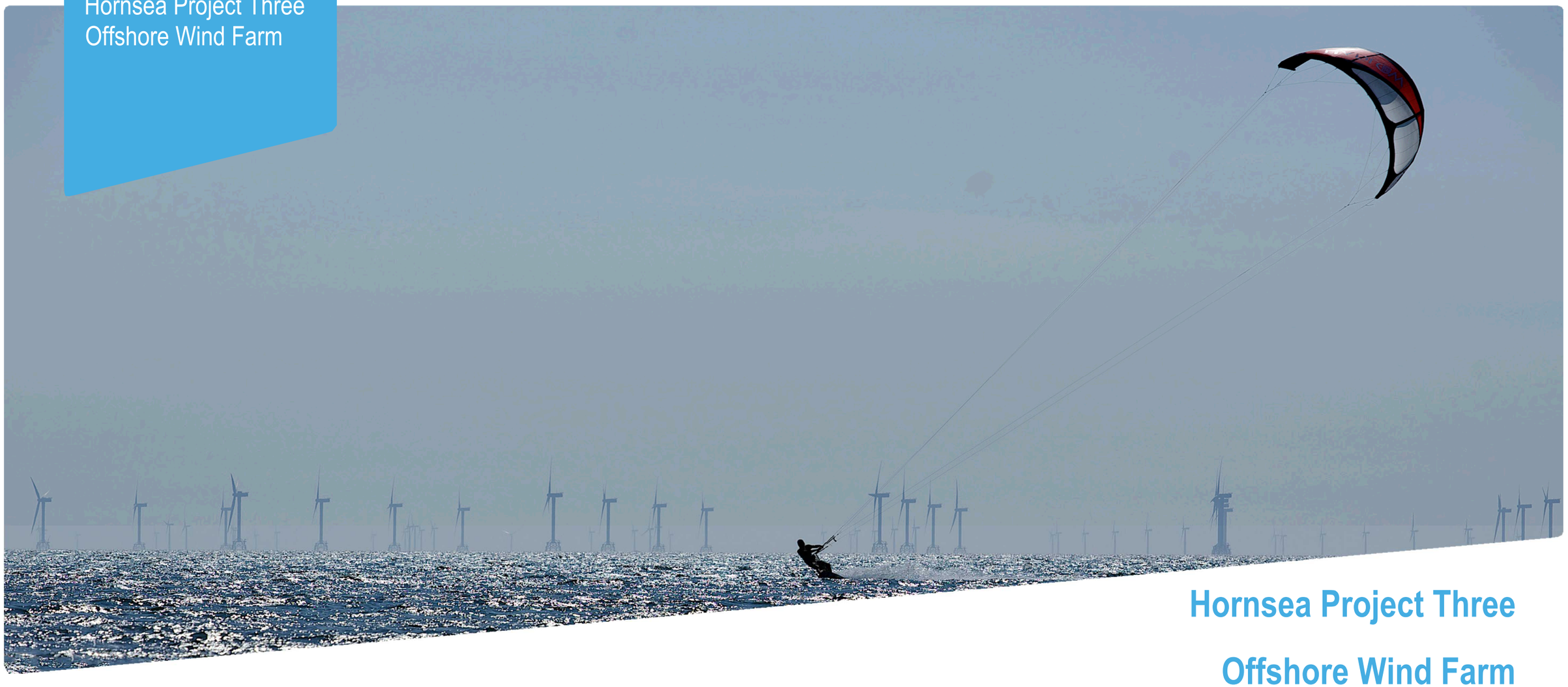
Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three

Offshore Wind Farm

Environmental Statement:
Volume 6, Annex 3.10 - Onshore Ornithology – Breeding Birds

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Hornsea 3
Offshore Wind Farm

Ørsted

Environmental Impact Assessment

Environmental Statement

Volume 6

Annex 3.10 – Onshore Ornithology – Breeding Birds

Report Number: A6.6.3.10

Version: Final

May 2018

This report is also downloadable from the Hornsea Project Three offshore wind farm website at:
www.hornseaproject3.co.uk

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Glossary

Term	Definition
Evidence Plan	A formal mechanism to agree upfront what information the applicant needs to supply to the Planning Inspectorate (PINS) as part of a Development Consent Order (DCO) application. This will help to ensure compliance with the Habitats Regulations.
Onshore elements of Hornsea Three	Hornsea Three landfall, onshore cable corridor, the onshore HVAC booster station, the onshore HVDC converter/HVAC substation and the interconnection with the Norwich Main National Grid substation .
Hornsea Three scoping onshore cable corridor search area	The onshore cable corridor search area which was assessed and consulted upon in the Scoping Report.
Onshore cable corridor survey area	Ornithology survey area defined using a 250m buffer around the PEIR onshore cable corridor search area (200 m wide).
Hornsea Three onshore cable corridor	The corridor in which the onshore export cables will be located. Approximately 80 m in width.
Landfall Area	The area between (MHWS) and (MLWS) in which all of the export cables will be landed and is the transitional area between the offshore export cabling and the onshore export cabling.
Mean High Water Spring (MHWS)	Average of the heights of two successive high waters during those periods of 24 hrs (approximately once a fortnight) when the range of the tide is greatest.
Mean Low Water Spring (MLWS)	average height obtained by the two successive low waters during those periods of 24 hrs (approximately once a fortnight) when the range of the tide is greatest.
Norwich Main National Grid Substation	The existing National Grid Norwich Main substation which Hornsea Project Three will ultimately connect to.
Onshore HVAC booster station area	The area in which the onshore HVAC booster station, if required, will be located.
Onshore HVDC converter / HVAC substation area	The area in which the onshore HVDC converter / HVAC substation will be located.

Acronyms

Unit	Description
CWS	County Wildlife Site
EIA	Environmental Impact Assessment
EU	European Union
EWG	Expert Working Group
LBAP	Local Biodiversity Action Plan
PEIR	Preliminary Environmental Information Report
RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UK	United Kingdom

Units

Unit	Description
GW	Gigawatt (power)
MW	Megawatt (power)
m	Metre (length)
km	Kilometre (distance)

1. Introduction

1.1 Background

1.1.1.1 Ornithological baseline surveys are required to inform the Environmental Impact Assessment (EIA) of the onshore infrastructure associated with Hornsea Three Offshore Wind Farm (hereafter referred to as 'Hornsea Three'). In this regard, NIRAS was commissioned to undertake surveys for breeding birds, which were conducted between April to July 2017.

1.1.1.2 Hornsea Three is a proposed offshore wind farm located in the southern North Sea. At the time of survey design, the project had identified a 200 m wide cable corridor search area which was the focus of the Phase 2 Consultation and formed the basis of the assessments contained within the Preliminary Environmental Information Report (PEIR), hereafter known as the 'PEIR onshore cable corridor search area'). An onshore cable corridor search area was identified by Hornsea Three. It was approximately 55 km in length running from Weybourne on the north Norfolk coast, southwards through Norfolk, and ending at the Norwich Main National Grid substation in the vicinity of Swardeston, south-west of Norwich. Since survey completion, the design of Hornsea Three has been refined and an onshore cable corridor, which is approximately 80 m in width, has been identified (hereafter referred to as 'onshore cable corridor'). This report provides the results for the survey area which comprises the PEIR onshore cable corridor search area plus a 250 m buffer, although particular focus has been given to breeding birds located within the onshore cable corridor where appropriate.

1.1.1.3 In addition to the onshore cable corridor, Hornsea Three also includes the onshore HVAC booster station (located at Barningham), onshore HVDC converter/HVAC substation (located at Mangreen South) and the interconnection with the Norwich Main National Grid substation in addition to construction compounds and associated storage areas, located adjacently to the onshore cable corridor.

1.2 Legislation and policy

1.2.1.1 This section provides a brief introduction to the relevant international conventions, European directives and national legislation and policy that are relevant to birds.

1.2.1.2 Within the European Union, the key legislative measure providing for the protection of birds is the Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive'). The Birds Directive helps member states fulfil their commitments under the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention); the Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention); and the Convention on Wetlands (Ramsar Convention).

1.2.1.3 Articles 2 and 3 of the Birds Directive aim to maintain the populations of all wild bird species across their natural range and encourage various activities, which promote this. Article 4 allows for the designation of SPAs for species listed in Annex I of the Birds Directive, as well as for regularly occurring migratory species, with particular attention to the protection of wetlands and particularly to wetlands of international importance. SPAs designated under the Birds Directive (together with Special Areas of Conservation (SACs) designated under the Habitats Directive) form part of the Natura 2000 protected area network. Article 6 of the Habitats Directive affords protection to Natura 2000 sites from plans or projects that may affect them.

1.2.1.4 The Wildlife and Countryside Act 1981 (as amended) transposes the requirements of the Birds Directive in England and provides protection for wild birds by making it an offence to intentionally kill, injure, or take any wild bird or take, damage or destroy the nest or eggs of a wild bird, as well as intentionally or recklessly disturb breeding birds listed on Schedule 1 of the Act. The Act also provides for the designation of Sites of Special Scientific Interest (SSSI).

1.2.1.5 The Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations 2017') consolidate and update the Conservation of Habitats and Species Regulations 2010 (the 'Habitats Regulations 2010') allow for the designation of SPAs and SACs (European sites) and set out a mechanism for the protection of those sites in accordance with the Habitats Directive and Birds Directive. In England, Ramsar sites are afforded the same level of protection as Natura 2000 sites with respect to plans or projects that may affect them.

1.2.1.6 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 requires all public bodies *"to have regard to the conservation of biodiversity in England"* when carrying out their normal functions. The list of habitats and species of 'principal importance for the conservation of biodiversity in England' (Section 41) guides public bodies in implementing their duty. Local planning authorities and other competent authorities therefore must consider the impact on biodiversity from proposed developments.

1.2.1.7 Section 117 of the National Planning Policy Framework (NPPF) states that planning policies should *"promote the recovery of priority species populations, linked to national and local targets"* (e.g. Local Biodiversity Action Plan (LBAP) targets) and that the planning system should *"contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible"*.

1.3 Consultation

1.3.1.1 Consultation through the Evidence Plan process implemented for Hornsea Three has allowed the presentation and agreement of the methodological approach for breeding birds. Consultees that form the Expert Working Group (EWG) for onshore ecology aspects of the Evidence Plan include Natural England, the Royal Society for the Protection of Birds (RSPB), Norfolk County Council, the Environment Agency and Norfolk Wildlife Trust.

1.3.1.2 An overview of the breeding bird survey methodology was presented to the EWG on 17 February 2017 where it was agreed that the approach was acceptable, noting that further information may be required on the points counts (see section 2.4) and whether they cover County Wildlife Site (CWS) habitats.

1.3.1.3 An update on the status of the surveys was provided to the EWG on 28 April 2017 where point count locations in relation to CWS sites was presented. It was also detailed that a species-specific approach to surveying Nightjar (*Caprimulgus europaeus*) would be implemented at Kelling Heath SSSI (see section 2.6). Again, the approach presented was agreed by the EWG.

1.4 Scope of surveys

1.4.1.1 The breeding bird surveys comprised of five components, undertaken to inform the baseline characterisation of the onshore elements of Hornsea Three. These components comprised:

- Survey of areas of permanent land take – HVAC booster station and the HVAC substation /HVDC converter[1] and landfall;
- Survey of areas compound site;
- Survey along the onshore cable corridor;
- Survey of locations where the onshore cable corridor crossed SSSI sites; and
- Species specific survey methods where appropriate.

1.4.1.2 As detailed in the introduction, there has been substantial refinement of the onshore cable corridor since the completion of the surveys. The survey mapping and results presented in this report cover the PEIR cable corridor search area plus a 250 m buffer, but this includes the refined onshore cable corridor. Storage areas and construction compounds are located immediately adjacent to the onshore cable corridor and therefore fall within the survey buffer.

1.4.1.3 Two onshore cable corridor options immediately subsequent to the landfall were in consideration at the time of the survey. These options impacted the survey design of Kelling Heath SSSI, the landfall and the onshore cable corridor as a whole. Subsequent to the completion of the survey, the western route was chosen to be taken forward as part of the Hornsea Three onshore cable corridor (ES Volume 1, Chapter 4; Site Selection and Consideration of Alternatives).

1.5 Survey aims and objectives

1.5.1.1 The aim of the surveys was to provide baseline data to inform the characterisation and valuation of the onshore elements of Hornsea Three for breeding birds. This has, in turn, informed an impact assessment of the likely impacts on terrestrial breeding birds as a result Hornsea Three (presented in volume 3, chapter 3: Ecology and Nature Conservation).

1.5.1.2 The objectives of the survey were to identify the:

- breeding bird communities present within the onshore cable corridor and areas of land take of Hornsea Three; and
- legislative status, distribution and population size of species of conservation importance.

[1] The design of the booster, substation and converter include both permanent and temporary land take elements. For ease of reference in this report all elements of these sites are included in the sections detailing permanent land take.

2. Methodology

2.1 Overview

2.1.1.1 Survey methodologies were developed based on key guidance on the survey of breeding birds such as: SNH (2014) and Natural England (2010) in addition to standard guidance on survey techniques such as Bibby *et al.* (2000) and Gregory *et al*. (2004).

2.1.1.2 As the guidance from Natural England is focussed on the potential impacts of onshore wind farms, is has been adapted where relevant to the potential impacts of an onshore cable route on breeding birds. Discrete methodologies are detailed for each area of permanent land take, temporary land take and the onshore cable corridor as identified below; both the level of survey effort and the survey technique applied depended on the type and extent of potential impact.

2.1.1.3 All methodologies detailed here were presented to and agreed with the EWG formed for Hornsea Three.

2.2 Permanent land take and landfall

2.2.1.1 A survey of breeding birds was conducted in areas of permanent land take i.e. the onshore HVAC booster station and the onshore HVDC converter/HVAC substation, to establish the breeding bird community present and the inclusion of any sensitive ornithological receptors. The survey area for the HVAC booster station and the HVAC substation/HVDC converter sites encompassed the footprint of each of the structures (and associated temporary working areas), plus a buffer of 100 m to allow for all bird territories potentially exposed to disturbance to be identified. The survey areas are presented in Figure 2.1 and Figure 2.2 respectively.

2.2.1.2 A survey of breeding birds was also conducted at the landfall. As at the time of surveys, definitive features of the landfall had not been fixed (either permanent or temporary), it was considered appropriate, on a precautionary basis, to implement surveys across the full width of the PEIR onshore cable corridor search area at landfall. This is defined fully in Figure 2.3 where the survey area extends south to the A149. The only permanent land take at the landfall will be the junction transition bay, the remaining area will be subject to temporary land take. The landfall survey area therefore includes the Beach Road, Weybourne CWS and borders the Muckleburgh Hill CWS. This survey area was split into two areas, east and west, which were covered simultaneously (the eastern section included a section of Weybourne Cliffs SSSI). The landfall survey area is presented in Figure 2.3.

2.2.1.3 Given the potential impacts of Hornsea Three which involve permanent loss of habitat in these areas, territory (registration) mapping techniques were undertaken as detailed in Bibby *et al.* (2000). This technique forms the basis of the British Trust for Ornithology (BTO) Common Bird Census (CBC), the outcome of which provides a sufficient level of confidence when describing the breeding bird community present (SNH, 2014). The use of a CBC type survey is consistent with Natural England guidance (2010).

2.2.1.4 Survey visits were undertaken early in the morning, generally between 05:00 –11:00 and during periods of good visibility and suitable weather conditions, i.e. avoiding periods of persistent rain or fog, extreme temperatures and high winds. During each survey visit, surveyors walked at a slow pace along pre-set transects within the survey area. Positions and behaviour of each bird were recorded using the standard BTO codes for mapping birds and bird activities (Bibby *et al.* 2000).

2.2.1.5 The locations of birds were recorded directly onto a 1:10,000 scale Ordnance Survey base map of the survey area (and adjacent land) on repeat visits. The expected outcome of this technique was that mapped registrations fall into clusters, approximately coinciding with breeding territories. Territories were identified through standard methods of interpreting territory maps based on rules set out by Marchant (1983) for the BTO's CBC.

2.2.1.6 The optimal timing for a survey of breeding birds is April-June. Natural England guidance (2010) suggests that, in terms of frequency of survey visits, at least one visit every two weeks from March to July i.e. 10 visits are required. However, this generic recommendation follows, without question, that of the historic CBC guidelines from the BTO which was designed for the purposes of providing reliable population trends for the UK's commoner breeding species. For the purpose of determining a robust baseline for Hornsea Three, six visits were considered adequate to provide sufficient information on baseline conditions and to enable impacts to be properly assessed (see Hounsome 2015). The survey effort applied to breeding birds was agreed with the Onshore Ecology EWG.

2.2.1.7 Therefore, to determine the number of breeding territories and allow for recording the maximum number of species possible, six survey visits were made between early April and late June 2017 within the following time periods:

- Visit 1: 1 April - 15 April;
- Visit 2: 16 April - 30 April;
- Visit 3: 1 May - 15 May;
- Visit 4: 16 May - 31 May;
- Visit 5: 1 June - 15 June; and
- Visit 6: 16 June - 30 June.

2.2.1.8 At any one time, a survey team comprising of two or more surveyors were in radio contact, providing simultaneous coverage of adjacent areas of the survey area.

Figure 2.1: Onshore HVAC booster station location and breeding bird survey area 2017.

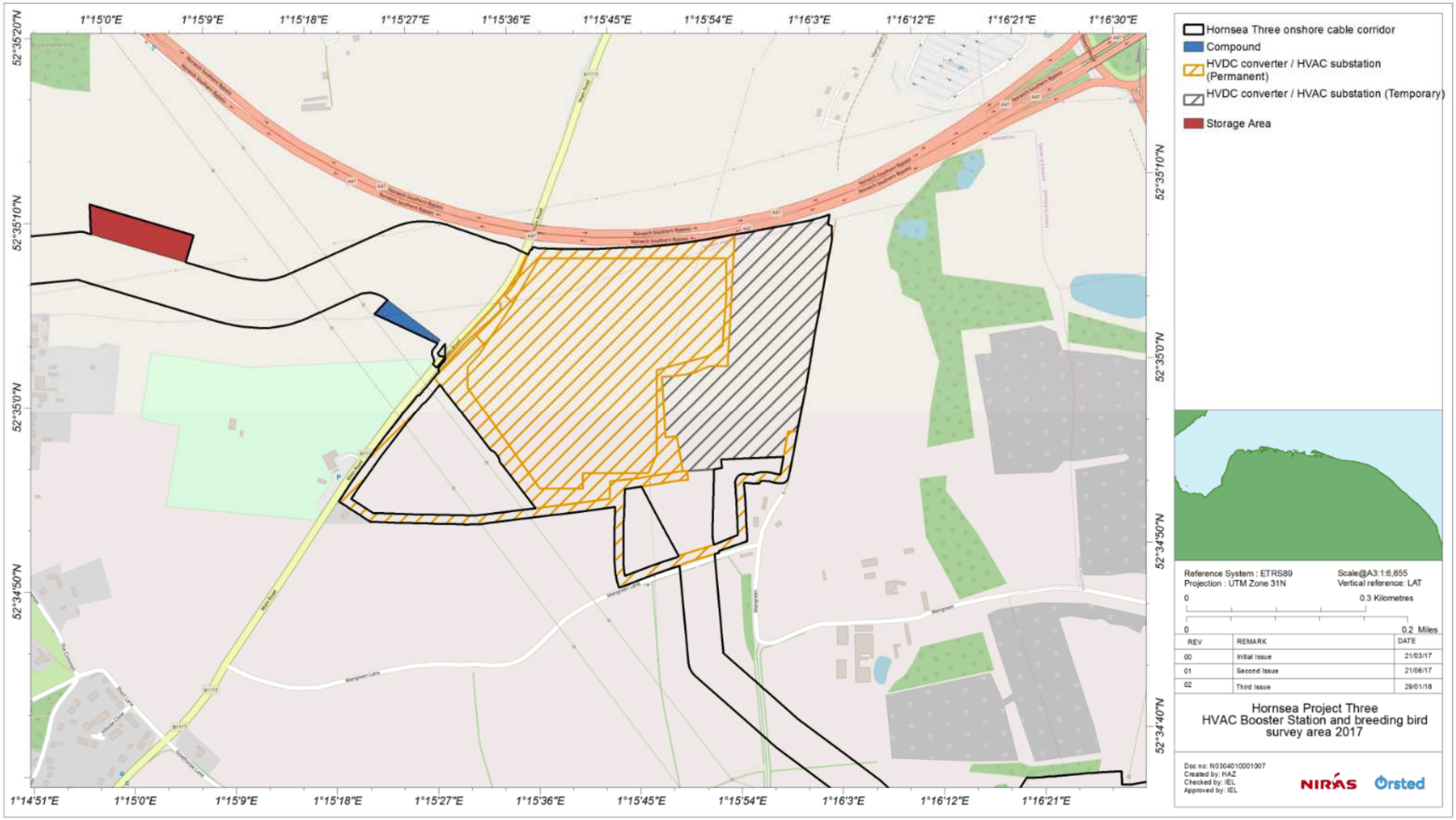

Figure 2.2: Onshore HVAC substation / HVDC converter location and breeding bird survey area 2017.

