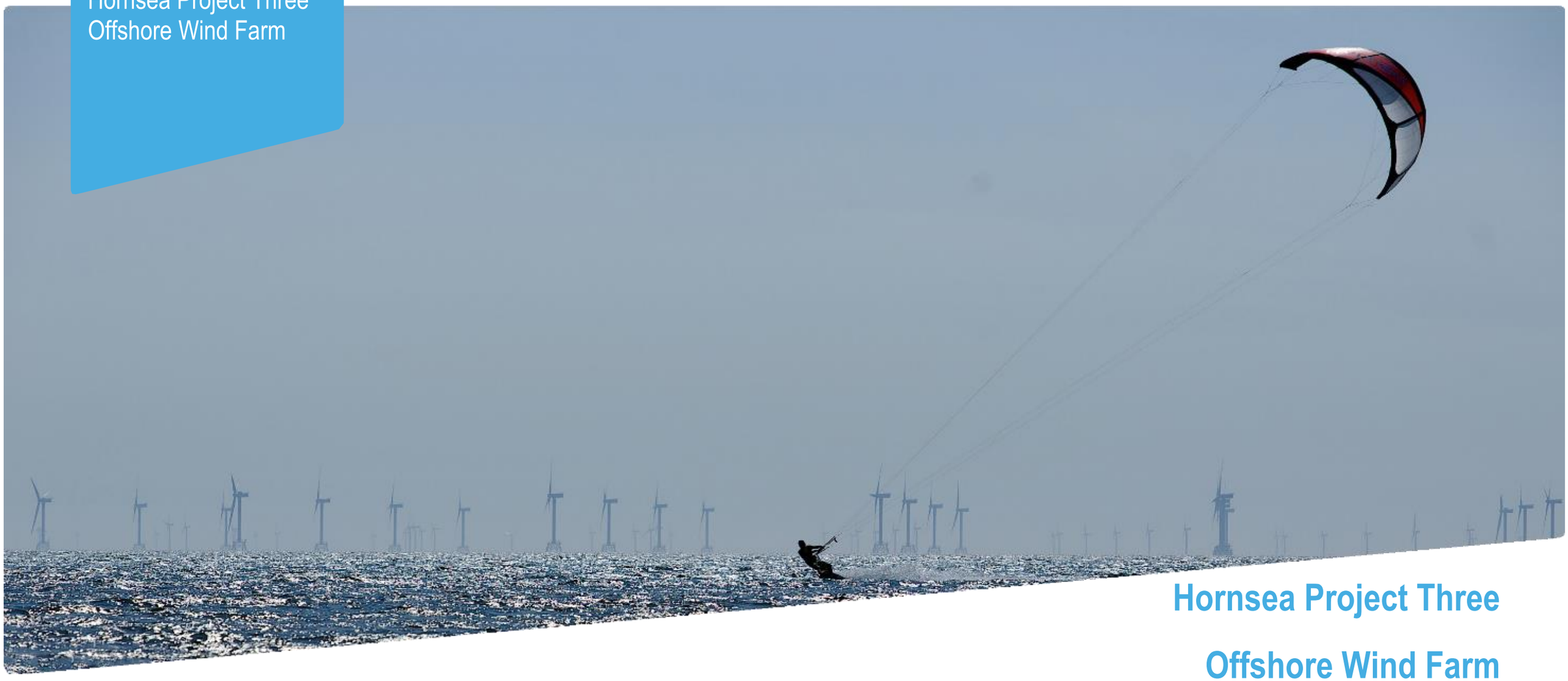
Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three

Offshore Wind Farm

Appendix 2 to Deadline 7 submission
Outline Ecological Management Plan

APFP Regulation 5(2)(a)

Date: 14th March 2019

Hornsea 3
Offshore Wind Farm

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Liability

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Front cover picture: Kite surfer near a UK offshore wind farm © Ørsted Hornsea Project Three (UK) Ltd, 2019.

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Glossary

Term	Definition
Biodiversity Action Plan (BAP)	The UK Government's response to the Convention on Biological Diversity, which the UK signed in 1992 in Rio de Janeiro and ratified in 1994. The Convention on Biological Diversity requires signatory countries to identify, develop and enforce action plans to conserve, protect and enhance biological diversity. The UK BAP addresses this requirement. Local BAPs (LBAPs) have been produced by many counties, to detail measures to conserve, protect and enhance local/county biological diversity.
Enhancement	An ecological enhancement is the modification of a site which increases the site's capacity to support target plants or animals.
European Protected Species (EPS)	The animal species listed in Annex IV(a) to the Habitats Directive and the plant species listed in Annex IV(b) to the Habitats Directive.
Hornsea Three onshore elements	Hornsea Three landfall area, onshore cable corridor, the onshore HVAC booster station, the onshore HVDC converter/HVAC substation and the interconnection with the Norwich Main National Grid substation.
Intertidal area	The area between mean low water and mean high water.
Local Biodiversity Action Plan (LBAP)	Local BAPs (LBAPs) have been produced by many counties, to detail measures to conserve, protect and enhance local/county biological diversity.
Ramsar Convention	The Convention on Wetlands of International Importance especially as Waterfowl Habitat of 2 February 1971 (as amended) which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Ramsar site	Wetlands of international importance, designated under the Ramsar Convention.
Special Areas of Conservation (SAC)	A site of Community importance designated under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora through a statutory, administrative and/or contractual act where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and/or the populations of the species for which the site is designated.
Sites of Special Scientific Interest (SSSI)	Sites designated by Natural England under the Wildlife and Countryside Act 1981 (as amended) as areas of land of special interest by reason of any of their flora, fauna, or geological or physiographical features.
Special Protection Area (SPA)	An area which has been identified as being of international importance and designated under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds for the breeding, feeding, wintering or the migration of rare and vulnerable bird species found within European Union countries.
Woodland	As described under the Phase 1 habitat survey guidelines (Joint Nature Conservation Committee, 2010); vegetation dominated by trees more than 5 m high when mature, forming a distinct, although sometimes open, canopy. In accordance with Natural England's guidelines for Environmental Stewardship (Natural England, 2013, native woodland is defined as a group of trees with overlapping canopies covering at least 0.1 ha, at least half of which are native species.

Acronyms

Acronyms	Description
BAP	Biodiversity Action Plan
CEMP	Construction Environmental Management Plan
CoCP	Code of Construction Practice
CWS	County Wildlife Site
ECoW	Ecological Clerk of Works
EMP	Ecological Management Plan
EPS	European Protected Species
GCN	Great crested newt
HDD	Horizontal Directional Drilling
HSI	Habitat Suitability Index
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
LBAP	Local Biodiversity Action Plan
LPA	Local Planning Authority
NE	Natural England
NERC	Natural Environment and Rural Communities
PSCA	Population Size Class Assessment
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
SPA	Special Protection Area
VER	Valued Ecological Receptor
WCA 1981	The Wildlife and Countryside Act 1981 (as amended)

Units

Unit	Description
ha	Hectare (area)
km	Kilometre (distance)
m	Metre (distance)

1. Introduction

1.1 Background

1.1.1.1 This document is an Outline Ecological Management Plan (Outline EMP) for the Hornsea Project Three offshore wind farm (hereafter referred to as 'Hornsea Three'). The Outline EMP accompanies the application for the Secretary of State for a Development Consent Order (DCO).

1.1.1.2 This Outline EMP extends to all onshore elements of Hornsea Three (i.e. the landfall area, the onshore cable corridor, the onshore HVAC booster station, HVDC converter/HVAC substation and the interconnection with the Norwich Main National Grid substation). Further detail of these elements is provided in volume 1, chapter 3: Project Description of the Environmental Statement. The construction of the onshore elements will be supported by a series of compounds, storage areas and accesses, as described in the Outline Code of Construction Practice (Outline CoCP).

1.1.1.3 Hornsea Three will install all cables by ducting, rather than direct lay, with ducts installed in the trenches which would then be backfilled and at a later date, the cables will be pulled through the ducts from one joint bay to the next. Horizontal Directional Drilling (HDD) is used to cross all 'main' and numerous 'ordinary' watercourses, key habitats (e.g., woodland) and infrastructure (e.g., roads, and railways). The onshore crossing schedule (see Annex E of the Outline CoCP) summarises all the crossing points and provides details of the measures to be used to cross each feature along the onshore cable corridor.

1.1.1.4 ~~Construction~~ Should the DCO be granted, construction work is currently ~~planned~~ programmed to commence in 2021, however the surveys and enabling works could start as early as 2020. Hornsea Three could be built in a single phase of construction or two phases, with the potential for an overlap or a gap of up to three years between the completion of construction activities in one phase and the start of the same construction activity in the second phase. It is also possible that some activities may be carried out during an earlier phase for the benefit of a later one. However, any works completed for a later phase(s) would be left in a safe state, as agreed with the relevant authorities, to await the appropriate phase for completion.

1.2 Purpose of the Outline EMP

1.2.1.1 The purpose of the Outline EMP is to provide a single document that describes the ecology and nature conservation mitigation measures that will be implemented prior to, during and post construction of the onshore elements of Hornsea Three, and the long-term management measures to be set in place for reinstated and enhanced habitats.

1.2.1.2 This outline EMP is a 'living' document that will be updated as required post submission of the DCO application, during the Examination ~~Period~~ of the DCO application, and post consent, during the detailed design process as necessary, prior to implementation. The detailed EMP will be based on the principles set out in this Outline EMP and will set out the measures that the Undertaker and its contractors will be required to adopt. The detailed EMP will be prepared in consultation with the Local Planning Authority (LPA).

1.2.1.3 ~~If considered necessary at the time, a~~A separate EMP document will be produced for the onshore decommissioning phase of Hornsea Three, which will take into account up-to-date guidelines and best practice requirements applicable at the time.

1.2.1.4 The objective of this Outline EMP is to ensure the protection and appropriate management of Valued Ecological Receptors (VERs) located within the areas of permanent and temporary land take of the onshore elements of Hornsea Three and, where appropriate (e.g. where mitigation requirements for protected species require consideration of off-site habitats such as great crested newt breeding ponds), the surrounding area up to 500 m from these onshore elements. The Outline EMP also aims to ensure adherence to legislative requirements relating to ecology and nature conservation.

1.2.1.5 Specific details and locations of some VERs (e.g., badger setts and otter holts) have been omitted from this Outline EMP due to the potential risk to these species if sett or holt locations are put into the public domain. For those with a legitimate reason to know the locations of these VERs, these are shown in the confidential Appendix 1: Figure A.1 - valued ecological receptors (including confidential receptors), which will be made available on request.

1.2.1.6 This Outline EMP should be read in conjunction with the following documents:

- The Outline CoCP~~-~~; and
- The Outline Landscape Management Plan (LMP).

2. Ecological and nature conservation features

2.1 Introduction

2.1.1.1 This section describes the VERs located within or adjacent to the permanent and temporary land take for the onshore elements of Hornsea Three, which could be affected by the development. The locations of these VERs are shown in Figure 10.1.

2.2 Designated sites and habitats

2.2.1 Norfolk Valley Fens Special Area of Conservation

2.2.1.1 Norfolk Valley Fens Special Area of Conservation (SAC) is a European designated site, which comprises a series of geographically separate valley-head spring-fed fens.

2.2.1.2 The two component Sites of Special Scientific Interest (SSSIs) of the SAC which are close to or potentially affected by the onshore cable corridor are:

- Holt Lowes SSSI (located downstream of the route on the River Glaven); and
- Booton Common SSSI (located close to the corridor downstream on Blackwater Drain).

2.2.1.3 As cable installation will be by HDD beneath the tributaries of the River Glaven, as well as beneath Blackwater Drain, there will be no direct impact on these sites from the onshore cable corridor.

2.2.2 River Wensum SAC and SSSI

2.2.2.1 River Wensum SAC and SSSI is a site of European importance, which is designated for its riverine habitat and presence of white clawed crayfish, Desmoulin's whorl snail, bullhead and brook lamprey.

2.2.2.2 As cable installation will be by HDD beneath the River Wensum, there will be no direct impact from the onshore cable corridor.

2.2.3 North Norfolk Coast Special Protection Area, Ramsar site, SAC and SSSI

2.2.3.1 North Norfolk Coast Special Protection Area (SPA) and Ramsar site is a site of European importance designated for a range of bird species including wintering pink-footed goose. It is located west of Weybourne, and is approximately 320 m from the onshore cable corridor at closest approach, west of landfall and the onshore cable corridor at Weybourne Camp. The North Norfolk coast is also designated as a SAC and SSSI.

2.2.3.2 There will be no direct impact of the onshore cable corridor on the designated sites, but wintering pink-footed geese, a designated feature of the SPA/Ramsar site have been recorded utilising sugar beet fields at the north end of the onshore cable corridor.

2.2.4 SSSIs

2.2.4.1 In addition to the component SSSIs of the SACs listed above, there are two SSSIs (Kelling Heath SSSI and Alderford Common SSSI) that are located immediately adjacent to the onshore cable corridor. There will be no direct impact of the onshore cable corridor on either SSSI.

2.2.5 County Wildlife Sites

2.2.5.1 There are seven County Wildlife Sites (CWSs) that are crossed by the onshore cable corridor. These are: Dismantled Railway CWS, Marriott's Way CWS, Land adjoining River Tud CWS, Old Hall Meadow CWS, Algarsthorpe Marshes CWS, River Yare at Marlingford CWS and Low Common CWS. HDD will be used to install the onshore cable beneath all of these CWSs (as they are defined at the time of submission of the application).

2.2.5.2 A further six CWSs are located close to the onshore cable corridor (0-20 m). These are Muckleburgh Hill CWS, New Covert CWS, Bush Meadow Plantation CWS, Harman's Grove CWS, Yare Valley (Marlingford) CWS and Foxburrow Meadow CWS. New Covert CWS is immediately east of the onshore HVAC booster station.

2.2.5.3 There will be no direct impact from the onshore cable corridor on these CWSs.

2.2.6 Woodland

2.2.6.1 Woodlands are Priority Habitats under the UK Biodiversity Action Plan (BAP). Lowland mixed deciduous woodland is a Priority Habitat under the Norfolk Local Biodiversity Action Plan (LBAP) and is listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act.

2.2.6.2 HDD will be used to install the onshore cable beneath all significant woodland blocks along the onshore cable corridor. Figure 10.1 shows the locations of the woodland and HDD locations.

2.2.7 Hedgerows

2.2.7.1 The Hedgerow Regulations 1997 protect hedgerows from removal, with particular protection for 'important' hedgerows. A hedgerow is 'important' if it is at least 30 years old and meets at least one of the eight archaeology, history, wildlife or landscape criteria defined in the Regulations. A hedgerow is 'protected' if it is growing in, or adjacent to, any common land, protected land (Local Nature Reserves (LNRs) and SSSIs), or land used for agriculture (including dairy farming and the breeding and keeping of livestock), forestry or the breeding or keeping of horses, ponies or donkeys, if it: (a) has a continuous length of, or exceeding, 20 m; or (b) it has a continuous length of less than 20 m and, at each end, meets another hedgerow.

2.2.7.2 Hedgerows are highlighted as Priority Habitats under the UK BAP and/or Norfolk LBAP, and are listed under Section 41 of the NERC Act.

2.2.7.3 A total of 69 of the hedgerows surveyed along the onshore cable corridor were found to be important according to the Hedgerow Regulations ~~(~~1997~~)~~. One hedgerow was found to contain a tree with a bat roost.

2.2.7.4 Approximately 4.7 km of important hedgerow occurs within the Hornsea Three onshore cable corridor.

2.2.7.5 Of this total, 1.4 km of important hedgerow lies within HDD areas which would be crossed using HDD techniques and would not therefore be directly affected. A further 1.3 km of important hedgerow lies within areas crossed using HDD but where a haul road will be required across the HDD area. Existing hedgerow gaps will be used for the haul road crossing point wherever possible, and where this is not possible, the haul road location will be optimised through agreement with a suitably qualified ecologist to further minimise hedgerow and tree removal.

2.2.7.6 As such, the removal of up to 2 km of identified important hedgerow may be required. However, all hedgerows (including important hedgerows) on or near the order limits boundary will be retained where practicable, such that important hedgerow loss is likely to comprise approximately 1 km in total.

2.2.8 Rivers and streams

2.2.8.1 Rivers and streams are highlighted as Priority Habitats under the UK BAP, and rivers are listed under Section 41 of the NERC Act.

2.2.8.2 All 'main' watercourses and numerous 'ordinary' watercourses, including the River Wensum, River Bure, River Tud, River Yare, River Glaven tributaries, Blackwater Drain and Intwood stream will be crossed by HDD.

2.2.9 Ponds

2.2.9.1 Ponds are highlighted as Priority Habitats under the UK BAP and/or Norfolk LBAP, and are listed under Section 41 of the NERC Act.

2.2.9.2 No ponds will be directly affected by open cut trenching or by the onshore HVDC converter/HVAC substation area, the HVAC booster station area or associated temporary works areas.

2.3 Protected or otherwise notable species

2.3.1 Survey information

2.3.1.1 The sections below summarise surveys carried out for the onshore elements of Hornsea Three. The full survey reports can be found in volume 6 to the Environmental Statement.

2.3.2 Invertebrates

2.3.2.1 White clawed crayfish are protected under Sections 9(1) and 9(5). Section 9(1) of Schedule 5 of the Wildlife and Countryside Act ~~(WCA)~~ 1981 (as amended) (WCA 1981), which make it an offence to take white clawed crayfish. This species also receives protection under Annex II and V(a) of the European Commission Habitats Directive 1992 and the Prohibition of Keeping of Live Fish (Crayfish) Order 1996 (implemented under the Import of Live Fish (England and Wales) Act 1980).

