on the SPA and Ramsar comprise (JNCC, 2016):

- Changes in biotic conditions both inside and outside of the site;
- Changes in abiotic conditions both inside and outside of the site;
- Fishing and harvesting aquatic resources inside of the site;
- Outdoor sports and leisure activities, recreational activities inside of the site; and
- Other urbanisation, industrial and similar activities both inside and outside of the site.

4. Previous Bird Survey and Desk Study

4.1 Introduction

- 4.1.1 This chapter provides a review of the previous bird surveys carried out in support of the project and a desk study comprising local record centre data from SBIS, EFC and Essex Wildlife Trust (EWT) and datasets from the BTO. The review of previous surveys and the desk study focus on qualifying bird species and waterbird assemblage of the Stour and Orwell Estuaries SPA/Ramsar only.
- 4.1.2 The original bird desk study was undertaken based on a study area of 1km buffer around the Scoping Consultation Boundary, as defined in February 2021 and discussed in the Scoping Report (**application document 6.5.1**). Data has been subsequently focussed, and as presented in this report, is based on a 1km study area around the Order Limits. Data from BTO extended to beyond 1km where records based on 10km grid squares have been provided.
- 4.1.3 The field survey text below refers to the four route corridors that were identified during the options appraisal between 2009 and 2013, before the project was paused. Corridor 2 was identified as the preferred route corridor. The Order Limits primarily lie (excluding some temporary access routes) within Corridor 2. Further details on the route corridors and where these are located can be found in ES Chapter 3: Alternatives Considered (**application document 6.2.3**).
- 4.1.4 Although the previous survey results and reports exceed the recommended lifespan (CIEEM, 2019), this baseline data is still considered useful in providing further context relating to the bird activity patterns within proximity of the Order Limits. In addition, the results of the 2021/2022 UKHab survey shown on Habitats of Protected Species and Important Habitats Plans (**application document 2.8.2**) indicate that there is good consistency, with little land use change compared with the 2012 habitat survey data over the intervening time. In turn, this suggests that the presence and abundance of bird species recorded between 2009–2013 is also likely to be similar.

4.2 Previous Field Survey (2009-2012)

Ornithological Assessment, 2009-2011

- 4.2.1 The Suffolk Connections Ornithological Assessment (The Environmental Partnership (TEP), 2011) was carried out from pre-selected vantage points (agreed with the Royal Society for the Protection of Birds (RSPB)) across the four route corridors being considered as part of the options appraisal between 2009-2011. These included Corridor 2, within which the vast majority of the Order Limits lie.
- 4.2.2 The Ornithological Assessment included the following components:
- Winter bird surveys to identify field use by certain bird species over two seasons (2009/2010 and 2010/2011);
 - Detailed vantage point surveys in the period April to October 2010 to identify flight lines; and
 - Analysis of bird distribution and flight line data to undertake a comparative assessment of displacement and collision risk that may occur for different corridors.

- 4.2.3 The winter bird surveys were undertaken by experienced ornithologists and comprised monthly visits (November-March inclusive) along the four route corridors. The surveyors followed a transect that maximised visibility across the landscape and undertook bird counts in fields from suitable viewpoints, mapping numbers and flight movements of any waders and wildfowl; and recording the presence of any raptors.
- 4.2.4 The winter surveys covered the four route corridors although greater effort was directed to areas containing large agricultural fields or wetlands, particularly those where records indicated a historic association with waders and/or wildfowl. The surveyors also drove along one of two separate transects for a full day (dawn to dusk), regularly stopping at predetermined viewpoints to undertake counts of flocks of waders and wildfowl in agricultural fields.
- 4.2.5 No qualifying bird species of the Stour and Orwell Estuaries SPA and Ramsar were recorded during either of the two sets of winter surveys. However, lapwing, a species included in the wider waterbird assemblage was recorded during both surveys. The results are summarised in Table 4.1 and are shown on Figure 3: Lapwing (previous field survey and desk study).

Table 4.1 – Summary of Qualifying Bird Species (Data taken from TEP, 2011)

Visit	Total Number of Lapwing Recorded	Peak Flock Size	Nearest Record to Order Limits	Stour and Orwell Estuaries Peak Mean Count and %			
				(08/09 – 12/13)*		(15/16 – 19/20)*	
2009/2010 Season							
November 2009	0	0	n/a	3295	0%	3254	0%
December 2009	83	56	c. 500m south	3295	1.70%	3254	1.72%
January 2010	29	12	c. 1.2km north	3295	0.36%	3254	0.37%
February 2010	0	0	n/a	3295	0%	3254	0%
March 2010	18	10	c. 1.1km north	3295	0.30%	3254	0.31%
2010/2011 Season							
November 2010	15	15	1.1km north	3295	0.46%	3254	0.46%
December 2010	65	50	1.4km north	3295	1.52%	3254	1.54%
January 2011	95	95	Within	3295	2.88%	3254	2.92%
February 2011	18	12	1.2km north	3295	0.36%	3254	0.37%
March 2011	2	2	2.5km north	3295	0.06%	3254	0.06%

*Five year average from the BTO dataset (see Section 2.3 for details)

- 4.2.6 The numbers of lapwing recorded during the 2009/10 season ranged between 0 and a maximum count of 56. The majority of lapwing records were at distance from the existing 400kV and 132kV overhead lines and the Order Limits. The numbers of lapwing recorded during the 2010/11 season ranged between 0 and a maximum count of 95, with the majority of records made in fields to the north of the existing 400kV overhead line and the

Order Limits. The maximum count of 95 birds (January 2011) recorded within the Order Limits were flying overhead and not using the habitats within the Order Limits.

Breeding Bird Survey Report (TEP, 2012)

- 4.2.7 Two breeding bird survey (BBS) visits were undertaken by experienced ornithologists within Corridor 2 during the 2012 breeding bird season. The first visit surveys were conducted between 18 and 21 April 2012 and the second visit surveys between 30 May and the 1 June 2012. The proposed GSP substation site was surveyed on separate visits, with the first visit on the 11 May 2012 and the second on the 10 June 2012. Surveys were carried out between half an hour after dawn and midday to coincide with peak bird activity.
- 4.2.8 During each survey visit a transect was walked throughout Corridor 2, aiming to pass within 100m of all land within the corridor. The transect was walked at a steady pace with stops at regular intervals. All bird activity encountered, including songs, calls, flight lines, feeding, nesting and territorial behaviour was recorded and mapped.
- 4.2.9 No qualifying species of the Stour and Orwell Estuaries SPA/Ramsar were recorded during the 2012 BBS. However, lapwing and curlew species (comprising the wider waterbird assemblage) were recorded in very small numbers, within the Order Limits. The results of these surveys are presented in Table 4.2. The peak mean counts for each are also provided with percentages relative to the peak mean flock size recorded from the combined Stour and Orwell Estuaries BTO survey (BTO, 2022). The records are shown on Figure 3: Lapwing and Figure 4: Waterbird Assemblage excluding Lapwing.

Table 4.2 – Summary of Qualifying Bird Species Observations During the 2012 BBS

Species	Peak Count on Visit 1	Peak Count on Visit 2	Nearest Record to Order Limits	Stour and Orwell Estuaries Peak Mean Count and %			
				(08/09 – 12/13)		(15/16 – 19/20)	
Lapwing	2	1	Within	3295	0.06%	3254	0.06%
Curlew	0	1	Within	2177	0.05%	1651	0.06%

*Two WeBS Report counts for the Stour and Orwell Estuaries are provided; the first reflects the time of survey for the ornithological assessment and BBS (2008/09-2012/13), and the second the latest available dataset (2015/16-2019/20). These two time frames enable comparative analysis of the percentages at the time of survey (relative to the overall counts recorded).

4.3 Local Record Centre Data

- 4.3.1 A desk study of records from SBIS, EFC, and EWT of qualifying bird species within a 1km study area from the Scoping Consultation Boundary was undertaken in 2021 and updated with additional SBIS purchased in June 2022. The results presented here represent a 1km study area around the Order Limits, which was chosen as a representative distance at which species were likely to be present based on professional judgement. The results are summarised in Table 4.3 as are the peak mean counts and percentages (relative to the peak flock size recorded) from the Stour and Orwell Estuaries (BTO, 2022). These are also shown on Figures 2 to 4.
- 4.3.2 No qualifying species of the Stour and Orwell Estuaries SPA/Ramsar were returned in the local record centre datasets. Records of eight species that are specifically listed in the waterbird assemblage for the sites were returned.

- 4.3.3 While limited numbers of individuals of species were recorded, in the main, a large assemblage of lapwing was recorded near Assington in 2008, north of the Order Limits. More recent (within the last five years) records of lapwing have been much smaller in number with peak counts of only one.

Table 4.3 – Local Record Centre Data for Qualifying Bird Species

Species	Number of Records	Date	Approximate Distance of Peak Count from Order Limits	Stour and Orwell Estuaries Peak Mean Count and % (15/16 – 19/20)
Cormorant	6 (max count: 16)	2009-2018	50m	1017 1.57%
Goldeneye	1 (max count: 1)	2016	200m	150 0.67%
Great crested grebe	3 (max count: 1)	2018	560m	173 0.58%
Common ringed plover	1 (max count: 1)	2018	Within	443 0.23%
Wigeon	1 (max count: 2)	2007–2020	540m	3792 2.90%
Gadwall	3 (max count: 8)	2010-2016	540m	236 3.39%
Curlew	4 (max count: 1)	2007-2014	75m	1651 0.06%
Lapwing	24 (max count: c. 435)	2008–2019	580m	3254 13.37%

4.4 Other Relevant Data Sources

BTO Bird Atlas, 2007–2011

- 4.4.1 The BTO Bird Atlas data (2007–2011) was purchased in February 2021 based on the Scoping Consultation Boundary (see Section 4.1). The data covered the following 10km grid squares; TL83, TL93, TL94, TM03, TM04 and TM14, giving coverage of the Order Limits and wider context to the study area. The data is summarised in Table 4.4 along with the peak mean counts and percentages (relative to the peak flock size recorded during the survey) from the Stour and Orwell Estuaries (BTO, 2022). The results are shown on Figures 2 to 4.
- 4.4.2 No records of qualifying feature bird species of the Stour and Orwell Estuaries SPA/Ramsar were provided in this dataset. The data contains five records for waterbird assemblage bird species of the SPA and Ramsar.

Table 4.4 – Waterbird Assemblage Species Listed Within the BTO Atlas 2007–2011

Species	Season	Total Number of Records	Breeding Status	Peak Count	Stour and Orwell Estuaries Peak Mean Count and % (15/16 – 19/20)
Cormorant	Winter	14	Confirmed	16	1017 1.57%

Species	Season	Total Number of Records	Breeding Status	Peak Count	Stour and Orwell Estuaries Peak Mean Count and % (15/16 – 19/20)
Shelduck	Breeding	6	Confirmed	4	2393 0.17%
Wigeon	Wintering	10	Confirmed	235	3792 6.20%
Gadwall	Breeding and wintering	15	Confirmed	8	236 3.39%
Lapwing	Breeding and wintering	46	Confirmed	420	3254 12.91%

BTO Breeding Bird Survey, Twinstead, 2006–2019

- 4.4.1 Results from the BTO BBS (2006–2019) was purchased by the project in February 2021. The data covered the following grid squares which are the relevant squares in the study area; TL8736 and TL8435, which are the closest relevant to the Order Limits.
- 4.4.2 No records of qualifying feature bird species of the Stour and Orwell Estuaries SPA and Ramsar were provided in this dataset. There were two records of a waterbird assemblage bird species record for the SPA and Ramsar; a cormorant in 2010 and 2013, which is shown in Figure 4: Waterbird Assemblage excluding Lapwing.

BTO English Wintering Bird Survey, Twinstead, 2006–2019

- 4.4.3 The BTO English Wintering Bird Survey (2006–2019) was purchased in February 2021. The data covered the grid squares TL8738 and TM0142 in the study area, which are the closest relevant to the Order Limits. No records of qualifying birds of the SPA and Ramsar were returned within the data.

BTO BirdTrack data

- 4.4.4 The BTO BirdTrack data was purchased in February 2021. The data covered the following grid squares; TL83, TL93, TL94, TM03, TM04, TL8736, TL8435, TM14, TL8738 and TM0142, which are the closest relevant to the Order Limits. No records of qualifying feature bird species of the Stour and Orwell Estuaries SPA and Ramsar were provided in this dataset within the desk study area. The data is summarised in Table 4.5 along with the peak mean counts and percentages (relative to the peak flock size recorded during the survey) from the Stour and Orwell Estuaries (BTO, 2022). The results are shown on Figures 3 and 4. One of these records included a goldeneye within the Order Limits.

Table 4.5 – Waterbird Assemblage Species Listed Within the BTO BirdTrack data

Species	Number of Grid Squares with Species Records	Total Number of Records	Peak Count	Stour and Orwell Estuaries Peak Mean Count and % (15/16 – 19/20*)
Cormorant	4	46	7	1017 6.88%
Goldeneye	1	1	1	150 0.66%
Great crested grebe	1	1	No data	173 N/A

Species	Number of Grid Squares with Species Records	Total Number of Records	Peak Count	Stour and Orwell Estuaries Peak Mean Count and % (15/16 – 19/20*)
Wigeon	1	2	20	3792 0.53%
Gadwall	1	1	3	236 1.27%
Lapwing	10	25	150	3254 4.61%

4.5 Summary and Evaluation

- 4.5.1 The multiple data sources and the review of habitats present within the Order Limits combine to suggest that the habitats within the Order Limits and their surroundings are of limited importance to the qualifying bird species of the Stour and Orwell Estuaries SPA and Ramsar site. Indeed, no records of qualifying feature species of the SPA/Ramsar were recorded within 1km of the Order Limits. Where records of qualifying feature bird species were found, they were beyond the 1km study area, ranged between one and five individuals and pre-2016 (see Figure 2: Qualifying Bird Species Records).
- 4.5.2 Although some records of bird species that make up the waterbird assemblage of the European sites were identified, the majority of numbers were relatively small and unlikely to be important components of the species populations and the assemblage as a whole at the European site. The absence of any repeated and/or consistent presence of qualifying feature and assemblage species in any particular location across the study area suggests there is no reliance on habitats by those bird species within the study area and therefore does not constitute functionally linked habitat to the SPA and Ramsar site. Where repeated records are found these are of a small number of individuals recorded at Conard Mere, Arger Fen and open standing water south of Polstead, which are at some distance from the main components of the project. Furthermore, there is no data to indicate the presence of a significant migratory route for those species within the Order Limits and/or environs.
- 4.5.3 Whilst single records of larger aggregations of lapwing, gadwall, cormorant and wigeon (wider bird assemblage species) were identified which exceeded the indicative 1% threshold of importance, these were singular (i.e. not repeated which would suggest reliance on specific habitats) and so not indicative of habitat dependency within or around the Order Limits. Furthermore, a number of the lapwing records which exceeded the 1% threshold were in fact flyovers, that is the birds were not recorded at ground level and therefore should not be considered as a potential indication of functionally linked habitat (December 2010 – peak count 50 = 1.52% / 1.54%; and January 2011 - peak count 95 = 2.88% / 2.92%).
- 4.5.4 Notwithstanding the age of some of the survey data relied upon, professional judgement considers that the current abundance and distribution of bird species are likely to remain similar to the numbers previously recorded. This is based on review and comparison of habitats present at the time of field survey and the update in 2021/2.

5. Stage 1: Screening

5.1 Screening of Likely Significant Effects

5.1.1 Potential changes to a European site and its qualifying feature species, including those that may occur beyond the boundary of the designated site, that could lead to a likely significant effect are listed in Table 5.1 and discussed in detail below.

Table 5.1 – Likely Significant Effects

Potential Effects	Description
Habitat loss	Loss of functionally linked land outside of the SPA/Ramsar.
Habitat or Species Fragmentation	Fragmentation of habitat outside of the designated site used by SPA/Ramsar birds during construction in underground cable sections. Operational dispersal barriers to SPA/Ramsar birds in flight.
Reduction in Species Density	Mortality or injury risk to SPA/Ramsar birds during vegetation clearance within functionally linked habitats outside of the SPA/Ramsar. SPA/Ramsar bird collision with overhead lines. Mortality of Ramsar designated aquatic invertebrate (via changes in water quality). Degradation or reduction in distribution/extent of Ramsar designated plants (via changes in water quality).
Disturbance/ Displacement	SPA/Ramsar bird displacement from noise. SPA/Ramsar bird displacement from visual disturbance. SPA/Ramsar bird displacement from lighting. SPA/Ramsar bird avoidance of previously used habitats.
Changes in Key Indicators of Conservation Value	Adverse effect on SPA/Ramsar habitats and functionally linked habitats outside of the SPA/Ramsar (and consequentially the species they support) due to: <ul style="list-style-type: none"> Air quality change (nitrogen deposition and dust); Surface water quality change (from sedimentation and/or pollution incidents); and Groundwater quality change.

5.1.2 There are no plans to decommission the project. While the design life of the project is currently at least 40 years, this is likely to be significantly extended given the typical life of some components being longer than 40 years (for example a pylon would typically last 80 years before requiring full refurbishment).

5.1.3 It is assumed that decommissioning would only be undertaken if there were substantial changes to how electricity is transmitted around the country or significant changes to the sources of generation and areas of demand. At such a time National Grid determines that it would no longer require all or part of the project, the regulatory framework, good industry practices and the future baseline may have altered. At the point where the project requires decommissioning, National Grid would consider and implement an appropriate decommissioning strategy taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements.

- 5.1.4 There are unlikely to be any likely significant effects upon European site during decommissioning. In addition, the potential impacts of decommissioning would likely to be similar to construction but with a lower magnitude. The footprint of any decommissioning works is likely to be smaller than the ground disturbed during construction of the project and the effects would be no worse than those identified during construction.

5.2 Habitat Loss

Direct Habitat Loss

- 5.2.2 The project would not result in any direct land take or habitat loss from the Stour and Orwell Estuaries SPA and Ramsar. The Order Limits are located approximately 5.72km at the closest point from the Stour and Orwell Estuaries SPA and Ramsar.

