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Appendix 6.A – Preliminary Ecological Appraisal

NeuConnect, Great Britain to Germany
Interconnector: GB Onshore Scheme
Preliminary Ecological Appraisal Report

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1. Introduction

AECOM was instructed by NeuConnect Britain Limited (the 'Applicant') to undertake a Preliminary Ecological Appraisal (PEA) of the terrestrial area (*i.e.* the non-intertidal area) for the proposed development (the 'Proposed Development') of an electricity convertor station and substation at Grain, Isle of Grain. The proposed electricity converter station and substation will form part of a Direct Current (DC) electricity link (referred to as an interconnector) between Great Britain and Germany. As part of the application(s), the Applicant may also seek outline planning permission for underground DC and Alternating Current (AC) cables however this is subject to the Applicant's permitted development status.

1.1 The Project

NeuConnect (the 'Project'), is a 1400 megawatt (MW) interconnector between Great Britain and Germany. The Project will create the first direct electricity link between Great Britain and German energy networks. The new link will create a connection for electricity to be passed in either direction between Great Britain and Germany. The Project will be formed by over 700 kilometres (km) of subsea and underground High Voltage Direct Current (HVDC) cables, with on-shore converter stations linking into the existing electricity grids in Great Britain and Germany.

The connection points for the interconnector are at the Isle of Grain in Kent, England and the Wilhelmshaven region in Germany. The subsea cables connecting these points will traverse through British, Dutch and German waters.

1.2 Proposed Development

NeuConnect (the 'Project'), is a 1400 megawatt (MW) interconnector between Great Britain and Germany. The Project will create the first direct electricity link between Great Britain and German energy networks. The new link will create a connection for electricity to be passed in either direction between Great Britain and Germany. The Project will be formed by approximately 700 kilometres (km) of subsea and underground High Voltage Direct Current (HVDC) cables, with on-shore converter stations linking into the existing electricity grids in Great Britain and Germany.

The Proposed Development will comprise of three structures, a Converter Station, Sub-station and a Direct Current (DC) cable route (see Figure 1).

The footprint of the proposed converter station (green hashed area in Figure 1) is expected to be up to approximately 250 metres (m) by 250 m (to the perimeter security fence), with a maximum height of up to 26 m.

The footprint of the proposed substation (pink hashed areas in Figure 1) is expected to be approximately 80 m by 80 m (to the perimeter security fence), with a maximum height of 14 m.

The proposed DC cable corridor (purple hashed route between the intertidal area and the converter station in Figure 1) will be approximately 1.6 km long (from landfall to the converter station). The preferred installation method will be underground, which will result in a temporary loss of land during installation. The working corridor for the installation of the cable corridor will be 30 m.

Additional laydown areas (blue hashed areas in Figure 1) will be required for construction, comprising 1.5 hectare (ha) for the converter laydown and 0.3 ha for the substation laydown.

1.3 Site Description

The Proposed Development area (the 'Site') is entirely within the boundary of Medway Council and is centred on the Isle of Grain located at the tip of the Hoo Peninsula between the Thames Estuary to the north and the Medway Estuary to the south. The Site is located to the west of the village of Grain, Isle of Grain, Kent at Ordnance Survey (OS) central grid reference TQ 88205 76727. Land use comprises a mix of industrial development to the south, the small settlement of Grain to the southeast and undeveloped land, much of which is designated for ecological interests, to the north (along the coastline) and to the west. Land within the Site and in the immediate vicinity has historically been used for the extraction of gravel and sand and the resultant voids used for landfill.

Figure 1 shows the Site boundary (red-line), the cable corridor (purple line) and proposed location of each structure.