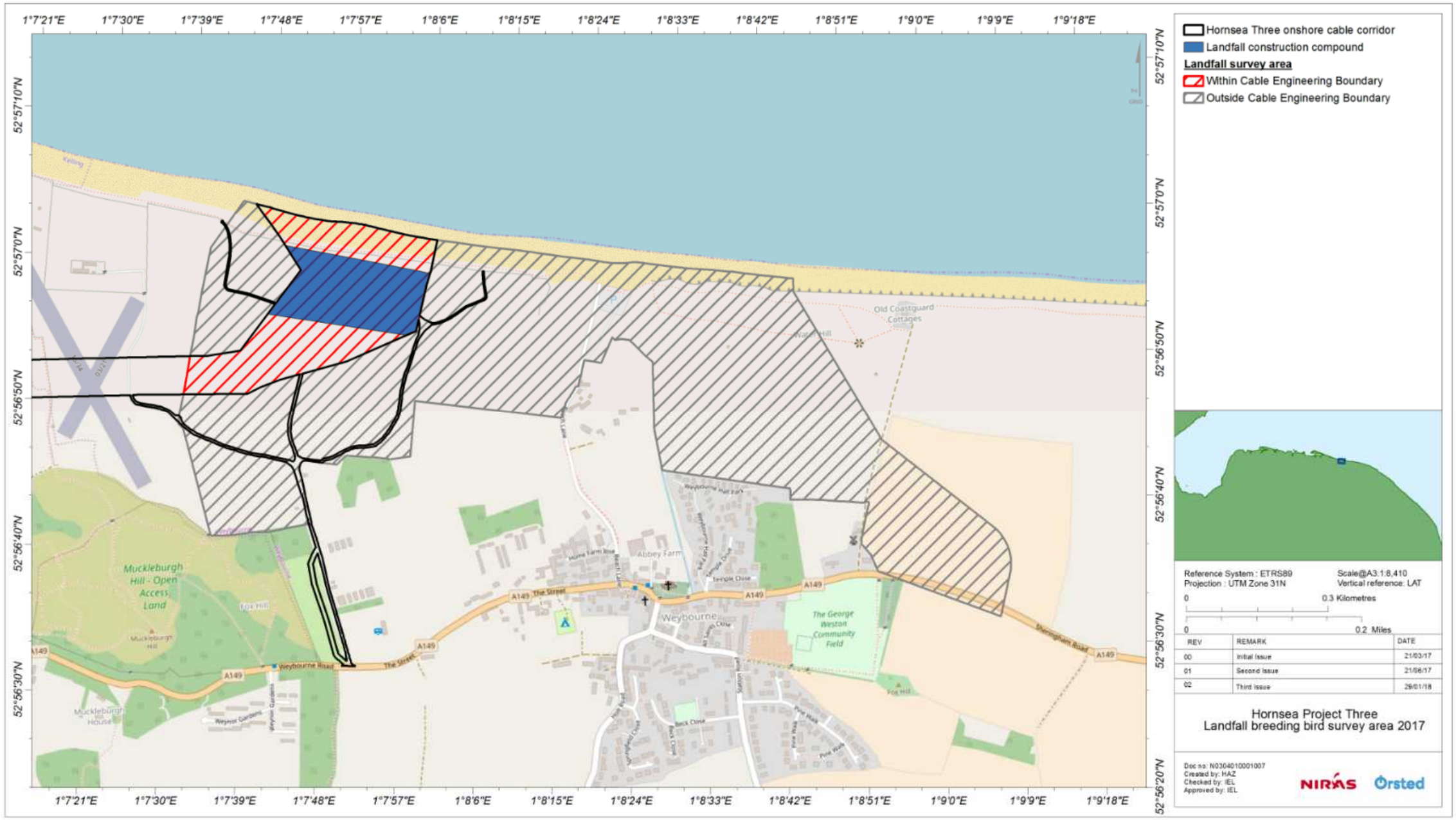

Figure 2.3: Landfall breeding bird survey area 2017.

2.3 Compound site

2.3.1.1 Identified compound sites comprise of a main construction compound site which is located on hardstanding within arable farm land at the southern extent of the onshore cable corridor at Oulton Airfield (See Appendices A.3.4).

2.3.1.2 For the compound site, the survey methodology was identical to that applied to the areas of permanent land take in that the survey area comprised the footprint of the land take plus a 100 m buffer covered via a reduced visit CBC type survey. As for the permanent land take area, six survey visits were undertaken between early April and late June 2017 in appropriate conditions (as detailed in section 2.1).

2.4 Onshore Cable Corridor

2.4.1.1 A survey of breeding birds was conducted to establish the presence of any protected bird species or sensitive ornithological receptors along the PEIR onshore cable corridor search area (with a buffer of 500 m to ensure coverage of any adjacent County Wildlife Sites or key habitats).

2.4.1.2 A point count methodology (Bibby *et al.*, 2000) was implemented where a minimum of one intersection per 1 km of PEIR onshore cable corridor search area was surveyed. This provided a total of 63 points including in the landfall area (locations are presented in Appendix 1). At the landfall, two points counts were conducted, one surveying the foreshore and the second the terrestrial habitats inland. These counts supplement the full breeding bird surveys of the landfall (see section 2.2).

2.4.1.3 Although all point counts were located in the PEIR onshore cable corridor search area, some do fall outside of the refined onshore cable corridor. Due to the limited separation distances involved, some of these counts are considered to provide appropriate baseline information on the breeding bird communities present.

2.4.1.4 Other point counts are, however, located several kilometres from the onshore cable corridor and as such are no longer considered relevant to the baseline for Hornsea Three and are not included in this report. This refers to point counts 6 -10, 14-18, 22, 24-26, 29-30, 33, 66-67, 70-72, 75 and 77..

2.4.1.5 It is considered that such a sampling regime over the entire PEIR onshore cable corridor search area provided a robust overview of the breeding bird communities present. It is not considered necessary for the purposes of assessing a temporary, reversible impact from installation of an underground cable to determine the number of breeding territories along the onshore cable corridor. Characterisation of the breeding community of the onshore cable corridor from point count sampling is considered satisfactory to provide enough information on baseline conditions to enable impacts to be properly assessed. Where the onshore cable corridor crosses or is adjacent to a CWS, point count locations were chosen as close as possible to the site boundary in order to provide relevant information about the importance of breeding bird communities in these areas. The survey methodology and point count locations were agreed with the Onshore Ecology EWG.

2.4.1.6 Survey visits were undertaken shortly after dawn for a period of five hours during periods of good visibility and suitable weather conditions, i.e. avoiding periods of persistent rain or fog, extreme temperatures and high winds. During each survey visit, experienced ornithologists equipped with binoculars, visited selected point count locations. A survey would not start until five minutes after the surveyor had reached the point to allow birds to settle down from any disturbance caused by the surveyor's arrival. The surveyor's view shed (field of view) and habitat features were recorded during this period from a static position. A timed twenty minutes of observation was then conducted from the fixed point. The behaviour, location and extent of flocks and individual birds detected were recorded using the standard BTO codes for mapping birds and bird activities (Bibby *et al.* 2000). The location of birds was recorded directly onto a 1:10,000 scale Ordnance Survey base map.

2.4.1.7 To determine the presence of any protected or sensitive bird species along the onshore cable corridor, three survey visits were conducted monthly between April and June 2017. At any one time, a survey team comprising of two or more surveyors who were in radio contact, provided simultaneous coverage of adjacent point count locations. This fulfils health and safety requirement whilst reducing the extent of the temporal period over which adjacent point count positions are surveyed.

2.5 Onshore cable corridor crossing points with SSSIs

2.5.1.1 The PEIR onshore cable corridor search area crosses several SSSI sites, with the citations of five including reference to their breeding bird features or assemblages. These comprise:

- Weybourne Cliffs SSSI (isolated bird colony - fulmar *Fulmarus glacialis*);
- Kelling Heath SSSI (not notified for birds but characteristic species described);
- Booton Common SSSI (not notified for birds but characteristic species described);
- River Wensum SSSI (not notified for birds but characteristic species described); and
- Alderford Common SSSI (assemblages of breeding birds - mixed: scrub, woodland).

2.5.1.2 SSSI citations that list characteristic bird species that are not notified features include: breeding nightjar and nightingale *Luscinia megarhynchos* (Kelling Heath); woodcock *Scolopax rusticola*, snipe *Gallinago gallinago*, grasshopper warbler *Locustella naevia* and lesser whitethroat *Sylvia curruca* (Booton Common SSSI); nightingale, lesser whitethroat, whitethroat *Sylvia communis*, turtle dove *Streptopelia turtur*, woodcock and hawfinch *Coccothraustes coccothraustes* (Alderford Common); and breeding kingfisher *Alcedo atthis*, little grebe *Tachybaptus ruficollis,* reed warbler *Acrocephalus scirpaceus*, sedge warbler *Acrocephalus schoenobaenus* and barn owl *Tyto alba* (River Wensum SSSI).

2.5.1.3 Due to the potential sensitivity of these areas, territory mapping / CBC methodology was applied to all areas of the PEIR onshore cable corridor search area and 100 m buffer which overlap with the SSSIs identified above. The survey methodology was identical to that proposed in sections 2.2 and 2.3.

2.5.1.4 The proposed PEIR onshore cable corridor search area included at the time of survey, two options for a route around Kelling immediately after landfall. Both potential routes were covered within the relevant surveys in this area (i.e. survey of Kelling Heath SSSI and generic onshore cable corridor surveys) and led to an extensive area of the SSSI and adjacent areas being surveyed (Figure 2.4).

2.5.1.5 For Kelling Heath SSSI, the defined survey area comprised of sections from both route options in this area of the onshore cable corridor. Weybourne Cliffs SSSI was surveyed as part of the landfall zone as defined in section 2.2.

2.6 Species Specific Methodologies

2.6.1 Nightjar surveys of Kelling Heath SSSI

2.6.1.1 The overlap of the onshore cable corridor with Kelling Heath SSSI necessitated the consideration of species specific survey methodologies for the protected species known to breed there. It was considered that the CBC surveys were sufficient for both woodlark *Lullula arborea* and Dartford warbler *Sylvia undata* due to the extensive number of survey visits during key periods for both species. There was considered a need to implement a bespoke methodology for breeding nightjar and this was agreed with the EWG (Consultation Report Annex 1 Evidence Plan).

2.6.1.2 The SSSI was split into two survey areas approximately separated by the railway line. Surveys based on the methodology described for breeding nightjar by Gilbert *et al.*(1998) were undertaken three times between June and mid-July 2017. Survey visits commenced half an hour before dusk for a period of 2-3 hours during periods of good visibility and suitable weather conditions (i.e. good visibility, low wind speeds and no precipitation). As a result of the high level of dusk activity recorded during the first two survey visits, dawn surveys were not considered necessary to fulfil the objectives of the survey, i.e. to estimate the number of singing (churring) males.

2.6.1.3 During each survey visit, surveyors walked at a slow pace along pre-set transects, within 100 m of every point within the survey area. The locations of nightjars heard and seen was recorded directly onto a 1:10,000 scale Ordnance Survey base map of the survey area (and adjacent land) using standard BTO codes for mapping birds and bird activities (Bibby *et al.* 2000).

2.6.1.4 At any one time, a survey team comprising of two or more surveyors who were in radio contact, provided simultaneous coverage of adjacent areas of Kelling Heath SSSI.

2.7 Survey constraints

2.7.1.1 The surveys were completed where access arrangements allowed. This provided very few constraints, although some point counts could not be located immediately adjacent to CWS boundaries; every effort was made to locate them as close as possible.

2.7.1.2 Survey methodologies for breeding woodlark recommend that the first survey visit of three is undertaken between 15 February and 21 March (Gilbert *et al.*, 1998). While four of the six survey territory mapping survey visits undertaken at Kelling Heath cover the periods recommended for the 2nd and 3rd woodlark surveys the first survey period was not covered. However, woodlark records from Kelling Heath from a site recce visit in late March 2017 were added to the data set in addition to those obtained by local birders who monitor woodlark nest locations (e.g. J. Wagstaff pers comm.). It is considered that the baseline data collected for woodlark at Kelling Heath is robust and sufficient to inform the impact assessment.

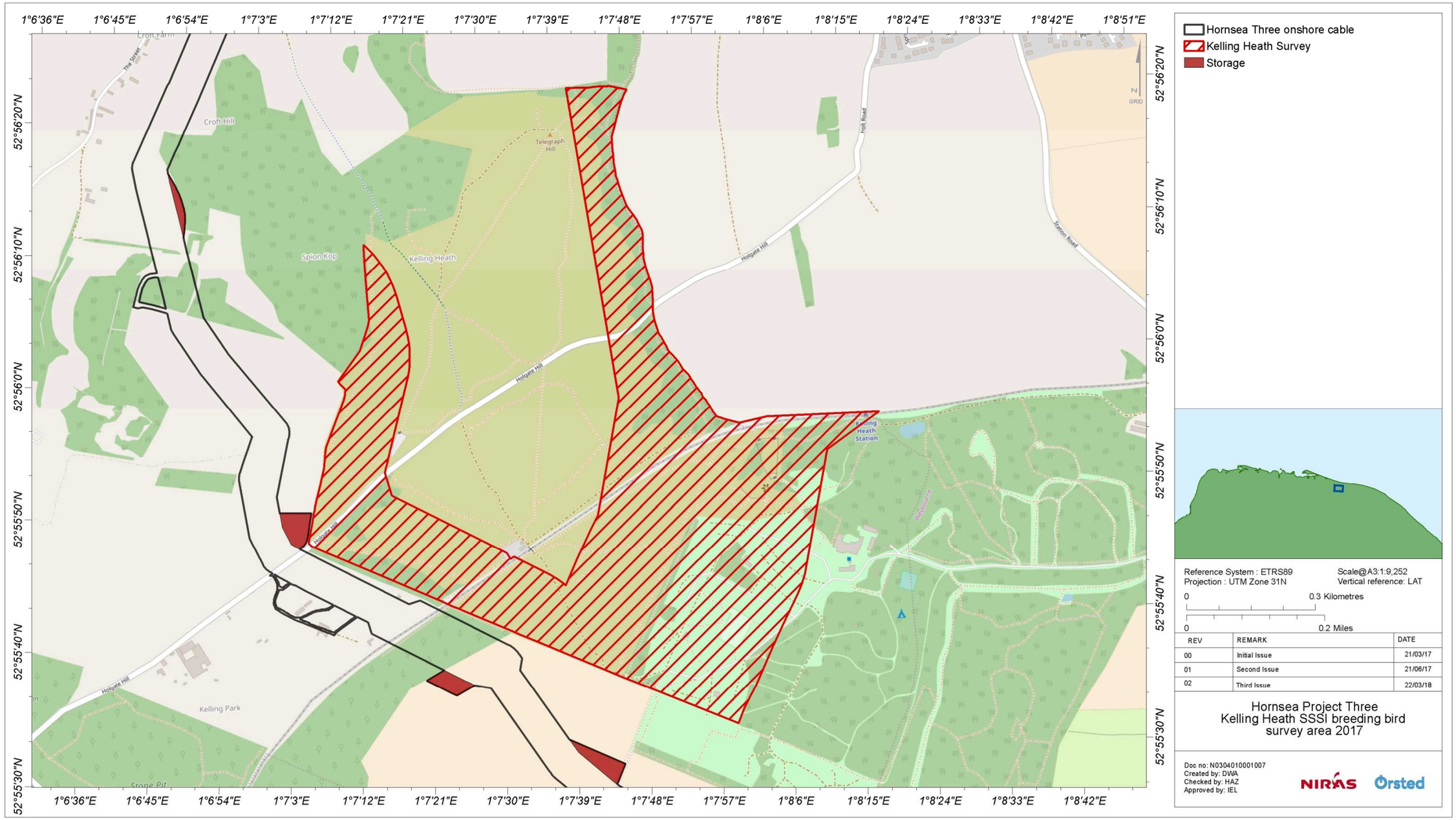

Figure 2.4: Kelling Heath SSSI breeding bird survey area 2017.

3. Results

3.1.1.1 This section provides a summary of all results, followed by a breakdown of results for area of permanent land take, landfall, compound site as well as the onshore cable corridor.

3.2 Summary

3.2.1 SSSIs, permanent land take and compound site

3.2.1.1 This section provides an overview of species recorded in the entire surveys (i.e. the area informed by the wider PEIR onshore cable corridor search area). A summary is provided of the determined breeding bird communities at all areas where territory mapping / CBC survey methodology was applied, namely at proposed permanent land take, compound site, landfall and SSSI crossing points.

3.2.1.2 A total of 103 species were recorded during the surveys of which three species, Canada goose *Branta canadensis*, pheasant *Phasianus colchicus* and red-legged partridge *Alectoris rufa*, were non-native. Excluding non-native species, evidence of occupation of a breeding/territory was recorded for 57 species.

3.2.1.3 Landfall had the highest number of breeding species (34), followed by Kelling Heath SSSI (31), HVAC booster station (30), HVAC/HVDC Substation (21), Alderford Common SSSI (19), Booton Common SSSI (15), Oulton Airfield Compound (15), River Wensum SSSI (15); and Western Longville Compound (14).

3.2.1.4 All sites supported species considered to be material considerations in planning, i.e. 'notable' including those listed Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Annex 1 of the EU Birds Directive, Section 41 of the NERC Act 2006 and those subject to Species Action Plans in Norfolk (Table 3.1). In Table 3.1, further reference is made to Birds of Conservation Concern (Eaton *et al.* 2015) which defines species on either Red, Amber or Green lists based on population trends over the last 25 year; and species subject to an action plan in Norfolk.

Table 3.1: Total number of species recorded at each survey area (total number of breeding species given in brackets).

Site	Species Total[a]	Birds Directive Annex 1	WCA Schedule 1	NERC Act Section 41	Norfolk Action Plans[b]	BoCC Red List	BoCC Amber List
HVAC booster station	57 (30)	1 (0)	1 (0)	13 (7)	5 (2)	12 (6)	13 (4)
HVAC Substation	48 (21)	0 (0)	0 (0)	9 (4)	3 (2)	8 (4)	8 (1)
Oulton Airfield Compound	39 (15)	1 (0)	1 (0)	7 (3)	1 (1)	6 (2)	8 (3)
West Longville Compound	33 (14)	0 (0)	0 (0)	6 (3)	3 (2)	4 (2)	6 (1)
Landfall	79 (34)	3 (0)	5 (2)	17 (6)	6 (2)	17 (5)	22 (5)
Kelling Heath	64 (31)	3 (3)	4 (2)	16 (9)	6 (5)	13 (6)	13 (5)
Alderford Common	38 (19)	0 (0)	0 (0)	9 (4)	2 (1)	8 (3)	5 (3)
Booton Common	36 (15)	0 (0)	0 (0)	6 (2)	3 (0)	4 (1)	6 (1)
River Wensum	45 (15)	2 (1)	1 (1)	7 (4)	4 (3)	5 (2)	12 (5)

[a]: includes full survey area, not refined 80 m onshore cable corridor.