Functionally Linked Land Outside of the Site

- 5.2.3 Temporary and permanent habitat loss would result from construction activities within the Order Limits. However, most habitats temporarily used would be reinstated post construction, with permanent habitat loss restricted to relatively minor areas associated with the proposed GSP substation (23km at the closest point), the CSE compounds (10km at the closest point) and individual pylon bases.
- 5.2.4 There could be temporary habitat loss outside of the European site itself in areas of known foraging, roosting or breeding habitat that supports mobile species, i.e. birds, for which a European site is designated. However, there is no evidence that the Order Limits support significant numbers of breeding or roosting wintering birds either of qualifying individual species or assemblages of the Stour and Orwell Estuaries SPA and Ramsar. Indeed, no records of the qualifying bird species were identified within 1km of the Order Limits.
- 5.2.5 Field surveys undertaken for the project (TEP, 2011; 2012) found no evidence that the habitats within the Order Limits provided an important resource for the species of the Stour and Orwell Estuaries SPA and Ramsar. Although occasional records were made of lapwing (part of the wider water bird assemblage qualifying feature), no evidence was found to indicate that any of the qualifying bird species of the European sites regularly or consistently used fields surveyed for roosting or feeding during the winter and migratory periods.
- 5.2.6 TEP (2011) concluded that *'discussions with representatives of the RSPB confirm that there is no functional link between the Stour and Orwell Estuaries SPA and the corridors study area'*. The results of the 2021/2022 UKHab survey shown on Habitats of Protected Species and Important Habitats Plans (**application document 2.8.2**) indicates no significant change in habitats type and extent and therefore it can be assumed that there would be no significant change in the presence/abundance of qualifying bird species in the study area. Furthermore, the desk study returned few records of qualifying bird species to otherwise indicate the potential presence of functionally linked habitat to the SPA and Ramsar within the study area.
- 5.2.7 This conclusion is supported by the comparative analysis of the baseline ecological conditions and BTO WeBS Report data (BTO, 2022), with peak counts of the following bird species representing less than one percent of the estuaries mean five-year

population number (which is set as a potential indicator of functionally linked land): goldeneye, common ringed plover, curlew, and shelduck.

5.2.8 Although a number of peak counts exceed one percent of the mean five-year population number, these are not considered indicative of functionally linked land for the following reasons:

- The average peak mean count of the Stour and Orwell Estuaries (WeBS Report data) is relatively low for the following species: great crested grebe = 157; and gadwall = 232. Therefore, the one percent threshold is less suitable in this instance as even low peak counts of less than twenty birds would indicate the potential presence of functionally linked habitat. However, even where these were recorded, they were singular events not repeated;
- No qualifying bird species were recorded during the previous surveys carried out in support of the project (November 2009 – March 2011). Lapwing and curlew, species from the waterbird assemblage, were recorded in these surveys during this timeframe but not in a consistent or repetitive manner which would indicate some level of reliance by those birds on the habitats in the study area; and
- The previous survey data indicates peak counts of lapwing in proximity to the Order Limits are usually less than one percent. The spikes above are not therefore considered regular occurrences which could indicate these locations have a role/function beyond the boundary of a European site in terms of supporting the populations for which the site was designated or classified.

5.2.9 As the qualifying feature invertebrate and plant species of the Ramsar are either non-mobile or highly restricted to the supporting habitat types of the Ramsar site itself and neither are found within or are functionally linked to the Order Limits, these qualifying features are not considered outside of the designated site boundaries.

5.2.10 No likely significant effect due to habitat loss impacts have been identified.

5.3 Habitat or Species Fragmentation

5.3.2 Outside of the European site, there would not be habitat fragmentation impact for the plant and invertebrate species that are part of the Ramsar designation. However, construction activities could cause habitat fragmentation impacts for mobile species outside of the European site.

5.3.3 In the construction phase, the open-cut sections of the underground cable would typically require an 80m wide working area located within the Order Limits, separating the retained habitats either side. However, this habitat fragmentation would be temporary with reinstatement undertaken at the end of construction. In addition, as the mobile species of the European site are airborne, any ground-based habitat fragmentation would not prevent flight movements between habitats on either side of the working area.

5.3.4 During operation, the project would not create permanent dispersal barriers that could otherwise contribute towards habitat or species fragmentation.

5.3.5 In conclusion, the baseline suggests that there is no functional link between the habitats of the Stour and Orwell Estuaries SPA and Ramsar and those within the Order Limits or surroundings.

- 5.3.6 No likely significant effect due to habitat or species fragmentation impacts have been identified.

5.4 Reduction in Species Density

Construction

- 5.4.2 If qualifying bird species with a functional link to the European sites were present within the Order Limits there could be a potential mortality or injury risk during habitat clearance for the construction activities. However, the likelihood of this occurring is limited, as not only is the recorded presence of qualifying bird species in the Order Limits extremely low, there is plentiful similar habitat in the wider landscape available for use, to which birds would naturally disperse out to in response to construction activities (see disturbance/displacement below) before they could be killed or injured. There is no feasible impact on eggs of breeding avocet (the only qualifying species listed as breeding within the European site designations) as no records of breeding avocet have been identified in the review of field survey data or desk study.
- 5.4.3 It is feasible that changes to the quality of surface water and groundwater, due to construction activities, entering the designated sites could impact upon Ramsar cited plant and invertebrate species dependent on freshwater. This is discussed further in Section 5.6.

Operation

- 5.4.4 The presence of overhead lines can create a collision risk to qualifying bird species when in flight. However, the likelihood of this occurring as a result of the project is minimal, as there are already overhead lines and pylons in the landscape, and the recorded presence of qualifying bird species in and around the Order Limits is extremely low.
- 5.4.5 The project involves removal of the existing 132kV overhead line (pylons approximately 30m in height) and construction of the proposed 400kV overhead line (pylons approximately 54m in height). The new overhead would generally run parallel to the existing 400kV overhead line, except for where a new line of pylons lie to the north and west of Hintlesham Woods. Therefore, there would remain the same number of overhead lines to the existing baseline. The pylons for the proposed 400kV overhead line would be slightly larger than the existing 132kV overhead line although they would be similar in height to the existing retained 400kV overhead line.
- 5.4.6 The project would also involve underground cables within the Dedham Vale Area of Outstanding Natural Beauty (AONB) and parts of the Stour Valley, which would result in a net reduction in overhead lines in the landscape and further limit the risk of collision in these locations. Therefore, the project would reduce the number of overhead lines present compared to the existing baseline, due to the underground sections.
- 5.4.7 No likely significant effects due to a reduction in species density have been identified during the operation phase of the project.

5.5 Disturbance/Displacement

Construction

- 5.5.2 Construction activities have the potential to cause short-term displacement of qualifying bird species of European sites outside of the designated site where those activities occur in important functionally linked habitat. Noise and vibration, provision of artificial lighting in previously unlit areas and additional human presence can all generate disturbance causing displacement.
- 5.5.3 Surveys carried out in support of the project (TEP, 2011 and TEP, 2012) indicate there is no potential for disturbance to qualifying bird species. Few records of lapwing and none of the specific qualifying feature bird species were made during the field survey, and similarly few were identified in the desk study.
- 5.5.4 The results of the 2021/2022 UKHab survey shown on Habitats of Protected Species and Important Habitats Plans (**application document 2.8.2**) indicates no significant change in habitats from those identified in 2012, and therefore it can be assumed that there would be no significant change in the presence/abundance of qualifying bird species in the Order Limits. Furthermore, the desk study returned few records of qualifying bird species to otherwise indicate the potential presence of functionally linked habitat to the SPA and Ramsar.
- 5.5.5 In the unlikely event individual birds were present and were to be displaced, they would have abundant similar alternative habitat nearby to use. No likely significant effects due to disturbance and/or displacement impacts have been identified.

Operation

- 5.5.6 Artificial lighting during operation would be limited to security lighting at the GSP substation, which would be motion-sensor activated and only triggered in exceptional circumstances. Blocks of woodland to the north and south of the proposed GSP substation and embedded design screening planting would screen much of this. No significant operational noise or vibration or increase in human presence is anticipated during operation.
- 5.5.7 The presence of overhead lines and pylons could generate displacement effects where qualifying bird species functionally linked to the European site actively avoid previously used suitable habitats. However, desk study and field survey in a landscape where overhead lines and pylons already exist show that the presence of qualifying bird species is low, and where they are recorded, they have been relatively close to the existing overhead line (TEP, 2011), suggesting the overhead lines do not pose a displacement risk. No likely significant effects due to disturbance and/or displacement impacts have been identified.

5.6 Changes in Key Indicators of Conservation Value

Air Quality

Construction

- 5.6.2 Assessment guidelines states that air quality impacts can occur up to 200m from their origin (Institute of Air Quality Management, 2019). As the Stour and Orwell Estuaries SPA

and Ramsar lies more than 200m from the Order Limits, no direct air quality change or impact is anticipated.

- 5.6.3 Desk based study and field survey (TEP, 2011; TEP, 2012) show that the Order Limits do not support important populations of any bird species or assemblages that define the Stour and Orwell Estuaries SPA and Ramsar. Any dust generated or nitrogen deposition generated by construction activities would be highly unlikely to be in sufficient quantities to generate a response in suitable habitat which is mostly arable and improved grassland, which are tolerant to changes in air quality.

Operation

- 5.6.4 No significant change in air quality is anticipated in the operational phase of the project, as there are no significant traffic movements.

Surface Water Quality

Construction

- 5.6.5 The Order Limits cross a number of watercourses, including the River Stour, River Box, River Brett and Belstead Brook, which lead into the Stour and Orwell Estuaries SPA and Ramsar. The project would cross the River Brett and the Belstead Brook by overhead lines and the Rivers Stour and Box via underground cabling.
- 5.6.6 There would be very limited interaction with the watercourses during construction in the overhead line sections. A temporary bridge would be used for the temporary access route crossing over the River Brett. Once construction is complete, the temporary crossing would be removed. No access route crossing of the Belstead Brook is proposed. No significant change in surface water quality is anticipated at these crossing points.
- 5.6.7 The River Stour and River Box would be crossed by underground cables that would be installed using a trenchless technique. Temporary bridges would be used for the temporary access route crossing over both rivers during construction. In addition, several unnamed watercourses that drain to the River Box and River Stour would also be crossed using a temporary culvert with an access track laid over the top for construction access. The minor unnamed watercourses would be crossed using trenched methods. These activities could result in sedimentation, (including from potential drilling muds/bentonite break-out where trenchless crossing techniques are used), and/or pollution incidents of watercourses that ultimately discharge into the European sites, reducing habitat quality there. Flood events during construction could also result in the mobilisation of pollutants such as bentonite, oil and fuel from the working area.
- 5.6.8 Above ground infrastructure (CSE compounds and the GSP substation) would be located within these river catchments but are at such distance that no pathway to effect is considered feasible. The construction of pylons and removal of existing 132kV overhead line and pylons located within the vicinity of watercourses could create potential pollution pathways via sediment loading in watercourses from topsoil stripping and excavation required for installation/removal of pylon foundations.
- 5.6.9 In the absence of CoCP measures, potential sedimentation and pollution incidents on watercourses crossed by the project could result in impacts downstream in the Stour and Orwell Estuaries SPA and Ramsar by causing a degradation of water quality with subsequent impacts on the habitats and species (including a reduction in species density) of the European sites.

Operation

- 5.6.10 No significant change in surface water quality is anticipated in the operational phase of the project as there would be no permanent discharge to surface water and the permanent drainage would be designed to achieve discharges at greenfield rates, see ES Chapter 4: Project Description (**application document 6.2.4**).

Groundwater

Construction

- 5.6.11 The trenchless crossings at the River Stour and River Box may require drill pits within the floodplain. The drill pits may require groundwater dewatering as the pits may extend below the bed of the river. In the absence of CoCP measures, potential pollution incidents on the River Stour and River Box could result in impacts downstream in the Stour and Orwell Estuaries SPA and Ramsar by causing a degradation of water quality with subsequent impacts on the habitats and species of the European sites.

Operation

- 5.6.12 No significant change in groundwater is anticipated in the operational phase of the project as no permanent discharge to groundwater are required.

5.7 Summary of Effects

- 5.7.2 In summary, no likely significant effects have been identified on the Stour and Orwell Estuaries SPA and Ramsar from the project in relation to: habitat loss; habitat or species fragmentation; or disturbance to species (i.e. displacement).
- 5.7.3 The project could have a potential impact upon surface water quality and groundwater through pollution and sedimentation incidents on watercourses which are crossed and subsequently discharge into the Stour and Orwell Estuaries SPA and Ramsar. It is feasible that such incidents could result in habitat degradation and indirectly in reduction in species density. As such, these are taken forward for further assessment to Stage 2: Appropriate Assessment.

6. Stage 2: Appropriate Assessment

6.1 Scope of Assessment

6.1.1 As identified in the Stage 1: Screening, the likely significant effects on the Stour and Orwell Estuaries SPA and Ramsar were identified in relation to surface water and ground water quality through pollution and sedimentation incidents on watercourses crossed by the project during construction. It is feasible that such incidents could result in habitat degradation and indirectly in reduction in species density. Due to the overlap in potential impacts and mitigation required for both surface water and ground water quality, both are considered in the following section together. In addition, due to the significant overlap between Stour and Orwell Estuaries SPA and Ramsar designations, the Ramsar is considered in parallel to the SPA and all relevant species considered together where they are a feature of more than one site.

6.1.2 The following assessment includes consideration of good practice measures relating to HRA which are taken from the CoCP (**application document 7.5.1**). The CoCP would be secured as part of the CEMP (**application document 7.5**), through Requirement 4 of the DCO (**application document 3.1**). Relevant good practice measures detailed in the CoCP that are pertinent to the HRA assessment are detailed in Table 6.1.

6.2 Surface Water Quality/Ground Water During Construction

6.2.1 The following potential pathways to sedimentation and/or pollution effects upon the European sites were identified during the screening process:

- The underground cables would be installed using a trenchless crossing at the River Stour and River Box and temporary bridges would be installed for temporary access over the watercourses during construction. The trenchless crossing at the River Box and River Stour may require drill pits and ground water dewatering within the floodplain, as the pits may extend below the bed of the river;
- Drilling muds/bentonite could break-out where trenchless crossing techniques e.g. drilling, is used beneath watercourses;
- Several unnamed watercourses that drain to the River Box and River Stour would also be crossed by temporarily installed culverts with an access track laid over the top for construction access; and
- Installation of new pylons and removal of existing 132kV overhead line and pylons located in proximity of watercourses where groundworks would be required for access and foundation works.

6.2.2 The risk of a pollution incident, such as sediment loading in water courses from topsoil stripping, drilling muds/bentonite entering the watercourse following an accidental outbreak, and/or the mobilisation of pollutants such as bentonite, oil and fuel at the drill sites following flood events, would be controlled with the pollution measures stipulated in the CoCP (**application document 7.5.1**), specifically GG04, GG05, GG06, GG15, GG16, GG22, GH05, GH06, GH07, W01-W05, W11, and W15. Table 6.1 details the relevant construction stage measures which when implemented would disrupt the pathway to and reduce the likelihood of effect, such that the potential impact upon surface water and ground water quality through pollution and sedimentation incidents is avoided.

- 6.2.3 A such, there would be no effect on the site integrity of the Stour and Orwell Estuaries SPA and Ramsar, which lies approximately 5.72km downstream.