2.3.2.2 The species is also a Norfolk LBAP Priority Species.

2.3.2.3 A total of 31 sites along the Hornsea Three onshore cable corridor were identified as having potential for white clawed crayfish. Access was not granted for 17 sites therefore, surveys were undertaken at 14 sites, with white clawed crayfish only recorded at one location - in the River Wensum. Non-native signal crayfish were recorded at the River Bure and Reepham Beck (further details of the survey findings are provided in volume 6, annex 3.4: White Clawed Crayfish Survey).

2.3.2.4 Notwithstanding these survey results, based on the desk study and consultee responses received, this assessment has assumed that white clawed crayfish are present in the River Glaven and River Tud.

2.3.2.5 All watercourses currently known to support white clawed crayfish will be crossed using HDD. No impacts from habitat loss or severance would therefore occur on this species.

2.3.2.6 Pre-commencement surveys of unsurveyed watercourses will be undertaken, and any necessary mitigation measures identified as a result of these surveys will inform the production of the detailed EMP.

2.3.3 Amphibians

2.3.3.1 Great crested newts (GCNs) are protected under the Habitats Regulations and section 9 of the WCA 1981 ~~(as amended)~~, which make it an offence to intentionally or recklessly capture, kill, or disturb GCNs, deliberately take or destroy GCN eggs, and damage or destroy a breeding site of GCNs. The legislation applies to all life stages of GCNs. The GCN is also a UK BAP Priority Species.

2.3.3.2 During surveys carried out in 2017, GCN were recorded at Beach Lane in Weybourne, and are therefore also assumed to be present on unsurveyed waterbodies in Weybourne Camp. A cluster of waterbodies containing GCN was found between 20 m and 75 m of the onshore cable corridor south of Bodham. Other clusters of GCN populations occurred in the vicinity of Alderford Common (the closest of which was less than 50 m from the onshore cable corridor); the River Wensum (over 60 m from the onshore cable corridor); and south of Little Melton (within 15 m of the onshore cable corridor). A single waterbody containing GCN was found approximately 150 m south of the onshore cable corridor, north of Swardeston.

2.3.3.3 Survey results identified the existence of five clusters of waterbodies containing GCN that could be affected by Hornsea Three. However, it should be noted that access to all parts of the onshore cable corridor was not granted. Pre-commencement surveys of unsurveyed waterbodies will be undertaken, and any necessary mitigation measures identified as a result of these surveys will inform the production of the detailed EMP.

2.3.4 Reptiles

2.3.4.1 All reptile species native to Britain are protected under Sections 9(1) and (5) of the WCA 1981 ~~(as amended)~~, which make~~s~~ it an offence to intentionally or recklessly kill or injure these species, or sell, barter, exchange, or transport reptiles or any part of them. Native reptiles are also Priority Species of the UK BAP.

2.3.4.2 Reptile surveys were carried out in 56 areas of suitable habitat within the Hornsea Three ecology and nature conservation study area and reptile presence was recorded at 23 of these sites. Adders were only recorded in one location (Kelling Heath, where grass snake, slow worm and common lizard were also recorded), although a consultation response included records of adders at Weybourne Camp, which was not accessible for survey. Further details of the consultation responses are found in the Consultation Report that accompanie~~d~~ds the DCO application. Slow worms were recorded in three clusters over 150 m from the onshore cable corridor at Kelling Heath SSSI; within the onshore cable corridor north of High Kelling; approximately 10 m from the onshore cable corridor at Alderford Common SSSI; within 15 m of the onshore cable corridor north of Booton Common SSSI; and at a number of locations within the onshore cable corridor both north and south of the River Wensum. Common lizards were recorded over 150 m from the onshore cable corridor at Kelling Heath SSSI; within the onshore cable corridor west of Saxthorpe; approximately 30 m from the onshore cable corridor at Alderford Common; over 150 m of the onshore cable corridor south west of Heathersett; and within 15 m of the onshore cable corridor north of Swardeston. Grass snakes were recorded at Alderford Common, and at a number of survey areas between the Yare Valley and east of Hethersett. Grass snakes were recorded within the onshore cable corridor at the River Yare and west of Foxburrow Meadow CWS, and within 15 m of the corridor south of Little Melton and east of Heathersett.

2.3.5 Birds

2.3.5.1 Birds are protected at a European level under the EC Directive on the Conservation of Wild Birds 2009 (2009/147/EC), the codified version of Council Directive 79/409/EEC as amended. This gives general protection to wild birds from deliberate killing, taking from the wild, egg collecting, nest destruction and keeping in captivity, but allowances are made for game birds. Specially protected birds are listed in Annex 1 of the Directive.

2.3.5.2 All species of wild bird in the UK (other than a few pest species) are protected under Part 1 section 1(1) of the WCA Act 1981 (as amended) against intentional or reckless killing, injuring or taking. Taking, damaging or destroying nests in use or being built, and taking or destroying eggs are also prohibited.

2.3.5.3 In addition to general protection for birds, certain species are also afforded special protection and are listed in Schedule 1 of the WCA 1981~~, as amended~~. These bird species are rare, endangered, declining or vulnerable. In addition to the protection from killing or taking that all birds, their nests and eggs have under the ~~Act~~WCA 1981, it is an offence to intentionally or recklessly disturb Schedule 1 birds and their young at, on or near an 'active' nest.

2.3.5.4 Wintering bird surveys were carried out in the winter of 2016-2017. Further surveys of the final Hornsea Three onshore cable corridor between Weybourne and Bodham were carried out in the winter of 2017-2018 to include the section of route between Weybourne Camp east of Kelling Heath that was not covered in the 2016-2017 surveys.

2.3.5.5 Winter bird surveys in 2016-2017 recorded 83 species within the wintering point count surveys along the onshore cable corridor. Of these species, 46 are considered to be of some conservation value. However, with the exception of pink-footed goose, none were considered to occur in particularly significant numbers.

2.3.5.6 Surveys for breeding birds were carried out in 2017 and involved territory mapping at the landfall area and in the locations where permanent land take would occur (i.e. the onshore HVAC booster station and the onshore HVDC converter/HVAC substation) and the main construction compound.

2.3.5.7 Surveys recorded 61 species considered possibly or likely to be breeding. No WCA Schedule 1 species were considered likely to be breeding within the onshore cable corridor.

2.3.6 Bats

2.3.6.1 All species of bat in the UK are fully protected under the WCA 1981 ~~(as amended)~~. All species are listed in Schedule 5 of the Act and are therefore subject to the provisions of Section 9, which make it an offence to intentionally or recklessly kill, injure or take a bat; possess or control any live or dead specimen or anything derived from a bat; intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; or intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose.

2.3.6.2 Under the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations), it is an offence to deliberately capture, kill or disturb a bat, damage or destroy a breeding site or resting place of a bat, and keep, transport, sell or exchange, or offer for sale or exchange, alive or dead bat or any part of a bat.

2.3.6.3 Soprano pipistrelle, noctule, Bechstein's bat, barbastelle, brown long-eared bat, and greater and lesser horseshoe bats are also listed as Priority Species under the UK BAP. Barbastelle, brown long-eared bat, noctule and soprano pipistrelle bat are Priority Species in the Norfolk LBAP.

2.3.6.4 Bat surveys were carried out along the areas affected by the permanent and temporary land take for the onshore elements of Hornsea Three in 2017. Surveys to determine areas of importance for foraging or commuting bats were undertaken using static monitoring detectors and transect surveys.

2.3.6.5 Static monitoring and transect surveys recorded eight bat species and four species groups.

2.3.6.6 A bat roost was recorded within a hedgerow to the south west of Corpusty. This hedgerow is proposed to be removed under the proposals for Hornsea Three.

2.3.7 Badgers

2.3.7.1 Badgers are protected under the Protection of Badgers Act 1992. The protection is primarily for welfare rather than conservation, since badgers are not rare but are subject to cruelty. Actions prohibited under this legislation, unless covered by licence, include the intentional or reckless damage, obstruction or destruction of a badger sett and the wilful killing, injuring or taking of badgers.

2.3.7.2 Badgers utilise habitats within and surrounding the permanent and temporary land take for the onshore elements of Hornsea Three. For those with a legitimate reason to know the locations of badger setts, this information is provided in the confidential Appendix 1: Figure A.1 - valued ecological receptors (including confidential receptors), which will be available on request.

2.3.7.3 One subsidiary and six outlier badger setts were recorded during surveys in 2017. In summary, these comprise:

- One outlier sett, which is within an area of HDD and may therefore need to be closed given that HDD operations may damage the below ground sett chambers;
- One outlier sett, which is on the edge of the area affected by the onshore elements of Hornsea Three and an area of HDD, and which may need to be closed;
- One currently disused outlier sett, in an area of HDD. May need closing if found to be occupied again when works commence;
- One partially used subsidiary sett approximately 30 m from the onshore cable corridor, and which should be unaffected; and
- Two outlier setts on the edge of an HDD area, which may need to be closed.

2.3.7.4 None of the setts currently known, that may be affected, are main setts.

2.3.8 Otters

2.3.8.1 The otter is listed in Annexes II and IV of the Habitats Directive, and is protected under the Habitats Regulations. A Species Action Plan has been produced for otters under the UK BAP and the species is a Priority Species of the Norfolk LBAP.

2.3.8.2 In 2017, otters were recorded along the rivers Yare and Wensum, as well as a waterbody south of Lower Bodham, at Salle, the stream associated with Low Common, Hethersett and Swardeston.

2.3.8.3 However, fourteen watercourses or other waterbodies, including the River Tud, could not be visited due to access limitations. Pre-commencement surveys of these watercourses and waterbodies will be undertaken, and any necessary mitigation measures identified as a result of these surveys will inform the production of the detailed EMP.

2.3.9 Water voles

2.3.9.1 Water voles are listed in Schedule 5 of the WCA 1981 (as amended) and protected under Section 9. The species is also a Priority Species of the Norfolk LBAP.

2.3.9.2 Field signs indicating the presence of water vole were recorded at 16 waterbodies distributed along the length of the Hornsea Three onshore cable corridor in 2017.

2.3.9.3 Water voles were recorded at Weybourne east of the landfall, at a pond near Lower Bodham, along the River Bure, at Salle, on Blackwater Drain, the Rivers Wensum and Bure, and Heathersett and north of Swardeston. The River Tud could not be accessed for survey. Pre-commencement surveys of unsurveyed watercourses and waterbodies will be undertaken, and any necessary mitigation measures identified as a result of these surveys will inform the production of the detailed EMP.

2.4 Responsibilities

2.4.1.1 All ecology works described in this Outline EMP will be carried out under the guidance of the Ecological Clerk of Works (ECoW). All site workers will be informed of the role of the ECoW. Contact details for the ECoW will be provided in the detailed EMP and will be made available to site workers and contractors as requested or required.

2.4.1.2 Site inductions for all site workers will include reference to the requirements of the approved detailed EMP and the approved detailed CoCP.

2.4.1.3 Toolbox talks provided to all contractors and site workers immediately prior to the commencement of activities on site, will include reference to the requirements of the detailed EMP and detailed CoCP. The toolbox talks will include the general principles and area-specific environmental measures that must be implemented

2.4.1.4 All site workers will be informed of the role of the ECoW. Contact details for the ECoW will be provided in the detailed EMP and will be made available to site workers and contractors as requested or required. A copy of the detailed EMP will be kept on site at all times and site workers will be made aware of its location and who to contact in order to obtain a copy of, or review the document as required.

2.4.1.5 Any known breaches of the requirements of the EMP by site workers will be reported to the ECoW or to the Site Manager appointed by the principal contractor (who in turn will advise the ECoW) as soon as practicable.

2.4.1.6 Where that breach is material (e.g. if conditions pertaining to a protected species licence are breached), the ECoW, or the Undertaker will report the breach to the relevant LPA and/or Natural England as soon as practicable.

2.4.1.7 Where a material breach requires a response, or has the possibility or re-occurring, the Undertaker will be responsible for developing an appropriate (ecology and nature conservation) response strategy and will apply lessons learnt to future construction method statements. Where longer term remedial measures are required, these measures will be discussed with the LPA and Natural England.

2.4.1.8 Contact details for the ECoW (Hornsea Three) will be provided in the detailed EMP.

3. Designed-in mitigation measures

3.1 Introduction

3.1.1.1 This section describes the designed-in ecology and nature conservation mitigation measures adopted as part of the onshore elements of Hornsea Three design in order to ensure the protection of VERs.

3.2 Designated sites and habitats

3.2.1.1 The route of the Hornsea Three onshore cable corridor has been developed to avoid designated sites, areas of woodland and other ecologically sensitive habitats wherever practicable. Other VER features such as ponds and hedgerows have been avoided in the selection of the onshore cable corridor alignment and local features such as standard trees have been avoided where it has been practicable to do so.

3.2.1.2 To minimise the impact of construction on features of ecology and nature conservation value, HDD will be employed beneath all 'main' and numerous 'ordinary' watercourses and all designated sites, including the River Wensum SAC, as detailed below (under Construction Measures).

3.2.1.3 Where practicable, existing highways or tracks will be used for access to the construction site to minimise loss and disturbance of species and habitats.

3.3 Protected or otherwise notable species

3.3.1.1 Where practicable, areas identified as containing protected species, including badgers and roosting bats, have been protected by siting the onshore cable corridor alignment to provide an appropriate protective buffer from construction and operational works. The width of these protection~~buffer~~ zones will be developed in accordance with standard industry requirements and best practice guidance, and such protective buffers are expected to be applied for nesting birds, roosting bats, for active badger setts, for otter holts and resting places and for water vole colonies.

4. Pre-construction mitigation measures

4.1 Introduction

4.1.1.1 This section describes the ecology and nature conservation mitigation measures adopted as part of the onshore elements of Hornsea Three that will be undertaken prior to the commencement of construction in the vicinity of the VER, in order to ensure the protection of VERs.

4.1.1.2 It is possible that additional VER species activity may be recorded during pre-construction surveys described in this section. Where this occurs, Figure 10.1 will be updated and, where required, the mitigation strategy set out in this document will be amended as soon as practicable.

4.1.1.3 All pre-construction surveys described in this section will be undertaken by the ECoW or an otherwise appropriately experienced and, where necessary, licenced ecologist(s), who will be pre-approved by the ECoW and will work under the guidance of the ECoW.

4.1.1.4 All surveys will be carried out in accordance with biosecurity risk assessments and safe systems of works, which will be produced by the ECoW prior to the commencement of the survey.

4.2 Habitats

4.2.1.1 In order to minimise the likely impacts on ecology and nature conservation features of interest, pre-construction studies will be carried out to update information on sensitive habitats in the vicinity of large/sensitive watercourse crossing locations and plans developed for the establishment of associated construction compounds and works sites, to minimise potential impacts.

4.2.2 Protective buffer zones

4.2.2.1 Works-free protecti<u>on</u>~~ve buffer~~ zones (see below) will be established around retained habitats of ecology and nature conservation concern, namely broadleaved semi-natural woodland, hedgerows, heathland, semi-improved and marshy grassland, ponds and watercourses, as well as sections of watercourses that will not be crossed by open cut trenching. These ~~buffer~~<u>protection</u> zones will be maintained throughout the works period.

4.2.2.2 Wherever practicable, <u>protection</u>~~buffer~~ zones surrounding retained areas of woodland and mature broadleaved trees will be 15 m in width or the width of the tree root protection zone, whichever is the greater, as advised by an appropriately qualified surveyor. <u>Protection</u>~~Buffer~~ zones around hedgerows will be at least 5 m in width (assessed by the ECoW) where practicable. <u>Protection</u>~~Buffer~~ zones surrounding ponds will be at least 8 m in width, or 10 m in width for main watercourses; approvals will be obtained as necessary for works closer to channels and main watercourses managed by Drainage Boards (DBs), LLFAs and the Environment Agency.

4.2.2.3 Additional <u>protection</u>~~buffer~~ zones, described in the sections below, will be established around habitat features of value to protected species.

4.2.2.4 All <u>protection</u>~~buffer~~ zones will prohibit <u>intrusive construction works,</u> the tracking of heavy vehicles, and the storage of vehicles, machinery, equipment and soils.

4.2.2.5 The ECoW will inform the Site Manager of the locations<u>,</u> ~~and~~ requirements <u>and restrictions</u> of <u>protection</u>~~buffer~~ zones in each working area prior to the commencement of construction in that area. Where necessary, locations <u>and restrictions</u> will be discussed on site.

4.2.2.6 Where considered necessary by the ECoW or Site Manager, <u>protection</u>~~buffer~~ zones will be marked out on site (e.g. with high-visibility Netlon fencing or coloured tape, and / or signs describing the prohibitive requirements of the zones) and installed at appropriate locations. <u>All protection zones associated with trees and/or hedgerows (see section 4.2.3 below), will be marked out in line with BS 5837:2012 (for example using heras fencing where practicable) with signs describing the prohibitive requirements of the zones.</u>

4.2.3 Hedgerows and trees

4.2.3.1 <u>The protection zones will be informed by a pre-construction survey and record of all trees and hedges along the onshore cable corridor, including trees and hedges affected by the onshore booster station and onshore HVDC converter / HVAC substation. Features included this survey will include width, height, condition, presence of standard trees and the location of any gaps. In addition to the pre-application ecology surveys, the following detailed surveys will be undertaken:</u>

- <u>Where a hedgerow has not been surveyed due to access restrictions, a full survey (incorporating ecological, landscape and heritage considerations) according to the importance criteria within the Hedgerow Regulations 1997 will be carried out and the results included in the detailed ecological constraints plan to be provided within the detailed EMP;</u>
- <u>Where trees within the onshore cable corridor have not been identified for retention through the use of HDD or avoidance, a full arboriculture survey of those trees will be carried in accordance with BS5837 and any trees found to be veteran, ancient or notable will be added to the Ancient Tree Inventory (ATI) and the detailed ecological constraints plan to be provided within the detailed EMP.</u>

4.2.3.2 <u>Veteran trees and important hedgerows to be retained will be clearly indicated on the schedule of trees, hedgerows and other significant areas of vegetation to be retained (which will accompany the detailed LP(s)).</u>

4.2.3.3 <u>Veteran trees and important hedgerows to be removed will be clearly indicated on the schedule of trees, hedgerows and other significant areas of vegetation to be removed (which will accompany the detailed LP(s)).</u>

4.2.3.4 Important hedgerows which meet the criteria for importance due to the presence of standard trees (according to the Hedgerow Regulations 1997) will be clearly indicated as such on the schedules outlined in paragraphs 4.2.3.2 and 4.2.3.3.