[b]: http://www.norfolkbiodiversity.org/actionplans/speciesactionplans/#Birds

3.2.1.5 All sites recorded breeding species included on the Red List of Birds of Conservation Concern and, with the exception of Booton Common, all sites supported at least one species subject to an action plan in Norfolk.

3.2.1.6 Species protected from disturbance at or near an active nest (Schedule 1 of the Wildlife and Countryside Act 1981 [as amended]) were recorded at Kelling Heath (woodlark and Dartford warbler), Landfall (little ringed plover *Charadrius dubius* and Cetti's warbler *Cettia cetti*) and River Wensum (kingfisher *Alcedo atthis*). Barn owl *Tyto alba* was recorded at the HVAC Booster Station and although not confirmed to be breeding within the survey area, it was considered likely to breed in adjacent farm buildings.

3.2.1.7 Species listed on Annex 1 of the EU Birds Directive were recorded at Kelling Heath SSSI (Dartford wabler, woodlark, nightjar) and the River Wensum (kingfisher).

3.2.2 Onshore cable corridor

3.2.2.1 This section provides an overview of species recorded and the determined breeding bird communities at all areas where point count methodology were applied along the PEIR onshore cable corridor search area.

3.2.2.2 A total of 92 species were recorded during the surveys of which 61 species were considered to be possibly or likely breeding (Appendix 2.1).

3.2.2.3 Although eight species listed on Schedule 1 of the Wildlife & Countryside Act (1981, as amended) or Annex 1 of the EU Birds Directive were recorded in the surveys, none were considered likely to be breeding. An active nest of hobby was located at point count 16 (TG1004 3822) although this point count is now not included in the refined onshore cable corridor. Hobby *Falco subbutteo* was also recorded at two additional point counts. Red kite *Milvus milvus* were widespread during the surveys, particularly at point counts close to the coast in April; no activity indicating possible breeding was noted.

3.2.2.4 Greenshank *Tringa nebularia* is a Schedule 1 listed species with a small UK breeding population in the highlands of Scotland; it is a regular passage migrant throughout England and one was recorded at point count 79 at Kelling Quags.

3.2.2.5 Little tern *Sternula albifrons* were recorded on a coastal point count (Weybourne) in April. The Norfolk breeding population is estimated at 400 – 600 pairs and is regularly recorded across the county's north coast throughout the breeding season (Taylor & Marchant, 2011). These birds are likely mostly associated with a breeding colony at Scolt Head or Blakeney Point, both of which lie to the west of the landfall. Common tern *Sterna hirundo* are listed on Annex 1 of the EU Birds Directive and were recorded during the surveys at two coastal point counts in addition to one inland (point count 61) where birds on passage were noted. Common terns nest in colonies around the Norfolk coast and in scattered inland sites, with 800 – 1,000 pairs present. The closest colony to the landfall is Blakeney Point, which lies approximately 9 km to the west of the landfall.

3.2.2.6 Mediterranean gull *Ichthyaetus melanocephalus* is Schedule 1 listed species, although its UK breeding population is showing a distinct upward trend in recent years. A minimum of 29 pairs bred in Norfolk in 2014 (Holing *et al.,* 2014) compared to an estimate of 3 – 14 pairs from 1999 – 2007 (Taylor and Marchant, 2011). Mediterranean gulls were recorded at four point counts, three of which were at the coast near landfall. The closest breeding site to the landfall detailed by Taylor and Marchant (2011) is Blakeney Point.

3.2.2.7 Cetti's warbler was recorded on territory at point counts 3 and 4. This involved individuals within the landfall survey footprint and are discussed in detail in section 3.4.

3.2.2.8 Two Schedule 1 species, fieldfare *Turdus pilaris* and brambling *Fringilla montifringilla*, were recorded during April surveys. Both species are regular winter visitors to Norfolk and southern England and their status is influenced by their small UK breeding populations in northern Scotland.

3.2.2.9 Species listed under Section 41 and/or included on the Red List of BoCC that were considered likely to be breeding included:

- Grey partridge *Perdix perdix* (point count 13);
- Turtle dove *(*point count 48 within Alderford Common SSSI),
- Cuckoo *Cuclus canorus* (point count 4 at the landfall);
- Marsh tit *Poecile palustris* (point counts 11 and 43);
- Skylark *Alauda arvensis* (widespread and common throughout);
- Song thrush *Turdus philomelos* (widespread – singing males at 31 point counts);
- Dunnock *Prunella modularis* (widespread and common throughout);
- House sparrow *Passer domesticus* (point count 53);
- Bullfinch *Pyrrhula pyrrhula* (widespread);
- Linnet *Linaria cannabina* (widespread with singing males recorded at 11 point counts);
- Yellowhammer *Emberiza citrinella* (common in heath and arable areas – likely breeding at 30 point counts); and
- Reed bunting *Emberiza schoeniclus* (point count 40).

3.3 Permanent land take

3.3.1.1 This section provides full detail of species recorded and the determined breeding bird communities at all areas of permanent land take.

3.3.2 HVAC booster station

3.3.2.1 The onshore HVAC booster station site covers an area of 0.40 km^2 (with the majority, 0.38 km^2 being of temporary land take). Including the buffer, the area surveyed totals 0.74 km^2. It is located east of Edgefield Street where part of its eastern boundary directly borders the New Covert CWS. The site consists of arable fields with mature hedgerows, while New Covert CWS is an area of mixed woodland, part of which falls within the buffer area surveyed.

3.3.2.1 Barn owl *Tyto alba* (Schedule 1 of the Wildlife and Countryside Act 1981 [as amended]) and common tern *Sterna hirundo* (Annex 1 of the EU Birds Directive) were recorded without breeding evidence being noted. Potentially suitable breeding habitat for barn owl exists at Shrub Farm adjacent to the survey area boundary. Suitable habitat for common tern was not observed in the wider area of the HVAC booster station and the single record of this species was considered to involve birds on migration.

3.3.2.2 Seven Section 41 species were recorded breeding at the HVAC booster station (marsh tit, skylark, song thrush, dunnock, house sparrow, linnet and yellowhammer) of which two species (skylark and song thrush) are also subject to Norfolk species action plans. The total number of territories for each species is given in Table 3.2 and are mapped in Appendix A.3.1.

3.3.2.3 Skylark were widespread throughout the arable fields of the survey area, with ten territories present within the footprint of the HVAC booster station area and five further territories in the 100 m buffer. House sparrow territories were limited to buildings at Shrub Farm which lies outside of the survey area; two territories were found to be present here. Linnet were commonly recorded within the surveys and two territories were considered to be present, one within hedgerows in the centre of the area and the other on the northern boundary. Yellowhammer were also recorded regularly and five territories were considered to be present along the field boundaries on the west of the HVAC booster substation area.

3.3.2.4 A single song thrush territory was found to be present in the woodland that lies beyond the eastern boundary of the HVAC booster station survey area; this woodland also supported a fledged brood of marsh tit. Although no singing males of the latter species were recorded, it was regularly seen during wintering surveys of this area. It is therefore assumed that a territory is present, although it is more likely to be outside of the defined survey area.

Table 3.2: Notable bird species recorded breeding at the HVAC booster station survey area.

Species	No. of territories	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	Norfolk Species Action Plan	UK BoCC (2015)
Marsh tit	1			x		Red
Skylark	15			x	x	Red
Song thrush	1			x	x	Red
Dunnock	9			x		Amber
House sparrow	2			x		Red
Linnet	2			x		Red
Yellowhammer	5			x		Red

3.3.3 HVDC converter / HVAC substation

3.3.3.1 The HVDC converter / HVAC substation covers an area of 0.26 km^2 and is located to the north-east of Swardeston. It consists of intensive arable farmland with periodic mature hedgerows. It is directly bordered to the north by the A47.

3.3.3.2 Four Section 41 species were recorded breeding at the HVDC converter / HVAC substation (skylark, song thrush, dunnock and yellowhammer) of which two species (skylark and song thrush) are also subject to species action plans in Norfolk. The total number of territories for each species is given in Table 3.3 and are mapped in Appendix A.3.2.

Table 3.3: Notable species recorded breeding at HVDC converter / HVAC substation survey area.

Species	No. of Territories	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	Norfolk Species Action Plan	BoCC (2015)
Skylark	6			x	x	Red
Song thrush	1			x	x	Red
Dunnock	7			x		Amber
Yellowhammer	1			x		Red

3.3.3.3 Skylark were again widespread at this site, with four territories present within the site boundary and two further territories in the 100 m buffer. The single yellowhammer territory was located in the centre of the site along a mature hedgerow. The song thrush territory was present to the south-east of the site, although outside of the survey area (Appendix A.3.2).

3.4 Landfall (and Weybourne Cliffs SSSI)

3.4.1.1 The landfall survey area consists of Weybourne Camp as part of the Muckleburgh Collection landholdings in the western half of the area. This area consists of a wide range of habitats including arable farmland, bare ground, coastal scrub and amenity grass. In the centre of the site, immediately west of the beach car park lies the Beach Lane CWS which comprises of a relatively extensive reedbed with limited open water. At the car park and further west, the shoreline is typified by coarse shingle while east of the car park cliffs form (as part of Weybourne Cliffs SSSI). In land of the cliffs, the eastern part of the survey area is almost entirely arable farmland.

3.4.1.2 Two species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded breeding at the Landfall. Little ringed plover breeding behaviour was observed through a distraction-display of a single adult within the grounds of the Muckleburgh Collection (Weybourne Camp and hence within the 80 m onshore cable corridor) at c. TG1037 4330. This species is a nationally scarce breeding species (575 pairs) (Holling and the Rare Breeding Birds Panel, 2016) with a small county population (25 – 40 breeding pairs; Taylor and Marchant, 2011).

3.4.1.1 Three singing male Cetti's warbler were recorded in wetland habitat west of the Weybourne Beach car park (with this area forming a CWS). This area does however lie outside of the 80 m onshore cable corridor. This species is a nationally 'less scarce' breeding species with a national population estimated to be 1,622 breeding pairs (Holling and the Rare Breeding Birds Panel, 2016). The county population was estimated by Taylor and Marchant (2011) to be 100–400 singing males.

3.4.1.2 Fulmar, a notified feature of Weybourne SSSI was recorded flying close inshore during surveys but no nesting sites were located in the study area. Sand martin is another species detailed in the SSSI citation; while no colonies of this species were noted within in the SSSI section of the survey area, a colony was noted c.200 m to the east near the cliff cottages. Approximately 10 pairs of sand martin were breeding in the small sandstone cliffs at the western extremity of the survey area, with further birds present immediately beyond.

3.4.1.3 Six Section 41 species were recorded breeding at the Landfall (cuckoo, skylark, dunnock, linnet, yellowhammer and reed bunting) of which two species (skylark and reed bunting) are also subject to species action plans in Norfolk. The total number of territories for each notable species is given in Table 3.4 and are mapped in Appendix A.3.3. Skylark were abundant throughout the landfall area, with a minimum of 23 territories recorded (nine of which were recorded within the 80 m onshore cable corridor). Particularly high densities occurred on Weybourne Camp and the arable fields north and east of Weybourne Windmill. A singing male cuckoo was recorded on several surveys on the Camp while two yellowhammer territories were identified, one in the extreme south-west of the survey area on the border with Muckleburgh Hill CWS with the second in the east half of the site bordering the A149 coast road. The single reed bunting territory was found in the wetland CWS along Weybourne Beach Lane. Linnet were commonly recorded throughout the survey area, with the 11 territories highlighted considered to be a minimum number present. The majority of territories of this species were in the coastal strip of Weybourne Camp (within the 80 m onshore cable corridor).

3.4.1.4 In addition, a single pair of stonechat *Saxicola torquata* were present in coastal strip of Weybourne Camp. While this species is only Green listed on BoCC, it is locally uncommon in Norfolk with a relatively small breeding population (13–60 breeding pairs) (Taylor & Marchant, 2011) compared to a much larger British population of 36,000–76,000 pairs (Musgrove *et al.*, 2013).

Table 3.4: Notable species recorded breeding at Landfall (including Weybourne Cliffs SSSI).

Species	No. of territories [a]	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	Norfolk Species Action Plan	BoCC (2015)
Little ringed plover	1 (1)	x				Green
Cuckoo	1 (1)			x		Red
Skylark	23 (9)			x	x	Red
Cetti's warbler	3 (0)	x				Green
Dunnock	7 (4)			x		Amber
Linnet	11 (6)			x		Red
Yellowhammer	2 (0)			x		Red
Reed bunting	1 (0)			x	x	Amber

[a]: Presents number of territories in PEIR onshore cable corridor search area, and then refined 80 m onshore cable corridor in parentheses.

3.5 Compound site

3.5.1 Oulton Airfield Compound

3.5.1.1 The Oulton Airfield Compound site consists of a Second World War airfield with now disused poultry farm buildings. Habitat presents consists of extensive improved grassland grazed by sheep with small areas of scrub bordering the south-west of the site. An onshore wind farm is operational immediately to the north.

3.5.1.2 Three Section 41 species were recorded breeding at Oulton Airfield Compound (skylark, dunnock and linnet) of which one species (skylark) is also subject to a species action plan in Norfolk. The total number of territories for each notable species is given in Table 3.5 and are mapped in Appendix A.3.4. Skylark were abundant within the survey area, although only three of the 10 territories recorded directly overlapped with the area highlighted for the compound (the remainder were present in the 100 m buffer). Few singing male linnet were recorded at Oulton Airfield, although the species was recorded in every survey visit. On a precautionary basis, it is estimated that three territories are present.

Table 3.5: Notable species recorded breeding at Oulton Airfield Compound.

Species	No. of territories	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	Norfolk Species Action Plan	BoCC (2015)
Skylark	10			x	x	Red
Dunnock	2			x		Amber
Linnet	3			x		Red

3.6 Onshore cable corridor crossing points with SSSIs

3.6.1 Kelling Heath SSSI

3.6.1.1 The Kelling Heath SSSI is an example of oceanic heathland which has developed on sands and gravel substrates. The site is crossed by a railway line whose embankments support a heathland community. The extensive areas of dry, acid heathland are dominated by Heather *Calluna vulgaris* with frequent Bell Heather *Erica cinerea* and Western Gorse *Ulex gallii*. Small areas of acidic grassland, with Wavy Hair-grass *Deschampsia flexuosa*, form a mosaic with the heath in two places. Bracken *Pteridium aquilinum* is dominant on the steep slopes and Gorse *Ulex europaea* is locally abundant on the northern part of the site. Young Silver Birch *Betula pendula* and Scots Pine *Pinus sylvestris* are thinly scattered over the entire heath. A band of secondary woodland, dominated by Pedunculate Oak *Quercus robur*, is present along a steep escarpment at the eastern margin of the site. Small areas of Hawthorn *Crataegus monogyna* and Blackthorn *Prunus spinosa* scrub are also present.

3.6.1.2 Six survey visits were conducted in optimal survey conditions at Kelling Heath SSSI. Nightjar surveys were undertaken on three occasions at and beyond dusk (15 June, 28 June and 12 July).

3.6.1.3 Of the two breeding bird species listed on the Kelling Heath SSSI citation, nightjar and nightingale, only nightjar was recorded. Nightingale has not been noted as breeding species in recent years (J. Wagstaff pers comm.).

3.6.1.4 Two species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded breeding at Kelling Heath (woodlark and Dartford warbler) and three species listed on Annex 1 of the EU Birds Directive (nightjar, woodlark and Dartford warbler).

Table 3.6: Notable species recorded breeding at Kelling Heath SSSI.

Species	No. of territories [a]	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	Norfolk Species Action Plan	UK BoCC (2015)
Turtle dove	2 (0)			x	x	Red
Nightjar	5+ (2)		X	x	x	Amber
Woodlark	4 (1)	x	X	x	x	Green
Skylark	2 (0)			x	x	Red
Dartford warbler	2 (0)	x	X			Amber
Song thrush	1 (0)			x	x	Red
Dunnock	7 (2)			x		Amber
Bullfinch	2 (0)			x		Amber
Linnet	16 (3)			x		Red
Yellowhammer	8 (1)			x		Red

[a]: Presents number of territories relevant to the PEIR onshore cable corridor search area, and then refined 80 m onshore cable corridor in parentheses.

Nightjar

3.6.1.5 A total of five nightjar territories were located either partially or fully within the survey area; of these two territories directly border the 80 m onshore cable corridor in the south-west of the SSSI. Two further identified territories included churring song posts that were immediately outside the survey area, while a further four were within 100 m. Nightjars were present across all areas of open heath and ranged from Kelling Heath Campsite in the south-east (a single churring male was present throughout the period surveyed) to the northern extremities of the SSSI.

3.6.1.6 Nightjar is a ground-nesting, nocturnal insectivorous species preferring dry, open, well-drained habitats (Snow & Perrins, 2006) with conifer woodland and dry heathland preferred in the Eastern England (Conway *et al.*, 2007). Based on available research, it has been noted that the Norfolk population increased its range since 1988 – 1991 and is concentrated around Breckland, the heaths of the Cromer to Holt Ridge and the Sandringham Estate (Taylor & Marchant, 2011).

3.6.1.7 Nightjar has relatively small county population (300–350 males; Taylor & Marchant, 2011) and regional population (649 males; Conway *et al.*, 2007), with the national population estimated at 4,600 males (Conway *et al.*, 2007). This species is an amber list bird of conservation concern as a result of a moderate contraction in the national breeding range over a period of more than 25 years (Eaton *et al.*, 2015). There has however been a 33% increase in the county population between 1981 and 1992 (Morris *et al.*, 1994) followed by a further 40% increase between 1992 and 2004 (Conway *et al.*, 2007).

Woodlark

3.6.1.8 Four woodlark territories were recorded in the surveys, with two associated with bare areas of heath near the rail line. A further territory was present in the southern extremity of the SSSI. The final territory was to the north of Holgate Hill, adjacent to the car park for the Heath. Most territories have a separation distance of over 100m to the 80 m onshore cable corridor apart from the southernmost territory which extended (possibly post-breeding) into the arable field outside the boundary of the SSSI.

3.6.1.9 This species is a nationally 'less scarce' breeding species (Holling and the Rare Breeding Birds Panel, 2016) with a relatively small county population of 323–451 territories (Conway *et al.*, 2009). The regional and national populations were estimated to be 761–1,018 territories and 3,064 territories respectively (Conway *et al.*, 2009).

3.6.1.10 Woodlark is a ground-nesting, insectivorous species preferring well-drained sites with short vegetation and open patches mainly in Norfolk associated with heathland (Conway *et al.*, 2009). The distribution of the Norfolk population has increased and is very much concentrated in Thetford Forest with smaller stongholds in the Sandringham/Roydon Common area and on the north Norfolk heaths (Taylor & Marchant, 2011). Up to three pairs have bred on Kelling Heath in recent years (J. Wagstaff pers comm.).

Dartford warbler

3.6.1.11 Two Dartford warbler territories were recorded during the surveys, with both being present on the heath to the south of the rail line. A further singing male was recorded to the north of the car park, but 150 m outside of the survey area. None of these territories are in close proximity to the 80 m onshore cable corridor. Up to five Dartford warbler territories have been recorded on Kelling Heath in recent years (J. Wagstaff pers comm.).