Table 6.1 – Extract of Relevant Good Practice Measures in the CoCP (**application document 7.5.1**)

Reference	Good Practice Measures
GG04	<p>A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the CEMP (application document 7.5). The Environmental Clerk of Works will monitor that the works proceed in accordance with relevant environmental DCO requirements and adhere to the required good practice and mitigation measures. The Environmental Clerk of Works will be supported as necessary by appropriate specialists, including ecologists and arboriculturalists.</p>
GG05	<p>Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the project. Topics could include but not be limited to:</p> <ul style="list-style-type: none"> • Pollution prevention and pollution incident response; • Dust management and control measures; • Location and protection of sensitive environmental sites and features; • Adherence to protected environmental areas around sensitive features; • Working hours and noise and vibration reduction measures; • Working with potentially contaminated materials; • Waste management and storage; • Working near water; • Flood risk response actions; and • Agreed traffic routes, access points, etc.
GG06	<p>A full record of condition will be carried out (photographic and descriptive) of the working areas that may be affected by the construction activities. This record will be available for comparison following reinstatement after the works have been completed to ensure that the standard of reinstatement at least meets that recorded in the pre-condition survey or as agreed in the LEMP (application document 7.8) or if the DCO provides otherwise, then in accordance with the DCO.</p>
GG15	<p>Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There will be no intentional discharge of silted or otherwise contaminated site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of an emergency). Watercourses near work sites would be inspected daily where work activity is being carried out. Inspections will look for signs of siltation or other forms of pollution for the duration of the period of ground</p>

Reference	Good Practice Measures
	disturbance and work site drainage would be inspected and maintained as required, so that they continue to operate to their design standard, safeguarding surface and groundwater quality.
GG16	Wash down of vehicles and equipment will take place in designated washdown areas within construction compounds and will be contained. Wash water will be prevented from passing untreated into watercourses and groundwater. Washdown water containing detergent must not pass through an interceptor. Appropriate measures will include use of sediment traps.
GG22	An Emergency Action Plan will be developed for the construction phase which will outline procedures to be implemented in case of unplanned events, including but not limited to site flooding and pollution incidents.
GH05	Measures related to discharge of water from dewatering activities and management of any contaminated soils will be described in the CEMP (application document 7.5).
GH06	A Foundation Works Risk Assessment will be undertaken by the Contractor at pylons, the CSE compounds, GSP substation and temporary bridges where piled foundations are proposed. The Foundation Works Risk Assessment will assess the risk of the piling creating new contamination pathways and will identify any additional measures required to protect groundwater and prevent aquifer mixing. This would be prepared in accordance with 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination' (Environment Agency, 2001). Pylon foundations will also be designed with suitable corrosion and pH resistant concrete formulas to reduce the risk of leaching harmful compound into soil and groundwater.
GH07	If the construction method of the trenchless crossing would use bentonite or other agents, than an assessment of potential frack out during the drilling process will be undertaken.
W01	All works within main rivers or ordinary watercourses will be in accordance with a method approved under environmental permits issued under the Environmental Permitting Regulations (2016) and the Land Drainage Act (1991), or the protective provisions of the DCO for the benefit of the Environment Agency and the Lead Local Flood Authorities or (where relevant) and protective provisions.
W02	<p>For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will include but not be limited to:</p> <ul style="list-style-type: none"> • Where practicable, reducing the working width for open cut crossings of a main or ordinary watercourse whilst still providing safe working; • Installation of a pollution boom downstream of open cut works; • The use and maintenance of temporary lagoons, tanks, bunds, silt fences or silt screens as required; • Have spill kits, straw bales or other appropriate measures readily available for downstream emergency use in the event of a pollution incident; • The use of all static plant such as pumps in appropriately sized spill trays;

Reference	Good Practice Measures
	<ul style="list-style-type: none"> • Prevent refuelling of any plant or vehicle within 15m of a watercourse (except for machinery associated with over-pumping); • Prevent storing of soil stockpiles within 15m of a main river; • Inspect all plant prior to work for leaks of fuel or hydraulic fluids; and • Reinstating the riparian vegetation and natural bed of the watercourse, using the material removed when appropriate, on completion of the works and compacting as necessary. If additional material is required, appropriately sized material of similar composition will be used.
W03	Riverbank, ponds and in-channel vegetation will be retained and protected where not directly affected by installation works. Natural substrate will be provided through temporary watercourse crossings culverts.
W04	Where watercourses are to be crossed by construction traffic using a culvert method, the area above the culvert will be backfilled to permit the passage of plant, equipment, materials and people. The culvert will be sized to reflect the channel width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. These installation works would be timed to avoid flood flow conditions where practicable, or if periods of work were necessary when higher flow conditions could be expected, suitable pumping provision would be put in place, with standby pumps also made available.
W05	The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and discharge activities. This will particularly be with regard to discharge volumes, rates and locations, and will include discharges to land, water bodies or third-party drains/sewers.
W11	Where the River Stour and River Box are crossed by a trenchless crossing, the cables will be laid at least 1m below the hard bed level of the river and will remain at or below this level for a distance of not less than 3m from the edge of the riverbank. Marker posts shall also be positioned on each bank of the river to indicate the location of the under-crossing and the nature of the works.
W15	All main rivers and ordinary watercourses crossed by an open cut methodology will be designed to allow continued downstream flow during construction to reduce flood risk. The works will be timed to avoid flood flow conditions or additional measures will be required.

- 6.2.4 The HRA assessment is supported by the WFD assessment (**application document 5.6**) which concluded that there are no residual effects subject to watercourses when taking into account the good practice measures within the CoCP (**application document 7.5.1**). Therefore, the project is considered compliant with the WFD framework and will not undermine the integrity of the Stour and Orwell Estuaries SPA and Ramsar.

6.3 Efficacy of Commitments

- 6.3.2 While no studies of the efficacy of the good practice measures are available in the literature to specifically demonstrate their effectiveness in preventing significant pollution and sedimentation effects on aquatic receptors, the measures have been developed over many years by the industry and there is very high confidence in them. The construction industry standards are long-standing and there has been no call or need for updating them in recent years, suggesting that they represent a mature and successful set of guidelines. There is no scientific reason to think that measures detailed in Table 6.1 that have proved successful on numerous projects in the past, protecting multiple habitat types and people without significant complaint, would not be equally successful at avoiding changes in surface water quality and quantity and therefore the subsequent effects on European sites.

6.4 In-Combination Effects

- 6.4.2 The good practice measures detailed in Table 6.1 disrupt the pathway to and reduce the likelihood of effect, such that the potential impact upon surface water quality through pollution and sedimentation incidents is avoided. With implementation of the measures there is no effect on surface water quality. Therefore, there is no feasible risk of surface water pollutants or sedimentation acting in combination with other plans and projects.
- 6.4.3 The potential for in-combination effects within the project itself (intra-project cumulative effects), i.e. two separate effects of the project both interfacing with a single receptor, have been reviewed. However, with individual adverse effects found to be absent or *de minimis* (inconsequential), a combination of a multiple of these is also *de minimis*, at worst, and requires no further assessment.

7. Conclusion

- 7.1.1 This HRA concludes that there would be no adverse effect on the integrity of the Stour and Orwell Estuaries SPA and Ramsar as a result of the project alone or in-combination with other plans or projects. This conclusion is supported by Natural England's response to the Statutory Consultation which stated '*We consider that should suitable mitigation measures of best practice be secured at the Appropriate Assessment stage through both the CoCP and CEMP, we consider that based on the information provided to date that the proposal would be unlikely to result in adverse effects on the integrity of any of the sites in question.*'
- 7.1.2 Desk study and field surveys carried out in support of the project show that the Order Limits do not regularly support significant numbers of roosting wintering birds of individual qualifying species or assemblages of the Stour and Orwell Estuaries SPA and Ramsar. The Order Limits also do not support regularly breeding or non-breeding avocet. Therefore, the Order Limits are not functionally linked to the European sites.
- 7.1.3 It is confidently determined that no significant change in this baseline has occurred since the original field survey in 2011/12. This is based on the results of the 2021/2022 UKHab survey where no material change in habitat type or extent has been identified, and therefore, it is considered highly unlikely to result in a material change in presence/abundance of qualifying bird species. This is again supported by the desk study.
- 7.1.4 The Stage 1: Screening (Chapter 5) concluded no likely significant effects were identified on the Stour and Orwell Estuaries SPA and Ramsar from the project in relation to habitat loss; habitat or species fragmentation; or disturbance to species (i.e. displacement). However, due to potential impacts upon surface water and ground water quality through pollution and sedimentation incidents as a result of construction, habitat degradation and subsequent reduction in species density as a result of surface water and ground water quality change was taken for Stage 2: Appropriate Assessment.
- 7.1.5 Stage 2: Appropriate Assessment found no adverse effect on the integrity of the SPA and Ramsar would occur once good practice measures in the CoCP (**application document 7.5.1**) are employed. These measures are secured through Requirement 4 of the draft DCO (**application document 3.1**). No in-combination effects (both intra- and inter-project) were identified.
- 7.1.6 As a result, the HRA does not need to progress onto Stage 3 of the HRA process, as outlined at the start of this report (see Section 2.1).

References

Bowland Ecology (2021) Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England. NERC361. Natural England.

British Trust for Ornithology (2022) WeBS Report (Online). (Accessed March 2023).

Chartered Institute of Ecology and Environmental Management (2019) Advice Note on The Lifespan of Ecological Reports & Surveys.

European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Oxford: School of Planning, Oxford Brookes University.

Highways England (2020) Design Manual for Roads and Bridges: LA 115 Habitats Regulations assessment. Revision 1.

Institute of Air Quality Management (2019) A guide to the assessment of air quality impacts on designated nature conservation sites. Version 1.0.

Joint Nature Conservation Council (2008) Stour and Orwell Estuaries Ramsar Information Sheet on Ramsar Wetlands (RIS). Version 3.0.

Joint Nature Conservation Council (2016) Stour and Orwell Estuaries SPA – Standard Data Form (online) Available from: <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9009121.pdf> (Accessed March 2023).

National Grid (2022) Bramford to Twinstead Preliminary Environmental Information Report: Volume 2: Appendices.

Natural England (2014a) Stour and Orwell Estuaries SPA Citation.

Natural England (2014b) Stour and Orwell Estuaries SPA Conservation Objectives.

Planning Inspectorate (2017) Advice Note 10: Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects. Version 8.

Planning Inspectorate (2022) Advice Note 10: Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects. Version 9.

The Environmental Partnership (2011) Suffolk Connections Ornithological Assessment (unpublished).

The Environmental Partnership (2012) Breeding Bird Survey (unpublished).

Appendix A: Screening Matrices

1.1.1 Potential effects upon the European site(s) (as defined in Advice Note 10, Planning Inspectorate, 2017) which are considered within the submitted HRA Report are provided in Table A.1.

Table A.1 – Effects Considered within the Screening Matrices

Effects Described in Submission Information	Presented in Screening Matrices As
Stour and Orwell Estuaries SPA	
Loss of functionally linked land outside of the SPA	Habitat loss
Fragmentation of habitat used by SPA birds during construction in underground cabling sections Operational dispersal barriers to SPA birds in flight	Habitat or Species Fragmentation
Mortality or injury risk to SPA birds during vegetation clearance within functionally linked habitats outside of the SPA SPA bird collision with overhead lines	Reduction in Species Density
SPA bird displacement from noise SPA bird displacement from visual disturbance SPA bird displacement from lighting SPA bird avoidance of previously used habitats	Disturbance/Displacement
Adverse effect on the habitats of the SPA and functionally linked habitats outside of the SPA (and ultimately the birds - and their prey - they support) due to: <ul style="list-style-type: none"> • Air quality change (nitrogen deposition and dust) • Surface water quality change (from sedimentation and/or pollution incidents) • Groundwater quality change 	Changes in Key indicators of Conservation Value
Stour and Orwell Estuaries Ramsar	
Direct habitat loss within the Ramsar	Habitat loss

Effects Described in Submission Information	Presented in Screening Matrices As
Loss of functionally linked land outside of the Ramsar	
Fragmentation of habitat used by Ramsar birds during construction in underground cabling sections Operational dispersal barriers to Ramsar birds in flight	Habitat or Species Fragmentation
Mortality or injury risk to Ramsar birds during vegetation clearance within functionally linked habitats outside of the Ramsar Ramsar bird collision with overhead lines Mortality of Ramsar designated aquatic invertebrate Degradation or reduction in distribution/extent of Ramsar designated plants	Reduction in Species Density
Ramsar bird displacement from noise Ramsar bird displacement from visual disturbance Ramsar bird displacement from lighting Ramsar bird avoidance of previously used habitats	Disturbance/Displacement
Adverse effect on Ramsar habitats and functionally linked habitats outside of the Ramsar (and consequentially the species they support) due to: <ul style="list-style-type: none"> • Air quality change (nitrogen deposition and dust) • Surface water quality change (from sedimentation and/or pollution incidents) • Groundwater quality change 	Changes in Key indicators of Conservation Value

Notes supporting the Screening Matrices

- 1.1.2 The European sites included within the screening assessment are:
- Stour and Orwell Estuaries SPA
 - Stour and Orwell Estuaries Ramsar
- 1.1.3 Evidence for, or against, likely significant effects on the European site(s) and its qualifying feature(s) is detailed within the footnotes to the screening matrices below.

Matrix Key:

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

✗ = Likely significant effect **can** be excluded

C = construction

O = operation

D = decommissioning

Table A.2 – Screening Matrix For Stour and Orwell Estuaries SPA

Name of European Site and Designation: Stour and Orwell Estuaries SPA (EU Code: UK9009121A)														Distance to the Project: 5.72km		
European Site Features				Likely effects of the Project												
Effect	Habitat loss			Habitat or Species Fragmentation			Reduction in Species Density			Disturbance/ Displacement			Changes in Key indicators of Conservation Value			
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Stage of Development																
Northern pintail (<i>Anas acuta</i>) (non-breeding)	✗ ^a	✗ ^a	✗ ^b	✗ ^c	✗ ^d	✗ ^b	✗ ^e	✗ ^f	✗ ^b	✗ ^g	✗ ^g	✗ ^b	✓ ^h	✗ ⁱ	✗ ^b	
Pied avocet (<i>Recurvirostra avosetta</i>) (breeding)	✗ ^a	✗ ^a	✗ ^b	✗ ^c	✗ ^d	✗ ^b	✗ ^e	✗ ^f	✗ ^b	✗ ^g	✗ ^g	✗ ^b	✓ ^h	✗ ⁱ	✗ ^b	
Grey plover (<i>Pluvialis squatarola</i>) (non-breeding)	✗ ^a	✗ ^a	✗ ^b	✗ ^c	✗ ^d	✗ ^b	✗ ^e	✗ ^f	✗ ^b	✗ ^g	✗ ^g	✗ ^b	✓ ^h	✗ ⁱ	✗ ^b	
Red knot (<i>Calidris canutus</i>) (non-breeding)	✗ ^a	✗ ^a	✗ ^b	✗ ^c	✗ ^d	✗ ^b	✗ ^e	✗ ^f	✗ ^b	✗ ^g	✗ ^g	✗ ^b	✓ ^h	✗ ⁱ	✗ ^b	
Dunlin (<i>Calidris alpina alpina</i>) (non-breeding)	✗ ^a	✗ ^a	✗ ^b	✗ ^c	✗ ^d	✗ ^b	✗ ^e	✗ ^f	✗ ^b	✗ ^g	✗ ^g	✗ ^b	✓ ^h	✗ ⁱ	✗ ^b	
Black-tailed godwit (<i>Limosa limosa islandica</i>) (non-breeding)	✗ ^a	✗ ^a	✗ ^b	✗ ^c	✗ ^d	✗ ^b	✗ ^e	✗ ^f	✗ ^b	✗ ^g	✗ ^g	✗ ^b	✓ ^h	✗ ⁱ	✗ ^b	

European Site Features	Likely effects of the Project														
Effect	Habitat loss			Habitat or Species Fragmentation			Reduction in Species Density			Disturbance/ Displacement			Changes in Key indicators of Conservation Value		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common redshank (<i>Tringa totanus</i>) (non-breeding)	x ^a	x ^a	x ^b	x ^c	x ^d	x ^b	x ^e	x ^f	x ^b	x ^g	x ^g	x ^b	✓ ^h	x ⁱ	x ^b
Waterbird assemblage of over 20,000 individuals. Species include great crested grebe (<i>Podiceps cristatus</i>); great cormorant (<i>Phalacrocorax carbo</i>); brent goose; common shelduck (<i>Tadorna tadorna</i>); Eurasian wigeon (<i>Anas penelope</i>); gadwall (<i>Anas strepera</i>); northern pintail; goldeneye (<i>Bucephala clangula</i>); common ringed plover (<i>Charadrius hiaticula</i>); grey plover; northern lapwing (<i>Vanellus vanellus</i>); red knot; dunlin; black-tailed godwit; Eurasian curlew (<i>Numenius arquata</i>); common redshank; and ruddy turnstone (<i>Arenaria interpres</i>).	x ^a	x ^a	x ^b	x ^c	x ^d	x ^b	x ^e	x ^f	x ^b	x ^g	x ^g	x ^b	✓ ^h	x ⁱ	x ^b

Evidence supporting the Screening Assessment of the Stour and Orwell Estuaries SPA

- The project would not result in any direct land take or habitat loss from the Stour and Orwell Estuaries SPA. Temporary and permanent habitat loss would result from the project within the Order Limits. However, most habitats temporarily used would be reinstated post construction, with permanent habitat loss restricted to relatively minor areas associated with the proposed GSP substation (23km at the closest point), the CSE compounds (10km at the closest point) and limited land at pylon bases. However, there is no evidence that the Order Limits support significant numbers of breeding or roosting wintering birds either of qualifying individual species or assemblages of the Stour and Orwell Estuaries SPA (see Chapters 4 of this report).
- There are no current plans to decommission the project. Potential impacts of decommissioning are likely to be similar to construction but with a lower magnitude. As such, there is no likely significant effect on the SPA.
- In the construction phase, the open cut sections of the underground cable would typically require an 80m wide working width located within the Order Limits, separating the retained habitats either side. However, this habitat fragmentation would be temporary with reinstatement undertaken shortly after installation. In addition, as the

mobile bird species of the European site are airborne, any ground-based habitat fragmentation would not prevent flight movements between habitats on either side of the working area.

- d. During operation, the project would not create permanent dispersal barriers that could otherwise contribute towards habitat or species fragmentation. Although overhead lines and pylons would be present within the landscape these would not prevent movement under, over or around the infrastructure.
- e. There are no works required within the SPA. However, if qualifying bird species with a functional link to the SPA were present within the Order Limits there could be a potential mortality or injury risk during habitat clearance for the construction activities. However, the likelihood of this occurring is limited, as not only is the recorded presence of qualifying bird species in the Order Limits extremely low and plentiful (see Chapter 4 of this report), similar habitat would be retained in the wider landscape available for use, but birds would naturally disperse out of the immediate area of work in response to construction activities before they could be killed or injured. There is no feasible impact on eggs of breeding avocet as no records of breeding avocet have been identified in the review of field survey data or desk study.
- f. The presence of new overhead lines and pylons in the landscape could create a collision risk to qualifying bird species when in flight. However, the likelihood of this occurring is limited, as there are already overhead lines and pylons in the landscape, and the recorded presence of qualifying bird species in the Order Limits is extremely low (see Chapter 4 of this report).
- g. Surveys carried out in support of the project (TEP, 2011 and TEP, 2012) indicate there is no potential for disturbance to qualifying bird species. Few records of lapwing and none of the specific qualifying feature bird species were made during the previous field survey and few were identified in the desk study (see Chapter 4). In the unlikely event individual birds were present and were to be displaced, they would have abundant similar alternative habitat nearby to use.
- h. Any dust generated or nitrogen deposition generated by construction activities would be highly unlikely to be in sufficient quantities to generate a response in suitable habitat in the Order Limits for SPA birds, outside of the SPA boundaries, which is mostly air quality tolerant arable and improved grassland. No impact is anticipated on groundwater as stated in the WFD Assessment (**application document 5.6**). However, in the absence of good practice measures set out in the CoCP (**application document 7.5.1**), potential sedimentation and pollution incidents on watercourses or their floodplains could result in impacts downstream in the Stour and Orwell Estuaries SPA by causing a degradation of water quality with subsequent impacts on the habitats upon which the SPA bird species are dependent. This is taken forward to Stage 2: Appropriate Assessment.
- i. No significant change in air quality is anticipated in the operational phase of the project, as there are no significant traffic movements. No significant change in surface water or groundwater quality is anticipated as there is no permanent discharge to surface water required and the drainage infrastructure would provide the storage necessary to achieve discharge to ground at greenfield rates.