4.2.3.5 The principle behind hedgerow and tree mitigation is to minimise vegetation removal during each phase of construction wherever practicable. Therefore, where veteran trees are identified within the onshore cable corridor, the Applicant will aim to preferentially protect these features either through micro-siting of the cable trenches or using alternative construction methodology (such as HDD) to cross the feature. Where retention is not possible for these features, removal will be justified as part of the detailed LP(s). The same approach would be applied to important hedgerows which are classified as such due to the presence of standard trees (as replacement trees cannot be planted above the cables).

~~4.2.3~~4.2.4 Minor watercourses and ditches

~~4.2.3.1~~4.2.4.1 The majority of watercourses will be crossed using HDD. However, some minor watercourses and drainage ditches will be crossed by open cut trenching along the Hornsea Three onshore cable corridor. Refer to the crossing schedule (volume 4, annex 3.5: Onshore Crossing Schedule) for details of the proposed locations of HDD and open cut trenching for all watercourses crossed by the onshore cable corridor.

~~4.2.3.2~~4.2.4.2 Watercourses that are to be crossed by trenching will require pre-construction surveys prior to the commencement of works in order to inform any mitigation strategy required, as described under species-specific impacts.

~~4.2.3.3~~4.2.4.3 Works will be carried out in accordance with relevant legislative requirements and best practice guidelines, as set out in the Outline CoCP and Appendix D to the Outline CoCP: Biosecurity Protocol. Measures will be set in place to minimise the potential for pollution from silt deposition into watercourses and from works vehicles, including measures to prevent transfer of invasive plant or animal species between watercourses (the latter is particularly important to avoid risk to watercourses containing white clawed crayfish in the headwaters of the River Glaven). These will include:

- Management of construction works to comply with the necessary standards and consent conditions as identified by the Environment Agency;
- A briefing highlighting the importance of water quality, the location of watercourses and pollution prevention included within the site induction;
- Areas with prevalent run-off to be identified and drainage actively managed (e.g. through bunding and/or temporary drainage);
- Vegetated strip to be left adjacent to the watercourse during construction;
- Bankside vegetation to be reinstated following the construction phase;
- Areas at risk of spillage, such as vehicle maintenance areas and hazardous substance stores (including fuel, oils and chemicals) to be bunded and carefully sited to minimise the risk of hazardous substances entering the drainage system or the local watercourses;
- The bunded areas to have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage/spillage. Bunds used to store fuel, oil etc. to have a 110% capacity;
- Disturbance to areas close to watercourses reduced to the minimum necessary for the work;
- Excavated material to be placed in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses;
- Construction materials to be managed in such a way as to effectively minimise the risk posed to the aquatic environment; and
- All plant machinery and vehicles to be maintained in a good condition to reduce the risk of fuel leaks.

4.3 Protected or otherwise notable species

4.3.1.1 Pre-construction surveys, informed by existing data for protected species, will be carried out to identify potential changes in distribution of protected species and hence any additional mitigation requirements arising as a result of presence of protected species. These surveys will be undertaken within twelve months prior to the commencement of construction works.

4.3.2 Great crested newts

4.3.2.1 A new district-wide licensing pathway for GCN is currently being developed by Natural England. The use of this potential alternative route for licensing will be considered further post-consent but prior to commencement of pre-construction surveys and construction works. If the district-wide licensing approach is available to Hornsea Three, this may reduce the requirement for pre-commencement surveys and scheme-specific mitigation measures such as fencing. The mitigation measures outlined below are those that may be required under the existing licensing regime, and therefore would be revised prior to the production of the detailed EMP if the alternative approach is feasible.

4.3.2.2 Surveys, if required, will include pre-construction surveys of ponds that were not surveyed during 2017 and any ponds surveyed more than two years prior to construction that are located up to 250 m from the permanent or temporary land take for the onshore elements of Hornsea Three, subject to land access agreements, to establish presence/likely absence of GCN. The survey will include an initial Habitat Suitability Index (HSI) assessment to determine the need for presence/absence surveys. If GCN are present, these ponds will be included in the mitigation strategy and, if necessary, a European Protected Species (EPS) licence will be obtained for works to commence. If access to survey is not granted, a worst-case scenario will be assumed (i.e. that GCN are present) and these inaccessible ponds will be included in the mitigation plan.

4.3.2.3 Any ponds located within 250 m of the works areas that have not been surveyed or have been surveyed more than two years prior to the commencement of construction, will be surveyed using the HSI methodology, prior to the commencement of construction in order to assess their potential value to GCN and, if necessary, the need for a presence/absence survey.

4.3.2.4 In addition, surveys will be undertaken of any ponds located between 250 m and 500 m of the permanent or temporary land take for the onshore elements of Hornsea Three, which are also situated no more than 250 m from a pond located within the 250 m survey area and are separated from this pond by favourable GCN habitat.

4.3.2.5 If it is not possible to discount the ponds through an HSI assessment, a worst-case scenario will be assumed (i.e. that GCN are present) and these ponds will be included in the mitigation plan.

4.3.2.6 Surveys will be carried out by GCN licensed ecologists working under the instruction and guidance of the ECoW. Surveys will be completed in accordance with the methodology described in the Great Crested Newt Mitigation Guidelines (English Nature, 2001).

4.3.2.7 Each pond will be surveyed for presence / absence using eDNA analysis. For ponds with a positive result (or ponds which are already known to support GCN), a six visit Population Size Class Assessment (PSCA) survey will be carried out to establish population size to inform any licence application and associated mitigation strategy. eDNA sampling must be carried out between mid-April and June. All PSCA survey visits are required to be undertaken between mid-March and mid-June inclusive (of which three survey visits must be undertaken between mid-April and mid-May). Where possible, during each survey visit, at least three of the following survey methods will be used; bottle trapping, torching, netting and egg search.

4.3.2.8 A report of survey findings and implications for construction will be produced by the ECoW and provided to the Undertaker and the Site Manager as soon as practicable.

4.3.2.9 If an EPS licence from Natural England is required for works to commence, as soon as practicable the ECoW will inform the Undertaker and the Site Manager that any works requiring a licence, as instructed by the ECoW, should not be undertaken within the 250 m wide surrounding area, or as otherwise instructed by the ECoW, until a licence for GCN has been obtained.

4.3.2.10 The ECoW will be responsible for assessing whether an EPS licence would be required for works to commence. The assessment will be made in accordance with Natural England licence guidelines, in particular those relating to the proximity of ponds to working areas and the amount of terrestrial habitat of potential value to GCN that would be lost or disturbed during construction.

4.3.2.11 The ECoW will be responsible for completing and submitting an EPS licence application prior to the commencement of works. The licence application will be informed by pre-construction surveys and will contain a detailed method statement and mitigation plan.

4.3.2.12 Licensed works will be carried out in accordance with licence requirements and under the guidance of the ECoW and the watching brief of a GCN licensed ecologist(s), who would be pre-approved by and work under the instruction of the ECoW.

4.3.2.13 The ECoW will produce a licence return form and report of works carried out under licence. A copy of this form and report will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of the licence.

4.3.2.14 No ponds currently known to support GCN will be directly affected by the onshore elements of Hornsea Three. The onshore cable corridor runs adjacent to ponds with known GCN populations in five places. The majority of the habitat temporarily affected for cable installation is arable land of low potential for terrestrial GCN, but some losses of terrestrial habitat would occur.

4.3.2.15 In addition, the onshore cable corridor will run between ponds containing GCN in at least two locations, and the corridor would therefore have a temporary severance effect for the approximate three month duration of the cable installation for each section prior to restoration. In the event that the onshore elements are built out in two phases, this would be repeated for the second phase.

4.3.2.16 Where terrestrial GCN will be affected by cable construction, appropriate mitigation techniques, via a licence application, will be employed. As noted above, the district-wide licensing approach, if available, may avoid or reduce the need for the scheme-specific mitigation measures outlined below.

4.3.2.17 If required, amphibian exclusion fencing will be installed where it is necessary to exclude GCN from the works area and / or translocate animals from terrestrial habitat within the onshore cable corridor.

4.3.2.18 Where fence installation requires the clearance of habitat of potential value to hibernating GCN, as identified by the ECoW (e.g. mature hedgerows, ditches, rough grass areas or suitable piles of rubble), exclusion fencing will be installed outside the GCN hibernation period (considered to be between November and February, although dependent on local weather conditions), so as to prevent the potential disturbance of hibernating GCN.

4.3.2.19 The installation of amphibian exclusion fencing will be carried out under the guidance of the ECoW and watching brief of a GCN licensed ecologist, pre-approved by the ECoW, who will be present to capture and relocate any GCN disturbed in the process to suitable habitat located outside the fence line and with open access to nearby ponds.

4.3.2.20 If more than one GCN is located during fence installation, the on-site ecologist will instruct site workers to halt works immediately and the ECoW will be informed.

4.3.2.21 The ECoW will inform the Undertaker and the Site Manager of the need to halt works until an alternative appropriate method statement for the works is developed by the ECoW and / or an EPS licence has been obtained, if necessary. A licence application will be submitted to Natural England by the ECoW as soon as practicable.

4.3.2.22 As a precautionary measure, amphibian exclusion fencing will also be installed, as described above, around habitats of potential value to GCN, which are located in working areas and within 250 m of any pond or cluster of ponds, have been identified as being of potential value to GCN through an HSI assessment, have not been surveyed for presence/absence due to a lack of land owner permission, and are separated from working areas by habitat favourable to newt movement, as informed by an ECoW.

4.3.2.23 In the maximum design scenario of a two-phase construction period, the same measures would be employed at the second phase.

4.3.3 Reptiles

4.3.3.1 Where necessary, pre-commencement surveys of areas of suitable habitat not covered in the 2017 surveys would be undertaken to update the baseline and inform requirements for reptile mitigation.

4.3.3.2 Where reptile habitat is required to be cleared for construction, a detailed method statement will be developed in order to help ensure the protection of these species. The method statement will include detailed pre-construction measures designed to ensure that impacts on reptiles are minimised, through relocation of animals from the works corridor and an adjacent ~~buffer~~protection zone and post-construction habitat reinstatement. The method statement will include post-construction habitat restoration and management requirements.

4.3.3.3 Reptile habitat areas shown in Figure 10.1 that are within the onshore elements of Hornsea Three will be managed prior to the commencement of construction in order to deter or displace any reptiles which might be present from the working areas, taking care not to displace animals into other parts of the working corridor. Management will be advised by the ECoW.

4.3.3.4 Habitat management will involve the clearance of ground cover in order to create unfavourable conditions.

4.3.3.5 If habitat is cleared during the reptile hibernation period (November until February inclusive, dependent on local weather conditions), trees and scrub will be cut using brushcutters or chainsaws, to a height of approximately 30 cm above ground level, so as to minimise the potential for disturbance to root balls where hibernating reptiles may be located.

4.3.3.6 Arisings will not be stacked on site as this could later provide a habitat feature of potential value to nesting birds, reptiles or other species. Instead, arisings will be removed from site.

4.3.3.7 Habitat clearance during the active reptile season (i.e. between March and October, depending on local weather conditions) will commence in the centre of the site and move outwards, so as to enable any reptiles or other animals that may be present to leave the area ahead of machinery. Scrub and tall grasses will be cut as above, to between 5 cm and 10 cm in height. Arisings will be removed from site. Uprooting of vegetation or clearance of habitat of potential value to hibernating reptiles will be undertaken during this period.

4.3.3.8 Areas will be maintained in a condition not favoured by reptiles (i.e. with minimal ground cover) until the commencement of construction (i.e. through regular mowing of ground vegetation).

4.3.3.9 Works will be carried out under the guidance of the ECoW.

4.3.3.10 In the event that the onshore elements are built out in two phases, this would be repeated for the second phase.

4.3.3.11 A record of works will be maintained by the ECoW and will be provided to Hornsea Three and the Site Manager. A copy of this record will be made available to the relevant LPAs on request.

4.3.4 Wintering and migratory pink-footed goose

4.3.4.1 If construction work on functionally linked sugar beet fields takes place between November and January inclusive, a pink-footed goose management plan will be formulated and submitted to Natural England for approval in the 12 months preceding commencement (see section 5.4.3).

4.3.4.2 An outline of the pink-footed goose management plan is provided in as Appendix F to the Outline CoCP.

4.3.5 Breeding birds

4.3.5.1 Pre-construction surveys for nesting birds will be undertaken where construction overlaps with the breeding season, and measures will be set in place to protect active nests until the ECoW has confirmed that young have fully fledged and left the nest. These measures are documented in more detail below.

4.3.5.2 Impacts on breeding birds from habitat loss predominantly affect ground-nesting farmland birds in arable or grassland habitats, and hedgerow nesting birds.

4.3.5.3 Arable and grassland habitats will be restored after trenching. Restoration will be implemented after both phases in the case of two-phase cable installation.

4.3.5.4 Where trees, hedgerows or scrub, of potential value to nesting birds, are required to be cleared for construction, clearance will be undertaken outside of the bird breeding season (14 February to 31 August inclusive) to prevent disturbance to nesting birds where possible. However, if this is not practicable, habitat will be surveyed prior to clearance. No habitat containing an active nest will be removed or disturbed, and measures will be set in place to protect the nest until young have fully fledged and left the nest. Measures may include the establishment of 5 m wide ~~buffer~~protection zones in which heavy vehicles will not be tracked and the storage of vehicles, equipment, machinery and soil storage will be prohibited. Works in the ~~buffer~~protection zone will be delayed until the ECoW has confirmed young have fully fledged and left the nest. Ground-nesting birds may be deterred from suitable fields (> 5 ha, open fields) where HDD launch pits will be located, using bird scarers prior to and during the breeding season.

4.3.5.5 Prior to the commencement of the breeding bird season (mid-February to August inclusive) and where practicable, measures will be set in place to help deter ground nesting birds from nesting in suitable large (>5 ha) open fields in which construction works would take place. Measures could include the use of bird scarers, although these would not be employed within 5 m of the North Norfolk Coast SPA to avoid affecting birds within this designated site.

4.3.5.6 The clearance of any habitat of potential value to nesting birds, including semi-mature and mature trees, hedgerows and areas of scrub, will be undertaken outside the bird breeding season, so as to prevent disturbance or injury to nesting birds or their young.

4.3.5.7 However, where this is not practicable, immediately prior to the commencement of works, vegetation suitable for nesting birds which will be cleared to enable works or which is located within 5 m of working areas, and large (>5 ha) open flat fields of potential value to ground-nesting species in which works will be undertaken, will be surveyed for active bird nests.

4.3.5.8 Where it is not possible to carry out a thorough visual inspection of all parts of the habitat being surveyed (e.g. due to the density of the habitat) the area will be surveyed for at least two hours between dawn and 9.00 am to identify any bird activity that might indicate the presence of nesting birds, such as birds carrying nesting material or food into the habitat being surveyed.

4.3.5.9 No habitat containing an active bird's nest will be removed or disturbed. Works-free ~~buffer~~protection zones of a minimum of 5 m width will be established around active nests until the ECoW has confirmed to the Site Manager or site workers that the young have fully fledged and left the nest. Where considered necessary by the ECoW, works-free ~~buffer~~protection zones will be marked out on site using high-visibility Netlon fencing or coloured tape.

4.3.5.10 The ECoW will maintain a record of all pre-construction bird nest surveys undertaken. The record will be provided to the Undertaker and a copy will be made available to the LPAs on request.

4.3.6 Bats

4.3.6.1 Taking into account the fact that bats will utilise tree roosts intermittently, prior to the commencement of works, mature trees that require felling or pruning will be inspected by the ECoW from ground level using a high-powered torch to locate potential roost sites and signs that could indicate the presence of roosting bats. These daytime surveys can be undertaken at any time of year; however, where practicable, the surveys will be undertaken during the winter months, when leaves will not obscure features of potential value to bats. Surveys will be completed sufficiently in advance of the works so as to enable follow-up surveys, to be undertaken where required to confirm the presence / absence of a bat roost.

4.3.6.2 In accordance with guidelines produced by the Bat Conservation Trust (BCT, 2016), trees that are reported by the ECoW be of category 1 or 1* potential value to roosting bats (as defined in the BCT guidelines), will be subject to dusk emergence and/or dawn swarming surveys between May and September in order to confirm the presence of roosting bats, identify the species of bat present and determine the size of any roost.

4.3.6.3 A report of survey findings and implications for construction will be produced by the ECoW and provided to the Undertaker and the Site Manager. The report will be made available to the LPAs and/or Natural England as requested or required.

4.3.6.4 One known tree roost, comprising a single soprano pipistrelle recorded on one occasion, is located within the corridor and will need to be removed under an EPS licence if it is found to remain as an active roost when construction occurs. No other known roosts will be affected. The loss of this low status roost will be mitigated via the provision of an alternative roost sites on nearby retained trees. The tree containing the roost will be removed following a dawn survey to confirm absence of bats, and the tree will be soft-felled in sections under the supervision of an appropriately licensed bat ecologist.