3.6.1.12 This species is a nationally 'less scarce' breeding species with a very small county population (5 pairs) and a small regional population (80 pairs) (Holling and the Rare Breeding Birds Panel, 2016). It is an insectivorous species preferring scrub habitat especially where gorse Ulex is present (Snow & Perrins, 2006; Wooton *et al.*, 2009). Between 1999 and 2007 Dartford warbler was recorded from only six "well-scattered" occupied sites in Norfolk from which breeding was confirmed at two sites (Taylor & Marchant, 2011). The Norfolk population has increased in its range in Norfolk since 1990 (Balmer *et al.*, 2013; Taylor & Marchant, 2011). The national population is estimated to be 2,827–3,491 territories (Wooton *et al.*, 2009).

Additional notable species

3.6.1.13 Seven further species included on Section 41 were recorded breeding at Kelling Heath (turtle dove, skylark, song thrush, dunnock, bullfinch, linnet and yellowhammer) of which three species (turtle dove, skylark, and song thrush) are also subject to species action plans in Norfolk. The total number of territories for each species is given in Table 3.6 and are mapped in Appendix 3.6.

3.6.1.14 Two turtle dove territories were considered to be present in the survey area. One was located to the north of the Kelling Heath SSSI car park, where a singing male was seen on two survey visits. The second territory involved only a single sighting of a male singing and displaying north of the rail line which cuts across the centre of the SSSI. Considering the behaviour exhibited and this location has historically held this species (J. Wagstaff pers comm.) it is recorded here as a territory on a precautionary basis. Neither territory is adjacent to or in close proximity to the 80 m onshore cable corridor.

3.6.1.15 Two skylark and single song thrush territories were present in and around the heath to the south of the rail line. Linnet were widespread and common in all areas of open heath, with a minimum of sixteen territories considered to be present. Eight territories of yellowhammer were located in areas of heath with the sections south of the rail line and near the car park supporting the majority.

3.6.1.16 In addition, two pairs of stonechat were present in the heath to the south of the rail line. While this species is only Green listed on BoCC, it is locally uncommon in Norfolk with a relatively small breeding population (13–60 breeding pairs) (Taylor & Marchant, 2011) compared to a much larger British population of 36,000–76,000 pairs (Musgrove *et al.*, 2013). A juvenile long-eared owl *Asio otus* was heard on the nightjar survey of 20th June (at c.TG0989 4160); this species is a scarce breeding bird in Norfolk and particularly so in the north of the county (Taylor & Marchant, 2011).

3.6.2 Booton Common SSSI

3.6.2.1 Booton Common lies in the valley of a tributary of the River Wensum, about one mile east of Reepham. The principal interest of the site is associated with a mosaic of wet calcareous fen grassland and acid heath communities which have developed due to the naturally undulating ground. Areas of tall fen and a strip of valley alder woodland occupy the lower ground adjacent to the stream.

3.6.2.2 Of the four characteristic breeding bird species listed on the Booton Common SSSI citation (woodcock, snipe, grasshopper warbler and lesser whitethroat), none were recorded during the surveys. Two Section 41 species were recorded breeding at Booton Common SSSI (marsh tit and bullfinch). The total number of territories for each species is given in Table 3.7.

Table 3.7: Notable species recorded breeding at Booton Common SSSI.

Species	No. of Territories	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	Norfolk Species Action Plan	UK BoCC (2015)
Marsh tit	1			x		Red
Bullfinch	1			x		Amber

3.6.3 Alderford Common SSSI

3.6.3.1 Alderford Common is situated on gently undulating ground and supports a wide range of habitats developed in response to variations in soils and topography. A thin layer of glacial sands and gravels cover the underlying chalk which is exposed in abandoned marl workings. A diverse chalk flora has developed in the old pits and the site forms the only remaining example of species-rich chalk grassland in East Norfolk.

3.6.3.2 None of the six characteristic breeding bird species listed in on the Alderford Common SSSI citation (nightingale, lesser whitethroat, whitethroat, turtle dove, woodcock and hawfinch) were recorded breeding in the study area. Four Section 41 species were recorded breeding at Alderford Common SSSI (marsh tit, dunnock, song thrush and bullfinch) of which one species (song thrush) is also subject to a species action plan in Norfolk. The total number of territories for each species is given in Table 3.8 and are mapped in Appendix 3.6. Single territories of song thrush and dunnock were present within the 80 m onshore cable corridor.

Table 3.8: Notable species recorded breeding at Alderford Common SSSI.

Species	No. of territories [a]	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	LBAP (Action Plans)	UK BoCC (2015)
Marsh Tit	1 (0)			x		Red
Song Thrush	3 (1)			x	x	Red
Dunnock	2 (1)			x		Amber
Bullfinch	1 (0)			x		Amber

[a]: Presents number of territories relevant to the PEIR onshore cable corridor search area, and then refined 80 m onshore cable corridor in parentheses.

3.6.4 River Wensum SSSI

3.6.4.1 The Wensum has been selected as one of a national series of rivers of special interest as an example of an enriched, calcareous lowland river. With a total of over 100 species of plants, a rich invertebrate fauna and a relatively natural corridor, it is probably the best whole river of its type in nature conservation terms, although short stretches of other similar rivers may show a slightly greater diversity of species. The upper reaches are fed by springs that rise from the chalk and by run-off from calcareous soils rich in plant nutrients. This gives rise to dense beds of submerged and emergent vegetation characteristic of a chalk stream. Lower down, the chalk is overlain with boulder clay and river gravels, resulting in aquatic plant communities more typical of a slow-flowing river on mixed substrate. Diversity of plant species is further enhanced by mills and weirs; upstream the river slows to produce characteristic deep water plant communities, whilst below the barriers they are replaced by species tolerant of swirling and turbulent water.

3.6.4.2 Of the four characteristic breeding bird species listed on the River Wensum SSSI citation (kingfisher, reed warbler, sedge warbler and barn owl), only kingfisher was recorded. One species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and Annex 1 of the EU Birds Directive (kingfisher) was recorded as holding a home range on the Rive Wensum within the survey area.

3.6.4.3 Four Section 41 species were recorded breeding at the Landfall (skylark, dunnock, song thrush and reed bunting) of which three species (skylark, song thrush and reed bunting) are also LBAP action plan species. The total number of territories for each species is given in Table 3.9 and are mapped in Appendix A.3.7. The single kingfisher and skylark territories overlap with the 80 m onshore cable corridor.

3.6.4.4 Kingfisher were recorded on four of the six visits to the survey area. Although a nest site was not located, the precautionary assumption is made that the survey area forms part of the territory of a breeding pair (including the 80 m onshore cable corridor). The British population of kingfisher is estimated to be 3,600–6,100 pairs (Musgrove *et al.*, 2013) although the Norfolk population is relatively small (100–150 breeding pairs) (Taylor & Marchant, 2011). The Norfolk population has been relatively stable is widely distributed with a concentration in the Broads in the east and the Little Ouse, Great Ouse, Nar and Wissey in the West (Taylor & Marchant, 2011).

3.6.4.5 A skylark territory was present in the arable field immediately west of the survey area while the song thrush territory was associated with hedgerow and scrub that includes part of the southern extent of the survey area.

Table 3.9: Notable species recorded breeding at River Wensum SSSI.

Species	No. of Territories [a]	WCA Schedule 1	EU Birds Directive Annex 1	Section 41 (England)	LBAP (Action Plans)	UK BoCC (2015)
Kingfisher	1 (1)					Amber
Skylark	1 (1)			x	X	Red
Song Thrush	1 (0)			x	X	Red
Dunnock	1 (0)			x		Amber
Reed Bunting	1 (0)			x	X	Amber

[a]: Presents number of territories relevant to the PEIR onshore cable corridor search area, and then refined 80 m onshore cable corridor in parentheses.

3.7 County Wildlife Sites within / adjacent to the onshore cable corridor

3.7.1.1 This section reports on the breeding bird communities recorded during point counts within, adjacent or in close proximity to CWSs. Appendix A.2 presents a summary of birds recorded relating to nine CWS where the point count surveys were considered relevant. Species noted with 'B' are those who exhibited breeding behaviour during the surveys (i.e. singing, nest building, courtship etc.)

Low Common CWS

3.7.1.2 No point count was located within this CWS, with the closest point count (61) used to provide an indication of the breeding bird community present. Thirty species were recorded on the surveys at PC61, with seventeen of these exhibiting breeding behaviour. Of the species potentially breeding, several were notable including skylark (Section 41, Red list), dunnock (Section 41), bullfinch (Section 41) and yellowhammer (Section 41, Red list).

Yare Valley (Marlingford) CWS

3.7.1.3 No point count was located within this CWS, with the closest PC (59) used to provide an indication of the breeding bird community present. Thirty species were recorded on the surveys at PC 59, with sixteen of these exhibiting breeding behaviour. Of the species potentially breeding, several were notable including skylark (Section 41, Red list), song thrush (Section 41, Red list) and dunnock (Section 41).

Old Hall Meadow CWS

3.7.1.4 No point count was located within this CWS, with the closest PC (58) used to provide an indication of the breeding bird community present. Thirty-six species were recorded on the surveys at PC 58, with fourteen of these exhibiting breeding behaviour. Of the species potentially breeding, several were notable including skylark (Section 41, Red list), song thrush (Section 41, Red list) and dunnock (Section 41).

Marriot's Way CWS

3.7.1.5 Point counts 42 and 48 were within this CWS. A total of thirty species were recorded on the surveys at PC's 42 and 48 with seventeen of these exhibiting breeding behaviour. Of the species potentially breeding, two were notable: skylark (Section 41, Red list) and dunnock (Section 41).

Dismantled Railway CWS

3.7.1.6 Point count 34 was within this CWS. A total of thirty species were recorded on the surveys at PC 34 with seventeen of these exhibiting breeding behaviour. Of the species potentially breeding, two were notable skylark (Section 41, Red list) and dunnock (Section 41).

New Covert CWS

3.7.1.7 No point count was located within this CWS, with the closest PCs (28 and 31) used to provide an indication of the breeding bird community present. Thirty-two species were recorded on the surveys at PC 28 and 31, with fourteen of these exhibiting breeding behaviour. Of the species potentially breeding, three were notable; skylark (Section 41, Red list) yellowhammer (Section 41, Red list) and dunnock (Section 41).

Kelling Heath Park and 100 Acre Wood

3.7.1.8 Point count 10 was within this CWS. A total of twenty-seven species were recorded on the surveys at PC 10 with fifteen of these exhibiting breeding behaviour. Of the species potentially breeding, three were notable: skylark (Section 41, Red list), dunnock (Section 41) and bullfinch (Section 41). None of the characteristic species of Kelling Heath SSSI (Dartford warbler, woodlark) were recorded at the PC.

Muckleburgh Hill

3.7.1.9 Point count 5 was within this CWS. A total of twenty-eight species were recorded on the surveys at PC 10 with fifteen of these exhibiting breeding behaviour. Of the species potentially breeding, three were notable: skylark (Section 41, Red list), dunnock (Section 41, Red list) and yellowhammer (Section 41).

Beach Lane, Weybourne

3.7.1.10 Point count 4 was within this CWS. A total of thirty-three species were recorded on the surveys at PC 4 with fourteen of these exhibiting breeding behaviour. Of the species potentially breeding, three were notable: cuckoo (Red list), skylark (Section 41, Red list), Cetti's warbler (Schedule 1) and dunnock (Section 41, Red list). The Cetti's warbler records refer to the same individuals that were recorded as part of the full territory mapping surveys of the landfall.

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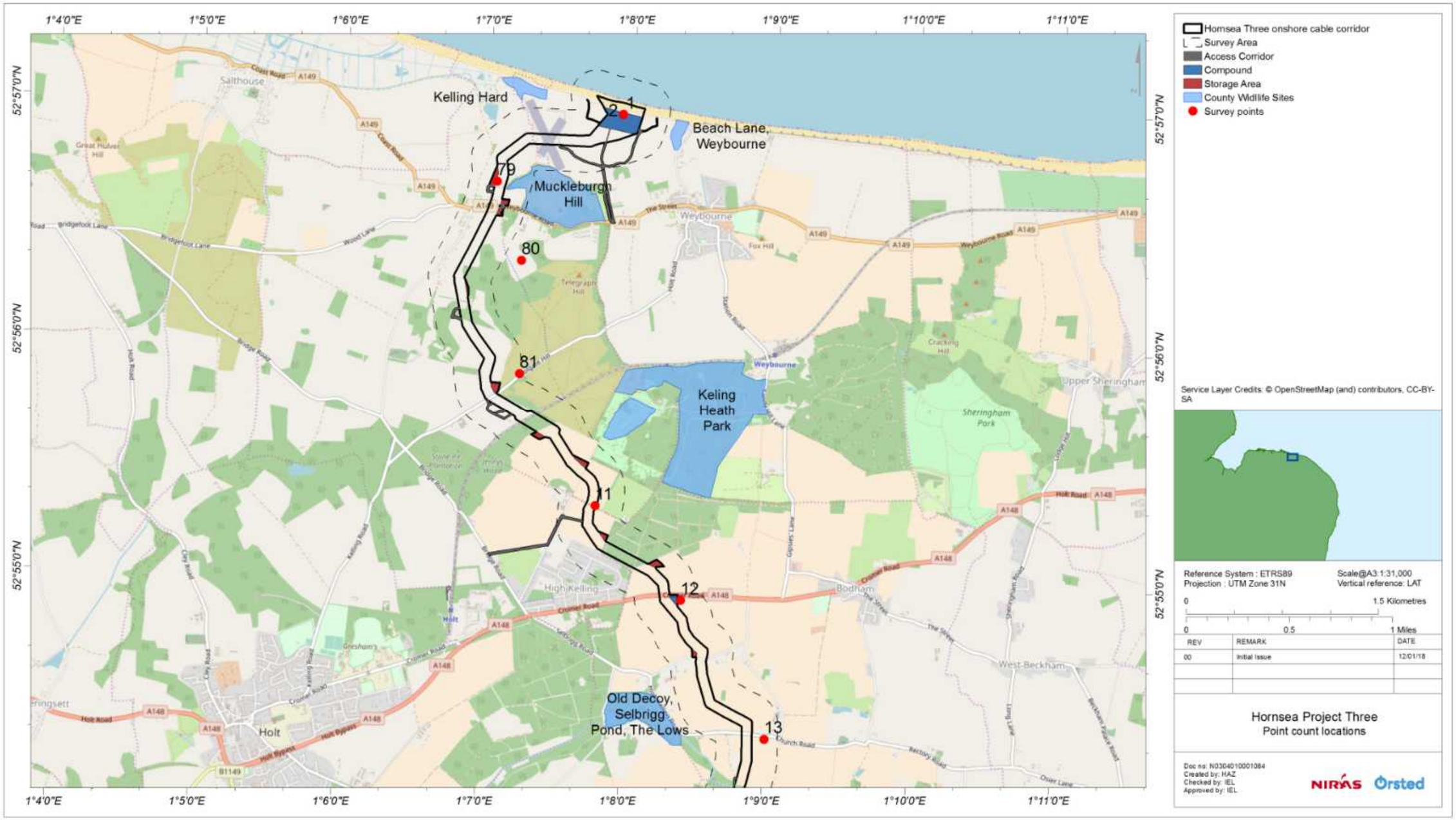
5. Appendices