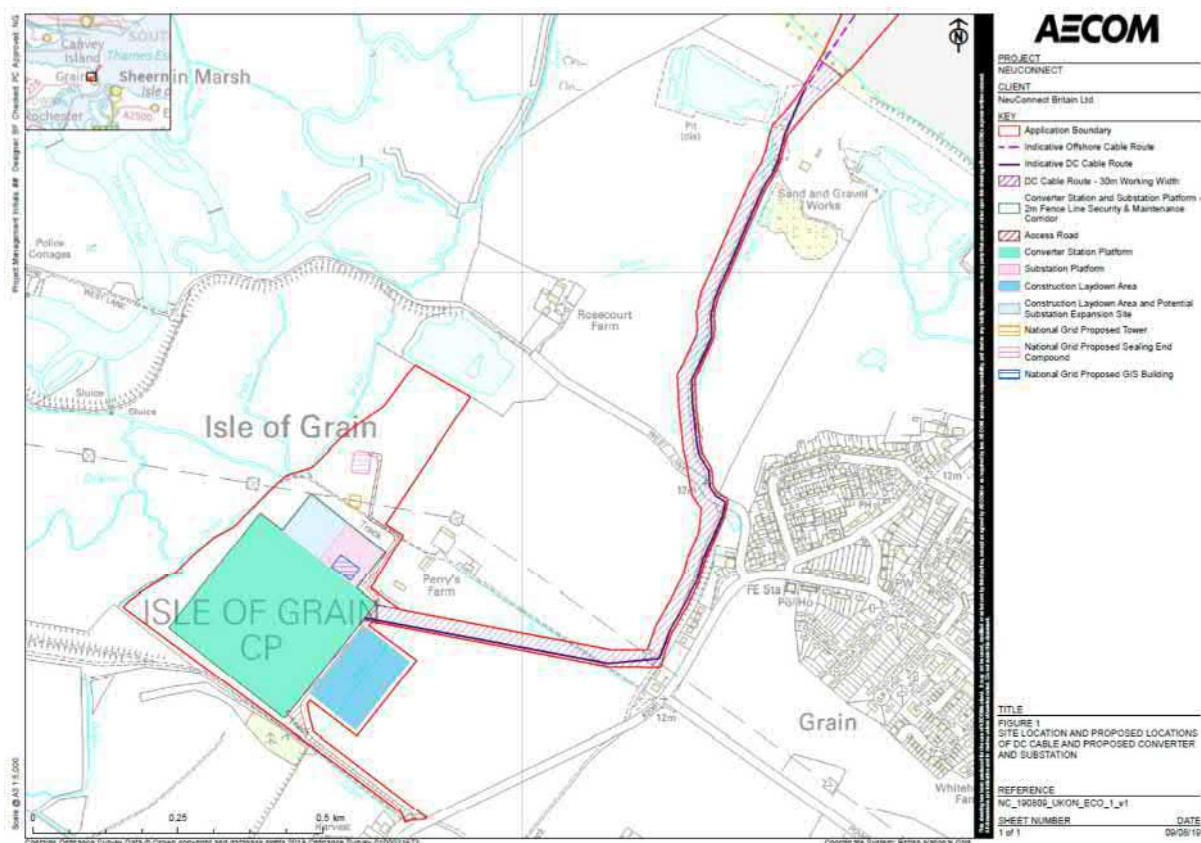


Figure 1 - Site boundary and location of structures

1.4 Purpose and Scope of the Preliminary Ecological Appraisal

This PEA was commissioned to identify whether there are known or potential ecological receptors (nature conservation designations and protected / notable habitats and species) that may constrain or influence the design and implementation of the Proposed Development. The approach applied when undertaking this PEA accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017)¹. The PEA addresses relevant wildlife legislation and planning policy as summarised in Section 2 of this report and is consistent with the requirements of British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development².

In order to deliver the PEA, a desk study and an extended Phase 1 Habitat Survey were undertaken by an appropriately experienced ecologist, to identify ecological features within the Proposed Development area (the Site) and the wider potential zone of influence. The potential zone of influence was defined with reference to the red line boundary as shown on Figure 1 and type of development. Additional details are provided in Section 3: Methods.

The purpose of the PEA was to:

- identify and categorise habitats present within the Site and any areas immediately outside of the Site where there may be potential for direct or indirect effects (the “zone of influence”);
- carry out an appraisal of the potential of the habitats recorded to support protected or notable species of fauna and flora; and

¹ CIEEM (2017) Guidelines for Preliminary Ecological Appraisal. https://www.cieem.net/data/files/Publications/Guidelines_for_Preliminary_Ecological_Appraisal_Jan2018_1.pdf [accessed April 2019]

² British Standards Institution (2013) BSI Standards Publication 42020:2013. Biodiversity – Code of practice for planning and development.

- provide advice on any potential ecological constraints and opportunities in the zone of influence that should be addressed in any future planning applications for the Site, including the identification (where relevant) of any requirements for follow-up habitat and species surveys and/or requirements for ecological mitigation.