4.3.6.5 Hedgerow restoration will take place immediately following each cabling phase. However, replacement planting will take time to mature after each phase of construction. Therefore, artificial hedgerows will be provided in locations where hedgerows supporting high or very high levels of bat activity have been recorded in the locations shown on Figure 10.1. This will ensure that connectivity will be maintained across gaps created by the hedgerow until the second phase restoration planting matures. Construction lighting in the vicinity of hedgerows where high or very high levels of bat activity have been recorded will follow best practice guidelines produced by the BCT (BCT, 2011).

4.3.6.6 Works in the vicinity of bat roosts outside the onshore cable corridor (Figure 10.1) will be completed during daylight hours only. However, should construction lighting be required, lighting will follow best practice guidelines produced by the BCT (BTC, 2011) and light fixtures will be directed away from the tree.

4.3.6.7 Removal or pruning of a tree containing a bat roost, or significant disturbance or obstruction to bats or their roost will require an EPS licence for bats from Natural England, which will be obtained prior to the commencement/continuance of works that could affect the roost.

4.3.6.8 Therefore, if surveys identify the presence of a bat roost, as soon as practicable, the ECoW will notify the Undertaker and the Site Manager of the requirement to obtain an EPS licence prior to the commencement of works on the tree or in the immediate surrounding area (i.e. within 15 m of the tree). The Site Manager and Undertaker will also be informed of the requirement to ensure the protection of the tree using a 15 m ~~buffer~~protection zone until the licence has been obtained. If construction is being undertaken in the nearby surrounding area, construction lighting will be carried out in accordance with guidelines produced by the BCT (Bat Conservation Trust, 2011).

4.3.6.9 The ECoW will be responsible for ensuring that an EPS licence for bats is applied for prior to the commencement of works requiring a licence. The licence application will be informed by findings of the pre-construction surveys, and will include a detailed method statement and mitigation strategy.

4.3.6.10 Works on or within 15 m of a tree containing a bat roost will commence only once a licence has been obtained and will be undertaken in accordance with the requirements of the licence. Licenced works will be carried out under the watching brief of a Natural England bat licenced ecologist.

4.3.6.11 A licence return form and report of the works undertaken will be completed by the licenced ecologist and approved by the ECoW. A copy of this form and report will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of the licence.

4.3.6.12 Where practicable, long-lasting woodcrete bat boxes, suitable for bats reported in the area (i.e. *Pipistrellus* and *Myotis* species, noctules (*Nyctalus noctula*) and brown long-eared bats (*Plecotus auritus*)) will be installed prior to construction, in appropriate locations on nearby retained mature trees as instructed by the ECoW, so as to provide immediate alternative roost sites.

4.3.6.13 Suitable locations will be at least 5 m above ground level, out of the reach of potential predators (e.g. cats), and away from very exposed areas, primarily facing in a south east or south west direction (although hibernation boxes can be sited in a north east or north west facing direction), within an area comprising good habitat connectivity, (e.g. a good connecting network of hedgerows, woodland parcels, lines of broadleaved trees and scrubs) or in areas where considerable numbers of bats were recorded during surveys completed to inform the EIA for Hornsea Three (volume 6, annex 3.8: Bat Surveys).

4.3.7 Badgers

4.3.7.1 A pre-construction badger survey of the works area and 30 m ~~buffer~~protection zone, will be undertaken in order to locate any potential new active setts that could cause a constraint to construction. Surveys will also be carried out in order to identify signs of high levels of activity, to inform the need for measures to be carried out to protect foraging badgers.

4.3.7.2 The ECoW will be responsible for ensuring the completion of pre-construction badger activity surveys of working areas and the surrounding ~~buffer~~protection zone. Any such surveys would be undertaken sufficiently in advance of the commencement of works to enable a protected species licence(s) from Natural England to be obtained, should this be required.

4.3.7.3 A report of survey findings and implications for construction will be produced by the ECoW and provided to the Undertaker and the Site Manager as soon as practicable.

4.3.7.4 Four currently known outlier badger setts are located within or very close to the onshore cable corridor, and if still occupied at construction will need to be removed under licence if they are found to be active when construction occurs.

4.3.7.5 If new setts are identified within 30 m of the cable works corridor, micro-siting of working areas away from the setts will be undertaken where practicable and possible within the consented boundary of development. If this is not practicable, a licence for badgers will be obtained before works commence if it is considered that badgers using the sett would be disturbed.

4.3.7.6 The ECoW will be responsible for ensuring a licence for badgers is applied for where necessary. The ECoW will inform the Undertaker and the Site Manager that a works-free ~~buffer~~protection zone of 30 m should be set up around the active sett until a licence has been obtained, and that once the licence has been obtained works will need to be carried out in accordance with the requirements of the licence.

4.3.7.7 A licence application will be informed by the pre-construction survey and will include a detailed method statement and mitigation strategy.

4.3.7.8 If sett destruction cannot be avoided, a licence application will include the requirement to close the sett outside the badger breeding season (considered to be between 30 November and 1 July).

4.3.7.9 Licensable works will be carried out under the guidance of the ECoW and under a watching brief of the named licenced ecologist(s), which could be the ECoW or an appropriately experienced ecologist pre-approved by the ECoW.

4.3.7.10 A licence return form and report of the works undertaken will be completed by the licenced ecologist and approved by the ECoW. A copy of this form and report will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of the licence.

4.3.8 Otters

4.3.8.1 Pre-construction otter surveys of watercourses and nearby areas of woodland and dense scrub will be undertaken in order to locate any potential otter holts or resting places within 50 m of the works area.

4.3.8.2 A report of survey findings and implications for construction, including the potential need for an EPS licence for otters, will be produced by the ECoW and provided to the Undertaker and the Site Manager as soon as practicable.

4.3.8.3 A licence would be required for any works that would result in the loss or disturbance of an otter holt or resting place, or significant disturbance or displacement of otters.

4.3.8.4 Therefore, if surveys confirm the presence of a previously unidentified otter holt or resting place within the survey area, and if it is not practicable to micro-site working areas to include appropriate works-free ~~buffer~~protection zones, an EPS licence for otters will be obtained by the ECoW prior to the commencement of works in the area.

4.3.8.5 The ECoW will inform the Undertaker and the Site Manager of the need to halt works in the area until a licence has been obtained.

4.3.8.6 A licence will require the contractor to work in accordance with an agreed method statement and works schedule. A licence application may include the pre-works construction of an artificial otter holt in a suitable location and at an appropriate distance from working areas. All licensed works will be overseen by the ECoW.

4.3.8.7 A licence return form and report of the works undertaken will be completed by the licensed ecologist following the completion of works and approved by the ECoW. A copy of this form and report will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of the licence.

4.3.9 Water voles

4.3.9.1 Pre-construction water vole surveys of all suitable minor watercourses that would be crossed by open-cut trenching will be undertaken in accordance with the survey methodology described in Strachan *et al.* (2011).

4.3.9.2 A report of survey findings and implications for construction will be produced by the ECoW and provided to the Undertaker and the Site Manager as soon as practicable.

4.3.9.3 For open-cut trenching or other disturbance works that will affect watercourses where water voles have been recorded, or if pre-construction surveys identify previously unrecorded water vole activity along watercourses that will be affected by construction, a detailed method statement will be developed as required in order to protect water voles from the direct impacts of construction works. Natural England will be consulted and a licence will be obtained prior to the commencement of any licensable works if requested by Natural England.

4.3.9.4 The detailed method statement or potential licence application will be informed by pre-construction surveys and will contain a detailed mitigation plan if necessary. The method statement is likely to include habitat manipulation to deter water voles from working areas and a surrounding ~~buffer~~protection zone and could include a relocation or a trapping and translocation programme prior to a destructive search of any burrows in the works area.

4.3.9.5 Vegetation removal to encourage relocation of water voles to adjacent habitat must commence between 15th February – 15th April. Regular repeat strimming is required in order to maintain habitat in a condition unsuitable for water voles until the commencement of works. Translocation of water voles, if required, should be completed between 15th February - 15th April.. Works will be carried out under the guidance of the ECoW and under an ecological watching brief.

4.3.9.6 A report of works carried out, and if a licence is required, a licence return form, will be produced by the ECoW and provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under any licence.

4.3.9.7 The ECoW will inform the Undertaker and the Site Manager that a works-free ~~buffer~~protection zone of at least 15 m or 50 m where HDD is being undertaken, should be established around watercourses supporting water voles until a licence has been obtained.

5. Construction mitigation measures

5.1 Introduction

5.1.1.1 This section describes the ecology and nature conservation mitigation measures adopted as part of the onshore elements of Hornsea Three that will be undertaken during construction in order to ensure the protection of notable habitats and species.

5.2 General site-wide mitigation measures

5.2.1.1 Construction will be undertaken in accordance with the Outline CoCP. The CoCP will include the following requirements:

- All works will be carried out taking full account of legislative requirements and Environment Agency guidance;
- Appropriate and adequate measures will be set in place to ensure appropriate levels of dust control so that no significant off-site dust effects will occur;
- Heavy machinery will not be tracked on waterlogged soils or over stored soils;
- Site induction and toolbox talks will include mitigation requirements;
- Soil storage areas will be located at adequate distances so as to ensure the protection of the retained soils; and
- Vehicle speeds will be restricted within the working corridor so as to reduce the likelihood of injury to species on site.

5.2.1.2 Night working will be avoided where practicable, although it may be necessary to undertake some works during night time hours. Where night working is unavoidable, light fixtures will be directed towards working areas and away from adjacent or nearby habitats of value to protected or otherwise notable species shown in Figure 10.1 and identified by the ECoW, in order to minimise likely disturbance effects of light spillage.

5.2.1.3 An ECoW will be present on site to oversee enabling works and construction where necessary. The ECoW will be a suitably experienced professional ecologist. The ECoW will review results of protected species surveys prior to the commencement of works in different areas and will contribute to all relevant construction method statements.

5.2.1.4 A biosecurity protocol will be implemented to minimise the risk of spreading invasive species. The main risks are associated with transfer of aquatic plants or animals (including vectors for disease) between watercourses or waterbodies. The majority of watercourse crossings are being undertaken using HDD, and no ponds are directly affected but where working in or near water, control measures will be implemented. These are documented in Appendix D to the Outline CoCP.

5.3 Habitat mitigation measures

5.3.1 Protective buffer zones

5.3.1.1 All ~~protective buffer~~protection zones described under Pre-Construction Mitigation Measures (Section 4) will be maintained throughout the construction phase. The ECoW will regularly (at least once every two weeks) monitor adherence to the requirements of the ~~buffer~~protection zones and will maintain a record of all site checks undertaken and findings.

5.3.1.2 Should any breach of the requirements become evident, the ECoW will inform the Undertaker and the Site Manager as soon as practicable. The ECoW will inform the Site Manager of measures required to be undertaken as soon as practicable to rectify any potential impacts.

5.3.1.3 The Undertaker will be responsible for notifying Natural England of any breaches to the ~~buffer~~protection zones if necessary and as advised by the ECoW.

5.3.2 Trees

~~5.3.2.1 Wherever practicable, a works-free buffer zone will be established around mature trees, of 15 m width or the width of the root protection zone, whichever is the greater, calculated on a tree-by-tree basis by an appropriately qualified surveyor.~~

~~5.3.2.2~~5.3.2.1 Any tree felling works will be carried out in accordance with protected species requirements described below.

~~5.3.2.3~~5.3.2.2 Where individual mature trees are to be felled, sections of dead or decaying wood will be soft-felled (felled in sections) and, where practicable, will be relocated to suitable locations as near to the source tree as practicable, as instructed by the ECoW (i.e. within areas of similar environmental conditions, particularly with regard to shade and groundwater levels, and in locations that will not obstruct the reinstatement of previous land management practices).

~~5.3.2.4~~5.3.2.3 Where passing bays are proposed as part of the measures identified within the Outline Construction Traffic Management Plan, the passing bays have been positioned to avoid root protection zones where feasible. Furthermore, the passing bay designs will adopt a Grasscrete cellular system designed to minimise impact on existing root protection areas associated with mature tree specimens. Where roots are likely to be encountered, advice will be sought from the ~~ecological clerk of works~~ECoW and a hand dig approach in accordance with National Joint Utilities Group guidelines, (Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Issue 2) will be adopted unless otherwise agreed with the local planning authority.

5.3.3 Hedgerows

5.3.3.1 The length of individual hedgerow sections to be removed within each phase will be reduced as far as reasonably practicable according to construction methods.

5.3.3.2 All sections of hedgerow removed to enable construction of the onshore cable corridor will be replanted as soon as practicable after each phase of cable installation, with regard to appropriate planting months. Replacement planting will comprise a species-rich mix of native shallow-rooting hedgerow species typical of the area. To prevent future root damage to cables, no hedgerow standard trees will be planted along the Hornsea Three onshore cable corridor. In addition, enhancement planting to improve connectivity and/or native species diversity will be considered on a case by case basis. Enhancement planting could include the planting of native hedgerow trees, typical of the area, at a suitable distance from the onshore cable corridor.

5.3.3.3 A replanting programme to compensate for habitat lost and provide screening will be implemented at the proposed HVAC booster station and onshore HVDC converter/HVAC substation sites in conjunction with mitigation measures considered as part of the landscape and visual impact assessment. Detailed landscaping proposals will be developed in a final Landscape Management Plan, to be produced in line with the Outline Landscape Management Plan. Planting will be undertaken as soon as practicable and once it could be confirmed that works will not significantly and adversely affect new planting. Where required, newly planted hedgerows will be protected by adequate fencing until the hedgerow has become established.

5.3.3.4 Hedgerow clearance, including tree felling works, will be carried out in accordance with species-specific requirements described below.

5.3.3.5 Arisings will be removed from site or, if necessary, temporarily relocated to a suitable site more than 5 m from working areas (or 50 m where HDD is being undertaken) so as to ensure that any nesting birds (or other species) which might utilise the pile of cuttings are protected against likely impacts of construction. Some arisings can be re-used a part of creation of artificial hedgerows where important bat flightlines have been identified (Figure 10.1).

5.3.4 Ponds and watercourses

5.3.4.1 In addition to measures to minimise the potential for pollution incidents, HDD will be carried out at all significant watercourses (Figure 10.1).

5.3.4.2 Drilling is expected to achieve at least 1.5 m beneath any watercourses.

5.3.4.3 Further details of measures relating to pollution prevention are described in the Outline CoCP. Measures include the provision of a pollution incident response plan and a drainage management plan to minimise potential pollution effects.

5.3.4.4 In the few locations where ditches and minor watercourses will be crossed by open cut cable trenches, construction works will be completed in accordance with the Outline CoCP. Methodologies will be pre-approved by the Environment Agency, Drainage Boards and/or Lead Local Flood Authorities where applicable, so as to help minimise the likely impacts on the wetland habitats.

5.3.4.5 Cable trenching works will also take into account species-specific mitigation measures described below.

5.4 Protected or otherwise notable species mitigation measures

5.4.1 Great crested newts

5.4.1.1 Where considered necessary by the ECoW, or required under an EPS licence obtained from Natural England, amphibian exclusion and drift fencing will be installed along the outer edges of works areas within proximity of a GCN pond. In addition, to take account of the metapopulation dynamics of the species, the exclusion fencing will be extended to segregate any other nearby ponds which are located within 250 m of a GCN pond and which also fall within 250 m of the working corridor, provided there are no significant barriers to dispersal between these ponds and the working corridor (e.g. major roads or rivers).

5.4.1.2 GCN exclusion fencing installed prior to construction will be monitored throughout the construction phase so as to ensure that necessary repairs can be undertaken as soon as practicable.

5.4.1.3 If a GCN is located during construction, works in the area will be halted immediately and the ECoW will be informed. A Natural England GCN licensed ecologist will attend the site to handle and, where necessary, relocate any GCN to suitable habitat outside the exclusion fence line.

5.4.1.4 Ongoing clearance of habitat of potential value to GCN (i.e. hedgerows and scrub) within the surrounding 250 m area will be monitored by the ecologist. If any more GCN are located during construction in the area, site works will be halted immediately, and the GCN licensed ecologist and/or ECoW will be informed. The ECoW will inform the Undertaker and the Site Manager as soon as practicable of the potential need for an amended method statement and/or EPS licence for GCN before works can recommence in the area.

5.4.1.5 The ECoW will be responsible for applying for an EPS licence for GCN if necessary.

5.4.2 Reptiles

5.4.2.1 Progressive and careful habitat clearance works, such as the gradual strimming of above-ground vegetation such as brambles, rough grass and scrub, will be undertaken in select areas prior to construction, to deter reptiles from the working area where alternative habitat is available to them.

5.4.2.2 Uprooting of vegetation of potential value to hibernating reptiles will be undertaken prior to the commencement of the hibernation period (November to March) to deter reptiles from hibernating in the area.

5.4.3 Wintering and migratory birds

5.4.3.1 If construction work on functionally linked sugar beet fields is likely to take place between November and January inclusive, a pink-footed goose management plan will be formulated and submitted to Natural England for approval in the 12 months preceding commencement. An outline of the pink-footed goose management plan is provided as Appendix F to the outline CoCP, and the full approved plan will be appended to the final CoCP.

5.4.3.2 To minimise the risk of disturbance at all times and locations, noise reduction measure from industry best practice guidance will be implemented in line with the Outline CoCP and EMP.

5.4.3.3 Where outdoor lighting is required, lighting units will be directional, fully shielded if not LED lighting and in all cases directed only on to the construction works area. The principles of the lighting strategy are contained in the Outline CoCP which accompanies the application for development consent.

5.4.4 Breeding birds

5.4.4.1 If, during construction, an active bird's nest is located within the works area or a surrounding 5 m wide ~~buffer~~protection zone, works within the area will be halted immediately and site workers will inform the ECoW as soon as practicable, either directly or through the Site Manager.