A.1 Appendix 1: Onshore Cable Corridor Point Count survey locations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Kelling Hard
Beach Lane, Weybourne
Muckleburgh Hill
Weybourne
Keling Heath Park
Old Decoy, Selbrigg Pond, The Lows
Holt
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2
79
80
81
11
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Hornsea Three onshore cable corridor
Survey Area
Access Corridor
Compound
Storage Area
County Wildlife Sites
Survey points
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
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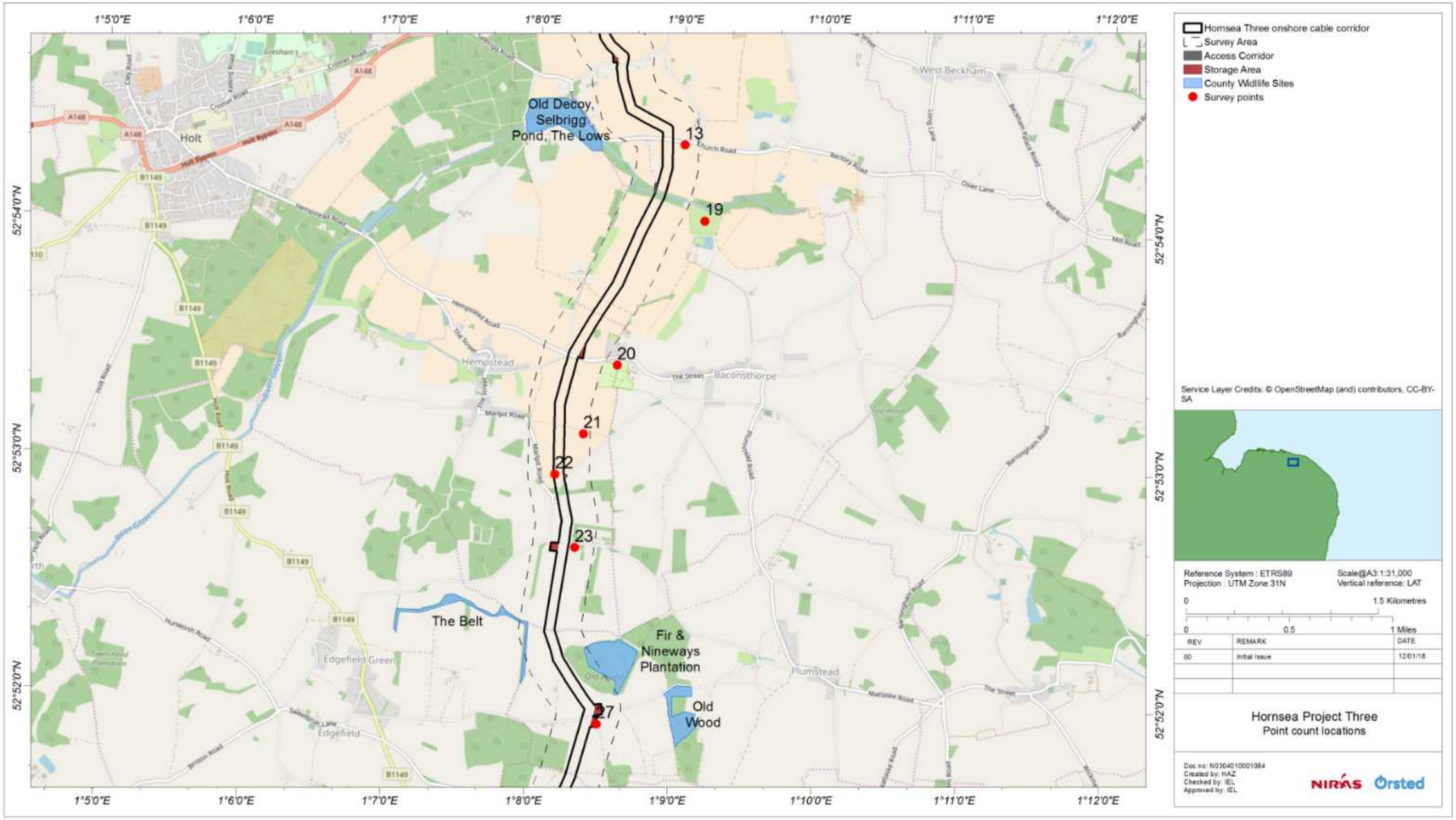
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Holt
Old Decoy, Selbrigg
Pond, The Lows
West Beckham
Hempstead
Baconsthorpe
The Belt
Fir & Nineways Plantation
Old Wood
Edgefield Green
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Plumstead
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Homsea Three onshore cable corridor
Survey Area
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County Widlife Sites
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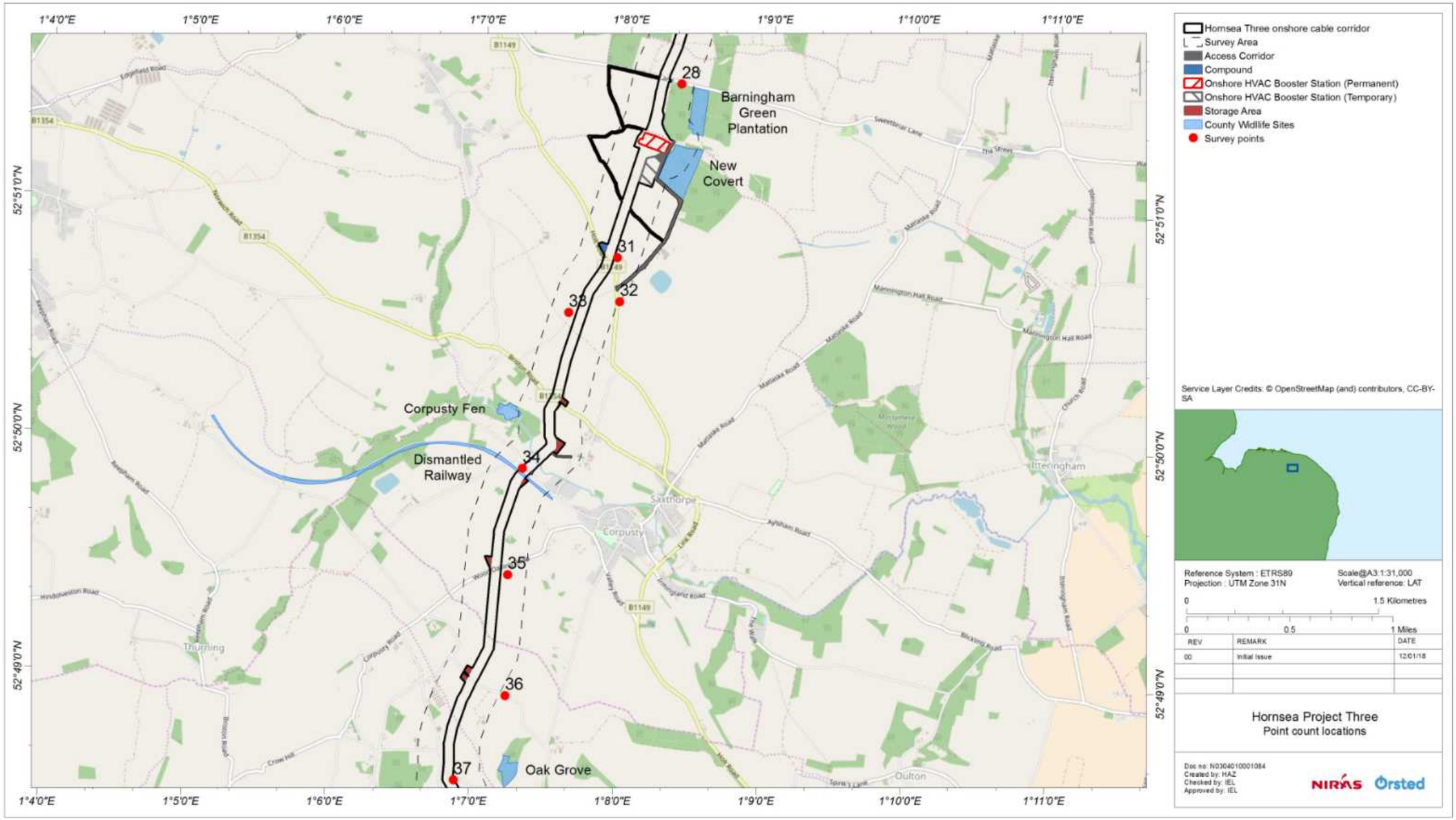
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Barningham Green Plantation
New Covert
Corpusty Fen
Dismantled Railway
Oak Grove
28
31
32
33
34
35
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37
Hornsea Three onshore cable corridor
Survey Area
Access Corridor
Compound
Onshore HVAC Booster Station (Permanent)
Onshore HVAC Booster Station (Temporary)
Storage Area
County Widlife Sites
Survey points
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
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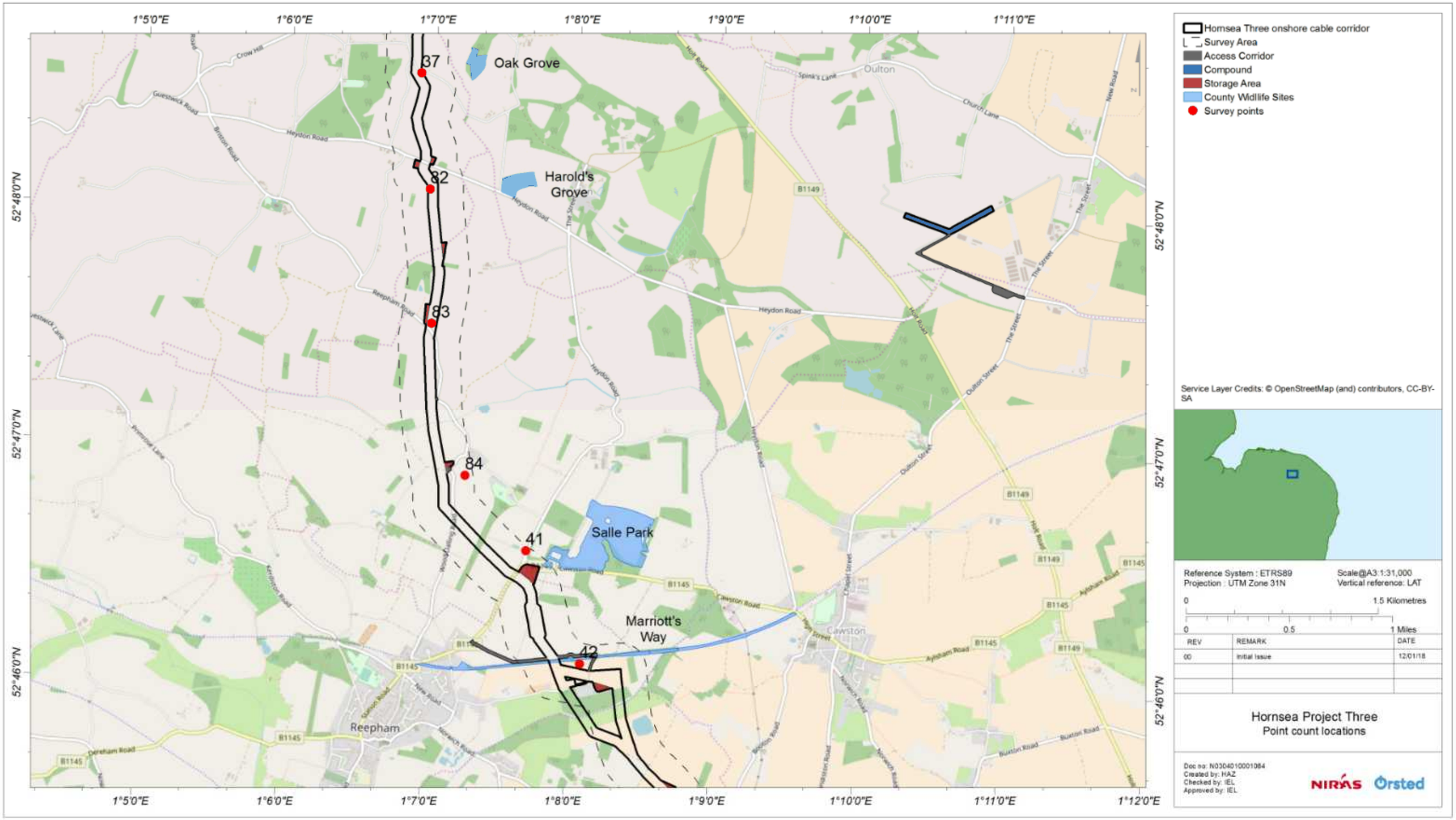
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52°47'0"N
52°46'0"N
37
82
83
84
41
42
Oak Grove
Harold's Grove
Salle Park
Marriott's Way
Reepham
Oulton
Cawston
B1149
B1145
Hornsea Three onshore cable corridor
Survey Area
Access Corridor
Compound
Storage Area
County Wildlife Sites
Survey points
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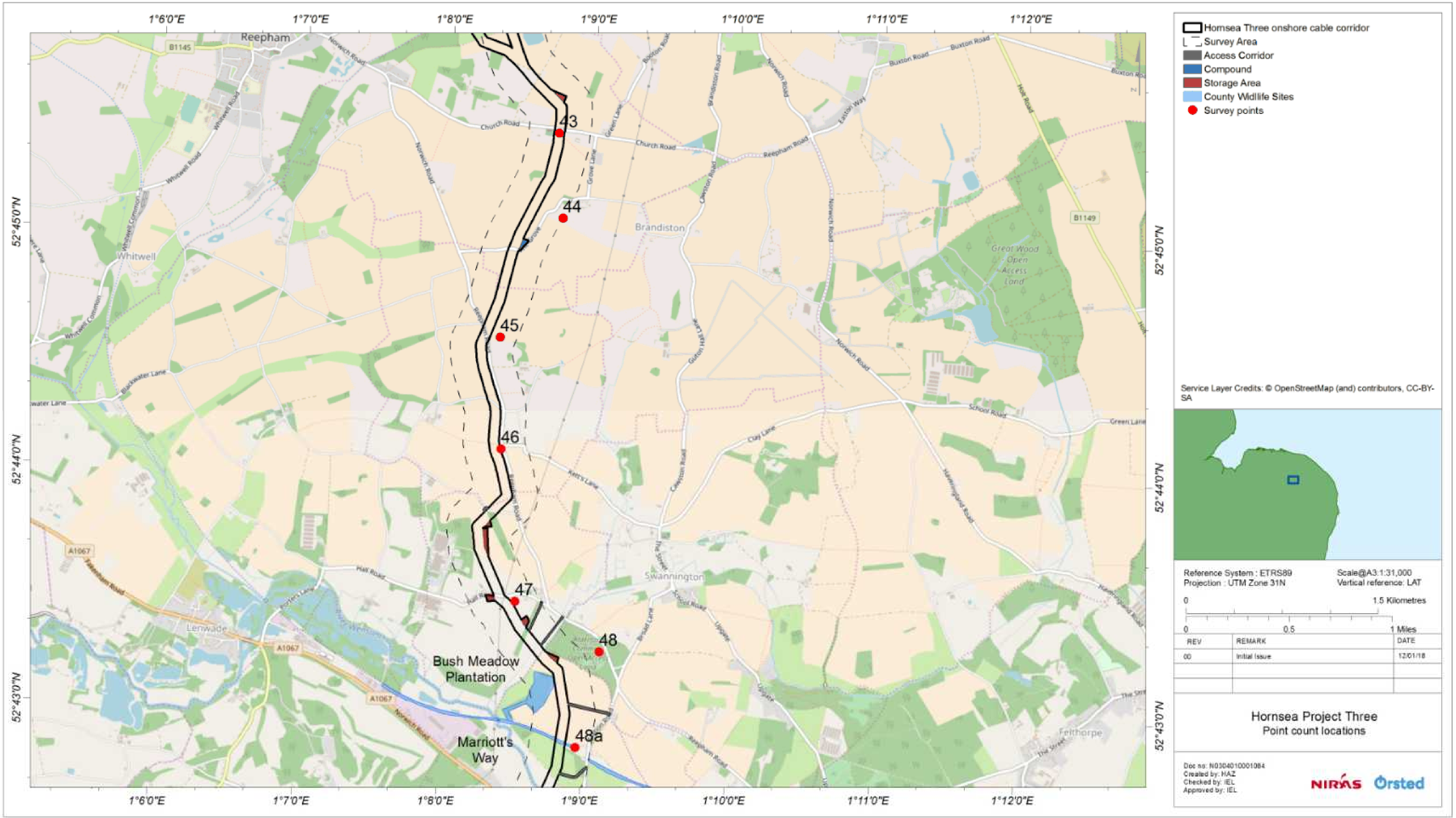
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48a
Reepham
Whitwell
Brandiston
Swannington
Lenwade
Bush Meadow Plantation
Marriott's Way
Great Wood Open Access Land
Felthorpe
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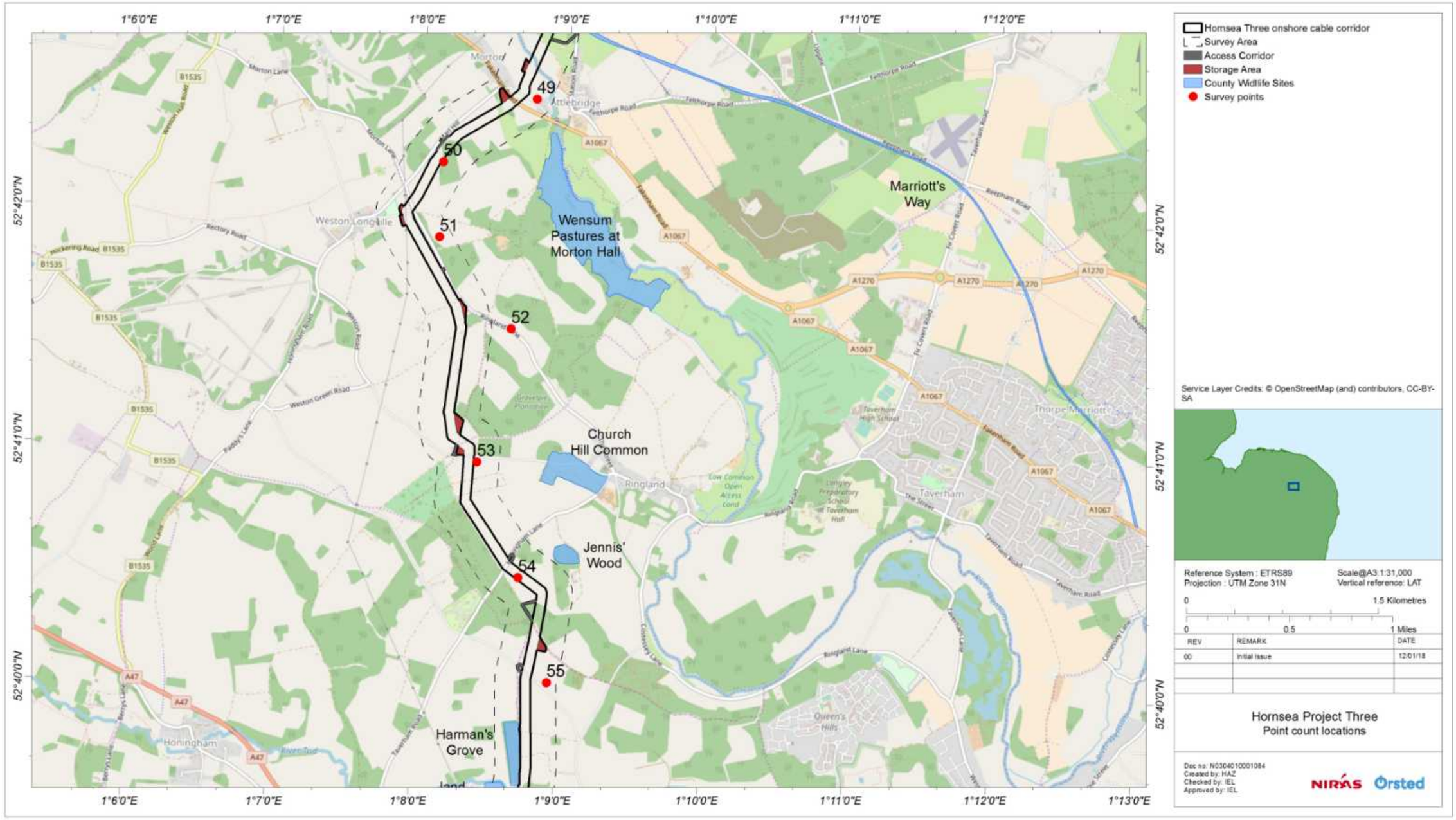
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Wensum Pastures at Morton Hall
Marriott's Way
Church Hill Common
Jennis' Wood
Harman's Grove
Weston Longville
Attlebridge
Ringland
Taverham
Thorpe Marriott
Honingham
Hornsea Three onshore cable corridor
Survey Area
Access Corridor
Storage Area
County Widlife Sites
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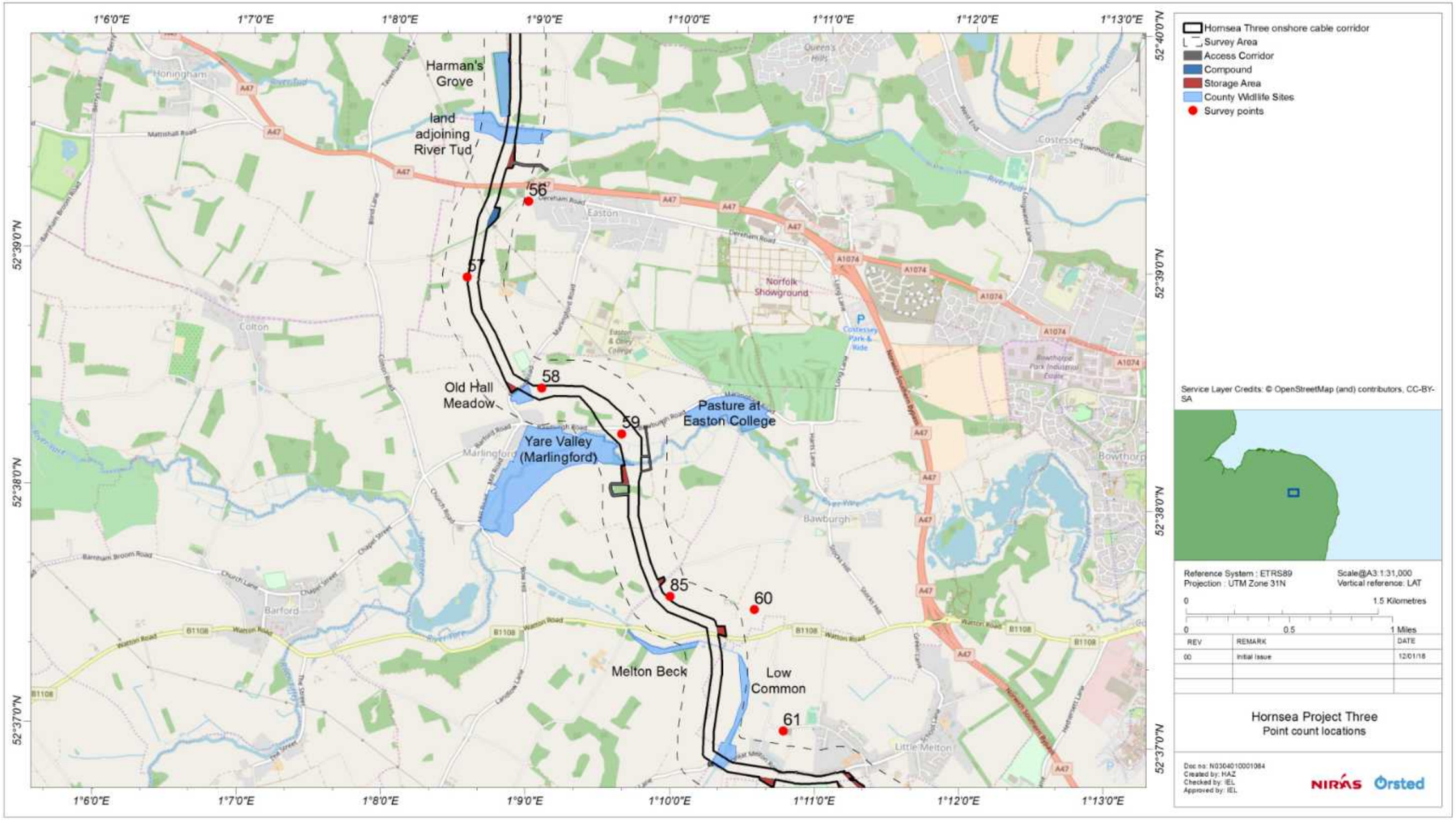
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Harman's Grove
land adjoining River Tud
56
57
58
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Old Hall Meadow
Yare Valley (Marlingford)
Pasture at Easton College
Melton Beck
Low Common
Norfolk Showground
Hornsea Three onshore cable corridor
Survey Area
Access Corridor
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County Wildlife Sites
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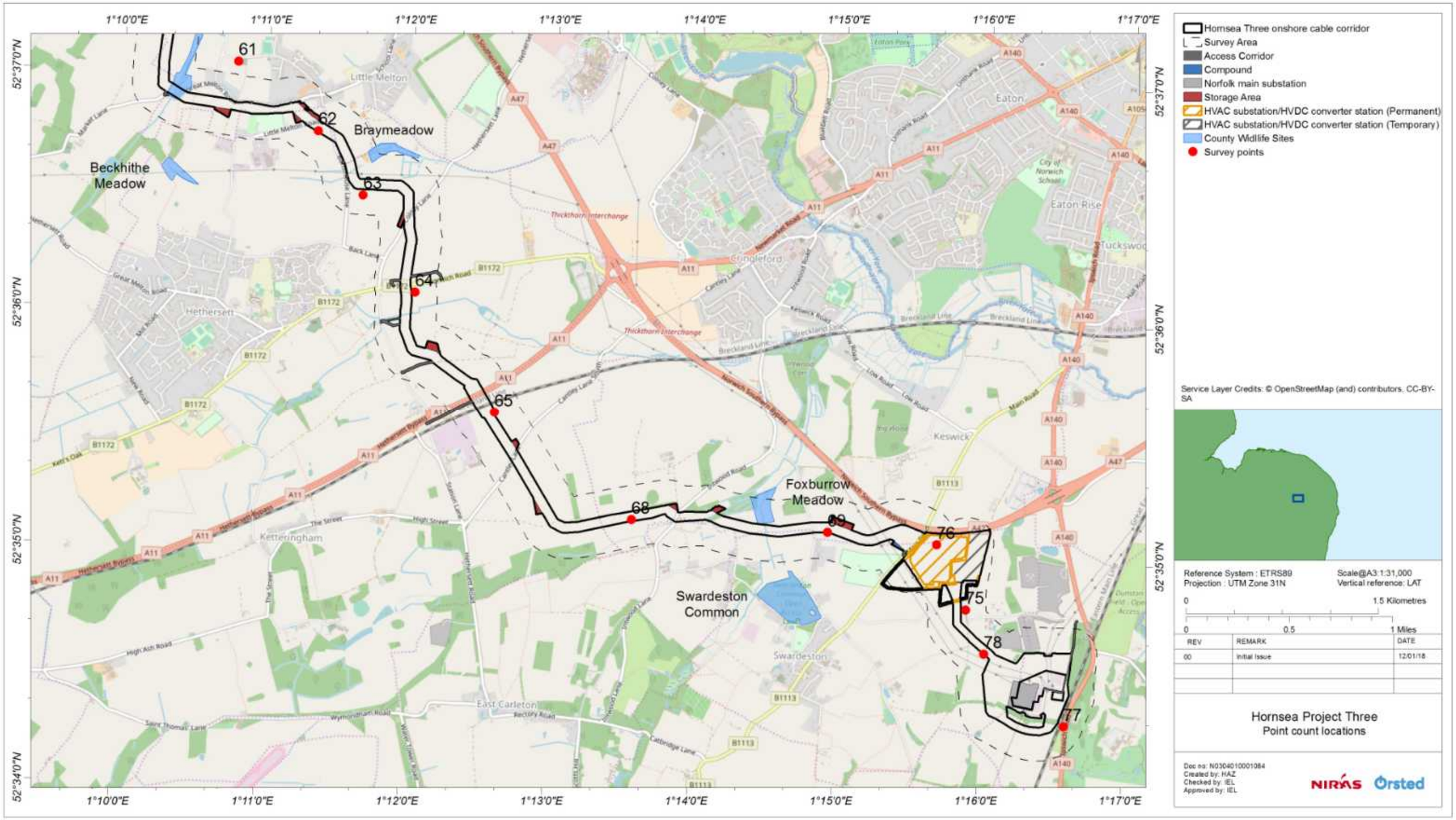
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Braymeadow
Beckhithe Meadow
Foxburrow Meadow
Swardeston Common
Little Melton
Hethersett
Ketteringham
East Carleton
Swardeston
Keswick
Eaton
Eaton Rise
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Hornsea Three onshore cable corridor
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Storage Area
HVAC substation/HVDC converter station (Permanent)
HVAC substation/HVDC converter station (Temporary)
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A.2 Appendix 2: Onshore Cable Corridor Bird Data