Table A.3 – Screening Matrix For Stour and Orwell Estuaries Ramsar

Name of European site and Designation: Stour and Orwell Estuaries Ramsar (EU Code: UK11067)														Distance to Project: 5.72km		
European site features	Likely effects of the Project															
Effect	Habitat loss			Habitat or Species Fragmentation			Reduction in Species Density			Disturbance/ Displacement			Changes in Key indicators of Conservation Value			
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	
Ramsar criterion 2: Contains seven nationally scarce plants and five British Red Data Book invertebrates (see Table 3.2 of this report)	x ^a	x ^a	x ^c	x ^a	x ^a	x ^c	✓ ⁱ	x ^a	x ^c	x ^a	x ^a	x ^c	✓ ⁱ	x ^j	x ^c	
Ramsar criterion 5: Assemblages of international importance (63,017 waterfowl – five-year peak mean 1998/99–2002/2003)	x ^b	x ^b	x ^c	x ^d	x ^e	x ^c	x ^e	x ^f	x ^c	x ^g	x ^h	x ^c	✓ ⁱ	x ^j	x ^c	
Ramsar criterion 6: Species populations occurring at levels of international importance (concurrent with species listed as SPA qualifying features)	x ^b	x ^b	x ^c	x ^d	x ^e	x ^d	x ^e	x ^f	x ^c	x ^g	x ^h	x ^c	✓ ⁱ	x ^j	x ^c	

Evidence supporting the Screening Assessment of the Stour and Orwell Estuaries Ramsar

- The project would not result in any direct land take or habitat loss from the Stour and Orwell Estuaries Ramsar. As the qualifying feature invertebrate and plant species of the Ramsar are either non-mobile or highly restricted to the supporting habitat types of the Ramsar site itself and neither are found within or are functionally linked to the Order Limits, these qualifying features are not considered outside of the designated site boundaries.
- The project would not result in any direct land take or habitat loss from the Stour and Orwell Estuaries Ramsar. Temporary and permanent habitat loss would result from the project within the Order Limits. However, most habitats temporarily used would be reinstated post construction, with permanent habitat loss restricted to relatively minor areas associated with the proposed GSP substation (23km at the closest point), the CSE compounds (10km at the closest point) and limited land at pylon bases. However, there is no evidence that the Order Limits support significant numbers of breeding or roosting wintering birds either of qualifying individual species or assemblages of the Stour and Orwell Estuaries Ramsar (see Chapters 4 of this Report).
- There are no current plans to decommission the project. Potential impacts of decommissioning are likely to be similar to construction but with a lower magnitude. As such, there is no likely significant effect on the Ramsar.

- d. In the construction phase, the open-cut sections of the underground cable would typically require an 80m wide working width located within the Order Limits, separating the retained habitats either side. However, this habitat fragmentation would be temporary with reinstatement undertaken shortly after installation. In addition, as the mobile bird species of the European site are airborne, any ground-based habitat fragmentation would not prevent flight movements between habitats on either side of the working area.
- e. During operation, the project would not create permanent dispersal barriers that could otherwise contribute towards habitat or species fragmentation. Although overhead lines and pylons would be present within the landscape there would not prevent movement under, over or around the infrastructure.
- f. There are no works required within the Ramsar. However, if qualifying bird species with a functional link to the Ramsar were present within the Order Limits there could be a potential mortality or injury risk during habitat clearance for the construction activities. However, the likelihood of this occurring is minimal, as not only is the recorded presence of qualifying bird species in the Order Limits extremely low (see Chapter 4 of this report) and plentiful, similar habitat would be retained in the wider landscape available for use, but birds would naturally disperse out of the immediate area of work in response to construction activities before they could be killed or injured. There is no feasible impact on eggs of breeding avocet as no records of breeding avocet have been identified in the review of field survey data or desk study.
- g. The presence of new overhead lines and pylons in the landscape could create a collision risk to qualifying bird species when in flight. However, the likelihood of this occurring is limited, as there are already overhead lines and pylons in the landscape, and the recorded presence of qualifying bird species in the Order Limits is extremely low (see Chapter 4 of this report).
- h. Surveys carried out in support of the project (TEP, 2011 and TEP, 2012) indicate there is no potential for disturbance to qualifying bird species. Few records of lapwing and none of the specific qualifying feature bird species were made during the previous field survey and few were identified in the desk study (see Chapter 4). In the unlikely event Ramsar birds were present and were to be displaced, they would have abundant similar alternative habitat nearby to use.
- i. Any dust generated or nitrogen deposition generated by construction activities would be highly unlikely to be in sufficient quantities to generate a response in suitable habitat in the Order Limits (or within 200m) for Ramsar birds, present outside of the Ramsar, which is mostly air quality tolerant arable and improved grassland. However, in the absence of good practice measures set out in the CoCP (**application document 7.5.1**), potential sedimentation and pollution incidents on watercourses or within their floodplains could result in impacts downstream in the Stour and Orwell Estuaries Ramsar by causing a degradation of water quality with subsequent impacts on the habitats upon which the qualifying Ramsar bird, plant and invertebrate species are dependent. This is taken forward to Stage 2: Appropriate Assessment.
- j. No significant change in air quality is anticipated in the operational phase of the project, as there are no significant traffic movements. No significant change in surface water or groundwater quality is anticipated as there is no permanent discharge to surface water required and the drainage infrastructure would provide the storage necessary to achieve discharge to ground at greenfield rates.

Appendix B: Integrity Matrices

1.1.1 Likely significant effects have been identified for the following sites:

- Stour and Orwell Estuaries SPA
- Stour and Orwell Estuaries Ramsar

1.1.2 These sites have been subject to further assessment in order to establish if the project could have an adverse effect on their integrity. Evidence for the conclusions reached on integrity is detailed within the footnotes to the matrices below.

Matrix Key:

✓ = Adverse effect on integrity **cannot** be excluded

✗ = Adverse effect on integrity **can** be excluded

C = construction

O = operation

D = decommissioning

Table B.1 – Integrity Matrix For Stour and Orwell Estuaries SPA

Name of European Site and Designation: Stour and Orwell Estuaries SPA (EU Code: UK9009121A)				Distance to the Project: 5.72km						
European Site Features		Adverse Effect on Integrity								
Effect	Stage of Development	Habitat degradation (Surface Water Quality)			Indirect Reduction in Species Density			In Combination Effects		
		C	O	D	C	O	D	C	O	D
Northern pintail (<i>Anas acuta</i>) (non-breeding)		✗ ^a	✗ ^a	✗ ^a	✗ ^b	✗ ^b	✗ ^b	✗ ^c	✗ ^c	✗ ^c
Pied avocet (<i>Recurvirostra avosetta</i>) (breeding)		✗ ^a	✗ ^a	✗ ^a	✗ ^b	✗ ^b	✗ ^b	✗ ^c	✗ ^c	✗ ^c

European Site Features	Adverse Effect on Integrity								
Effect	Habitat degradation (Surface Water Quality)			Indirect Reduction in Species Density			In Combination Effects		
	C	O	D	C	O	D	C	O	D
Grey plover (<i>Pluvialis squatarola</i>) (non-breeding)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Red knot (<i>Calidris canutus</i>) (non-breeding)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Dunlin (<i>Calidris alpina alpina</i>) (non-breeding)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Black-tailed godwit (<i>Limosa limosa islandica</i>) (non-breeding)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Common redshank (<i>Tringa totanus</i>) (non-breeding)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Waterbird assemblage of over 20,000 individuals. Species include great crested grebe (<i>Podiceps cristatus</i>); great cormorant (<i>Phalacrocorax carbo</i>); brent goose; common shelduck (<i>Tadorna tadorna</i>); Eurasian wigeon (<i>Anas penelope</i>); gadwall (<i>Anas strepera</i>); northern pintail; goldeneye (<i>Bucephala clangula</i>); common ringed plover (<i>Charadrius hiaticula</i>); grey plover; northern lapwing (<i>Vanellus vanellus</i>); red knot; dunlin; black-tailed godwit; Eurasian curlew (<i>Numenius arquata</i>); common redshank; and ruddy turnstone (<i>Arenaria interpres</i>).	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c

Evidence supporting conclusions on integrity of the Stour and Orwell Estuaries SPA

- a. Potential impacts upon the surface water quality of waterbodies hydrologically connected to the SPA (i.e. pollution and sedimentation incidents of groundwater and watercourses that discharge into the European site) would not adversely impact the quality of water entering the SPA. No effect on the integrity of the SPA is deemed likely when considering the combination of good practice measures included within the CoCP (**application document 7.5.1**).
- b. The potential indirect effect of reduction in species density effecting the individual qualifying features bird species or the bird assemblage as a whole (including their prey species) caused by degradation of the aquatic habitat upon which they depend is considered highly unlikely. The good practice measures included within the

CoCP (**application document 7.5.1**) would avoid any sediment or pollution incidents occurring where subsequent impacts could have occurred downstream of any incident on watercourses and ultimately the Stour and Orwell Estuaries SPA.

- c. The HRA Report has shown that adverse effects on the SPA are absent or negligible upon application of good practice measures included within the CoCP (**application document 7.5.1**). The potential for in combination effects on the Ramsar between the effects on the watercourses crossed by the project and those proposed plans and projects that intersect with the Order Limits or are downstream of this have been reviewed (see Section 6.3 of this report). No effect on site integrity has been identified for in-combination effects with other plans or projects.

Table B.2 – Integrity Matrix For Stour and Orwell Estuaries Ramsar

Name of European site and Designation: Stour and Orwell Estuaries Ramsar (EU Code: UK11067)							Distance to Project: 5.72km		
European Site Features	Adverse Effect on Integrity								
Effect	Habitat Degradation (Surface Water Quality)			Indirect Reduction in Species Density			In Combination Effects		
Stage of Development	C	O	D	C	O	D	C	O	D
Ramsar criterion 2: Contains seven nationally scarce plants and five British Red Data Book invertebrates (see Table 3.2 of this report)	x ^a	x ^{d,a}	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Ramsar criterion 5: Assemblages of international importance (63,017 waterfowl – five-year peak mean 1998/99–2002/2003)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c
Ramsar criterion 6: Species populations occurring at levels of international importance (concurrent with species listed as SPA qualifying features)	x ^a	x ^a	x ^a	x ^b	x ^b	x ^b	x ^c	x ^c	x ^c

Evidence supporting conclusions on integrity of the Stour and Orwell Estuaries Ramsar

- a. Potential impacts upon the surface water quality of waterbodies hydrologically connected to the Ramsar (i.e. pollution and sedimentation incidents of groundwater and watercourses that discharge into the European site) would not adversely impact the quality of water entering the Ramsar. There would be no effect on the integrity of the Ramsar when considering the combination of good practice measures included within the CoCP (**application document 7.5.1**).
- b. The potential indirect effect of reduction in species density of designated plants, animals and bird species and assemblages caused by degradation of the aquatic habitat upon which they depend is considered highly unlikely. The good practice measures included within the CoCP (**application document 7.5.1**) would avoid any sediment or pollutions incidents occurring where subsequent impacts could occur on watercourses downstream of any incident and ultimately the Stour and Orwell Estuaries SPA.

- c. The HRA Report has shown that adverse effects on the Ramsar are absent or negligible upon application of good practice measures included within the CoCP (**application document 7.5.1**). The potential for in combination effects on the Ramsar between the project's effects on the watercourses crossed by the project and those proposed plans and projects that intersect with the Order Limits or are downstream of this have been reviewed (see Section 6.3 of this report). No effect on site integrity has been identified for in-combination effects with other plans or projects.

Appendix C: Stour and Orwell Estuaries SPA – Natura 2000 Data Sheet

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 [Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 \(2011/484/EU\)](#).

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 UK9009121
SITENAME Stour and Orwell Estuaries

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- [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 A	1.2 Site code UK9009121	Back to top
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1.3 Site name

Stour and Orwell Estuaries

1.4 First Compilation date 1994-07	1.5 Update date 2015-12
--	-----------------------------------

1.6 Respondent:

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

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1994-07
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude
1.160555556

Latitude
51.95444444

2.2 Area [ha]:

3667.37

2.3 Marine area [%]

85.6

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code **Region Name**

UKH1	East Anglia
UKH3	Essex

2.6 Biogeographical Region(s)

Atlantic (100.0
%)

3. ECOLOGICAL INFORMATION

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

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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.	Gl
B	A054	Anas acuta			w	741	741	i		G	B		C	
B	A050	Anas penelope			w	3979	3979	i		G	C		C	
B	A051	Anas strepera			w	97	97	i		G	C		C	
B	A169	Arenaria interpres			w	690	690	i		G	C		C	
B	A062	Aythya marila			w	28	28	i		G	C		C	
B	A675	Branta bernicla bernicla			w	2627	2627	i		G	B		C	
B	A067	Bucephala clangula			w	213	213	i		G	C		C	
B	A672	Calidris alpina alpina			w	19114	19114	i		G	B		C	
B	A143	Calidris canutus			w	5970	5970	i		G	C		C	

B	A137	Charadrius hiaticula			w	372	372	i		G	B		C	
B	A137	Charadrius hiaticula			c	638	638	i		G	B		C	
B	A036	Cygnus olor			w	239	239	i		G	C		C	
B	A616	Limosa limosa islandica			w	2559	2559	i		G	A		C	
B	A160	Numenius arquata			w	2153	2153	i		G	C		C	
B	A017	Phalacrocorax carbo			w	232	232	i		G	C		C	
B	A140	Pluvialis apricaria			w	773	773	i		G	C		C	
B	A141	Pluvialis squatarola			w	3261	3261	i		G	B		C	
B	A005	Podiceps cristatus			w	245	245	i		G	C		C	
B	A132	Recurvirostra avosetta			r	21	21	p		G	B		C	
B	A048	Tadorna tadorna			w	2955	2955	i		G	B		C	
B	A162	Tringa totanus			c	2588	2588	i		G	B		C	
B	A162	Tringa totanus			w	3687	3687	i		G	B		C	
B	A142	Vanellus vanellus			w	6242	6242	i		G	C		C	

- **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)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
B	WATR	Waterbird assemblage			63017	63017	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **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)
- **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](#))
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories:** **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N16	0.2
N06	0.8
N07	5.5
N02	88.0
N05	0.5
N03	5.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: sand,shingle,clay,alluvium,neutral,mud 2 Terrestrial: Geomorphology and landscape: coastal,lowland 3 Marine: Geology: mud,clay,shingle,sand 4 Marine: Geomorphology: intertidal sediments (including sandflat/mudflat),estuary,lagoon,subtidal sediments (including sandbank/mudbank) Ramsar Wetland Types: Marine and coastal wetlands

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: *Recurvirostra avosetta* (Western Europe/Western Mediterranean - breeding) 3.6% of the population in Great Britain 5-year peak mean 1996-2000 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: *Anas acuta* (North-western Europe) 1.2% of the population 5-year peak mean 1995/96-1999/2000 *Branta bernicla bernicla* (Western Siberia/Western Europe) 1.2% of the population 5-year peak mean 1995/96-1999/2000 *Calidris alpina alpina* (Northern Siberia/Europe/Western Africa) 1.4% of the population 5-year peak mean 1995/96-1999/2000 *Calidris canutus* (North-eastern Canada/Greenland/Iceland/North-western Europe) 1.3% of the population 5-year peak mean 1995/96-1999/2000 *Limosa limosa islandica* (Iceland - breeding) 7.3% of the population 5-year peak mean 1995/96-1999/2000 *Pluvialis squatarola* (Eastern Atlantic - wintering) 1.3% of the population 5-year peak mean 1995/96-1999/2000 *Tringa totanus* (Eastern Atlantic - wintering) 2.8% of the population 5-year peak mean 1995/96-1999/2000 On passage the area regularly supports: *Tringa totanus* (Eastern Atlantic - wintering) 2% of the population 5-year peak mean 1995/96-1999/2000 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 63017 waterfowl (5 year peak mean 1991/92-1995/96) Including: *Podiceps cristatus* , *Phalacrocorax carbo* , *Branta bernicla bernicla* , *Tadorna tadorna* , *Anas penelope* , *Anas strepera* , *Anas acuta* , *Bucephala clangula* , *Charadrius hiaticula* , *Pluvialis squatarola* , *Vanellus vanellus* , *Calidris canutus* , *Calidris alpina alpina* , *Limosa limosa islandica* , *Numenius arquata* , *Tringa totanus* , *Arenaria interpres*

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

Positive Impacts

Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	M02		B
H	E06		B
H	F02		I
H	G01		I
H	M01		B

Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
H	A02		I
H	A04		I
H	B02		I
H	D05		I
H	G03		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):

[REDACTED]

[REDACTED]

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

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	90.4				

6. SITE MANAGEMENT

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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>Hippophya 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 roburi-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
-----	--	------------------

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

Appendix D: Stour and Orwell Estuaries Ramsar – Information Sheet

Information Sheet on Ramsar Wetlands (RIS)

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

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DD MM YY

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 13 July 1994 / Updated: May 2005

3. Country:

UK (England)

4. Name of the Ramsar site:

Stour and Orwell Estuaries

5. Map of site included:**a) hard copy** (required for inclusion of site in the Ramsar List): *yes -or- no***b) digital (electronic) format** (optional): YES

6. Geographical coordinates (latitude/longitude):

51° 57' 15'' N 01° 09' 26'' E

7. General location:

Nearest town/city: Felixstowe

The Stour Estuary forms the south-eastern part of Essex/Suffolk boundary.

The Orwell Estuary is a relatively long and narrow estuary with extensive mudflats and some saltmarsh, running from Ipswich in the north, southwards towards Felixstowe.

Administrative region: Essex; Suffolk

8. Elevation (average and/or max. & min.) (metres): **9. Area** (hectares): 3,323.62

Min. 0

Max. No information available

Mean No information available

10. Overview:

The Stour and Orwell site is a wetland of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches. It provides wintering habitats for important assemblages of wetland birds and supports internationally and nationally important numbers of wintering wildfowl and waders, and holds several nationally scarce plants and British Red Data Book invertebrates.