The purpose of this report is to provide a high level appraisal of the ecological risks and opportunities associated with the Proposed Development. The report identifies the scope of further work (where necessary) that would be required to support a planning application and to inform an Ecological Impact Assessment (EclA). High level recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the Proposed Development (where known) on the identified ecological receptors, and of potential enhancements to the biodiversity.

2. Wildlife Legislation and Planning Policy

2.1 Wildlife Legislation

The following wildlife legislation is potentially relevant to the Proposed Development:

- Wildlife and Countryside Act (WCA) 1981 (as amended);
- Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2018; and
- Natura (2000) including the Birds Directive (2009) and Habitats Directive (1992).

The above legislation has been considered when planning and undertaking this PEA using the methods described in Section 3, when identifying potential constraints to the Proposed Development, and when making recommendations for further survey, design options and mitigation, as discussed in Section 5. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed development.

Further information on the requirements of the above legislation is provided in Appendix A.

2.2 National Planning Policy

2.2.1 The National Planning Policy Framework

The National Planning Policy Framework (NPPF) was originally published on 27th March 2012 and detailed the Government's planning policies for England and how these are expected to be applied. The NPPF was then revised on 24th July 2018 and 19th February 2019.

The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this is to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

The NPPF is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

Further information on the relevant parts of the NPPF is provided as Appendix A.

2.2.2 The 25 Year Environment Plan

In early 2018 the government published its 25 Year Environment Plan to provide guidance on its intended approach to managing the environment. The plan promotes a 'natural capital' approach that recognises the wider value of the environment and its contribution, such as food, clean water and air, wildlife, energy, wood, recreation and protection from hazards. The plan seeks to embed a 'net environmental gain' principle for development to deliver environmental improvements locally and nationally.

2.2.3 UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UKBAP) was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority habitats and species of conservation concern were published, and have subsequently been succeeded by the UK Post-2010

Biodiversity Framework (July 2012). The UK list of priority species and habitats, however, remains an important reference source and has been used to help draw up statutory lists of priority habitats and species in England, Scotland, Wales and Northern Ireland. For the purpose of this assessment, the UK BAP is still used as one of the criteria to assist in assigning national value to an ecological receptor.

The UK Post-2010 Biodiversity Framework sets a broad enabling structure for action across the UK between now and 2020, including a shared vision and priorities for UK-scale activities to help deliver the Aichi targets and the EU Biodiversity Strategy. A major commitment by Parties to the Convention of Biological Diversity is to produce a National Biodiversity Strategy and/or Action Plan.

The UK Post-Development Framework is relevant within England in the context of Section 40 of the Natural Environment and Rural Communities (NERC Act) 2006, meaning that Priority Species and Habitats are material considerations in planning. These habitats and species are identified as those of conservation concern due to their rarity or a declining population trend. This list encompasses 56 habitats and 943 species.

2.3 Local Planning Policy

2.3.1 Local and Regional Plans

The Site is not supported by a formal allocation in adopted local planning policy, albeit its status is recognised in existing and emerging policy. Summary text for relevant local planning policies is included below. For the precise wording of each specific policy please refer back to the source document. These policies have been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for further survey, design options and ecological mitigation, as described in Section 5.

Regional Planning Guidance for the South East (RPG9)

RPG9 sets out a number of principles to govern development in the region. One of these requires the fullest possible use to be made of opportunities for redevelopment and recycling of urban land with the aim of securing regeneration and an improvement in the urban environment. The regional guidance also specifies that development should respect the region's valuable environmental features and avoid the wasteful use of land and other natural resources. Within the strategy, the region's environment is considered to be one of its key assets. A significant improvement to the physical environment is sought including promoting good design and building on local distinctiveness. It also indicates that priority should be given to protecting designated areas of national or strategic environmental quality.

The Thames Gateway Planning Framework (RPG9a)

The principles of RPG9 are carried forward into "*The Thames Gateway Planning Framework*" (RPG9a). This Planning Framework is more focused on the locality and the environmental issues of Medway. One of its objectives is to safeguard and enhance natural and man-made environmental assets and, where necessary, improve the quality of the local environment and encourage the highest quality in the design, layout and appearance of new developments. It also recognises that there is scope for environmental improvement and economic regeneration to complement each other.