A.2.1 Onshore cable corridor point count survey results

Table 5.1: Summary of bird species recorded and those indicating breeding activity at onshore cable corridor point count locations.

Species	Conservation Status				Point counts	
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Breeding evidence	Other
Mute swan			Amber		19	59, 69
Greylag goose			Amber			13, 19, 34, 40, 41, 55, 61, 48a
Egyptian goose			Green			53, 58, 63
Shelduck			Amber		9	5, 79, 80, 81
Gadwall			Amber			19
Mallard			Amber		4, 41, 55, 59, 48a	19, 32, 36, 57
Tufted duck			Green		19	
Red-legged partridge			Green		13, 23, 39, 41, 53, 55, 56, 57, 58	7, 12, 27, 28, 31, 36, 37, 38, 40, 42, 43, 45, 47, 52, 54, 69, 79, 80, 83, 84
Grey partridge			Red	X	13	31, 40, 52
Pheasant			Green		8, 9, 11, 13, 28, 32, 36, 37, 39, 41, 46, 48, 54, 55, 63, 69, 76, 80, 81, 48a	7, 19, 20, 23, 27, 34, 38, 40, 44, 45, 47, 50, 51, 52, 53, 58, 59, 60, 61, 64, 68, 79, 83, 84, 85
Fulmar			Amber			4
Cormorant			Green			1, 2, 3, 11,
Grey Heron			Green			20, 59, 48a
Red kite	X		Green			2, 4, 5, 6, 27, 55, 58
Sparrowhawk			Green			57, 60, 61, 62, 79, 85
Buzzard			Green		68, 69, 80	8, 9, 19, 20, 23, 27, 28, 32, 34, 36, 37, 40, 44, 48, 49, 50, 51, 53, 55, 58, 59, 64, 76, 85, 48a
Water rail			Green		83	
Moorhen			Green		13	3, 4, 19, 36, 41, 59, 61, 62, 63, 68
Oystercatcher			Amber			1, 2, 3, 5, 12, 31, 81
Ringed plover			Red			1
Curlew			Red	X		12
Greenshank	X		Amber			79

Species	Conservation Status				Point counts	
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Breeding evidence	Other
Snipe			Amber			2
Little tern	X		Amber			3
Sandwich tern			Amber		3	1
Common tern		X	Amber			1, 3, 61
Black-headed gull			Amber			1, 2, 3, 4, 5, 7, 8, 9, 11, 13, 19, 23, 31, 35, 36, 44, 46, 50, 51, 59, 79, 80, 81, 82, 85
Mediterranean gull	X		Amber			1, 3, 4, 11
Common gull			Amber			7, 8, 9, 11, 35, 36, 47, 79
Lesser black-backed gull			Amber			1, 10, 31, 32, 35, 36, 44, 46, 47, 49, 53, 55, 56, 58, 61, 62, 63, 64, 65, 69, 76, 78, 81, 84
Herring gull			Red	X		1, 2, 3, 8, 23, 35, 44, 46, 47, 58, 62, 63, 65, 68, 79, 80, 81, 82, 80a
Great black-backed gull			Amber			1, 3, 46
Stock dove			Amber		11, 50, 80, 85	5, 6, 10, 13, 19, 21, 35, 36, 40, 46, 49, 51, 53, 55, 56, 58, 59, 60, 62, 63, 64, 68, 69, 76, 78, 79, 81, 83, 84
Woodpigeon			Green		5, 6, 8, 9, 10, 11, 13, 19, 20, 27, 28, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 47, 48, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 62, 64, 78, 79, 82, 85, 48a, 80a	2, 3, 4, 7, 12, 23, 31, 32, 35, 45, 49, 55, 61, 63, 65, 68, 69, 76, 80, 81, 83, 84
Collared dove			Green		7, 20, 38, 44, 46, 47, 61, 69	4, 11, 13, 36, 40, 43, 58
Turtle dove			Red	X	48	
Cuckoo			Red	X	4	
Little owl			Green			47
Swift			Amber			4, 6, 10, 19, 31, 40, 41, 57, 61, 62, 69, 76, 78, 82, 84, 85
Green woodpecker			Green		10, 51, 62	47, 48, 49, 52, 53, 54, 59, 60, 63, 68, 48a
Great spotted woodpecker					19, 34, 38	10, 40, 50, 65, 80, 82, 85, 80a
Kestrel			Amber		19, 68	3, 6, 8, 12, 20, 23, 27, 31, 35, 37, 43, 50, 57, 62, 80, 82, 84
Hobby	X					80,85
Magpie					46	5, 6, 7, 11, 12, 20, 34, 36, 39, 44, 54, 55, 56, 58, 61, 62, 63, 64, 68, 69, 76, 78, 79, 81, 82, 85, 48a
Jay					38, 42, 50, 61, 69	10, 11, 13, 34, 37, 41, 47, 51, 52, 53, 54, 56, 58, 59, 63, 64, 78, 81, 84, 85, 48a, 80a

Species	Conservation Status				Point counts	
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Breeding evidence	Other
Jackdaw					19, 50, 84	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 20, 21, 27, 31, 32, 34, 35, 36, 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 58, 59, 61, 62, 63, 64, 65, 69, 76, 78, 79, 80, 81, 85, 48a, 80a
Rook					2, 5, 35	4, 6, 7, 9, 10, 11, 12, 20, 31, 36, 39, 40, 41, 42, 43, 45, 47, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 65, 68, 69, 76, 78, 79, 80, 81, 48a
Carrion crow					19, 36	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 20, 23, 27, 28, 31, 32, 34, 35, 37, 38, 40, 41, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 68, 69, 76, 78, 79, 80, 81, 82, 85, 48a, 80a
Goldcrest					5, 10, 11, 28, 34, 38, 43, 49, 50, 51, 52, 54, 56, 62, 64, 48a, 80a	23, 39, 42, 46
Blue tit					6, 9, 11, 13, 19, 23, 32, 37, 38, 39, 42, 43, 46, 47, 48, 50, 51, 53, 54, 55, 56, 59, 61, 62, 64, 76, 80, 48a	4, 5, 7, 8, 10, 20, 28, 31, 34, 36, 40, 41, 44, 45, 49, 52, 57, 58, 60, 63, 65, 68, 69, 78, 79, 81, 83, 85
Great tit					5, 6, 9, 11, 23, 28, 32, 34, 36, 38, 40, 41, 42, 43, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 61, 62, 64, 76, 78, 80, 48a	8, 19, 60, 69, 81, 80a
Coal tit					28, 51, 52, 54, 80a	11, 38, 53, 80
Marsh tit			Red	X	11, 43	76
Skylark			Red	X	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 20, 21, 23, 27, 28, 31, 32, 34, 35, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63, 65, 68, 69, 76, 78, 79, 81, 82, 85, 48a	
Sand martin					1	2, 3, 4, 6, 79, 80
Swallow						2, 3, 7, 9, 11, 13, 19, 21, 27, 32, 40, 43, 44, 58, 61, 68, 79, 80, 81, 82, 85
House martin			Amber			7, 9, 13, 20, 31, 35, 36, 40, 58, 62, 63, 82
Cetti's warbler	X				3, 4	
Long-tailed tit					62	5, 9, 11, 19, 23, 28, 34, 39, 40, 43, 46, 48, 49, 50, 54, 56, 58, 64, 48a, 80a
Chiffchaff					2, 3, 4, 5, 6, 8, 9, 10, 11, 13, 19, 20, 23, 28, 32, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 62, 64, 69, 78, 79, 80, 81, 82, 83, 80a	
Willow warbler			Amber		10, 21, 37, 48, 65, 81	34, 58
Blackcap					4, 5, 7, 8, 9, 10, 11, 13, 19, 23, 28, 32, 34, 36, 37, 38, 39, 41, 42, 43, 45, 48, 50, 51, 52, 54, 55, 56, 58, 59, 60, 61, 62, 64, 68, 76, 78, 79, 80, 81, 85, 48a, 80a	40

Species	Conservation Status				Point counts	
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Breeding evidence	Other
Garden warbler					5, 8, 10, 28, 48, 81, 83	
Lesser whitethroat					7, 8, 34, 46, 58, 83	19
Whitethroat					2, 4, 5, 7, 10, 11, 12, 13, 19, 27, 31, 32, 35, 36, 37, 39, 41, 44, 45, 46, 54, 55, 57, 58, 59, 60, 61, 62, 63, 65, 68, 79, 80, 82, 83, 84, 48a	
Sedge warbler					2, 4	
Reed warbler					4	
Nuthatch					38, 43, 52	5, 19, 54, 80, 80a
Treecreeper					51	9
Wren					2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 23, 27, 28, 32, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 69, 78, 79, 80, 81, 82, 83, 84, 85, 48a, 80a	46
Starling			Red	X		20, 27, 35, 43, 46, 49, 58, 59, 62, 65, 69, 79, 80
Blackbird					5, 7, 10, 11, 12, 13, 19, 20, 27, 32, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 47, 48, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 61, 62, 63, 64, 68, 69, 78, 80, 81, 82, 83, 84, 85, 48a, 80a	3, 6, 9, 23, 28, 35, 49, 65, 76, 79
Fieldfare	X		Red			12, 13
Song thrush			Red	X	7, 12, 13, 19, 27, 37, 38, 39, 40, 41, 43, 44, 45, 47, 48, 49, 51, 54, 55, 56, 57, 58, 59, 64, 68, 78, 80, 81, 83, 85, 80a	53, 76, 48a
Mistle thrush			Red		50	4, 48, 65
Robin					2, 5, 9, 10, 11, 13, 19, 20, 23, 28, 32, 34, 37, 38, 39, 40, 41, 42, 43, 48, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 61, 62, 64, 69, 76, 78, 80, 81, 85, 48a	6, 7, 27, 44, 47, 53, 79, 83, 80a
Stonechat					4	2, 21, 58
Wheatear					35	4
Dunnock				X	2, 4, 5, 6, 7, 8, 10, 11, 12, 13, 19, 20, 23, 27, 32, 34, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 52, 53, 54, 55, 56, 58, 59, 60, 61, 62, 64, 65, 69, 76, 78, 79, 80, 81, 82, 83, 84, 85, 80a, 48a	38
House sparrow			Red	X	53	3, 20, 37, 46, 47, 84

Species	Conservation Status				Point counts	
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Breeding evidence	Other
Pied wagtail					49	2, 3, 4, 6, 11, 27, 31, 32, 34, 37, 40, 43, 45, 46, 47, 53, 63, 68, 79, 80, 84
Meadow pipit					3, 4	2, 9, 12, 35, 52, 60, 63, 79
Rock pipit						3
Brambling	X					53
Chaffinch					3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 23, 28, 31, 32, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 69, 76, 78, 79, 80, 81, 82, 83, 84, 85, 48a	27, 35, 68, 80a
Bullfinch				X	10, 23, 37, 43, 56, 61, 62	5, 9, 21, 39, 42, 48, 81, 82, 83
Greenfinch					20, 34, 38, 40, 43, 46, 47, 49, 53, 56, 59, 61, 62, 63, 78, 80, 82, 48a	7, 36, 50, 54, 57, 58, 65, 76
Linnet			Red	X	2, 3, 11, 13, 19, 39, 45, 59, 61, 63, 84	1, 4, 7, 8, 9, 10, 12, 20, 23, 27, 28, 35, 37, 40, 41, 43, 44, 46, 47, 49, 50, 51, 52, 53, 54, 55, 57, 60, 62, 65, 68, 78, 79, 81, 83, 85
Lesser redpoll			Red	X		10, 11, 23, 52, 54, 81
Goldfinch					13, 19, 20, 32, 36, 40, 42, 46, 47, 53, 62, 79, 80, 83, 48a	3, 4, 5, 6, 7, 10, 11, 12, 23, 27, 31, 34, 37, 38, 39, 41, 43, 44, 45, 49, 54, 55, 56, 57, 58, 59, 64, 65, 69, 81, 82, 84, 85
Yellowhammer			Red	X	5, 7, 8, 9, 11, 12, 13, 19, 20, 23, 27, 31, 32, 35, 36, 37, 39, 44, 45, 46, 47, 52, 55, 57, 60, 61, 68, 69, 78, 83	6, 81, 84
Reed bunting				X	40	4, 85

A.2.2 Onshore cable corridor point count survey results: breeding birds adjacent to County Wildlife Sites

Table 5.2: Summary of breeding birds recorded within, adjacent to or in close proximity to County Wildlife Sites.