11. Ramsar Criteria:

2, 5, 6

Secretariat Comment: The RIS provides information requiring the application of Criterion 4. This need to be included in the next update.

12. Justification for the application of each Criterion listed in 11. above:

Ramsar criterion 2

Contains nationally scarce plants and British Red Data Book invertebrates.

The vascular plants *Zostera noltei* and *Spartina maritima* are considered vulnerable and endangered, respectively, in the GB Red Book.

Secretariat Comment: Criterion 2 requires to specify the scientific names of those species considered vulnerable, endangered or critically endangered. This need to be included in the next update.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

51,285 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:

Species with peak counts in winter:

Black-tailed godwit , <i>Limosa limosa islandica</i> , Iceland/W Europe	2,157 individuals, representing an average of 4.6% of the population (5 year peak mean 1998/9-2002/3)
Common redshank , <i>Tringa totanus totanus</i> ,	2,657 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)
Dark-bellied brent goose, <i>Branta bernicla bernicla</i> ,	2,133 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9- 2002/3)
Dunlin , <i>Calidris alpina alpina</i> , W Siberia/W Europe	14,626 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)
Grey plover , <i>Pluvialis squatarola</i> , E Atlantic/W Africa -wintering	3,204 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

Species with peak counts in winter:

Red knot , <i>Calidris canutus islandica</i> , W & Southern Africa (wintering)	5863 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3)
--	--

More 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 Alerts report, which is updated annually. See <http://www.bto.org/survey/webs/webs-alerts-index.htm>.

13. Biogeography:**a) biogeographic region:**

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

14. Physical features of the site:

Soil & geology	shingle, sand, mud
Geomorphology and landscape	lowland, coastal, valley, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), estuary
Nutrient status	
pH	
Salinity	brackish / mixosaline, fresh, saline / euhaline
Soil	no information
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Lowestoft, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/lowestoft.html) Max. daily temperature: 13.0° C Min. daily temperature: 7.0° C Days of air frost: 27.8 Rainfall: 576.3 mm Hrs. of sunshine: 1535.5

General description of the Physical Features:

No information available

15. Physical features of the catchment area:

No information available

16. Hydrological values:

Sediment trapping

17. Wetland types

Inland wetland, Marine/coastal wetland

Code	Name	% Area
E	Sand / shingle shores (including dune systems)	0.3
F	Estuarine waters	19.8
G	Tidal flats	44.2
H	Salt marshes	35
4	Seasonally flooded agricultural land	0.7

18. General ecological features:

Orwell is a relatively long and narrow estuary with extensive mudflats bordering the channel that support large patches of eelgrass *Zostera* sp. The saltmarsh tends to be sandy and fairly calcareous with a wide range of communities. There are small areas of vegetated shingle on the foreshore of the lower reaches. Grazing marshes adjoin the estuary at Shotley. The Stour estuary is a relatively simply structured estuary with a sandy outer area and a muddier inner section. The mud is rich in invertebrates and there are areas of higher saltmarsh. The shoreline vegetation varies from oak-dominated wooded cliffs, through scrub-covered banks to coarse grasses over seawalls, with reed-filled borrow dykes behind.

19. Noteworthy flora:

Nationally important species occurring on the site.

Higher Plants.

Puccinellia rupestris, *Spartina maritima*, *Sarcocornia perennis*, *Limonium humile*, *Zostera angustifolia*, *Zostera noltei*.

20. Noteworthy fauna:

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Little tern , *Sterna albifrons albifrons*, W Europe 46 apparently occupied nests, representing an average of 2.3% of the GB population (Seabird 2000 Census)

Species with peak counts in spring/autumn:

Common greenshank , *Tringa nebularia*, Europe/W Africa 68 individuals, representing an average of 11.3% of the GB population (5 year peak mean 1998/9-2002/3)

Great crested grebe , *Podiceps cristatus cristatus*, NW Europe 165 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)

Little egret , *Egretta garzetta*, West Mediterranean 17 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Common goldeneye , *Bucephala clangula clangula*, NW & C Europe 328 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3)

Eurasian curlew , *Numenius arquata arquata*, N. a. *arquata* Europe (breeding) 1784 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)

Northern pintail , *Anas acuta*, NW Europe 510 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

Spotted redshank , *Tringa erythropus*, Europe/W Africa 4 individuals, representing an average of 2.9% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site.

Invertebrates.

Phaonia fusca, *Haematopota grandis* (Meigen), *Arctosa fulvolineata*, *Baryphyma duffeya*.

21. Social and cultural values:

Aesthetic
 Archaeological/historical site
 Livestock grazing
 Non-consumptive recreation
 Sport hunting
 Tourism
 Transportation/navigation

22. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation	+	
Local authority, municipality etc.	+	
National/Crown estate	+	
Private	+	+

23. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Tourism	+	+
Recreation	+	+
Cutting of vegetation (small scale/subsistence)	+	
Bait collection	+	
Permanent arable agriculture		+
Grazing (unspecified)	+	
Hunting: recreational/sport	+	
Sewage treatment/disposal	+	
Harbour/port	+	
Flood control	+	
Transport route	+	+
Urban development		+
Non-urbanised settlements	+	+

24. Factors 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?
No factors reported	NA	Potential: harbour/port, transport route, settlements			

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

Is the site subject to adverse ecological change? NO

25. Conservation measures taken:

Conservation measure	On-site	Off-site
SSSI / ASSI	+	
SPA	+	
Land owned by a NGO for nature conservation	+	
Management agreement	+	
Site management statement/plan implemented	+	
AONB	+	+

26. Conservation measures proposed but not yet implemented:

No information available

27. Current scientific research and facilities:**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.

High tide bird counts.

Environment, Flora and Fauna.

Vegetation, bird and invertebrate surveys/monitoring carried out on NGO reserves.

28. Current conservation education:

None reported

29. Current recreation and tourism:**Activities, Facilities provided and Seasonality.**

A popular area for tourists as it is within an AONB. There are more visitors in the summer. However it is well used throughout the year by walkers, bird watches and for sailing.

30. Jurisdiction:

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

31. Management authority:

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

32. Bibliographical references:**Site-relevant references**

- Anon. (2002) *Suffolk Coast and Estuaries Coastal Habitat Management Plan: Executive summary*. English Nature, Peterborough (Living with the Sea LIFE Project) www.english-nature.org.uk/livingwiththesea/project_details/good_practice_guide/HabitatCRR/ENRestore/CHaMPs/SuffolkCoast/SuffolkCHaMP.pdf
- Armitage, MJS, Burton, NHK, Atkinson, PW, Austin, GE, Clark, NA, Mellan, HJ & Rehfish, MM (2002) *Reviewing the impact of Agency permissions and activities on bird populations in Special Protection Areas: Level 1 interpretation*. British Trust for Ornithology, Thetford (BTO Research Report, No. 296)
- Ashelby, CW, Worsfold, TM & Fransen, CHJM (2004) First records of the oriental prawn *Palaemon macrodactylus* (Decapoda: Caridea), an alien species in European waters, with a revised key to British Palaemonidae. *Journal of the Marine Biological Association*, **84**(5), 1041-1050

- Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP, Davidson, NC & Buck, AL (eds.) (1998) *Coasts and seas of the United Kingdom. Region 7 South-east England: Lowestoft to Dungeness*. Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)
- Beardall, CH, Dryden, RC & Holzer, TJ (1988) *The Suffolk estuaries: a report on the wildlife and conservation of the Suffolk estuaries*. Suffolk Wildlife Trust, Saxmundham [accompanied by separate volume, *Suffolk estuaries bibliography*]
- Beardall, CH, Gooch, SM & Pilcher, R (1990) The intertidal invertebrate fauna of the Orwell estuary. *Transactions of the Suffolk Naturalists' Society*, **26**, 33-45
- Buck, AL (ed.) (1993) *An inventory of UK estuaries. Volume 5. Eastern England*. Joint Nature Conservation Committee, Peterborough
- Burd, F (1989) *The saltmarsh survey of Great Britain. An inventory of British saltmarshes*. Nature Conservancy Council, Peterborough (Research & Survey in Nature Conservation, No. 17)
- Cadbury, CJ & Olney, PJS (1978) Avocet population dynamics in England. *British Birds*, **71**, 102-121
- Cayford, JT & Waters, RJ (1996) Population estimates for waders Charadrii wintering in Great Britain, 1987/88 – 1991/92. *Biological Conservation*, **77**, 7-17
- Covey, R (1998) Chapter 6. Eastern England (Bridlington to Folkestone) (MNCR Sector 6). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 179-198. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)
- Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge
- Crewe, MD (1993) *Suffolk birds 1992 Volume 42*. Suffolk Naturalists' Society, Ipswich
- Crewe, MD (1994) *Suffolk birds 1993 Volume 43*. Suffolk Naturalists' Society, Ipswich
- Crewe, MD (1996) *Suffolk birds 1995 Volume 45*. Suffolk Naturalists' Society, Ipswich
- Crewe, MD (1997) *Suffolk birds 1996 Volume 46*. Suffolk Naturalists' Society, Ipswich
- Davidson, NC, Laffoley, D d'A, Doody, JP, Way, LS, Gordon, J, Key, R, Pienkowski, MW, Mitchell, R & Duff, KL (1991) *Nature conservation and estuaries in Great Britain*. Nature Conservancy Council, Peterborough
- Delany, S & Scott, D (2002) *Waterbird population estimates*. 3rd edn. Wetlands International, Wageningen (Global Series, No. 12) www.wetlands.org/pubs&/WPE.htm
- Doody, JP, Johnston, C & Smith, B (1993) *Directory of the North Sea coastal margin*. Joint Nature Conservation Committee, Peterborough
- Dyer, MF (2000) *Stour and Orwell benthic survey 1997*. (Contractor: Unicomarine, Letchworth) Unpublished report to Harwich Haven Authority, Harwich (StrOrw97)
- Gibbons, DW, Reid, JB & Chapman, RA (1993) *The new atlas of breeding birds in Britain and Ireland: 1988–1991*. Poyser, London
- Hagemeyer, EJM & Blair, MJ (eds.) (1997) *The EBCC atlas of European breeding birds: their distribution and abundance*. Poyser, London
- Hill, TO, Emblow, CS & Northen, KO (1996) *Marine Nature Conservation Review Sector 6. Inlets in eastern England: area summaries*. Joint Nature Conservation Committee, Peterborough (Coasts and seas of the United Kingdom. MNCR series)
- Hoyo, J del, Elliot A & Sargatal, J (eds.) (1996) *Handbook of the birds of the world. Volume 3: Hoatzin to auks*. Lynx Edicions, Barcelona
- Joint Nature Conservation Committee (1999) *The Birds Directive – selection guidelines for Special Protection Areas*. Joint Nature Conservation Committee, Peterborough
- Lack, P (1986) *The atlas of wintering birds in Britain and Ireland*. Poyser, Calton
- Lowe, G (1998) *Suffolk birds 1997 Volume 47*. Suffolk Naturalists' Society, Ipswich
- Lowe, G (1999) *Suffolk birds 1998 Volume 48*. Suffolk Naturalists' Society, Ipswich
- Lowe, G (2000) *Suffolk birds 1999 Volume 49*. Suffolk Naturalists' Society, Ipswich
- Lowe, G (2002) *Suffolk birds 2000 Volume 50*. Suffolk Naturalists' Society, Ipswich

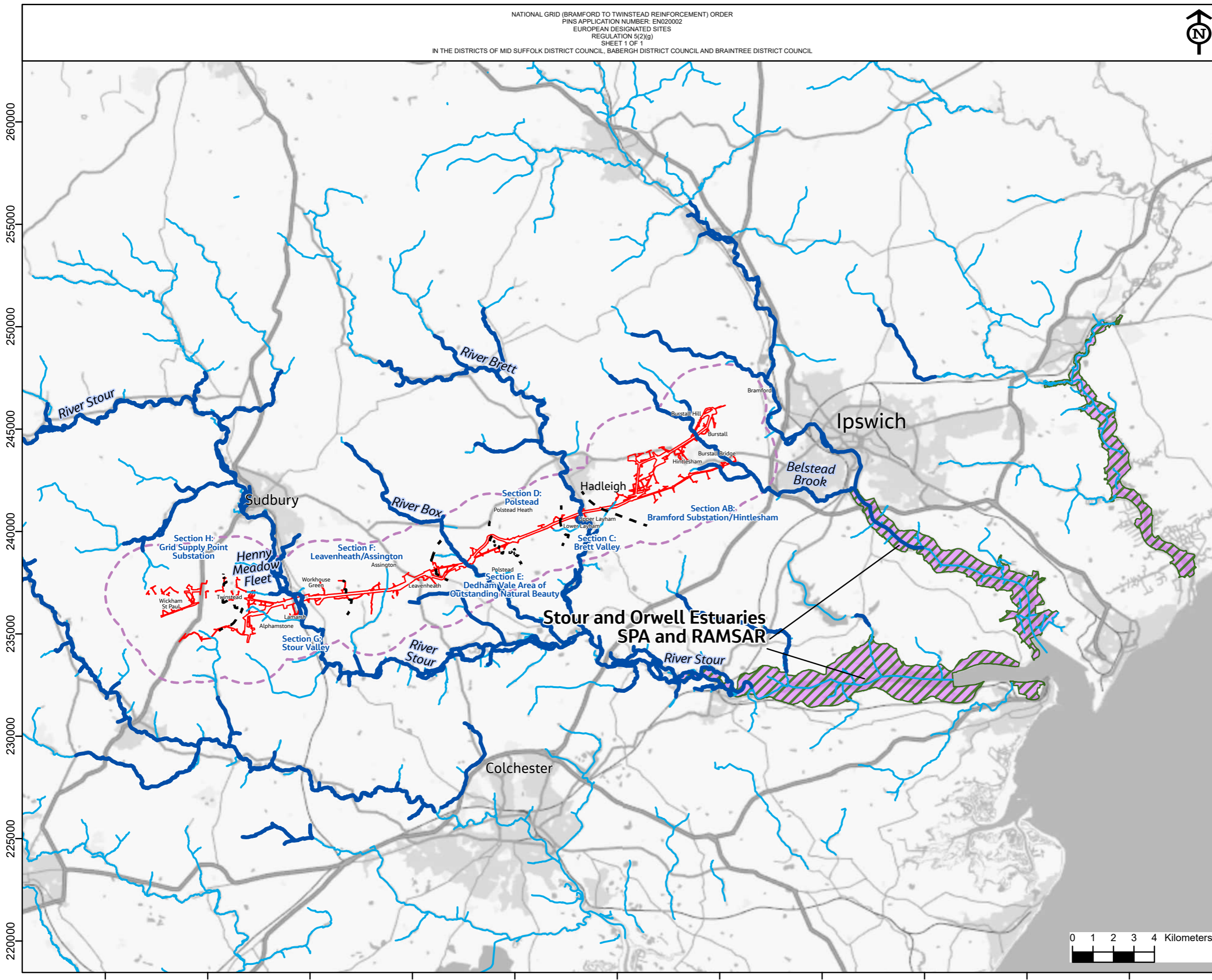
- Moser, M (1988) Limits to the numbers of grey plovers *Pluvialis squatarola* wintering on British estuaries: an analysis of long-term population trends. *Journal of Applied Ecology*, **25**, 473-485
- Musgrove, AJ, Langston, RHW, Baker, H & Ward, RM (eds.) (2003) *Estuarine waterbirds at low tide. The WeBS Low Tide Counts 1992-93 to 1998-99*. WSG/BTO/WWT/RSPB/JNCC, Thetford (International Wader Studies, No. 16)
- Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999-2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14
- Ogilvie, MA & the Rare Breeding Birds Panel (1996) Rare breeding birds in the United Kingdom in 1993. *British Birds*, **89**, 61-91
- Owen, M, Atkinson-Willes, GL & Salmon, DG (1986) *Wildfowl in Great Britain*. 2nd edn. Cambridge University Press Cambridge
- Piersma, T (1994) *Close to the edge: energetic bottlenecks and the evolution of migratory pathways in knots*. Unpublished PhD thesis, Rijksuniversiteit Groningen, Netherlands
- Prater, AJ (1981) *Estuary birds of Britain and Ireland*. Poyser, London
- Rafe, RW (1995) *Suffolk birds 1994 Volume 44*. Suffolk Naturalists' Society, Ipswich
- Ridgill, SC & Fox, AD (1990) *Cold weather movements of waterfowl in western Europe*. International Waterfowl and Wetlands Research Bureau, Slimbridge (Special Publication No 13)
- Rose, PM & Scott, DA (1997) *Waterfowl population estimates*. 2nd edn. Wetlands International, Wageningen (Wetlands International Publication, No. 44) www.wetlands.org/IWC/wpe2/WPE2-toc.htm
- Scott, DA & Rose, DA (1996) *Atlas of Anatidae populations in Africa and western Eurasia*. Wetlands International, Wageningen (Publication No. 41)
- Sneddon, P & Randall, RE (1994) *Coastal vegetated shingle structures of Great Britain: Appendix 3. Shingle sites in England*. Joint Nature Conservation Committee, Peterborough
- Snow, DW & Perrins, CM (1998) *The birds of the western Palearctic. Volume 1: Non-passerines*. Concise edn. Oxford University Press, Oxford
- Stone, BH, Sears, J, Cranswick, PA, Gregory, RD, Gibbons, DW, Rehfisch, MM, Aebischer, NJ & Reid, JB (1997) Population estimates of birds in Britain and in the United Kingdom. *British Birds*, **90**(1), 1-22
- Stour and Orwell Estuaries Group (1996) *Stour and Orwell Estuaries management plan*. Suffolk Coast and Heaths Project, Woodbridge
- Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm
- Tubbs, CR (1991) The population history of grey plovers *Pluvialis squatarola* in the Solent, southern England. *Wader Study Group Bulletin*, **61**, 15-21
- Worsfold, TM (2002) *Combined intertidal and subtidal biotope report and maps for the Stour and Orwell estuaries*. (Contractor: Unicmarine, Letchworth) Unpublished report to Harwich Haven Authority, Harwich (HHAComBiotop02)
- Wright, M (2000) Orwell estuary: systematic review of waterbirds incorporating a report on the effects of the Felixstowe Dock expansion on key wading species at Fagbury. *English Nature Research Reports*, No. **381**