Kent and Medway Structure Plan 2006

The Kent and Medway Structure Plan was adopted by Kent County Council and Medway Council on 6th July 2006. One of the key themes of the plan is to nurture Kent's environment and resources. Policy SP1: Conserving and Enhancing Kent's Environment and Ensuring a Sustainable Pattern of Development states that, "*the primary purpose of Kent's development and environmental strategy will be to protect and enhance the environment and achieve a sustainable pattern and form of development.*" The plan also details the importance of nature conservation and provides protection for wildlife. Policy EN6: International and National Wildlife Designations and Policy EN7: County and Local Wildlife Designations both protect International, National, County and Local designated wildlife sites from development. Additionally, Policy EN8: Protection, Conservation and Enhancement of Biodiversity specify that, "*development likely to have an adverse effect, directly or indirectly on important habitats or species will not be permitted unless:*

- *there is an overriding need for the development that outweighs adverse impact on nature conservation; and*

- *adverse impact on an important nature conservation resource can be adequately mitigated and/or compensated.”*

Policy EN9: Trees, Woodland and Hedgerows states that, *“provision should be made for the creation of new woodland, especially indigenous broad-leaved species at appropriate locations in Kent, including provision of new habitats as part of development proposals. Additionally tree cover and the hedgerow network should be maintained.”*

Medway Local Plan 2003

The plan outlines the importance of protecting Medway’s outstanding wildlife. Policy BNE35: International and National Nature Conservation Sites and Policy BNE36: Strategic and Local Nature Conservation Sites both state *“development that would materially harm, directly or indirectly, the scientific or wildlife interest of these sites will not be permitted unless the development is connected with, or necessary to, the management of the site’s wildlife interest.”* The plan also states that, *“in accordance with Policy BNE6, Medway Council will seek the enhancement and incorporation of new wildlife resources and habitat management within new developments.”*

Furthermore, Policy BNE37: Wildlife Habitats states that *“development that would cause a loss, directly or indirectly, of important wildlife habitats or features not protected by policies BNE35 and BNE36 will not be permitted, unless:*

- *there is an overriding need for the development that outweighs the importance of these wildlife resources;*
- *no reasonable alternative site is (or is likely to be) available if ancient woodland, inter-tidal habitats and calcareous (chalk) grassland would be lost;*
- *the development is designed to minimise the loss involved; and*
- *appropriate compensatory measures are provided”.*

Policy BNE39: Protected Species details that development will not be permitted if statutorily protected species and/or their habitat will be harmed. Additionally, conditions will be attached, and/or obligations sought, to ensure that protected species and/or their habitats are safeguarded and maintained.

Furthermore, Policy BNE38: Wildlife Corridors and Stepping Stones states that *“development should, wherever practical, make provision for wildlife habitats, as part of a network of wildlife corridors or stepping stones”.*

Future Medway Local Plan

The Medway area’s environmental quality is of international and national importance with 28% designated as a Special Protection Area (SPA) or Ramsar site, and a third of the land area designated as Sites of Special Scientific Interest (SSSI). Most of the designated land is in favourable condition, but some areas are in unfavourable condition, largely resulting from land management practices. Consequently, Medway Council are currently working on a new Local Plan to replace the 2003 Medway Local Plan and cover the period up to 2035, which, subject to outcome, will be adopted in 2020.

As part of the preparing the new plan, a Development Strategy technical report was drafted to set out the ambitions of the plan. Within Section 7 of the Developmental Strategy report, titled “Natural Environment and Green Belt” the council’s vision and strategic objectives for the Local Plan is to place a healthy and attractive environment at the heart of its ambitions for Medway in 2035.

To achieve this, Policy NE 1 details that no development will be permitted which may have an adverse effect on the integrity of a Special Area of Conservation (SAC), SPA or Ramsar site, alone or in combination with other plans or projects.