5.4.4.2 The ECoW will attend the site if considered necessary in order to assess the most appropriate mitigation measures required to protect the nest. Protective measures may include the creation of a 5 m wide works-free ~~buffer~~protection zone around the nest, which will be maintained until the ECoW confirms the young have fully fledged and left the nest.

5.4.4.3 A record of findings and measures undertaken will be maintained by the ECoW and provided to the Undertaker and the Site Manager.

5.4.5 Bats

5.4.5.1 Taking into account the particular value of some hedgerows along the onshore cable corridor to foraging and commuting bats, temporary artificial hedges to provide a link between severed edges of hedgerows and other habitat crossed by the Hornsea Three onshore cable corridor, which have been identified as key commuting/foraging routes will be provided. The artificial bridges will be retained *in situ* throughout the construction period and until replacement planting has established and developed sufficiently to create a continuous connecting habitat. The bridges will be put into place at the end of each working day and will be retained *in situ* during the day when not working in the area.

5.4.5.2 Artificial hedges will comprise sections of fencing without gaps and at least 2 m high in order to retain bat flight paths. At locations where construction is ongoing, covered heras fencing (for example with brush retained from hedgerow clearance or camouflage mesh) may be used to allow the artificial hedges to be removed during working hours.

5.4.5.3 When construction is completed on a particular section, a more permanent artificial hedge will be installed until replacement planting creates a continuous connecting habitat. If construction is carried out in two phases, a more permanent artificial hedge will be installed after construction of the first phase, and removed prior to construction of the second phase. These fences would again be without gaps and at least 2 m and may include willow woven fencing, wooden or close-boarded fencing, heras fencing covered with brush, or panels of artificial foliage (or a combination of these).

5.4.5.4 Should a bat roost be located during the construction period, works within 15 m of the roost will be halted immediately and site workers will inform the ECoW as soon as practicable, either directly or through the Site Manager. Any potential construction lighting in nearby areas will be directed away from the roost site.

5.4.5.5 If the tree requires felling, an EPS licence will be obtained prior to felling (licences typically require felling to take place in/around October or April, to minimise the impact on any bats that might be present).

5.4.5.6 In the unlikely event of a 'missed' tree roost being accidentally felled or disturbed, the ECoW will ensure that a Natural England bat licensed ecologist attends the site as soon as practicable. The bat licensed ecologist will ensure the section containing the roost is moved to a suitable safe and sheltered location, at least 15 m from the works area and away from any potential obstructions that could prevent the exit of bats which may still be present. If required, the bat licenced ecologist will capture and relocate any disturbed bat(s) to a suitable alternative roost site (such as the pre-installed bat roost box) or, if considered necessary, the bat(s) will be taken to a Natural England licensed handler who could monitor its recovery prior to release.

5.4.5.7 A record of findings and measures undertaken to protect any disturbed roosting bats will be maintained by the ECoW and provided to the Undertaker and the Site Manager. The Undertaker will inform Natural England of the event and measures undertaken as soon as practicable. If a Natural England licence is required to continue the works, the ECoW will complete and submit an application and works will not recommence until the licence has been obtained. Works would then be carried out in accordance with the licence and, as necessary, under the watching brief of a Natural England bat licensed ecologist.

5.4.6 Badgers

5.4.6.1 The following best practice measures will be undertaken during the construction period to minimise impacts on badgers.

- Where practicable, works within 30 m of an active sett will finish one hour before dusk and commence one hour after dawn to help minimise the level of disturbance to badgers;
- Vehicle speeds will be restricted within the working corridor;
- Night working will be avoided unless essential. Where this is not possible, lighting will be focussed on works areas and directed away from badger setts and areas of high potential value to foraging badgers (e.g. areas of rough grassland and woodland). Lighting will be kept to the minimum necessary where located within 30 m of an active badger sett;
- No construction works will be carried out within minimum distances an active sett entrance. Works within 30 m of a badger sett entrance may require a Natural England licence for badgers. Protection zones will be marked out on site, such as with high-visibility fencing or coloured tape;
- Areas of high badger activity, if identified, will be cordoned off to ensure these are kept fully intact and with minimal interference from construction;
- Excavations more than 0.5 m deep will be fenced or covered overnight, where practicable, or if this is not practicable, a method of escape (e.g. a plank to act as a ladder) will be provided; and

- Large diameter pipes will be capped at the end of each working day to reduce the potential for badgers and other animals to enter them and become trapped.

5.4.6.2 If pre-construction surveys (section 4.3.7) confirm the need for a licence for badgers, construction works will be undertaken in accordance with the requirements of the licence.

5.4.6.3 If work within minimum distances of a sett and, therefore, sett closure or disturbance cannot be avoided, this will need to be carried out outside the badger breeding season (defined as 30 November to 1st July) and in accordance with a Natural England approved method statement and where relevant a licence for badgers.

5.4.6.4 HDD launch pits will be located minimum distances from active badger setts, or a Natural England licence for badgers may be required prior to the commencement of works, as considered necessary by an experienced badger ecologist.

5.4.6.5 Toolbox talks on badgers will be provided by the ECoW to all construction staff on site and an emergency procedure protocol will be given to contractors in the event of encountering a badger or discovering a sett. If new setts are identified within minimum distances of the Hornsea Three onshore cable corridor, or in the areas around HDD launch sites, micrositing away from the setts will be undertaken where practicable within the consented boundary of development, or a Natural England licence for badgers may be required before works continue.

5.4.6.6 The ECoW or an appropriately experienced ecologist pre-approved by the ECoW, will attend the site as soon as practicable in order to confirm reports of badger activity and assess the need for further surveys to confirm the presence of badgers and / or the need for a development licence for badgers.

5.4.6.7 A report of findings of the site visit and implications for construction will be produced by the ECoW and provided to the Site Manager and the Undertaker.

5.4.6.8 If the continuance of works would result in further damage or disturbance to an active badger sett, or significant disturbance of any badgers that might be utilising the sett, the ECoW will submit to Natural England an application for a development licence for badgers. Works will not recommence until a licence has been obtained.

5.4.6.9 All licenced works will be carried out under the guidance of the ECoW and under a watching brief of the licence holder or ecologist named on the licence.

5.4.6.10 If construction works result in the death or injury of a badger, the ECoW or appropriately experienced pre-approved ecologist will determine the cause of death where possible (through speaking to site workers, inspecting the body, if possible, and investigating site conditions). If the death is considered likely to be a result of construction works, the ECoW will assess the need for further mitigation measures such as the installation of badger exclusion fencing around working areas or the use of additional covering of excavations to prevent access into dangerous areas.

5.4.6.11 Findings of the assessment and measures proposed will be reported to the Undertaker and the Site Manager as soon as practicable.

5.4.6.12 The ECoW will monitor the effectiveness of new mitigation requirements so as to ensure any necessary amendments or additions to mitigation are set in place as soon as practicable.

5.4.7 Otters

5.4.7.1 Where HDD is to be undertaken beneath watercourses supporting otters, consideration will be given to the location of launch pits and their relationship to watercourses. No holts in the vicinity of the onshore cable corridor are currently known to be present. Should pre-commencement surveys identify the presence of a holt, HDD launch pits will be located at a minimum distance of 50 m from the holt, and construction compounds and storage areas will also be located a minimum distance of 50 m from any otter holts. Works-free ~~buffer~~protection zones will be set up around the holt and any other identified resting place, within which no tracking of heavy machinery, or storage of equipment, machinery or soils will be permitted.

5.4.7.2 HDD pits, other excavations and ducts will be covered overnight to prevent otters entering the areas, or a method of escape (such as a plank to act as a ladder) will be provided where such excavations cannot be covered or filled on a nightly basis.

5.4.7.3 Where considered necessary by the ECoW, high visibility fencing will be erected around works-free zones. No below-ground destructive works, or tracking of heavy machinery will be undertaken a minimum distance from known otter holts.

5.4.7.4 Work sites required for HDD will be located 100 m from the watercourse crossing point where practicable. Construction compounds and storage areas will be located at least 50 m from the watercourse.

5.4.7.5 If night time works take place, lighting will be focussed on working areas and directed away from the watercourse and other watercourses of potential value to otters. Lighting will be kept to the minimum necessary up to a distance of approximately 100 m from otter holts or other identified resting places.

5.4.7.6 If pre-construction surveys report the presence of a previously unrecorded otter holt or resting place that would require an EPS licence for otters before works in the area can commence, construction works will be carried out in accordance with the requirements of the licence and under the guidance of the ECoW and, where necessary, an ecological watching brief.

5.4.8 Water voles

5.4.8.1 Taking into account the mobile nature of water voles, pre-construction surveys will be undertaken to confirm the presence/absence of water voles along all watercourses of potential value to water voles that are crossed by open trenching. If water voles are found to be present in ditches or watercourses that would be affected by trenching, licence would be required. Construction works will be carried out in accordance with the requirements of the licence and under the guidance of the ECoW and, where necessary, an ecological watching brief.

5.4.8.2 Method statements will include pre-construction measures to deter water voles from the working corridor and an adequate ~~buffer~~protection zone (i.e. up to 15 m where favourable habitat is present). Measures could potentially include:

- Removal of vegetation from channel and bank-side vegetative cover, up to a minimum of 1.5 m inland from the top of the bank between 15 February and 15 April;
- Where vegetation is removed from water vole habitat between 15th February and– 15th April, regular repeat strimming through the water vole breeding season until bank works commence is required in order to maintain the habitat in a condition unsuitable for water voles.
- The potential capture and translocation of water voles from working areas by an appropriately qualified and experienced ecologist;
- A destructive search of water vole burrows within the working corridor under the watching brief of an appropriately qualified and experienced ecologist; and
- Measures to protect adjacent sections of the watercourse, which will not be directly impacted by trenching, such as marking out on the ground the boundary of the Hornsea Three onshore cable corridor, to control the movement of personnel and vehicles.

6. Post-construction mitigation measures

6.1 Introduction

6.1.1.1 This section describes the mitigation measures adopted as part of the onshore elements of Hornsea Three that will be undertaken as soon as practicable following the completion of construction in an area, in order to mitigate the impacts of development on features of ecological and nature conservation interest and to provide biodiversity benefit.

6.1.1.2 Works will be carried out under the guidance of the ECoW.

6.1.1.3 All post-construction monitoring surveys described in this section will be undertaken by the ECoW or an otherwise appropriately experienced and where necessary, licensed ecologist(s), who will be pre-approved by the ECoW and will work under the guidance of the ECoW.

6.1.1.4 All surveys will be carried out in accordance with biosecurity risk assessments and safe systems of works which will be produced by the ECoW prior to the commencement of a survey.

6.2 Habitats

6.2.1.1 To minimise the period of time that habitats and species will be affected, reinstatement of damaged or cleared terrestrial habitat will be carried out as soon as practicable and as soon as it can be confirmed that ongoing works for that phase will not result in the damage or disturbance of reinstated or enhanced habitats. Habitat reinstatement will involve the replacement of stripped soils and the planting of native hedgerows, shrubs and trees, typical of the local area and of local provenance where possible. The construction of buildings and planting of trees with deep roots will not be permitted above the onshore cable corridor to prevent potential damage to cabling. Habitat reinstatement will be undertaken in accordance with the Outline Landscape Management Plan. The Plan will include the retention and/or replacement of habitats of nature conservation value wherever practicable.

6.2.1.2 New planting will be carried out in accordance with the Outline Landscape Management Plan and associated biosecurity risk assessments and Safe Systems of Works. The Outline Landscape Management Plan which accompanies the DCO application includes planting methodologies and plant species lists.

6.2.1.3 The ECoW will be responsible for producing a report to confirm habitat reinstatement or enhancement requirements have been carried out in accordance with the requirements of this Plan and the Outline Landscape Management Plan .

6.2.2 Woodland

6.2.2.1 Tree and shrub planting around the onshore HVDC converter / HVAC substation will comprise a diverse mix of native shallow-rooting broadleaved tree and understorey species found in the area, with native shrub planting to provide a dense edge habitat, and an adjacent rough grass margin to add structural diversity, enhanced cover and shelter.

6.2.3 Hedgerows

6.2.3.1 Sections of hedgerows removed during the construction of the onshore cable corridor will be replanted with a species-rich native mixture following each phase of cable installation, in accordance with the Outline Landscape Management Plan.

6.2.4 Minor watercourses and ditches

6.2.4.1 Watercourses will be restored to their previous bank profile following each phase of cable installation. For watercourses, where substantial lengths are affected (i.e. where open cut is proposed), an appropriate native species marginal seed mix would be sown of local provenance where practicable.

6.2.4.2 For watercourses where only, a narrow width has been affected (e.g. where haul roads have been installed, but the streams are otherwise unaffected), natural colonisation would be appropriate.

6.2.5 Arable field margins

6.2.5.1 The Hornsea Three onshore cable route runs through some arable land where arable field margins are maintained under a Stewardship agreement (e.g. at Kelling Estate). There will therefore be temporary losses of this UKBAP habitat during construction. Field margins will be restored with an appropriate seed mix in consultation with the landowner.

6.3 Protected or otherwise notable species

6.3.1.1 Should any licences for protected species be required for construction works to be undertaken, licence applications will include habitat restoration and enhancement measures for the benefit of the protected species that the licence applies to. These measures will take into account requirements of the Outline Landscape Management Plan. However, should measures be required under a licence that are not included in the Outline Landscape Management Plan, these will be carried out by landscape contractors working under the guidance of the ECoW and/or licence holder.

6.3.1.2 The ECoW and / or protected species licence holder will be responsible for producing any required licence return forms and report of the works undertaken. A copy of the forms and reports will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of the licence.

6.3.2 Birds

6.3.2.1 Hedgerow reinstatement planting will include fruit-bearing species of potential value to birds including hawthorn and blackthorn, alder, crab apple, field rose, and dog rose.

6.3.3 Bats

6.3.3.1 The potential impact on bats will be minimised through bat habitat and bat roost creation, restoration or enhancement.

6.3.3.2 Long-lasting woodcrete bat boxes, suitable for the species of bats recorded in the area (i.e., *Pipistrellus* and *Myotis* species, noctule and brown long-eared bat), will be installed under the guidance of the ECoW in suitable locations on nearby retained mature trees located within the onshore cable corridor to provide immediate potential roost sites as mitigation for lost tree holes of potential value to roosting bats.

6.3.3.3 The ECoW will advise on appropriate locations for boxes on a site by site basis.

6.3.3.4 Mitigation for loss of foraging or commuting habitat via the removal of hedgerows will be mitigated by replacement hedgerow planting, including the planting of scattered native hedgerow trees where practicable as tree planting will provide potential long-term roosting opportunities. The long-term establishment and maintenance of replacement habitat will be secured in accordance with the landscape mitigation measures.

6.3.3.5 Where hedgerow reinstatement cannot be undertaken immediately following construction, artificial hedges used throughout the construction phase will be retained *in situ* until replacement planting has been carried out and, where necessary, until replacement plants have become established to provide effective habitat links between the severed sections of the hedgerows, as confirmed by the ECoW.

7. Decommissioning mitigation measures

7.1.1.1 The measures to be adopted during decommissioning will be similar to those adopted during construction and will incorporate best practice guidance available at that time. A Decommissioning Plan and EMP for the decommissioning works will be produced, and relevant organisations will be consulted as part of the process of producing these updated plans prior to decommissioning.

8. Operational and long-term ecology management

8.1 Introduction

8.1.1.1 This section describes ecology measures adopted as part of the onshore elements of Hornsea Three that will be undertaken following the completion of post-construction mitigation described above (section 6) and during the operational phase.

8.2 Habitats

8.2.1.1 During the establishment phase (three to five years following the planting or spreading of seed) any failed plants will be replaced like-for-like as required to prevent any significant gaps in planting and as agreed with land owners.

8.2.1.2 Once established, new planting will be managed in accordance with the Outline Landscape Management Plan and as described below.

8.2.1.3 Should Natural England development licences be required for works to be undertaken, habitat management would be carried out in accordance with the requirements of these licences.

8.2.2 Onshore HVDC converter/HVAC substation site boundaries (tree and shrub planting)

8.2.2.1 The long-term management of the area of tree and shrub planting along and within the boundaries of the onshore HVDC converter/HVAC substation site will remain the responsibility of the offshore transmission owner.

8.2.2.2 Once established, the objective of long-term management of these areas will be to create a parcel of wooded habitat comprising a mix of native broadleaved standards and interspersed cover of understorey species, with a wide edge of native scrub and an adjacent wide tall rough grass margin.

8.2.2.3 Rough grass margins will be mown on a rotational basis every two to five years in order to encourage the development of a rough grassland habitat and control encroaching scrub.

8.2.3 Onshore infrastructure: protection of watercourses

8.2.3.1 Areas at risk of spillage (e.g. hazardous substance stores, including fuel, oils and chemicals) will be bunded and carefully sited to minimise the risk of hazardous substances entering the drainage system or the local watercourses. Additionally, the bunded areas will have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage / spillage. Bunds used to store fuel, oil etc. will have a capacity of 110% of the tanks / drums they contain.

8.2.3.2 The measures to be adopted for the avoidance of pollution of the environment during the operation of the onshore infrastructure are set out in volume 3, chapter 2: Hydrology and Flood Risk.

8.2.4 Hedgerows

8.2.4.1 Reinstated hedgerows and enhanced hedgerows will remain under the management control of the land owner.

8.3 Protected or otherwise notable species

8.3.1.1 Should any licences for protected species be required, the ECoW will notify the Undertaker of any additional survey and habitat requirements and these will be carried out under the guidance of the ECoW.

8.3.1.2 The ECoW will maintain a record of all ecology works completed, which will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of any licence.

9. Monitoring and reporting

9.1 Monitoring

9.1.1.1 The ECoW will be responsible for monitoring adherence to the construction requirements of this Plan through:

- Weekly site inspections where works are active; and/or
- Weekly meetings with the Site Manager.