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Figures

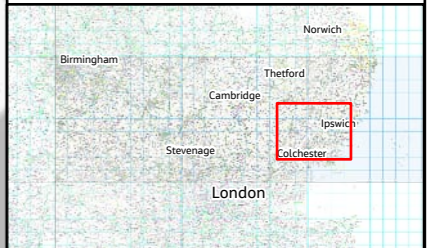


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Legend

- Section boundaries
- Order Limits
- Impact pathway study area (2km)
- Wetlands of International Importance (Ramsar)
- Special Protection Areas (SPA)
- Main rivers crossed by the Order Limits
- Other rivers/watercourses



NG Investment No. ETX/01142

ISSUE	DATE	REMARKS	DRWN	CHKD	APPD
A	03/2023	Rev A for DCO Application	GW	LG	CW

PROJECT: **Bramford to Twinstead Reinforcement**

nationalgrid

TITLE: **Figure 1 European Designated Sites**

CIRCUIT / SITE: **Bramford – Pelham & Bramford – Braintree – Bulls Lodge** GIS

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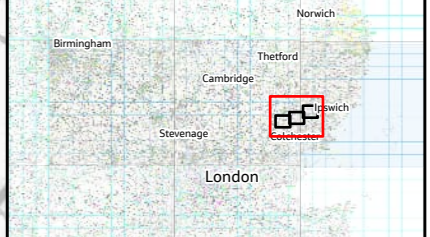
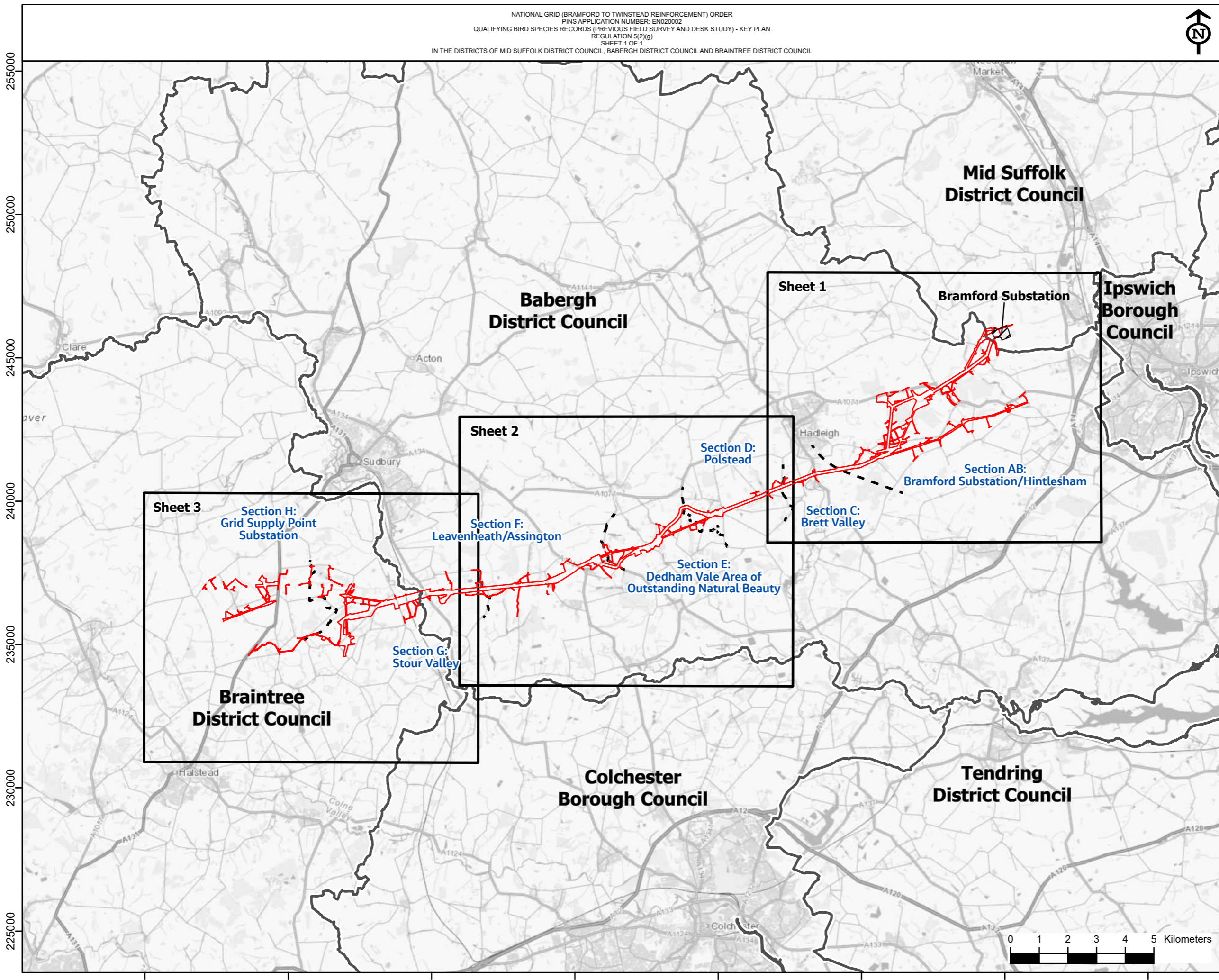
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- Legend
- Section boundaries
 - Order Limits
 - ▭ Local authority districts
 - ▨ Existing Bramford Substation



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ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: Bramford to Twinstead Reinforcement

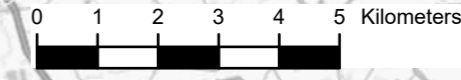


TITLE:
 Figure 2 Qualifying Bird Species Records
 (previous field survey and desk study)
 - Key Plan

CIRCUIT / SITE: Bramford – Pelham & Bramford – Braintree – Bulls Lodge	GIS
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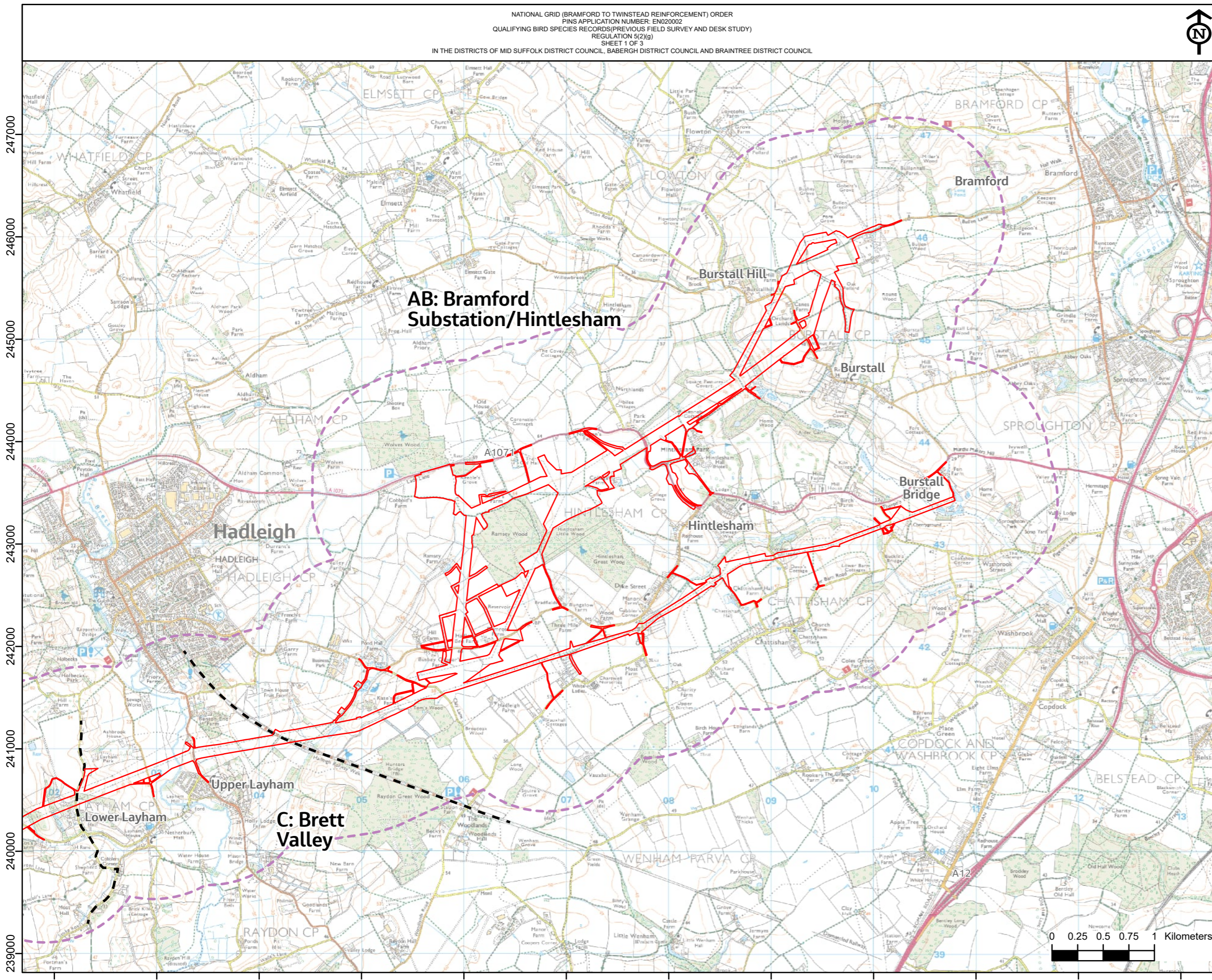
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Legend

- Section boundaries
- Order Limits
- Study area (1km)

Species	WeBS Report 5 year mean
Black-tailed Godwit	3213
Pintail	461
Redshank	2275

Note: Peak count data is provided where known



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ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

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nationalgrid

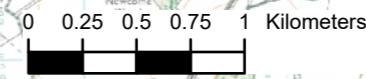
TITLE: Figure 2
 Qualifying Bird Species Records
 (Previous Field Survey and Desk Study)

CIRCUIT / SITE :
 Bramford – Pelham & Bramford
 – Brantree – Bulls Lodge

ORIGINATOR DRAWING NO.
 AAA_BTT_HRA_Fig02_Rev0

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 BT-JAC-020631-500-0127

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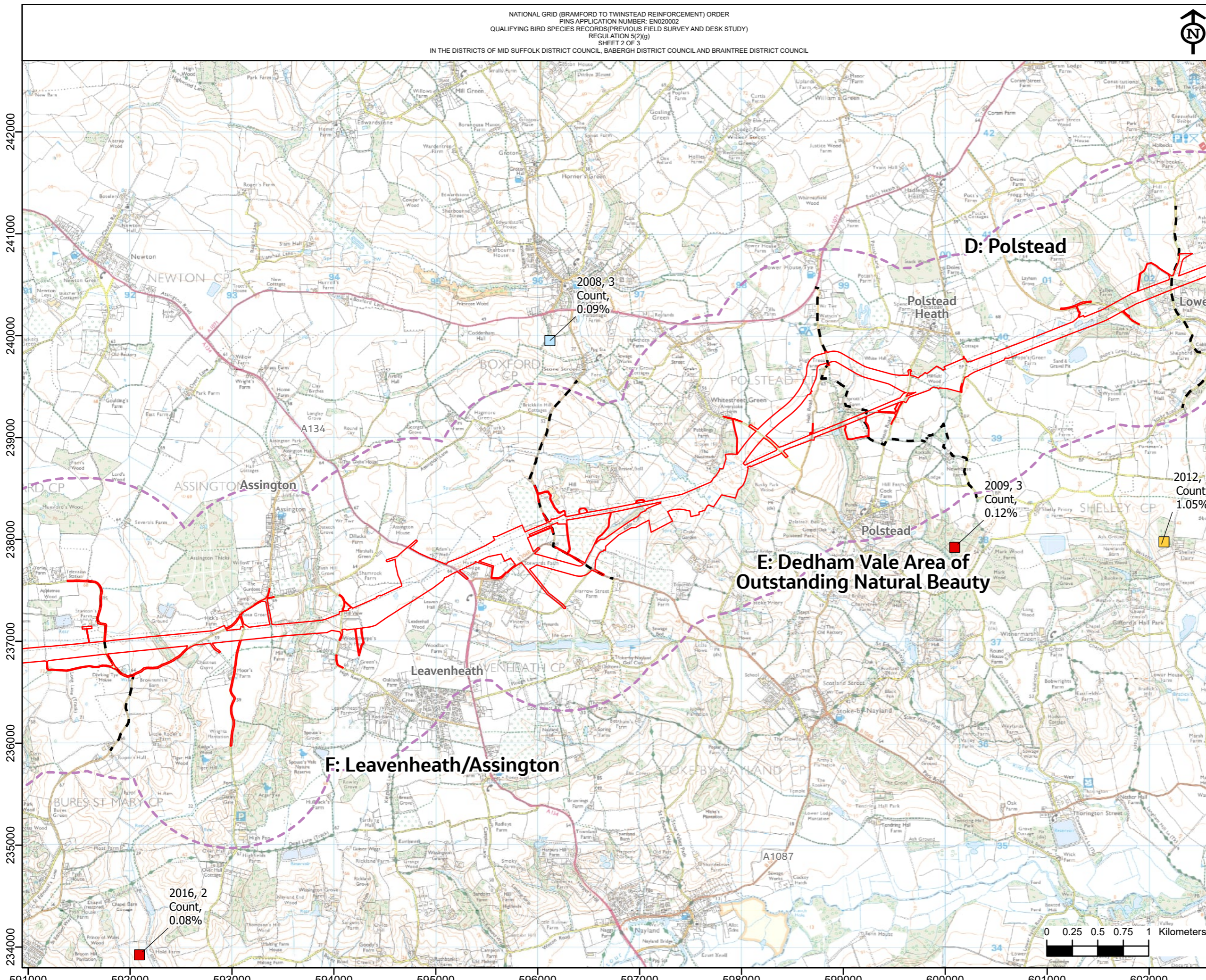


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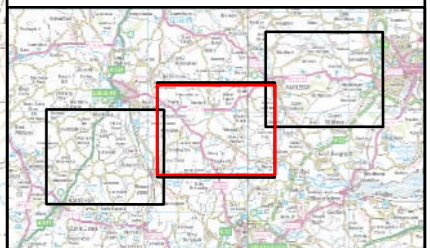
Legend

- Section boundaries
- Order Limits
- Study area (1km)

Species	WeBS Report 5 year mean
Black-tailed Godwit	3213
Pintail	461
Redshank	2275



Note: Peak count data is provided where known



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A	02/2023	Rev A for DCO Application	GW	LG	CW
ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: Bramford to Twinstead Reinforcement

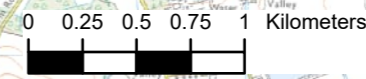
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 Qualifying Bird Species Records
 (Previous Field Survey and Desk Study)

CIRCUIT / SITE: Bramford – Pelham & Bramford – Braitree – Bulls Lodge

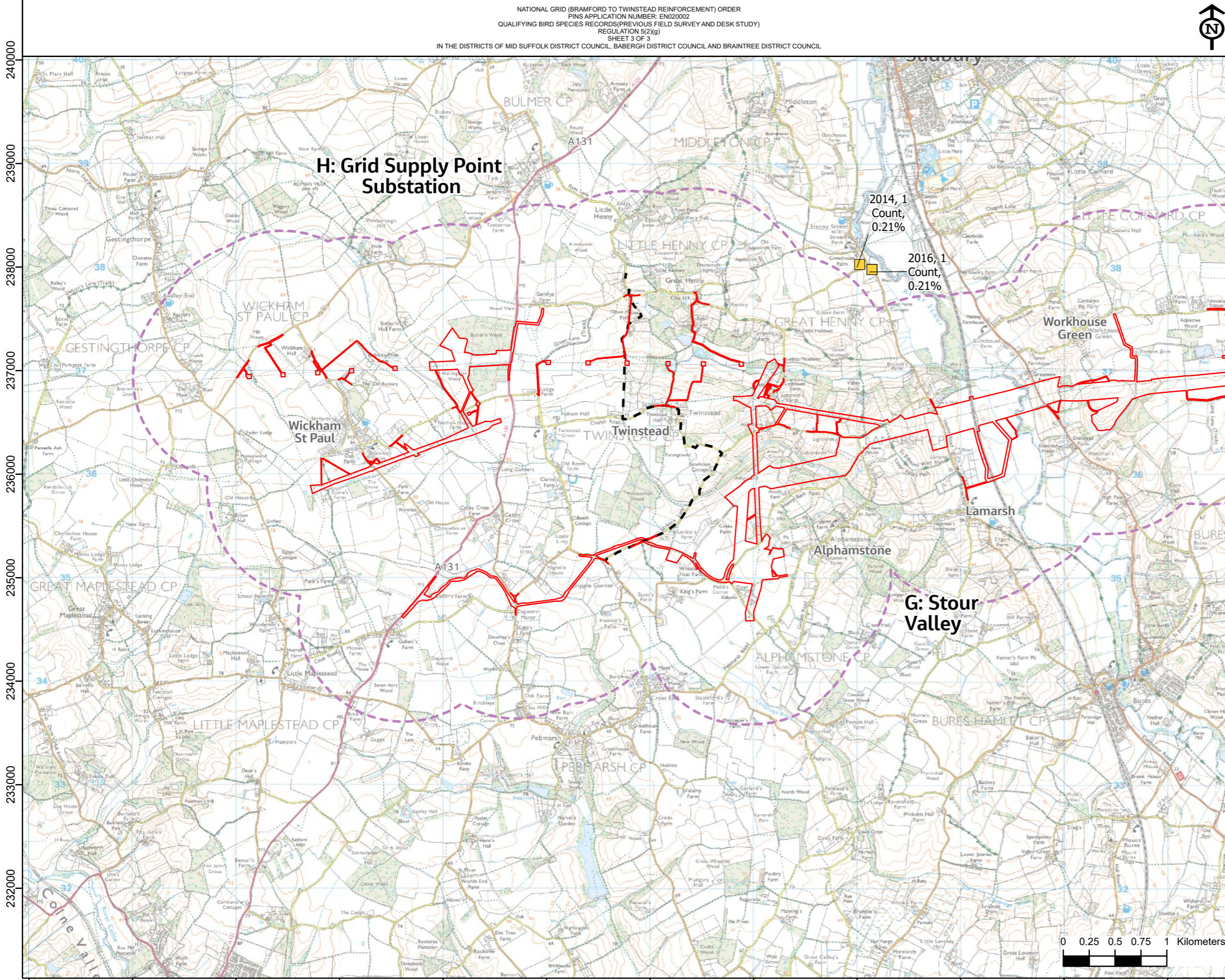
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NG DRAWING No. BT-JAC-020631-500-0127	SHEET NO. 2	NO. OF SHEETS 3	ISSUE: A
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- Section boundaries
- Order Limits
- Study area (1km)