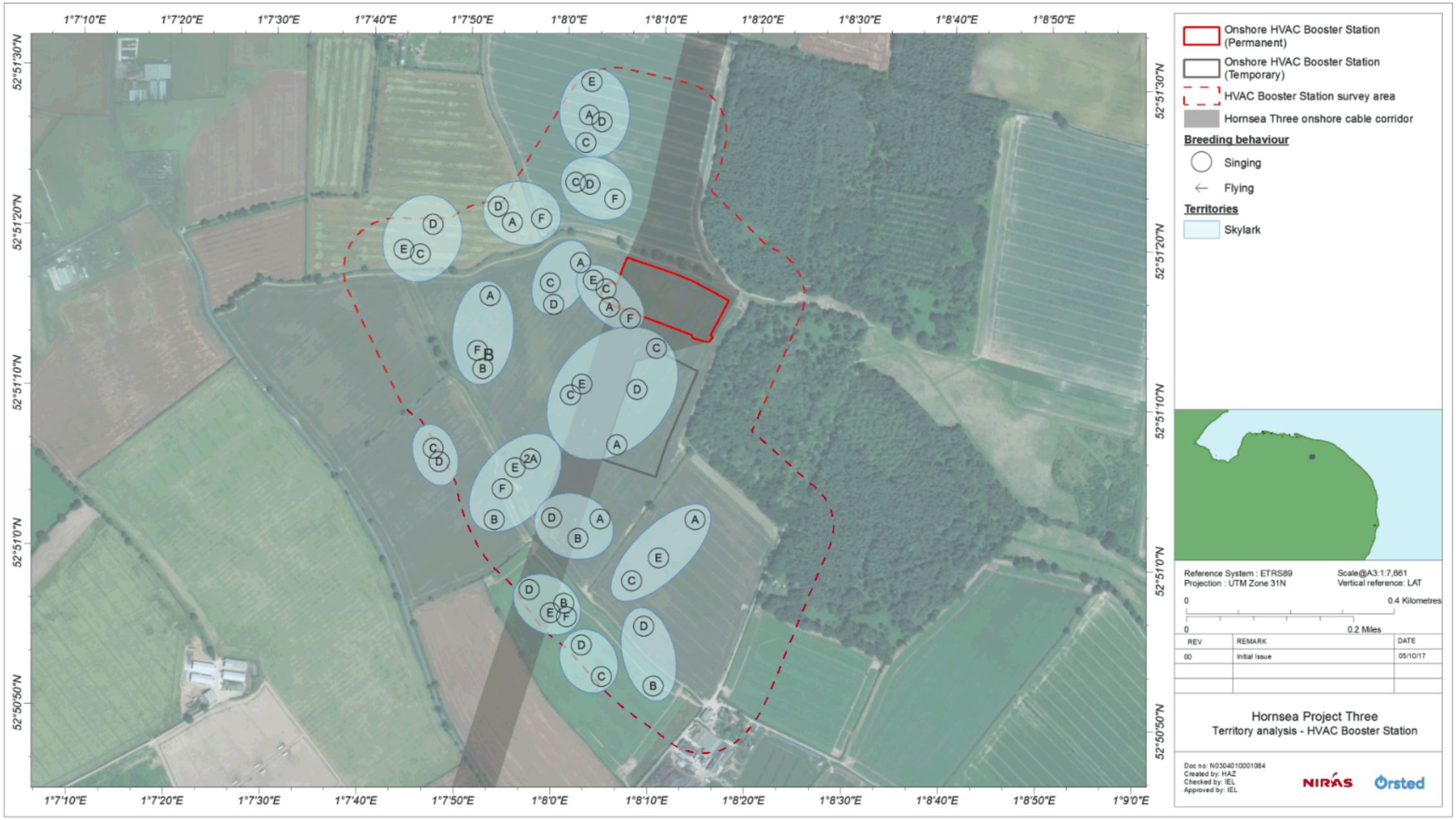
Species	Conservation Status				County Wildlife Site								
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Low Common	Yare Valley (Marlingford)	Old Hall Meadow	Marriot's Way	Dismantled Railway	New Covert	Kelling Heath Park	Muckleburgh Hill	Beach Lane, Weybourne
Mute swan			Amber			P							
Greylag goose			Amber		P			P	P				
Egyptian goose							P						
Shelduck			Amber									P	
Mallard			Amber			B		B					B
Red-legged partridge							B	P		P			
Grey partridge			Red	X						P			
Pheasant					P	P	P	P	P	B			
Fulmar			Amber										P
Grey heron						P		P					
Red kite	X						P					P	P
Sparrowhawk					P								
Buzzard						P	P	P	P	P			
Moorhen					P	P							P
Oystercatcher			Amber							P		P	
Common tern		X	Amber		P								
Black-headed gull			Amber			P				P		P	P
Mediterranean gull	X		Amber										P
Lesser black-backed gull			Amber		P		P			B	P		
Herring gull			Red	X			P						
Stock dove			Amber			P	P				P	P	
Woodpigeon					P	B	B	B	B	B	B	B	P
Collared dove					B		P						P
Cuckoo			Red	X									B
Swift			Amber		P					P	P		P

Species	Conservation Status				County Wildlife Site								
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Low Common	Yare Valley (Marlingford)	Old Hall Meadow	Marriot's Way	Dismantled Railway	New Covert	Kelling Heath Park	Muckleburgh Hill	Beach Lane, Weybourne
Green woodpecker						P		P			B		
Great spotted woodpecker									B		P		
Kestrel			Amber							P			
Magpie					P		P	P	P			P	
Jay					B	P	P	B	P		P		
Jackdaw					P	P	P	P	P	P	P	P	P
Rook					P	P	P	P		P	P	B	P
Carrion crow					P	P	P	P	P	P	P	P	P
Goldcrest								B	B	B	B	B	
Blue tit					B	B	P	B	P	P	P	P	P
Great tit					B	B	B	B	B	B		B	
Coal tit										B			
Skylark			Red	X	B	B	B	B	B	B	B	B	B
Sand martin													P
Swallow					P		P						
House martin			Amber				P			P			
Cetti's warbler	X												B
Long-tailed tit							P	P	P	P		P	
Chiffchaff					B	B	B	B	B	B	B	B	B
Willow warbler			Amber				P		P		B		
Blackcap					B	B	B	B	B	B	B	B	B
Garden warbler										B	B	B	
Lesser whitethroat			Red	X			B		B				
Whitethroat					B	B	B	B		B	B	B	B
Sedge warbler													B
Reed warbler													B
Nuthatch												P	

Species	Conservation Status				County Wildlife Site								
	WCA Schedule 1	EU Birds Directive Annex 1	UK BoCC (2015)	Section 41	Low Common	Yare Valley (Marlingford)	Old Hall Meadow	Marriot's Way	Dismantled Railway	New Covert	Kelling Heath Park	Muckleburgh Hill	Beach Lane, Weybourne
Wren					B	B	B	B	B	B	B	B	B
Starling			Red	X		P	P						
Blackbird					B	B	B	B	B	P	B	B	
Song thrush			Red	X		B	B	P					
Mistle thrush			Red										P
Robin					B	B	B	B	B	B	B	B	
Stonechat							P						B
Wheatear													P
Dunnock				X	B	B	B	B	B		B	B	B
Pied wagtail									P	P			P
Meadow pipit													B
Chaffinch					B	B	B	B	B	B	B	B	B
Bullfinch				X	B			P			B	P	
Greenfinch					B	B	P	B	B				
Linnet					B	B				P	P		P
Lesser redpoll			Red	X							P		
Goldfinch						P	P	B	P	P	P	P	P
Yellowhammer			Red	X	B					B		B	
Reed bunting				X									P

A.3 Appendix 3: Territory Mapping

A.3.1 Territory mapping HVAC booster station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1°8'20"E
1°8'30"E
1°8'40"E
1°8'50"E
1°9'0"E
52°51'30"N
52°51'20"N
52°51'10"N
52°50'50"N
Onshore HVAC Booster Station (Permanent)
Onshore HVAC Booster Station (Temporary)
HVAC Booster Station survey area
Hornsea Three onshore cable corridor
Breeding behaviour
Singing
Flying
Territories
Skylark
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:7,661
Vertical reference: LAT
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0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
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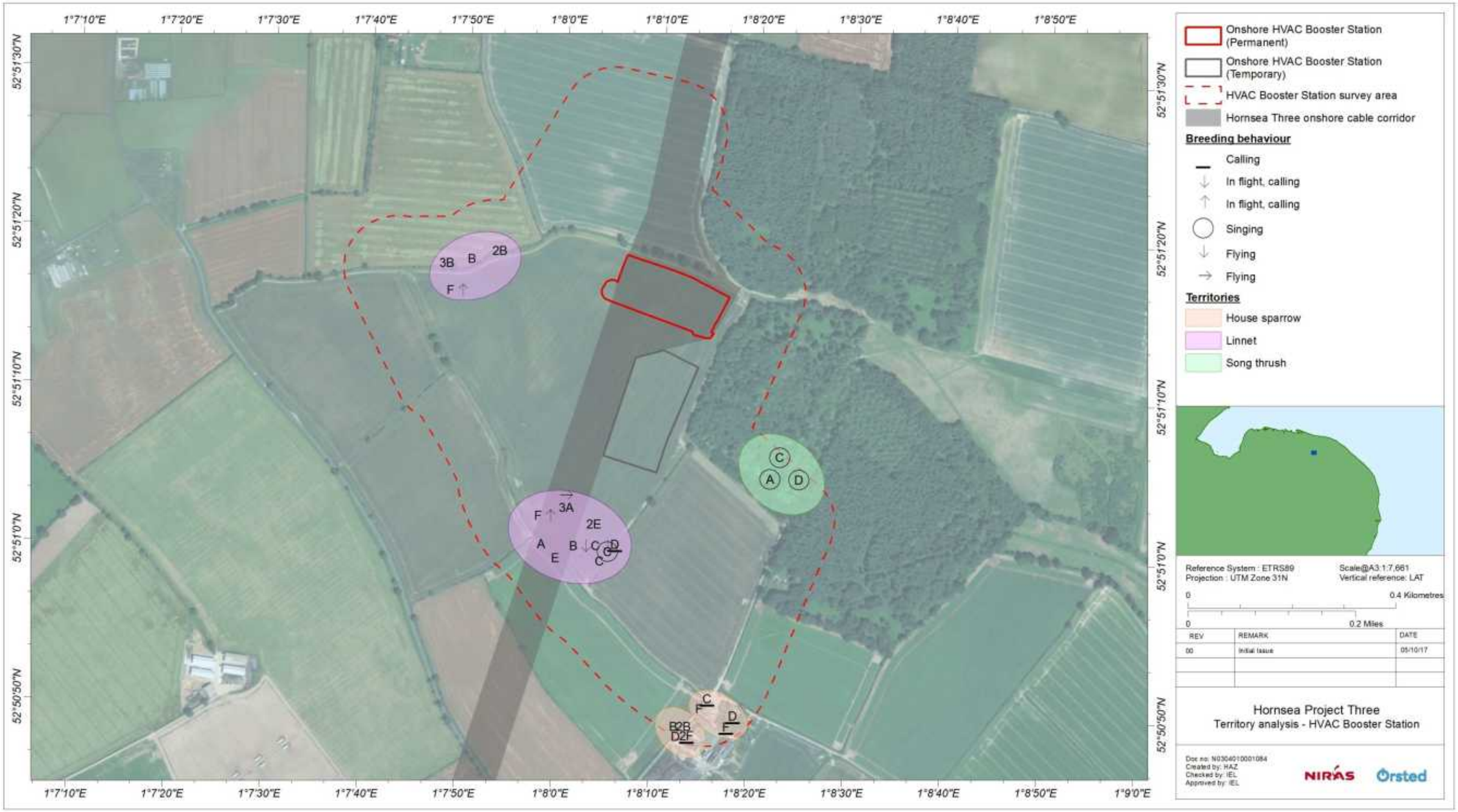
Initial Issue
05/10/17
Hornsea Project Three
Territory analysis - HVAC Booster Station
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL
NIRAS
Ørsted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1°8'30"E
1°8'40"E
1°8'50"E
1°9'0"E
52°51'30"N
52°51'20"N
52°51'10"N
52°50'50"N
3B B 2B F
C A D
F 3A 2E A B C D E C
C F D B2B D2F
Onshore HVAC Booster Station (Permanent)
Onshore HVAC Booster Station (Temporary)
HVAC Booster Station survey area
Hornsea Three onshore cable corridor
Breeding behaviour
Calling
In flight, calling
In flight, calling
Singing
Flying
Flying
Territories
House sparrow
Linnet
Song thrush
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:7,661
Vertical reference: LAT
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0
0.2 Miles
REV
REMARK
DATE
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Initial issue
05/10/17
Hornsea Project Three
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Checked by: IEL
Approved by: IEL
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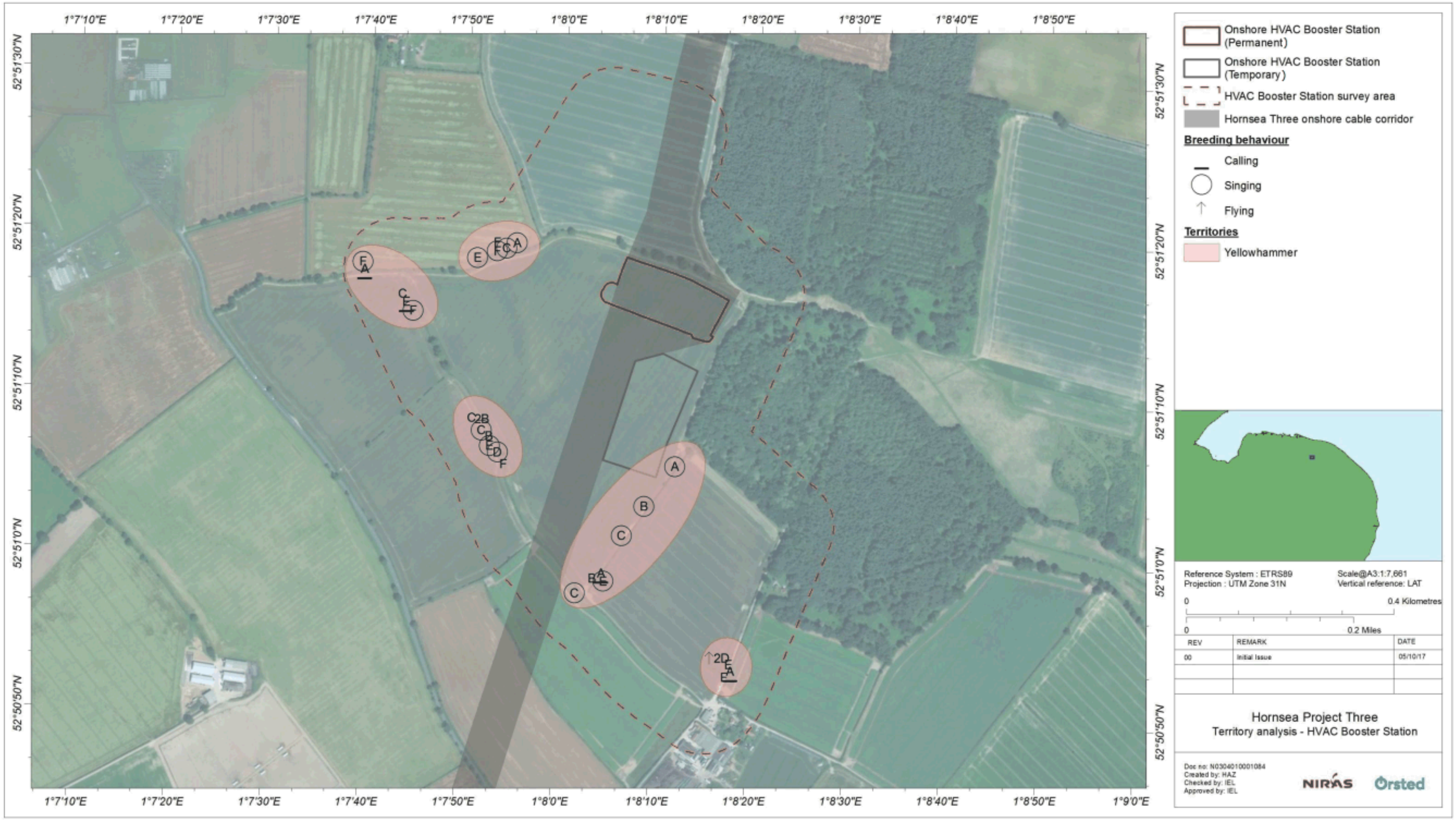
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1°7'30"E
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1°8'40"E
1°8'50"E
1°9'0"E
52°51'30"N
52°51'20"N
52°51'10"N
52°50'50"N
Onshore HVAC Booster Station (Permanent)
Onshore HVAC Booster Station (Temporary)
HVAC Booster Station survey area
Hornsea Three onshore cable corridor
Breeding behaviour
Calling
Singing
Flying
Territories
Yellowhammer
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:7,661
Vertical reference: LAT
0
0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
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Initial Issue
05/10/17
Hornsea Project Three
Territory analysis - HVAC Booster Station
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL
NIRAS
Ørsted

A.3.2 Territory mapping HVAC/HVDC Substation


1°15'15"E
1°15'30"E
1°15'45"E
1°16'0"E
1°16'15"E
52°35'10"N
52°35'0"N
52°34'50"N
HVDC converter / HVAC substation (Permanent)
HVDC converter / HVAC substation (Temporary)
Hornsea Three onshore cable corridor
HVDC converter / HVAC substation survey area
Breeding behaviour
Calling
Singing
Flying
Territories
Yellowhammer
Skylark
Song thrush
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:4,683
Vertical reference: LAT
0
0.2 Kilometres
0
0.1 Miles
REV
REMARK
DATE
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Initial issue
14/02/17
Hornsea Project Three
Territory analysis - HVDC converter / HVAC substation
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Checked by: HAZ
Approved by:IEL
NIRAS
Ørsted
Name: N0304010001069_Territory_analysis_SS_B_V2
Source of background information

A.3.3 Territory mapping: Landfall


1°7'40"E
1°7'50"E
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1°8'10"E
1°8'20"E
1°8'30"E
1°8'40"E
1°8'50"E
1°9'0"E
1°9'10"E
52°57'0"N
52°56'50"N
52°56'40"N
52°56'30"N
Landfall Survey Area
Compound
Hornsea Three onshore cable corridor
Breeding behaviour
Singing
Calling
Territories
Cetti's warbler
Cuckoo
Mistle thrush
Yellowhammer
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:6,776
Vertical reference: LAT
0
0.3 Kilometres
0
0.2 Miles
REV
REMARK
DATE
00
Initial Issue
05/10/17
Hornsea Project Three
Territory analysis - Landfall
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL
NIRAS
Ørsted


1°7'40"E
1°7'50"E
1°8'0"E
1°8'10"E
1°8'20"E
1°8'30"E
1°8'40"E
1°8'50"E
1°9'0"E
1°9'10"E
52°57'0"N
52°56'50"N
52°56'40"N
52°56'30"N
Landfall Survey Area
Compound
Hornsea Three onshore cable corridor
Breeding behaviour
Flying
Aggressive encounter
Carrying food
Singing
Flying
Territories
Linnet
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:6,776
Vertical reference: LAT
0
0.3 Kilometres
0
0.2 Miles
REV
REMARK
DATE
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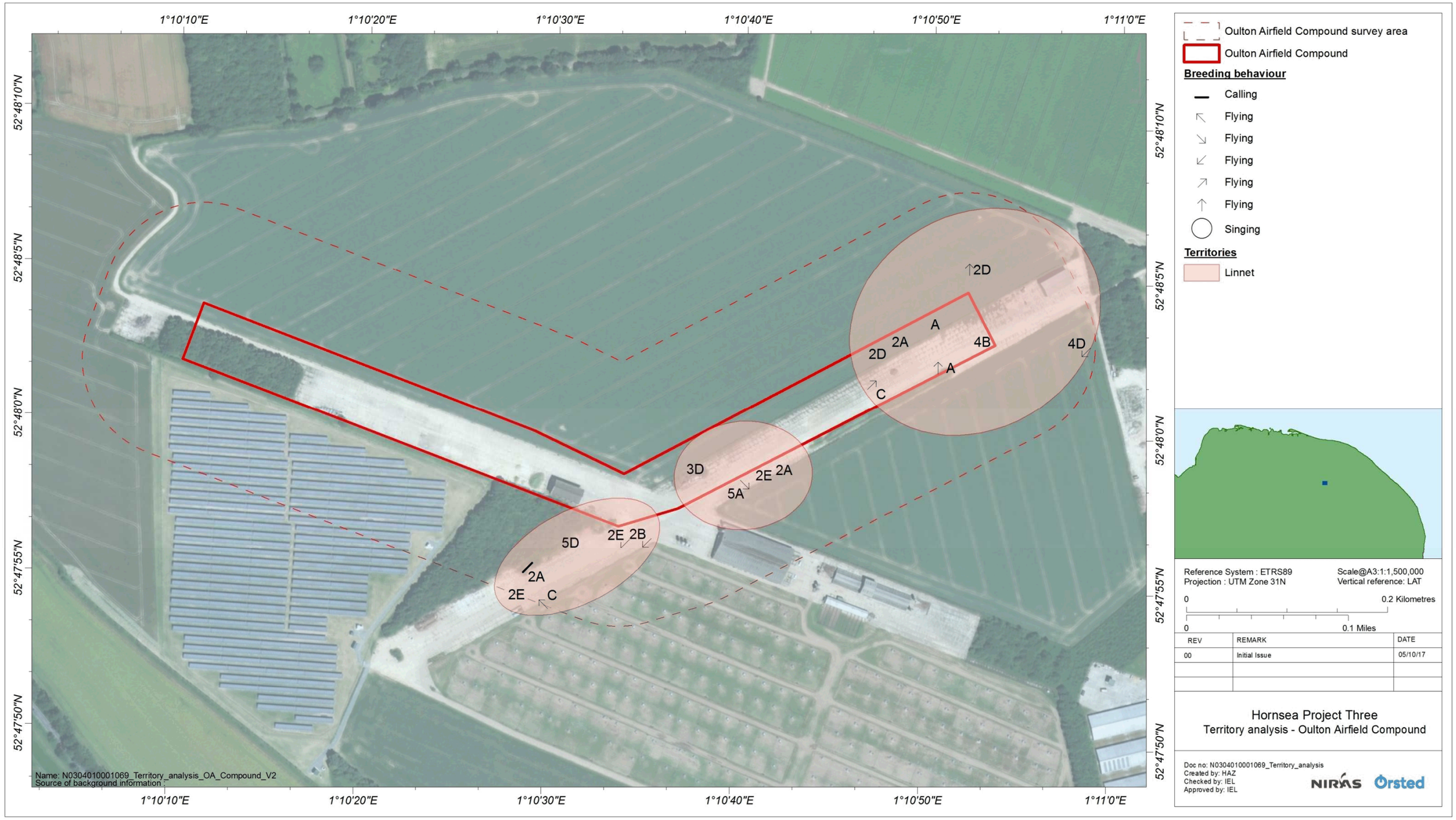
Initial Issue
05/10/17
Hornsea Project Three
Territory analysis - Landfall
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL
NIRAS
Ørsted