9.1.1.2 The ECoW will maintain a record of these site inspections and meetings, which will be provided to the Site Manager and the Undertaker and will be made available to the relevant LPA(s) and Natural England as required or requested.

9.1.1.3 The ECoW will regularly (at least once every two weeks) monitor adherence to the requirements of the protectionve buffer zones. Should any breach of these requirements become evident, the ECoW will inform the Site Manager as soon as practicable. The ECoW will inform the Site Manager of measures required to be undertaken as soon as practicable to rectify any potential impacts. If the breach is material, the ECoW, Site Manager or Undertaker will then be responsible for notifying Natural England of any breaches to the bufferprotection zones.

9.1.1.4 New planting will be monitored during the establishment phase (up to three to five years post planting) by the Undertakers landscape contractor (or land owner or farm manager if so agreed between those parties). Failed plants will be replaced like-for-like as required to prevent the development of a significant gap in planting. If plants or grassland areas are confirmed to be established after three years of planting, monitoring will cease.

9.1.1.5 Post-construction monitoring of protected species as required under any protected species licences will be undertaken by the ECoW or appropriately experienced and if necessary, licensed ecologist(s), who will be pre-approved by the ECoW.

9.2 Summary of reporting requirements

9.2.1.1 The ECoW will maintain a record of all pre-construction works undertaken as they relate to the protection of VERs.

9.2.1.2 The ECoW will produce pre-construction survey reports listed below:

- Great crested newts;
- Reptiles;
- Wintering pink-footed goose habitat;
- Breeding birds;
- Roosting bats;
- Badgers:
- Otters; and
- Water voles.

9.2.1.3 Survey reports, including advice regarding implications for construction, will be provided to the appointed Site Manager and Undertaker. A copy will be made available to the relevant LPA(s) on request.

9.2.1.4 Should any Natural England development licences be required, the ECoW will produce protected species licence applications which will be submitted to Natural England. Reports will support licence applications where required. The Undertaker reserves the right to review any application prior to submission, but must not unreasonably delay its submission to the appropriate authority.

9.2.1.5 The LPAs and Natural England will be invited to attend regular meetings (typically monthly where active works are about to or are occurring) during the pre-construction and construction phases. The need for and regularity of meetings will be held as requested or required by the LPAs or Natural England during the operational phase. Meetings will be held so as to enable the ECoW, Site Manager or Undertaker to report on progress and the effectiveness of the implemented EMP and to provide an opportunity to discuss measures considered necessary to ensure adherence to the requirements of the Plan and relevant legislation. Where practicable, consideration will be given to installing long-lasting woodcrete bat roost boxes in suitable locations on retained mature trees within the Hornsea Three onshore cable corridor to enhance the potential value of the site to roosting bats.

9.2.1.6 Where necessary (i.e. where topics or work areas to be discussed are relevant) invitations to meetings will be extended to other relevant stakeholders including the Environment Agency. More or less frequent and ad hoc meetings will be held by the ECoW, Site Manager or Undertaker as considered necessary.

9.2.2 During construction

9.2.2.1 The ECoW will maintain a record of all ecology works undertaken during the construction period, including any ecological watching briefs or protected species surveys and findings of any site visits. Reports will be provided to the Undertaker and the Site Manager and, where appropriate, to Natural England and the relevant LPA.

9.2.2.2 The ECoW will maintain a record of any breaches of the requirements of this Plan and any measures undertaken in order to mitigate potential impacts of a breach. Records will be provided to the Undertaker, Site Manager and if necessary the relevant LPA and Natural England.

9.2.2.3 If any reasonable changes to the measures described in this Plan are considered necessary by the ECoW in order to achieve the objectives and adhere to the timetable of suitable work periods requirements of the Plan (section 10) and any relevant legislation, the ECoW will produce a report of these proposed changes, detailing the reasons for them, and this report will be provided to the LPA for approval prior to the measures being carried out on site.

9.2.2.4 Should a protected species licence be required during the construction period, the ECoW will be responsible for applying for a licence.

9.2.2.5 The ECoW and/or licence holder will be responsible for producing any required Natural England licence return forms and report of the works undertaken. A copy of the forms and reports will be provided to the Undertaker, Natural England and the relevant LPA(s) as soon as practicable and as required under the conditions of the licence.

9.2.3 Post-construction

9.2.3.1 Should any licences be required, the ECoW and / or Natural England licence holder will be responsible for producing and distributing any required licence return forms and report of the works undertaken as described above.

9.2.3.2 The ECoW will be responsible for producing a report to confirm habitat reinstatement or enhancement requirements have been carried out in accordance with this Plan and the Outline Landscape Management Plan.

10. Timetable of suitable work periods

10.1.1.1 Table 10.1 provides optimal and optional months during which the works detailed in this Outline EMP could be undertaken.

Table 10.1: Timetable of suitable work periods.

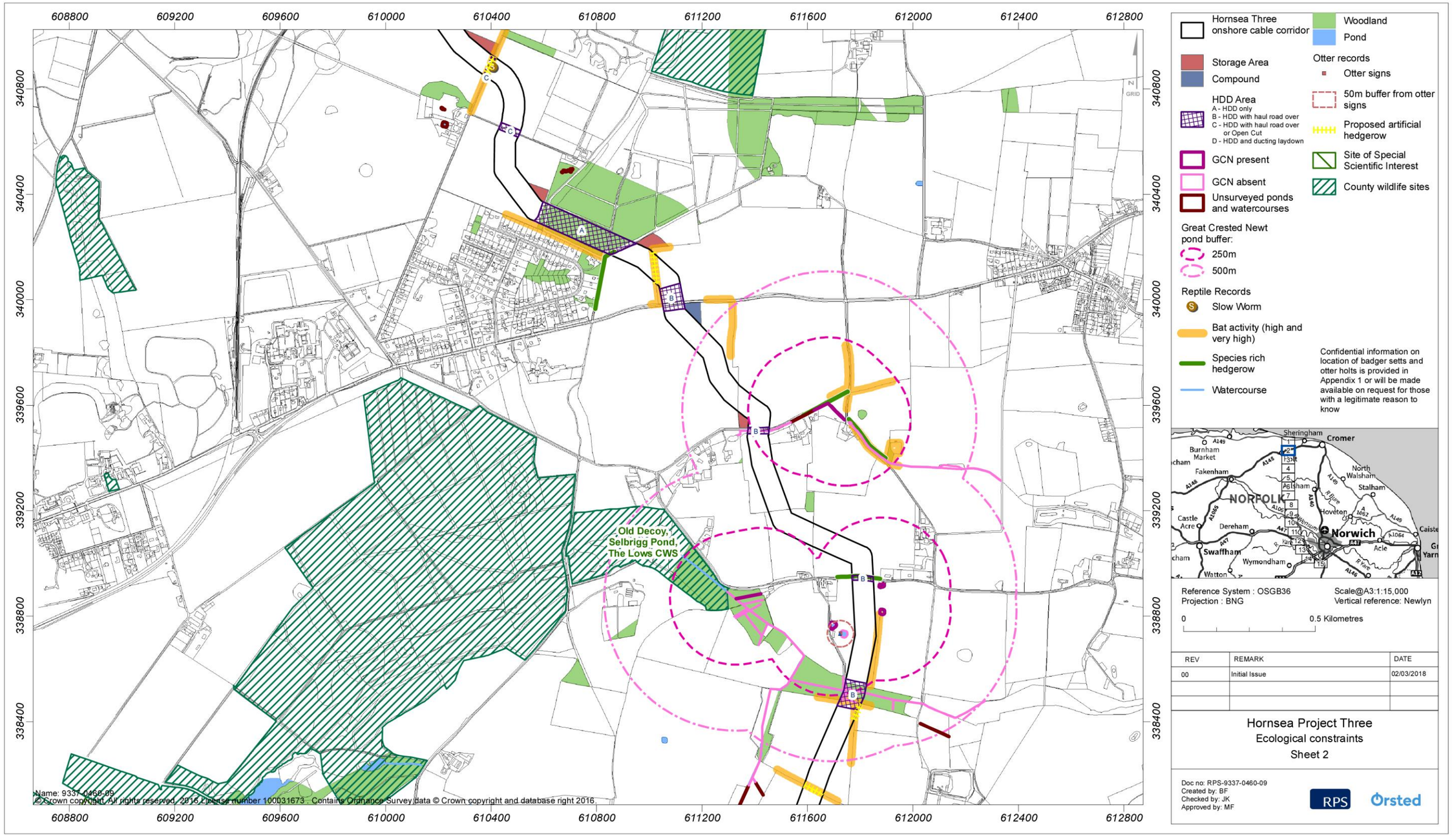
	Key
	Ecology survey or mitigation period (optimal time).
	Optional ecology survey or mitigation period, as advised by the ECoW (sub-optimal time).
	Period where survey or mitigation cannot be carried out.

Works Description	January	February	March	April	May	June	July	August	September	October	November	December
Pre-construction												
Pre-construction survey for breeding birds.												
Pre-construction and construction (between landfall and Hempsted) surveys of wintering Pink-footed Goose to inform Appendix F of the CoCP: Pink-footed Goose Management Plan.			*March surveys to be carried out should February surveys indicate PFG may remain in March.*									
Pre-construction daytime survey of trees for potential bat roosts.												
Pre-construction emergence/re-entry bat roost survey of trees.												
Installation of bat boxes.	Summer roost	Summer roost	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Summer roost	Summer roost	Summer roost
Pre-construction survey for badgers – sett locations.												
Pre-construction survey for badgers – badger activity.												
Pre-construction survey for otter activity.												
Pre-construction survey for water vole burrows.												
Pre-construction survey for signs of water vole activity.												

Works Description	January	February	March	April	May	June	July	August	September	October	November	December
Habitat management to deter water voles from working areas (commencing between 15th Feb – 15th April and continuing through active breeding season or until bank works start. Habitat management cannot commence after April 15th).												
Pre-construction surveys of ponds for GCNs.												
Installation of GCN exclusion fencing in areas of potential value to hibernating newts (as confirmed by the ECoW).												
Installation of GCN exclusion fencing in areas of no potential value to hibernating newts (as confirmed by the ECoW).												
Up-rooting of vegetation or clearance of materials (e.g. piles of rubble) of potential value to hibernating reptiles.												
Above ground habitat management to deter reptiles.												
Applications for Natural England licences (should they be required).												
Post-construction: Construction												
During construction survey survey of wintering Pink-footed Goose to inform Appendix F of the COCP: Pink-footed Goose Management Plan												
Use of artificial hedgerows to bridge severed hedges.												
Clearance of hedgerows, scrub and trees of potential value to nesting birds. NOTE: sub-optimal period requires immediately preceding survey to confirm no active nests.												

Works Description	January	February	March	April	May	June	July	August	September	October	November	December
Reinstatement and enhancement planting in accordance with the Outline Landscape Scheme and Management Plan .												
Installation of bat roost boxes (unless otherwise required by management plan).	Summer roost	Summer roost	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Summer roost	Summer roost	Summer roost
Post-construction: Long-term Management												
Installation of bat boxes.	Summer roost	Summer roost	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Hibernation	Summer roost	Summer roost	Summer roost
Replanting to replace failed plants during establishment period (3-5 years post planting).												

Figure 10.1: Ecological Constraints.



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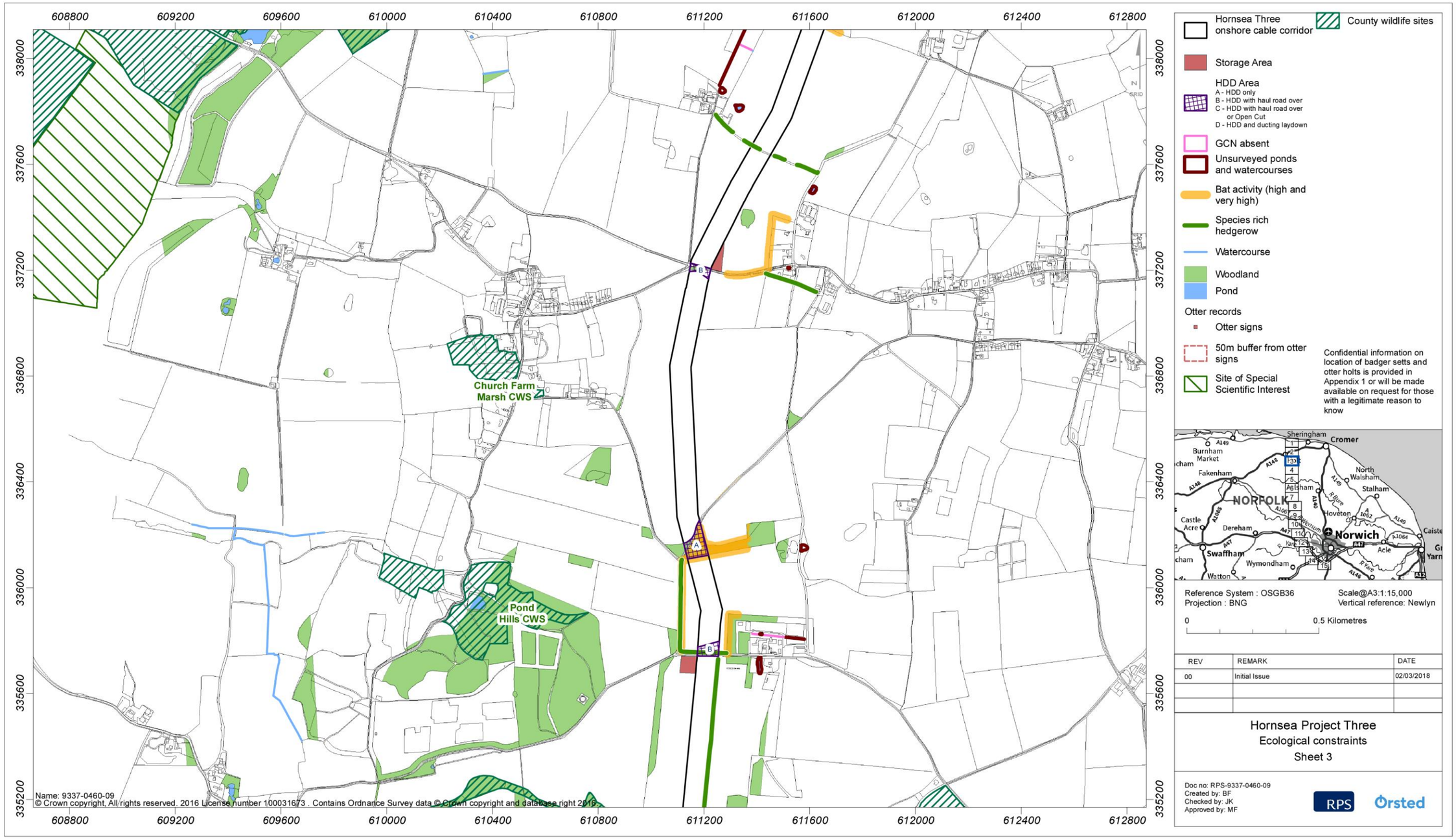

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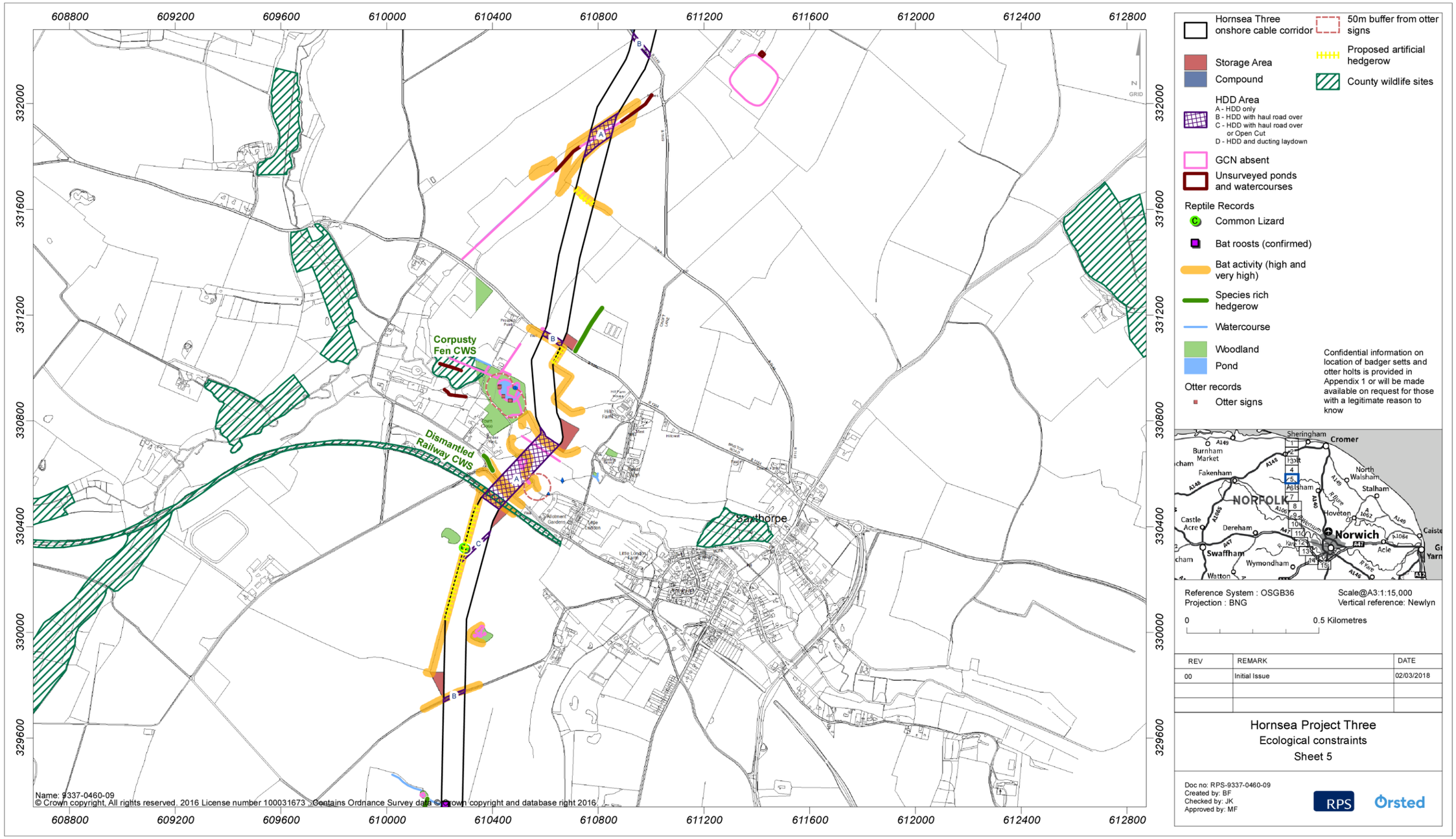