Species	WeBS Report 5 year mean
Black-tailed Godwit	3213
Pintail	461
Redshank	2275

Note: Peak count data is provided where known



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A	02/2023	Rev A for DCO Application	GW	LG	CW
ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: **Bramford to Twinstead Reinforcement**

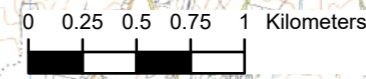


TITLE: **Figure 2
 Qualifying Bird Species Records
 (Previous Field Survey and Desk Study)**

CIRCUIT / SITE : **Bramford – Pelham & Bramford
 – Braintree – Bulls Lodge** **GIS**

ORIGINATOR DRAWING NO. **AAA_BTT_HRA_Fig02_Rev0** **A3**

NG DRAWING No. BT-JAC-020631-500-0127	SHEET NO. 3	NO. OF SHEETS 3	ISSUE: A
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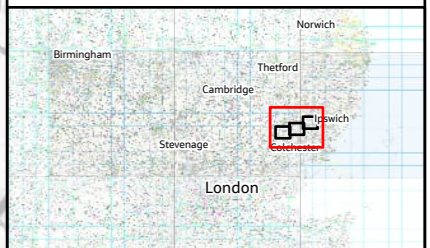
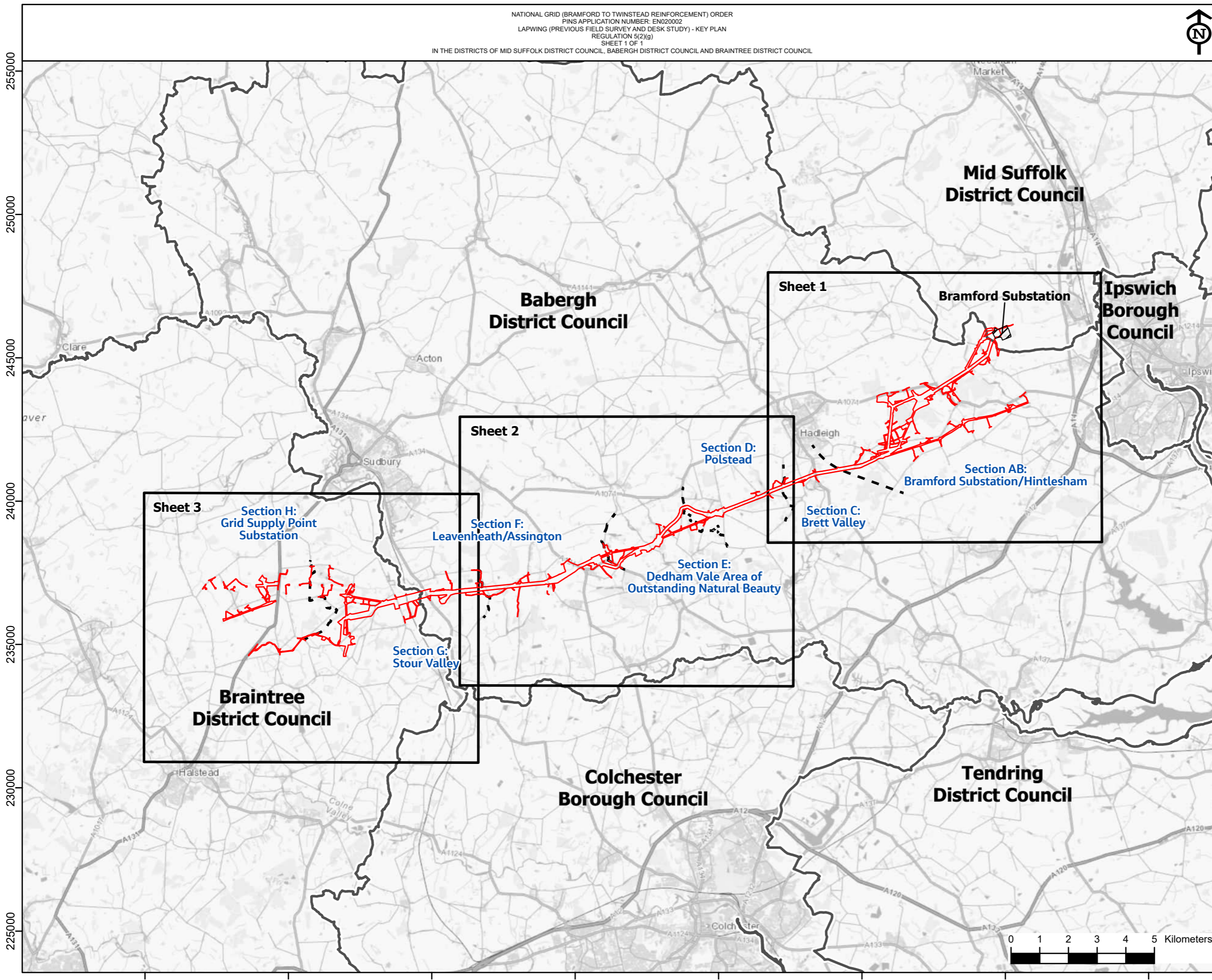
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Legend

- Section boundaries
- Order Limits
- Local authority districts
- Existing Bramford Substation



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A	02/2023	Rev A for DCO Application	PM	LG	CW
ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: Bramford to Twinstead Reinforcement

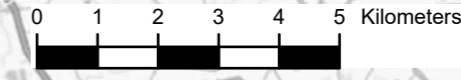


TITLE: Figure 3 Lapwing (previous field survey and desk study) - Key Plan

CIRCUIT / SITE: Bramford – Pelham & Bramford – Braintree – Bulls Lodge

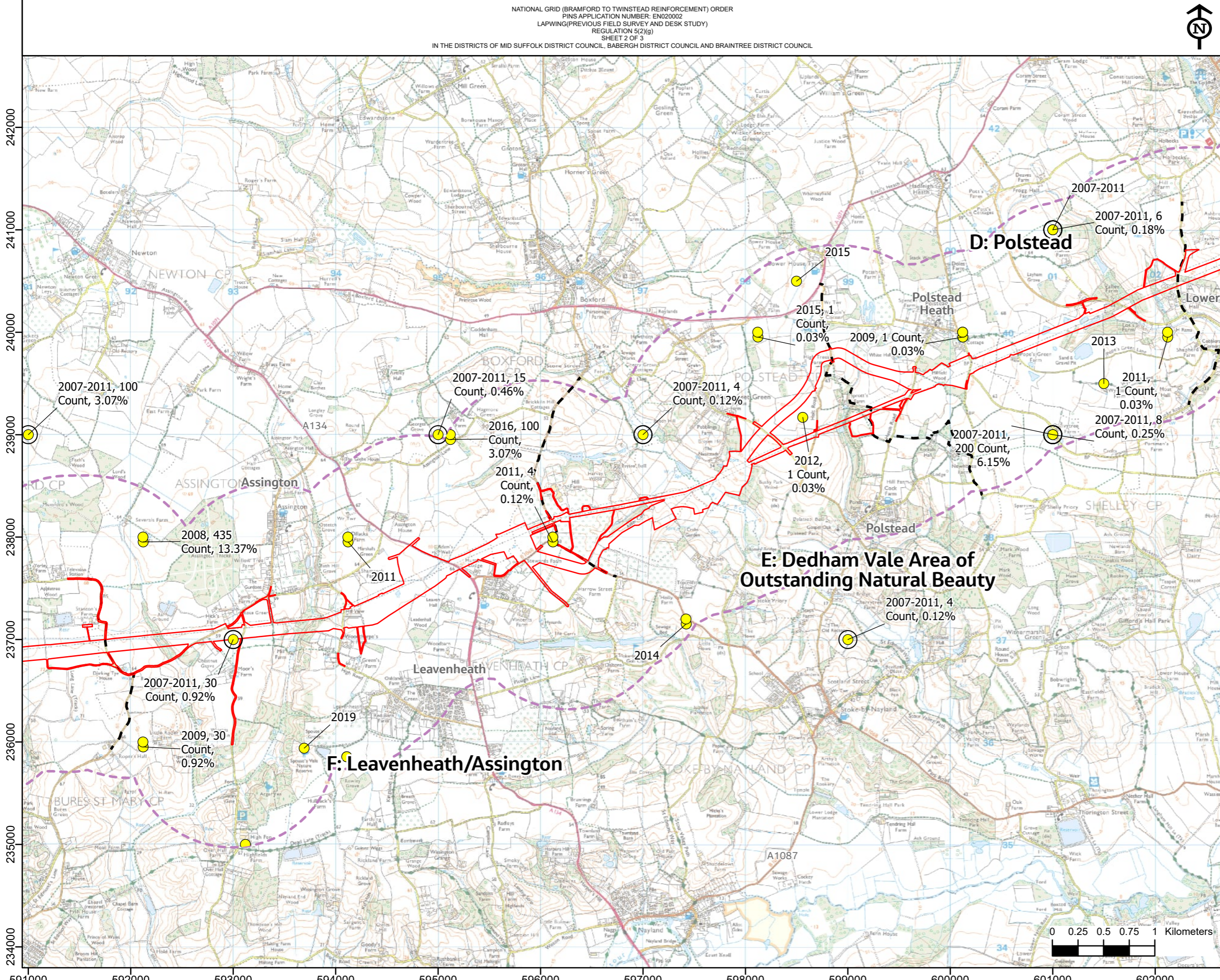
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NG DRAWING No. BT-JAC-020631-500-0007	SHEET NO. 1	NO. OF SHEETS 1	ISSUE: A
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Legend

- Section boundaries
- Order Limits
- Study area (1km)
- Centre point of 1km grid square records (see note)

Species	WeBS Report 5 year mean
Lapwing	3155

Note: Peak count data is provided where known
 British Trust for Ornithology data is only accurate to a 1km grid square. Points are represented by the centre point with a ring



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A	03/2023	Rev A for DCO Application	GW	LG	CW

PROJECT: Bramford to Twinstead Reinforcement

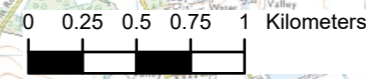


TITLE: Figure 3
 Lapwing
 (Previous Field Survey and Desk Study)

CIRCUIT / SITE :
 Bramford – Pelham & Bramford
 – Braitree – Bulls Lodge

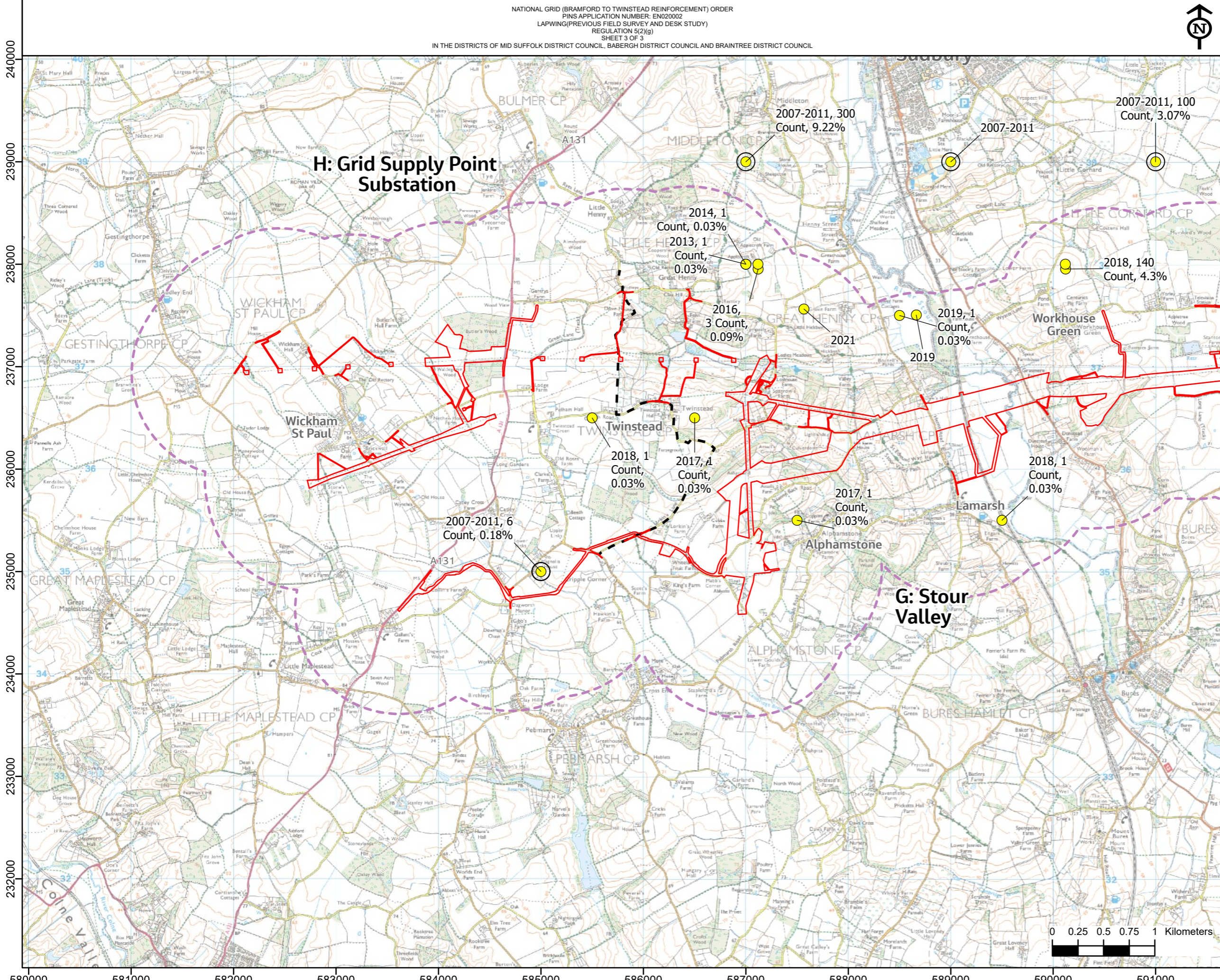
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Legend

- - - Section boundaries
- ▭ Order Limits
- ▭ Study area (1km)
- Centre point of 1km grid square records (see note)

Species	WeBS Report 5 year mean
● Lapwing	3155

Note: Peak count data is provided where known
 British Trust for Ornithology data is only accurate to a
 1km grid square. Points are represented by the centre
 point with a ring



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A	03/2023	Rev A for DCO Application	GW	LG	CW
ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: **Bramford to Twinstead Reinforcement**

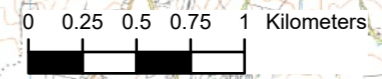


TITLE: **Figure 3
 Lapwing
 (Previous Field Survey and Desk Study)**

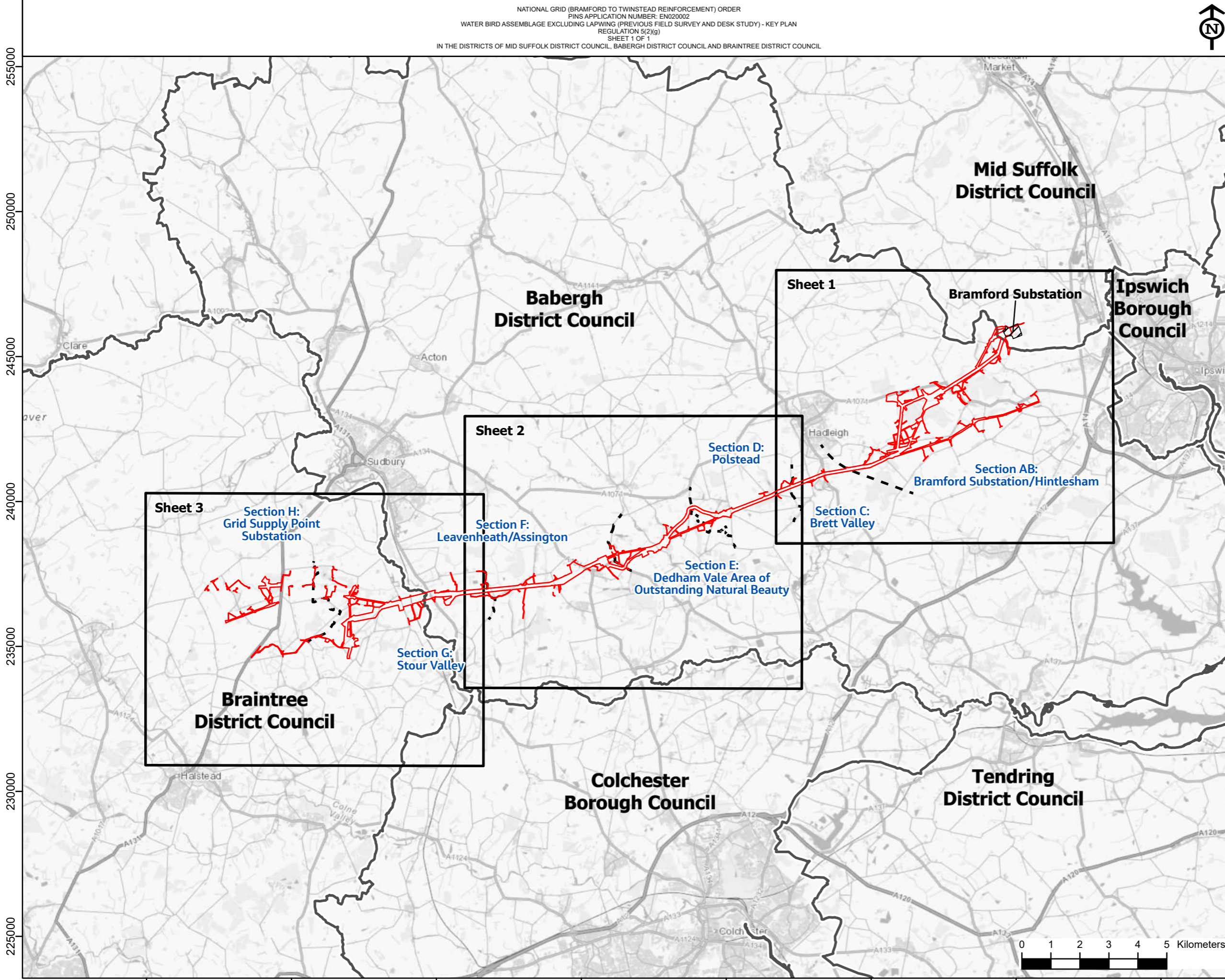
CIRCUIT / SITE : Bramford – Pelham & Bramford – Braitree – Bulls Lodge	GIS
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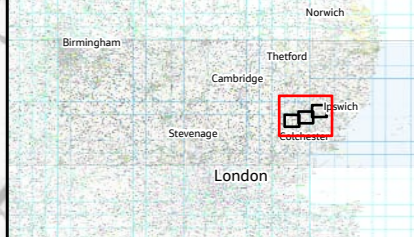
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- Legend**
- - - Section boundaries
 - ▭ Order Limits
 - ▭ Local authority districts
 - ▨ Existing Bramford Substation