A.3.4 Territory mapping: Oulton Airfield Compound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A
2A
4B
4D
2D
A
C
3D
2E 2A
5A
5D
2E 2B
2A
2E
C
Oulton Airfield Compound survey area
Oulton Airfield Compound
Breeding behaviour
Calling
Flying
Flying
Flying
Flying
Flying
Singing
Territories
Linnet
Reference System : ETRS89
Projection : UTM Zone 31N
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05/10/17
Hornsea Project Three
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A.3.5 Territory Mapping: Kelling Heath SSSI


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1°7'20"E
1°7'30"E
1°7'40"E
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1°8'0"E
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52°56'20"N
52°56'10"N
52°56'0"N
52°55'50"N
52°55'40"N
52°55'30"N
Hornsea Three offshore cable corridor
Kelling Heath SSSI Survey Area
Breeding behaviour
Calling
Flying
Possible nest
Singing
Flying
Territories
Nightjar
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:8,722
Vertical reference: LAT
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0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
00
Initial Issue
05/10/17
Hornsea Project Three
Kelling Heath
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL


1°6'40"E
1°6'50"E
1°7'0"E
1°7'10"E
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1°7'30"E
1°7'40"E
1°7'50"E
1°8'0"E
1°8'10"E
1°8'20"E
1°8'30"E
1°8'40"E
52°56'20"N
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52°56'0"N
52°55'50"N
52°55'40"N
52°55'30"N
2C
4F
A
2E
B
C
A
2C
D
E
2B
2A
2E
Hornsea Three offshore cable corridor
Kelling Heath SSSI Survey Area
Territories
Woodlark
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:8,722
Vertical reference: LAT
0
0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
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05/10/17
Hornsea Project Three
Kelling Heath
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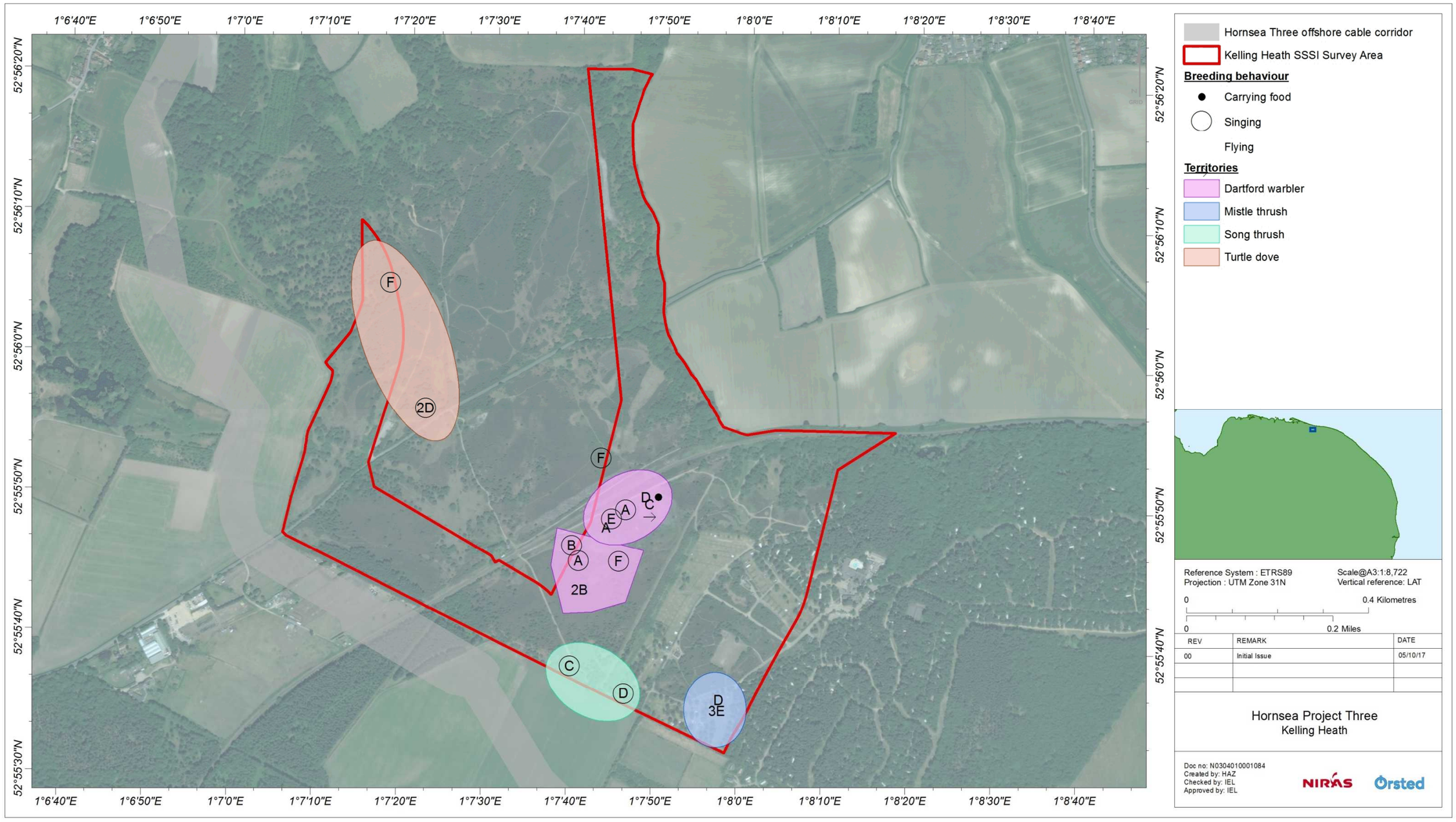
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2B
C
D
D
3E
Hornsea Three offshore cable corridor
Kelling Heath SSSI Survey Area
Breeding behaviour
Carrying food
Singing
Flying
Territories
Dartford warbler
Mistle thrush
Song thrush
Turtle dove
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:8,722
Vertical reference: LAT
0
0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
00
Initial Issue
05/10/17
Hornsea Project Three
Kelling Heath
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL
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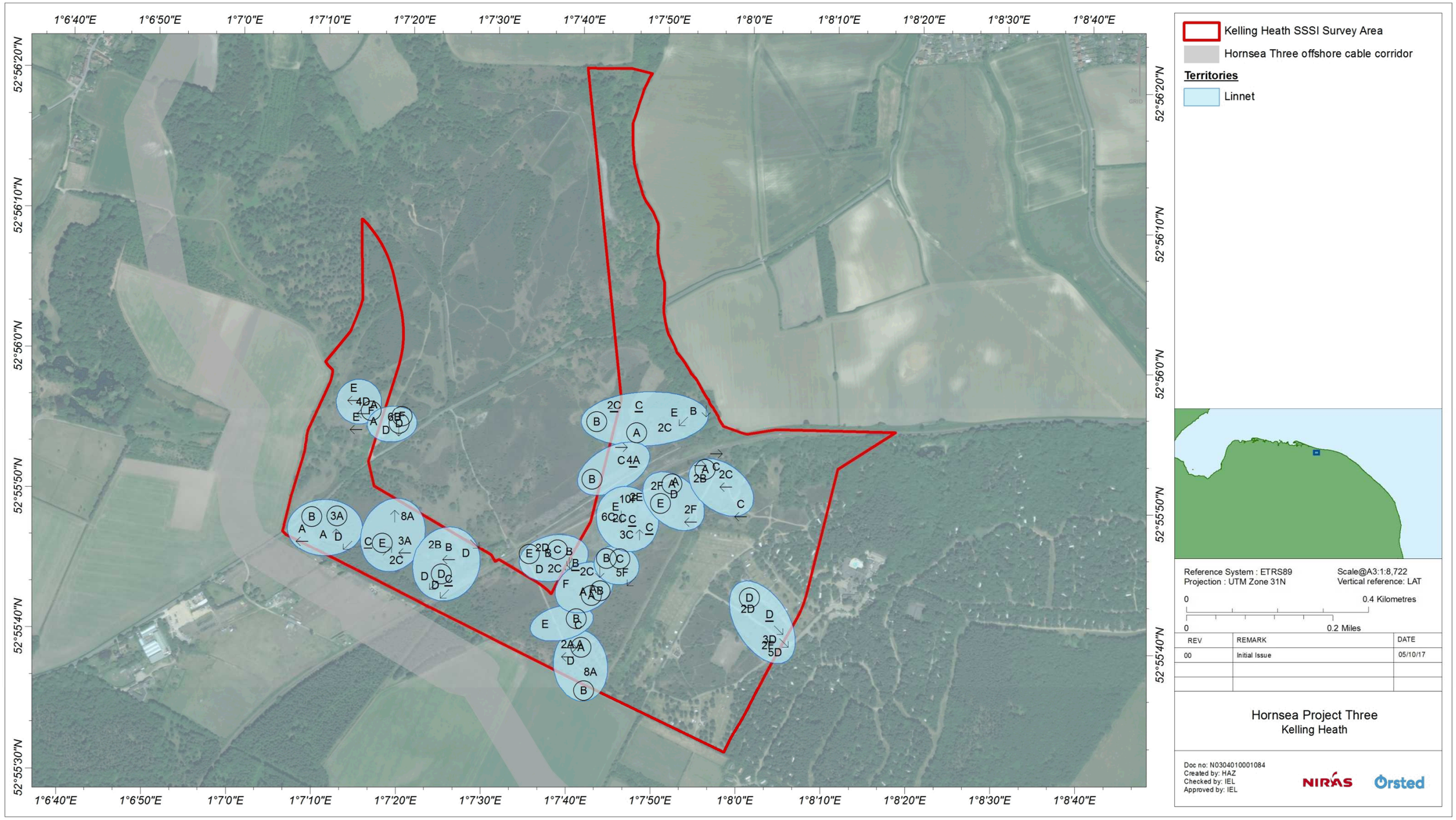
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52°56'20"N
52°56'10"N
52°56'0"N
52°55'50"N
52°55'40"N
52°55'30"N
Kelling Heath SSSI Survey Area
Hornsea Three offshore cable corridor
Territories
Linnet
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:8,722
Vertical reference: LAT
0
0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
00
Initial Issue
05/10/17
Hornsea Project Three
Kelling Heath
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL


1°6'40"E
1°6'50"E
1°7'0"E
1°7'10"E
1°7'20"E
1°7'30"E
1°7'40"E
1°7'50"E
1°8'0"E
1°8'10"E
1°8'20"E
1°8'30"E
1°8'40"E
52°56'20"N
52°56'10"N
52°56'0"N
52°55'50"N
52°55'40"N
52°55'30"N
Hornsea Three offshore cable corridor
Kelling Heath SSSI Survey Area
Breeding behaviour
Calling
Singing
Flying
Territories
Yellowhammer
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:8,722
Vertical reference: LAT
0
0.4 Kilometres
0
0.2 Miles
REV
REMARK
DATE
00
Initial Issue
05/10/17
Hornsea Project Three
Kelling Heath
Doc no: N0304010001084
Created by: HAZ
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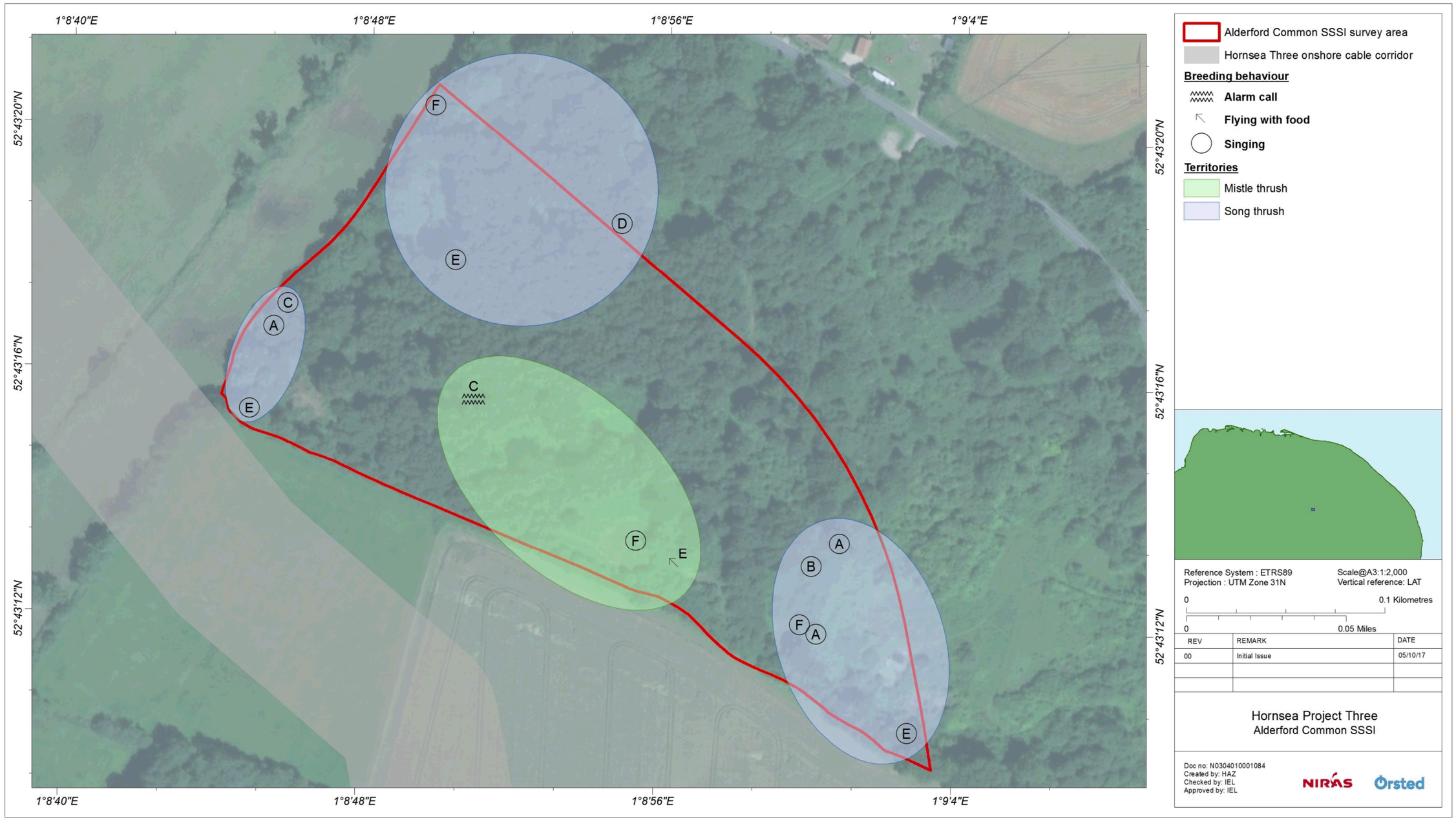
Approved by: IEL

A.3.6 Territory Mapping: Alderford Common SSSI


1°8'40"E
1°8'48"E
1°8'56"E
1°9'4"E
52°43'20"N
52°43'16"N
52°43'12"N
F
D
E
C
A
E
C
F
E
A
B
F
A
E
Alderford Common SSSI survey area
Hornsea Three onshore cable corridor
Breeding behaviour
Alarm call
Flying with food
Singing
Territories
Mistle thrush
Song thrush
Reference System : ETRS89
Projection : UTM Zone 31N
Scale@A3:1:2,000
Vertical reference: LAT
0
0.1 Kilometres
0
0.05 Miles
REV
REMARK
DATE
00
Initial Issue
05/10/17
Hornsea Project Three
Alderford Common SSSI
Doc no: N0304010001084
Created by: HAZ
Checked by: IEL
Approved by: IEL

A.3.7 Territory Mapping: River Wensum SSSI

A.4 Appendix 4: Permanent Land Take Bird Data

A.4.1 Permanent land take survey results – number of territories recorded

Species	HVAC booster station	HVAC / HVDC Substation	Landfall	Oulton Airfield Compound	Kelling Heath SSSI	Booton Common SSSI	Alderford Common SSSI	River Wensum SSSI
Mallard	0	0	0	0	0	0	0	1
Red-legged Partridge	1	2	3	2	0	0	0	0
Pheasant	1	0	0	2	2	0	0	0
Buzzard	1	1	1	0	0	0	0	1
Water Rail	0	0	1	0	0	0	0	0
Moorhen	0	1	0	0	0	0	0	0
Little Ringed Plover	0	0	1	0	0	0	0	0
Stock Dove	3	0	1	1	0	0	0	1
Woodpigeon	4	5	9	1	24	3	4	1
Collared Dove	1	0	0	0	0	0	0	0
Cuckoo	0	0	1	0	0	0	0	0
Little Owl	0	0	0	1	0	0	0	0
Great Spotted Woodpecker	1	0	0	0	0	1	0	0
Kestrel	0	0	0	1	0	0	0	0
Jay	0	0	0	0	1	0	0	0
Jackdaw	1	1	1	0	1	0	0	0
Rook	0	0	30+ (outside)	0	0	0	0	0
Goldcrest	2	0	0	1	5	3	1	0
Blue Tit	5	9	4	2	7	4	4	1
Great Tit	1	1	1	0	6	2	2	0
Coal Tit	2	0	1	1	7	0	0	0
Woodlark	0	0	0	0	4	0	0	0
Skylark	15	6	23	10	2	0	0	0
Sand Martin	0	0	4	0	0	0	0	0
Swallow	0	0	2	0	0	0	0	0

Species	HVAC booster station	HVAC / HVDC Substation	Landfall	Oulton Airfield Compound	Kelling Heath SSSI	Booton Common SSSI	Alderford Common SSSI	River Wensum SSSI
Cetti's Warbler	0	0	3	0	0	0	0	0
Long-tailed Tit	0	0	0	0	5	1	1	0
Chiffchaff	4	1	5	0	38	3	12	1
Willow Warbler	0	0	1	0	11	0	2	0
Blackcap	4	4	4	2	16	6	6	0
Garden Warbler	0	1	0	0	1	0	1	0
Whitethroat	5	1	8	0	5	0	0	1
Dartford Warbler	0	0	0	0	2	0	0	0
Sedge Warbler	0	0	3	0	0	0	0	0
Nuthatch	1	0	0	0	0	0	0	0
Treecreeper	1	0	0	0	0	1	2	1
Wren	8	10	14	1	44	10	14	5
Blackbird	3	3	3	1	8	2	3	0
Song Thrush	1	1	0	0	1	0	3	1
Mistle Thrush	0	1	1	0	1	0	1	0
Robin	2	7	2	0	11	8	5	0
Stonechat	0	0	1	0	2	0	0	0
Dunnock	9	7	7	2	7	0	2	1
House Sparrow	2	0	0	0	0	0	0	0
Pied Wagtail	1	0	2	2	1	0	0	0
Meadow Pipit	0	0	7	0	0	0	0	0
Chaffinch	6	5	10	6	25	3	2	1
Bullfinch	0	0	0	0	2	1	1	0
Greenfinch	1	2	0	0	0	0	0	0
Linnet	2	0	11	3	16	0	0	0
Goldfinch	1	1	3	0	2	0	0	0
Yellowhammer	5	1	2	0	8	0	0	0
Reed Bunting	0	0	1	0	0	0	0	1