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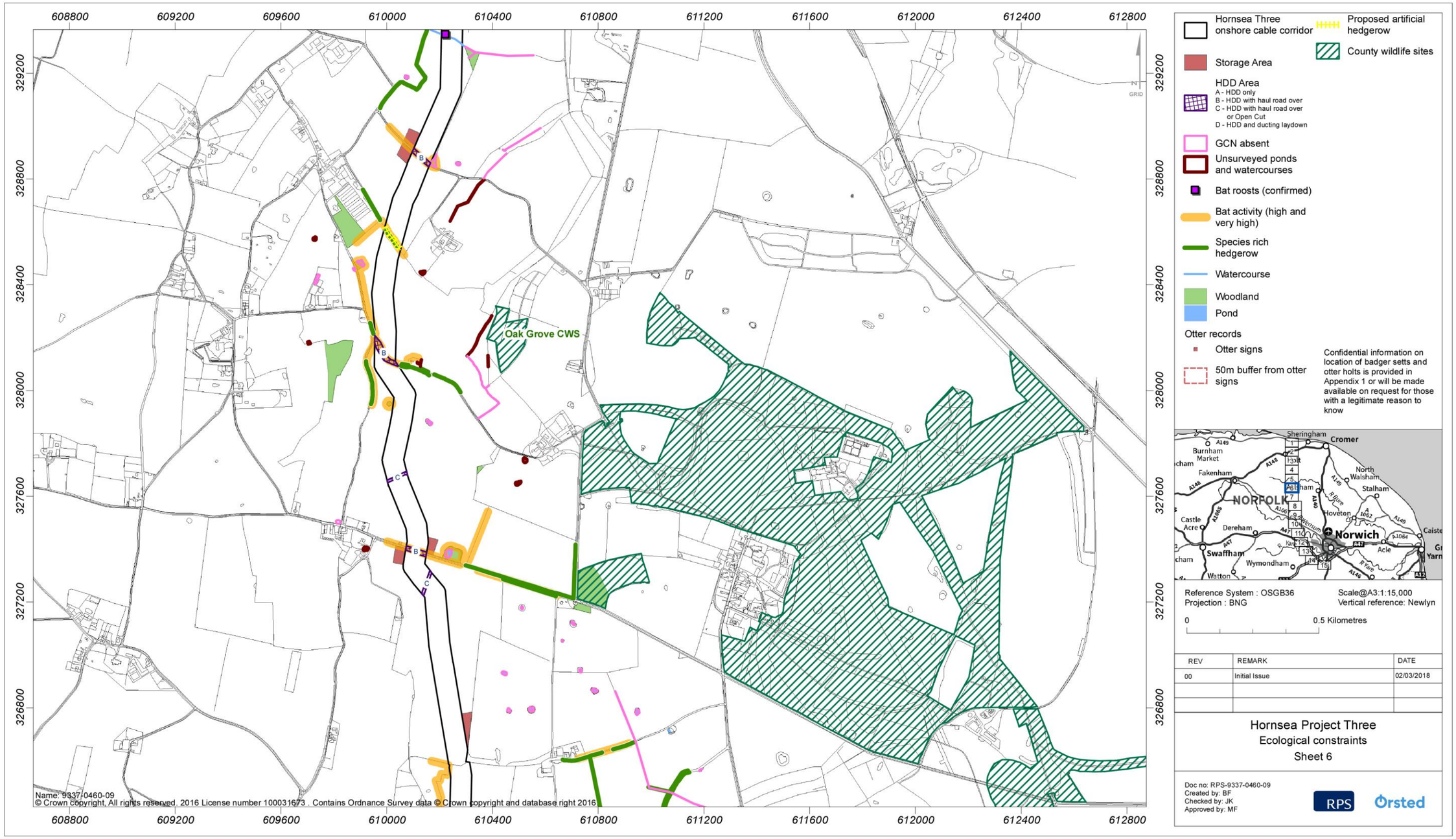

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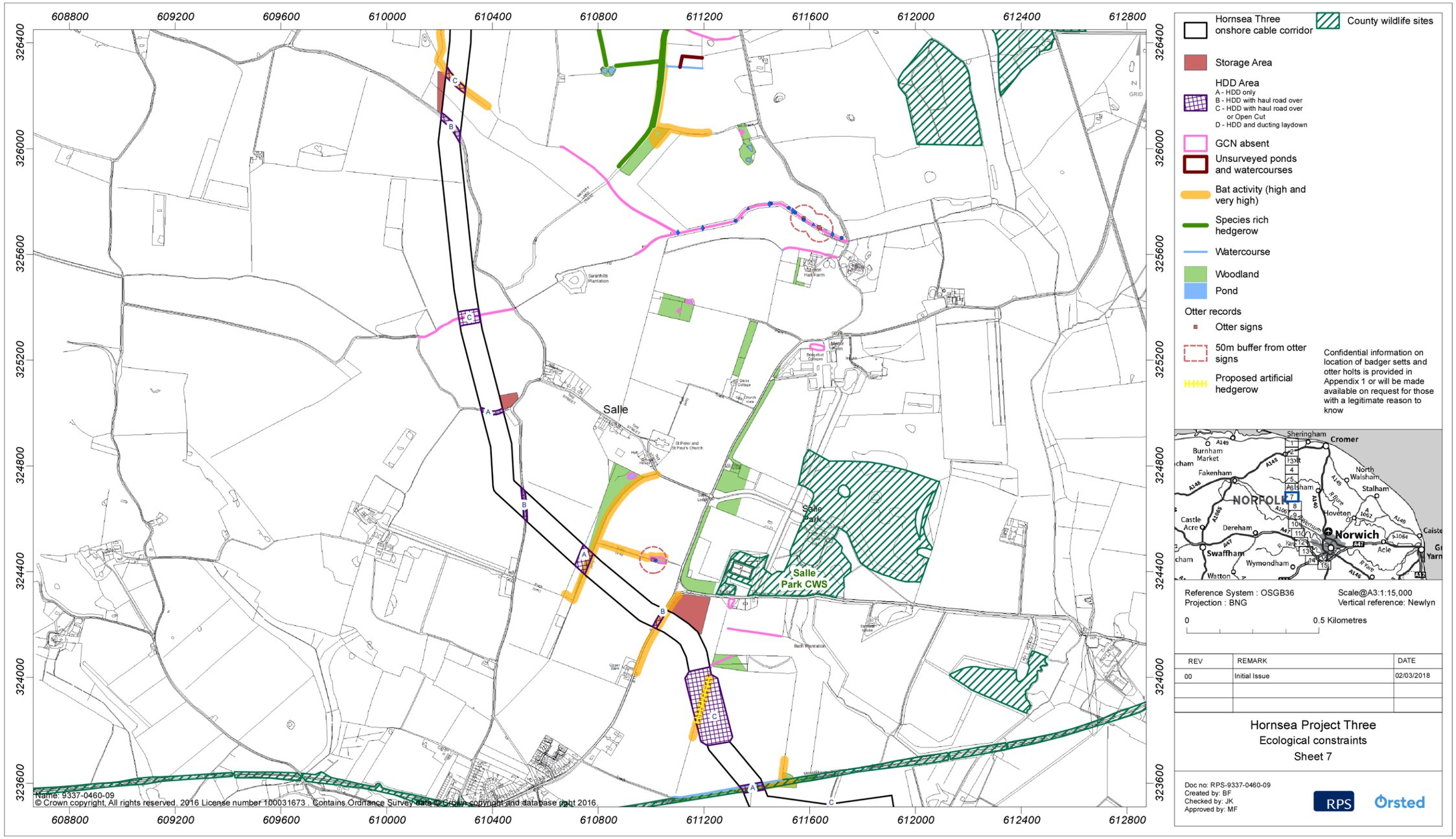

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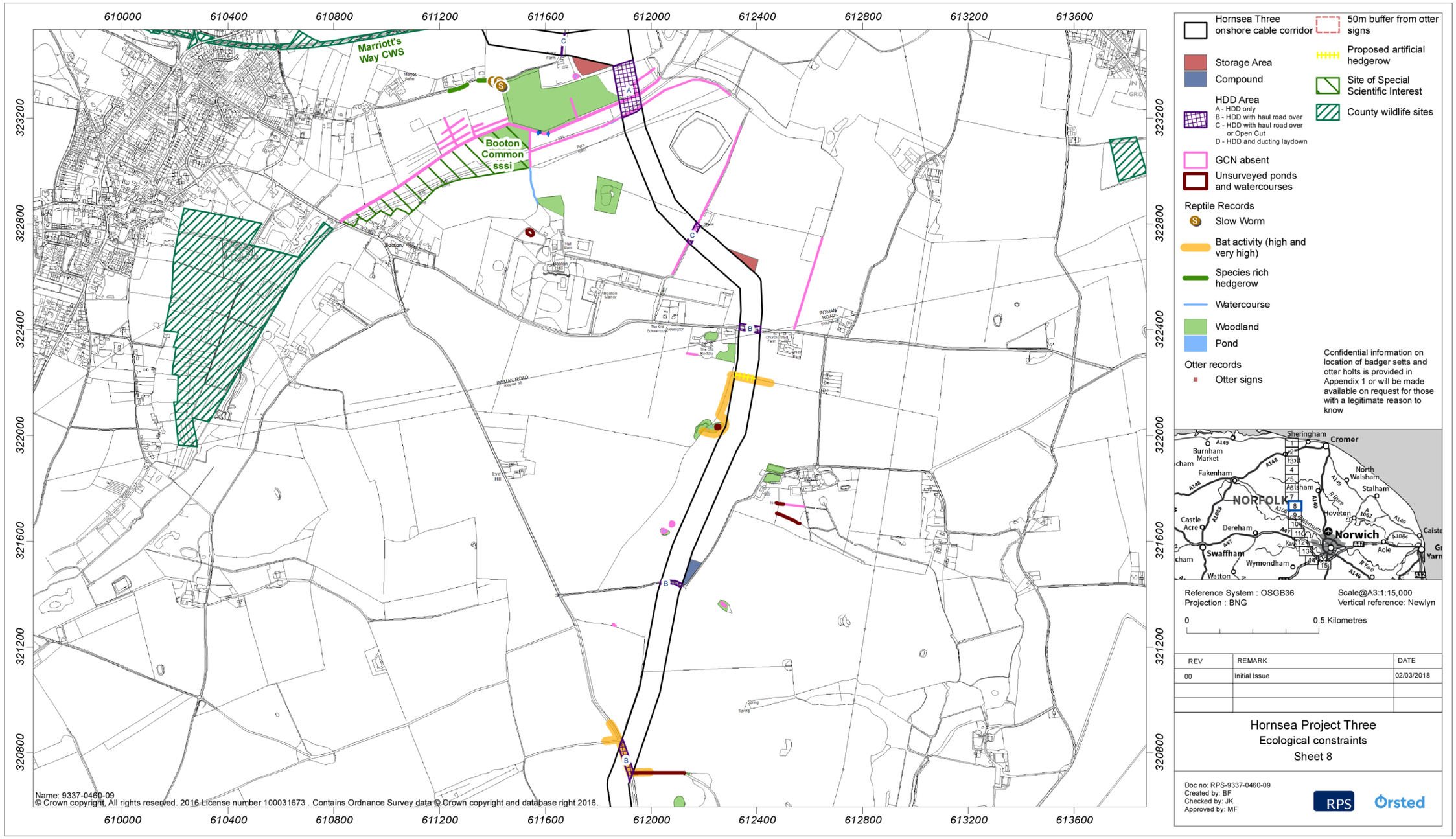

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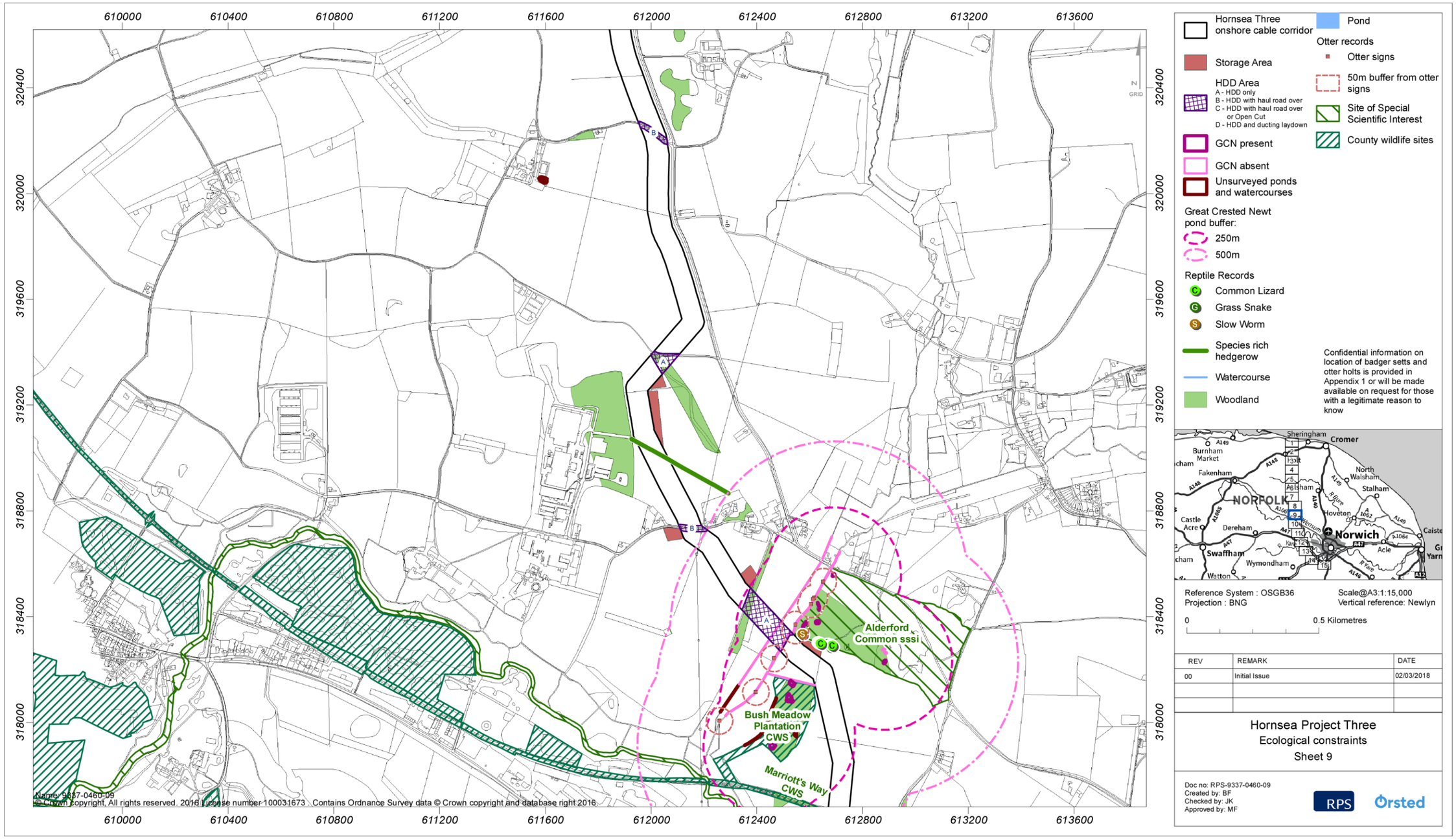