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A	02/2023	Rev A for DCO Application	PM	LG	CW
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PROJECT: Bramford to Twinstead Reinforcement

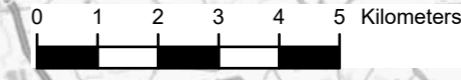


TITLE: Figure 4 Water Bird Assemblage Excluding Lapwing (previous field survey and desk study) - Key Plan

CIRCUIT / SITE :
 Bramford – Pelham & Bramford – Braintree – Bulls Lodge

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 AAA_BTT_HRA_Fig04_KeyPlan_Rev0

NG DRAWING No. BT-JAC-020631-500-0058	SHEET NO. 1	NO. OF SHEETS 1	ISSUE: A
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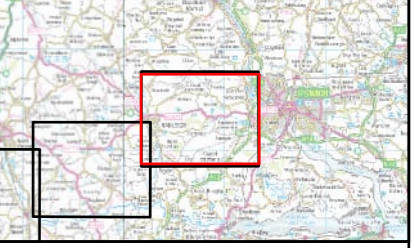
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Legend

- Section boundaries
- Order Limits
- Study area (1km)
- Centre point of 1km grid square records (see note)

Species	WeBS Report 5 year mean
Cormorant	1017
Curlew	1651
Gadwall	232
Goldeneye	136
Great crested grebe	157
Ringed plover	241
Shelduck	2388
Wigeon	3686

Note: Peak count data is provided where known
 British Trust for Ornithology data is only accurate to a
 1km grid square. Points are represented by the centre
 point with a ring



NG Investment No. ETX/01142

A	03/2023	Rev A for DCO Application	GW	LG	CW
ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: **Bramford to Twinstead Reinforcement**

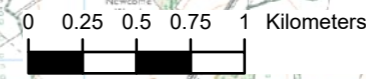
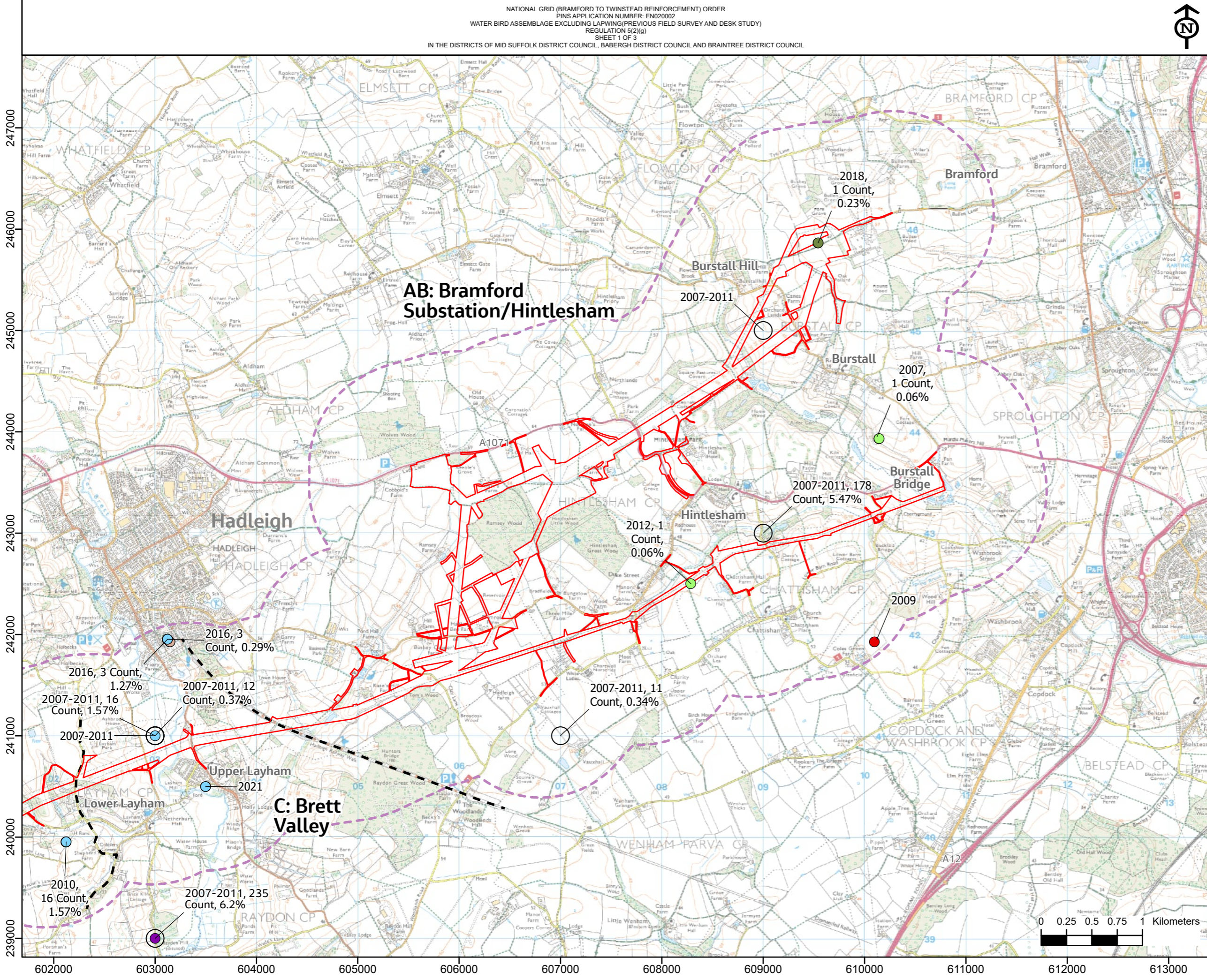
nationalgrid

TITLE: **Figure 4
 Water Bird Assemblage
 Excluding Lapwing
 (Previous Field Survey and Desk Study)**

CIRCUIT / SITE:
**Bramford – Pelham & Bramford
 – Braitree – Bulls Lodge**

ORIGINATOR DRAWING NO.
AAA_BTT_HRA_Fig04_Rev0

NG DRAWING No. BT-JAC-020631-500-0058	SHEET NO. 1	NO. OF SHEETS 3	ISSUE: A
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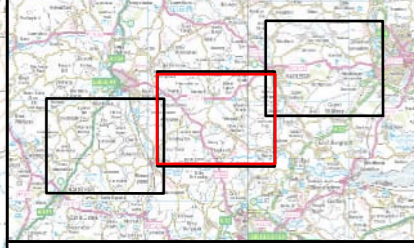


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- Legend**
- - - Section boundaries
 - Order Limits
 - Study area (1km)
 - Centre point of 1km grid square records (see note)

Species	WeBS Report 5 year mean
Cormorant	1017
Curlew	1651
Gadwall	232
Goldeneye	136
Great crested grebe	157
Ringed plover	241
Shelduck	2388
Wigeon	3686

Note: Peak count data is provided where known
 British Trust for Ornithology data is only accurate to a 1km grid square. Points are represented by the centre point with a ring



NG Investment No. ETX/01142

ISSUE	DATE	REMARKS	DRWN	CHKD	APPD
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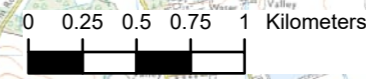
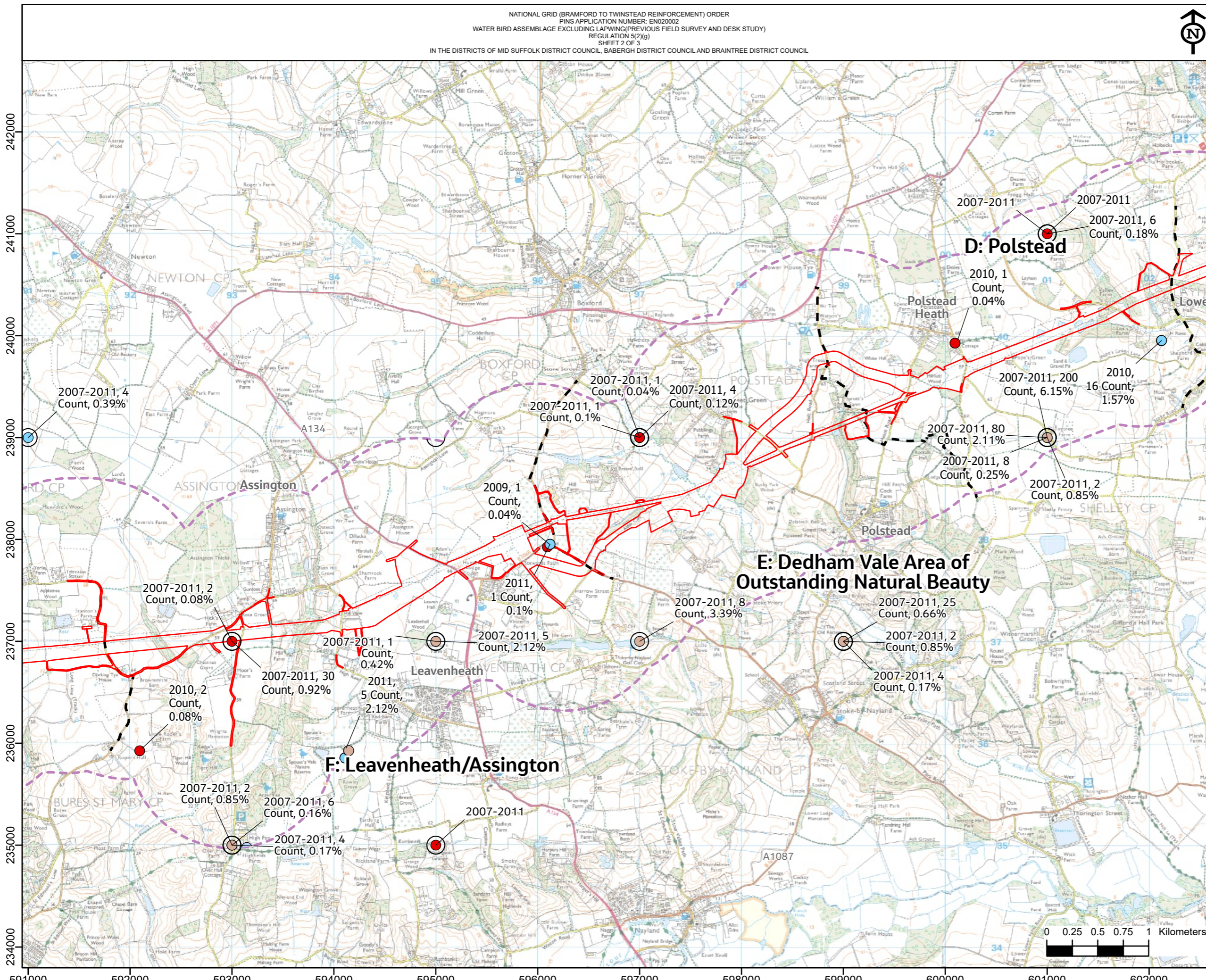
TITLE: Figure 4
 Water Bird Assemblage
 Excluding Lapwing
 (Previous Field Survey and Desk Study)

CIRCUIT / SITE:
 Bramford – Pelham & Bramford
 – Braitree – Bulls Lodge

ORIGINATOR DRAWING NO.
 AAA_BTT_HRA_Fig04_Rev0

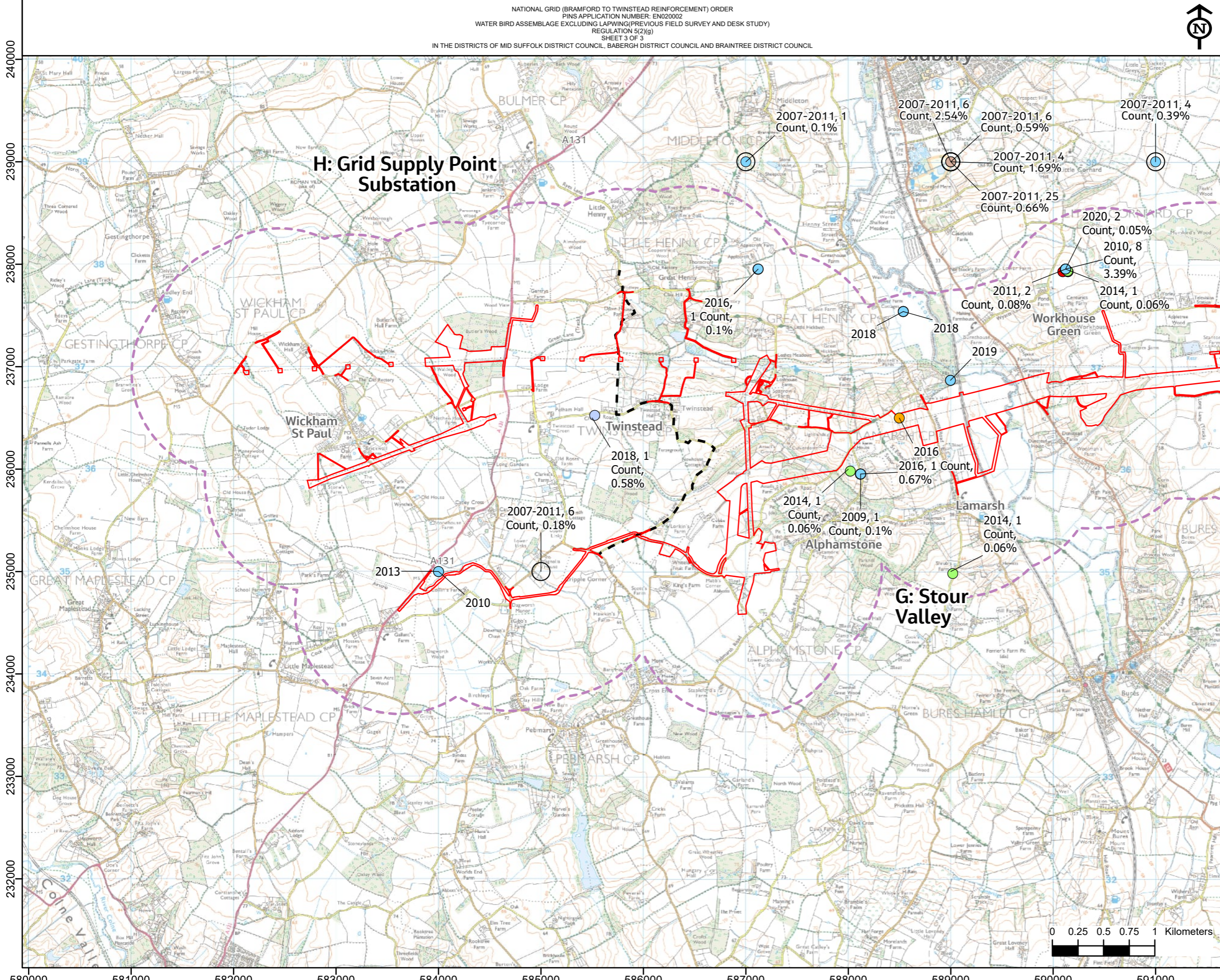
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SCALE: 1:35000





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Legend

- Section boundaries
- ▭ Order Limits
- - - Study area (1km)
- Centre point of 1km grid square records (see note)

Species	WeBS Report 5 year mean
● Cormorant	1017
● Curlew	1651
● Gadwall	232
● Goldeneye	136
● Great crested grebe	157
● Ringed plover	241
● Shelduck	2388
● Wigeon	3686

Note: Peak count data is provided where known
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A	03/2023	Rev A for DCO Application	GW	LG	CW
ISSUE	DATE	REMARKS	DRWN	CHKD	APPD

PROJECT: **Bramford to Twinstead Reinforcement**

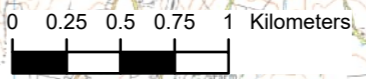


TITLE: **Figure 4
 Water Bird Assemblage
 Excluding Lapwing
 (Previous Field Survey and Desk Study)**

CIRCUIT / SITE: **Bramford – Pelham & Bramford – Braintree – Bulls Lodge**

ORIGINATOR DRAWING NO. **AAA_BTT_HRA_Fig04_Rev0**

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