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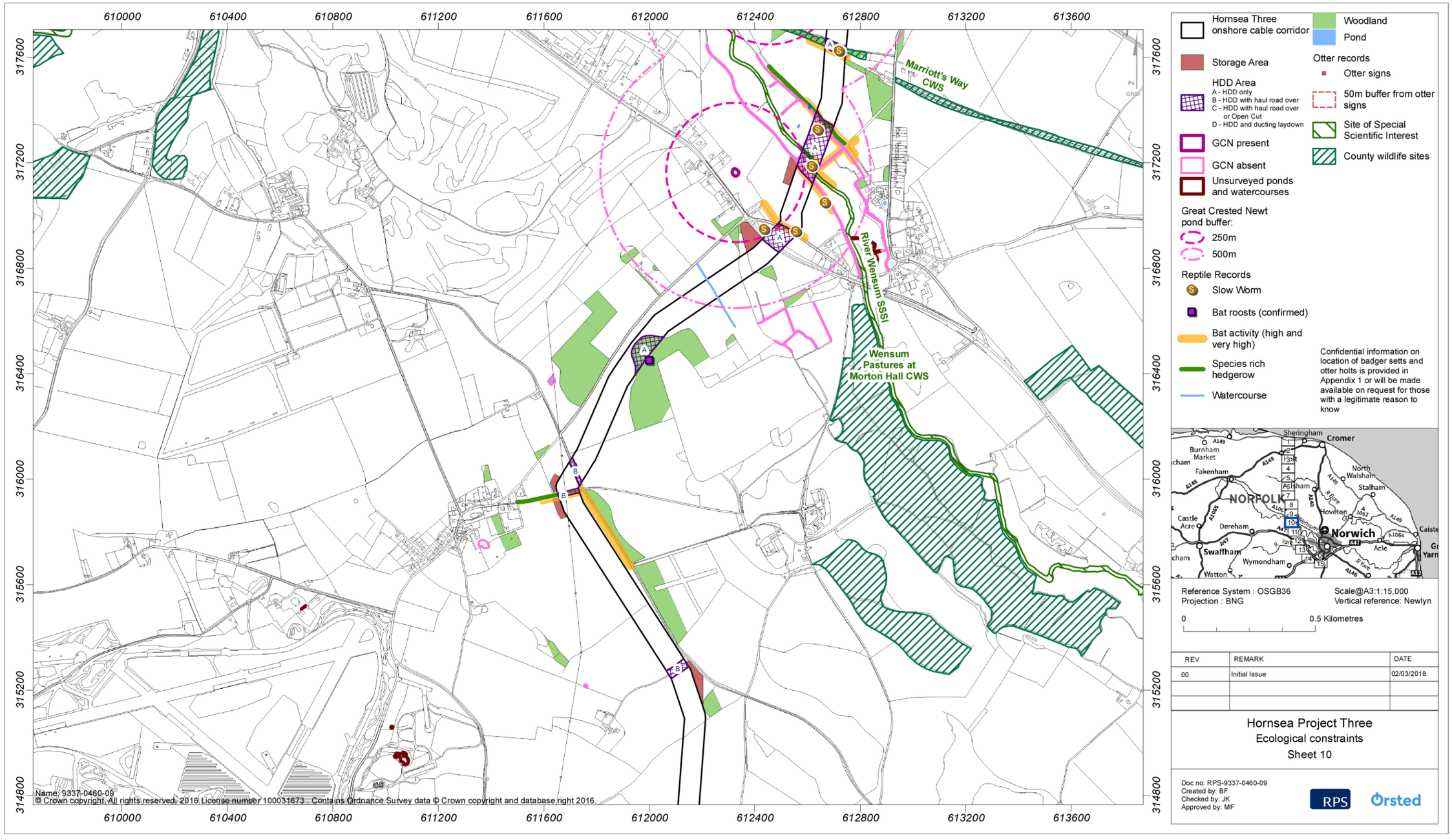

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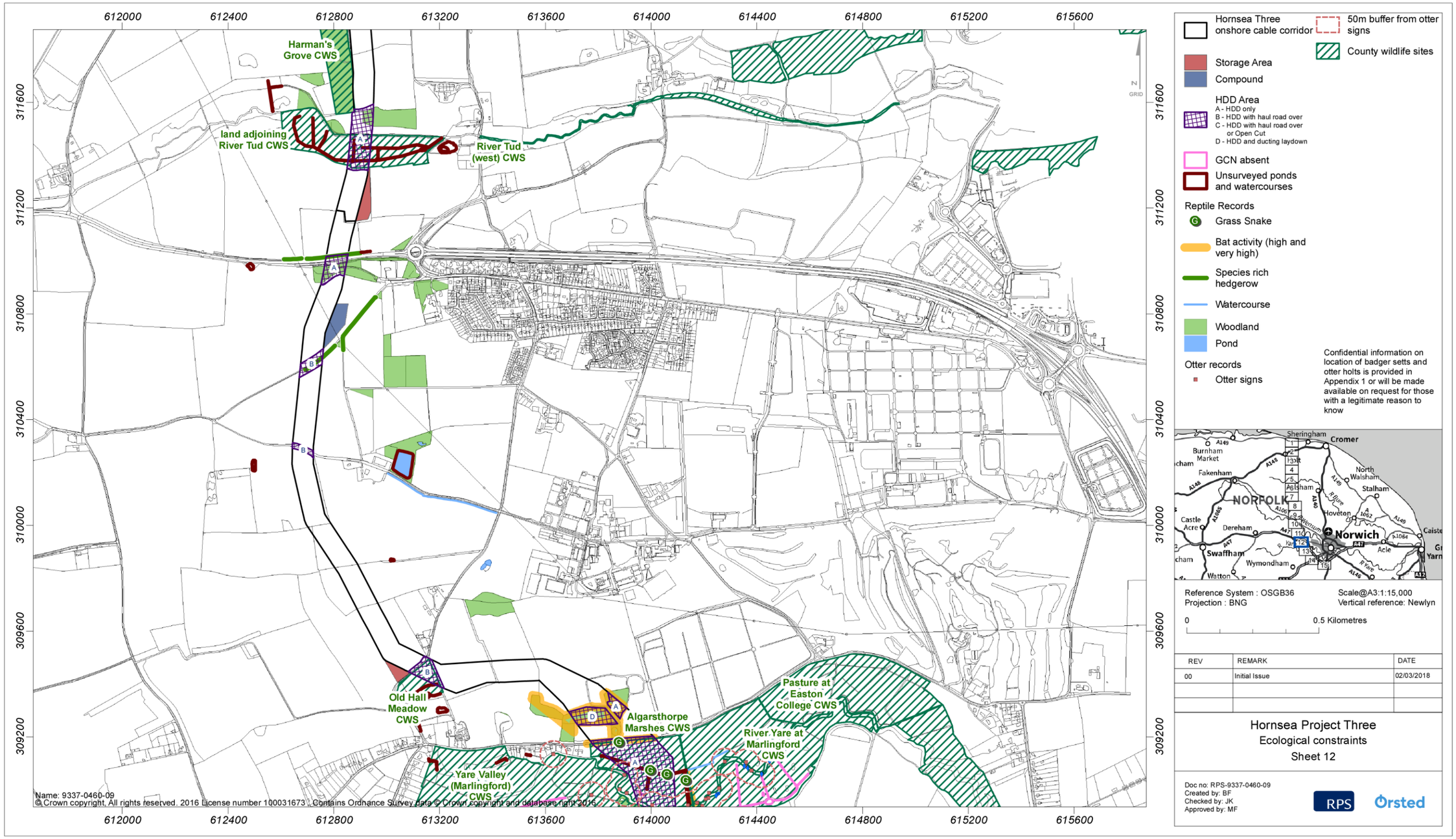

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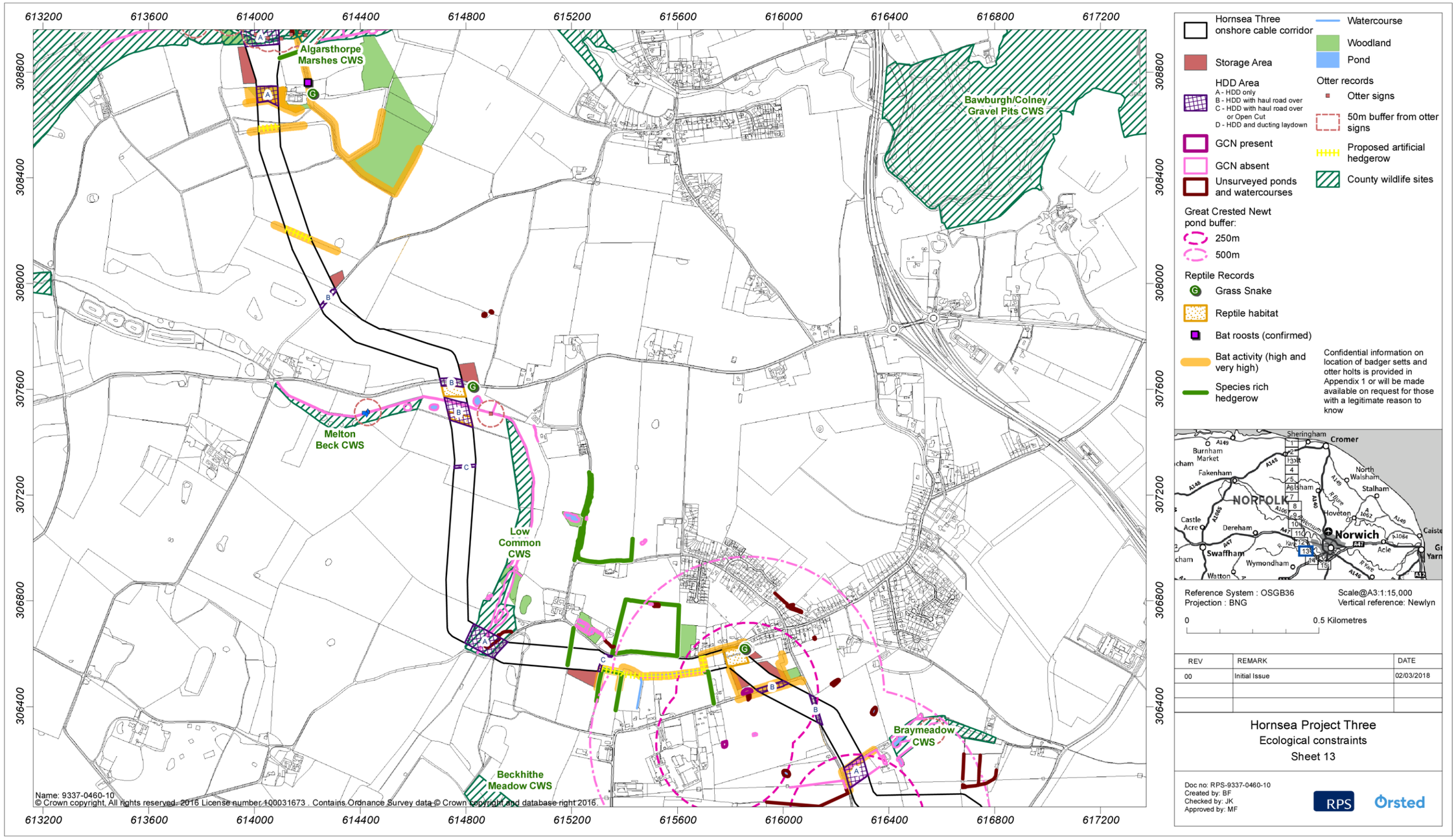

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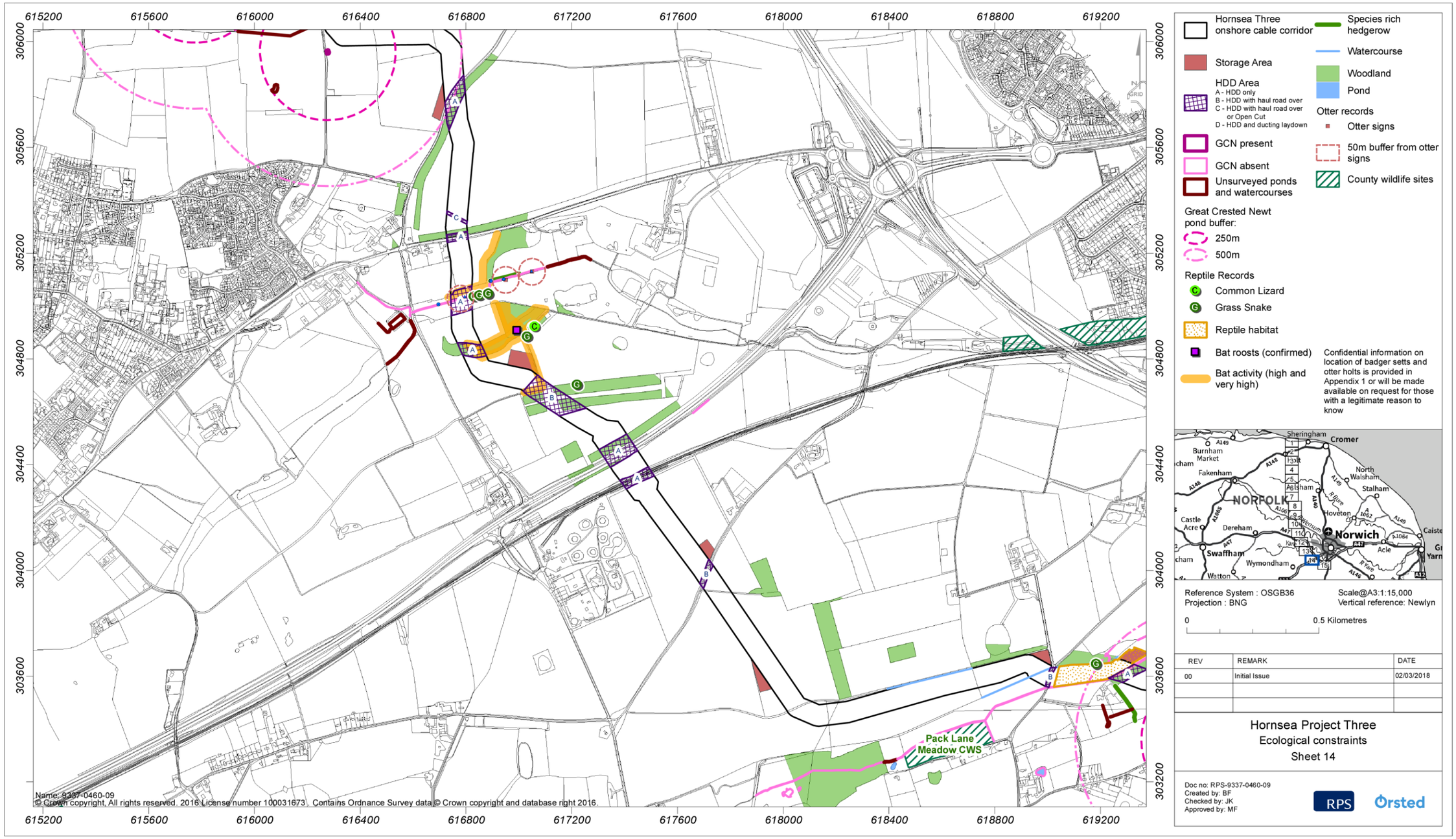

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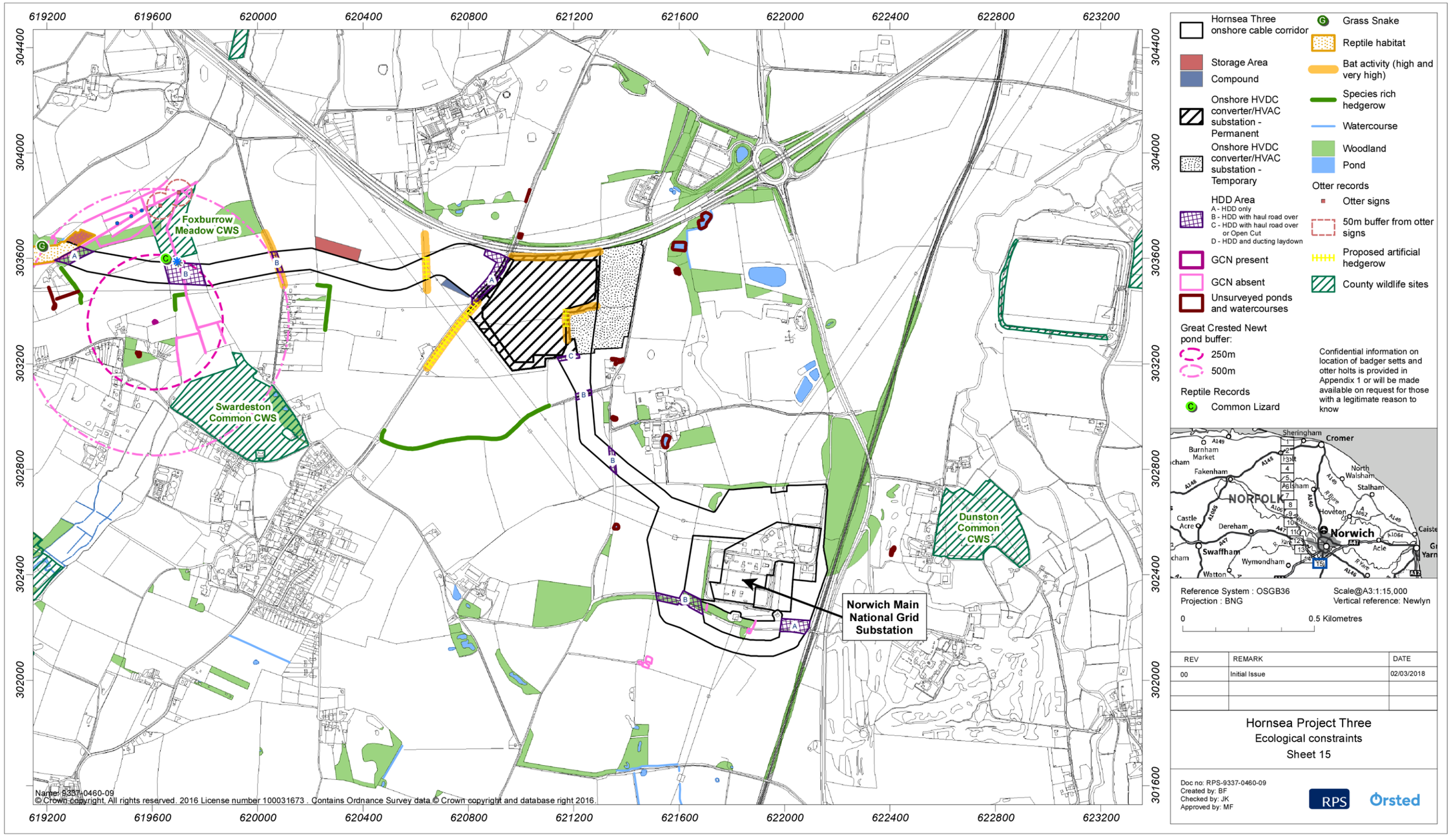

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