Policy NE2: Conservation and Enhancement of the Natural Environment also states *“the council will promote the conservation and enhancement of biodiversity in Medway, by restricting development that could result in damage to designated wildlife areas, and pursuing opportunities to strengthen biodiversity networks”.*

Furthermore, Policy NE5: Securing strong Green Infrastructure details the protection of the green infrastructure network of parks and paths, watercourses, and farmed, forested and natural environments across rural and urban Medway. The highest protection will be given to securing the ecological and landscape interests of sites designated of international importance as a Special Protection Area, Ramsar site and/or Special Area of Conservation. A high level of protection from damaging impacts of development will be given to Sites of Special Scientific Interest and Ancient Woodland and the council will consider the need to protect the special features of Regionally Important Geological Sites, Local Wildlife Sites and Local Nature Reserves. Additionally, this policy

states that new development should provide for green infrastructure that supports the successful integration of development into the landscape, and contributes to improved connectivity and public access, biodiversity, landscape conservation, design, management of heritage features, recreation and seeks opportunities to strengthen the resilience of the natural environment.

The council will also expect development proposals to demonstrate that they are designed to be resilient to, and can adapt to the future impacts of climate change, in strengthening ecological networks.

2.3.2 Local Biodiversity Action Plans

Kent Biodiversity Action Plan

The Kent Biodiversity Action Plan (1997)¹ sets out Habitat Action Plans for 20 habitat types and 13 Species Action Plans within the county. These are as follows:

- Woodland & Scrub;
- Wood-pasture & Historic Parkland;
- Old Orchards;
- Hedgerows;
- Lowland Farmland;
- Urban Habitats;
- Acid Grassland;
- Neutral & Marshy Grassland;
- Chalk Grassland;
- Heathland & Mire;
- Grazing Marsh;
- Reedbeds;
- River & Streams;
- Standing water;
- Intertidal Mud & Sand;
- Saltmarsh;
- Sand Dunes;
- Vegetated Shingle;
- Maritime Cliffs;
- Marine;
- Water Vole *Arvicola amphibius*;
- Otter *Lutra lutra*;
- Dormouse *Muscardinus avellanarius*;
- Serotine *Eptesicus serotinus*;
- Nightingale *Luscinia megarhynchos*;
- Great Crested Newt *Triturus cristatus*;
- Allis *Alosa alosa* and Twaite Shad *Alosa fallax*;
- White-clawed Crayfish *Austropotamobius pallipes*;

¹ The Kent Biodiversity Action Plan: A framework for the future of Kent's wildlife. Kent Biodiversity Action Plan Steering Group (1997)

- Heath Fritillary *Melitaea athalia*
- Pearl-bordered Fritillary *Boloria euphrosyne*;
- Silver-spotted Skipper *Epargyreus clarus*;
- Early Gentian *Gentianella anglica ssp anglica*; and
- Late Spider Orchid *Ophrys fuciflora*.

Kent Biodiversity 2020 and beyond – a strategy for the natural environment 2015 – 2025.

A more recent strategy for biodiversity in Kent and Medway is the Kent Biodiversity strategy for 2015 to 2025.

This plan sets targets for conservation of Kent's priority habitats and these conservation targets include:

- maintaining the extent and achieving good condition of existing habitat;
- restoring degraded habitat to meet the criteria for the BAP priority habitat description; and
- creating new habitat.

The strategy focuses on 33 priority habitats. These are as follows:

- Lowland Mixed Deciduous Woodland;
- Wet Woodland;
- Lowland Beech and Yew Woodland;
- Wood Pasture and Parkland;
- Traditional Orchard;
- Hedgerows;
- Arable Field Margins;
- Open mosaic habitats on previously developed land;
- Lowland dry acid grassland;
- Lowland meadow;
- Lowland Fen;
- Lowland calcareous grassland;
- Lowland heathland;
- Coastal and floodplain grazing marsh;
- Reedbeds;
- Rivers, including chalk rivers;
- Ponds;
- Maritime cliffs and slopes;
- Coastal sand dunes;
- Coastal vegetated shingle;
- Coastal saltmarsh;
- Intertidal mudflats;
- Intertidal and sub tidal chalk;
- Seagrass beds;
- Intertidal Under boulder communities;

- Peat and Clay Exposures with Piddocks;
- Saline lagoons;
- Sheltered muddy gravels;
- Subtidal sands and gravels;
- *Sabellaria spinulosa* reefs;
- *Sabellaria alveolata* reefs;
- Blue Mussel Beds on Sediment; and
- Fragile Sponge and Anthozoan Communities on Subtidal Rocky Habitats.

3. Methods

3.1 Desk Study

A desk study was carried out to identify nature conservation designations and protected / notable habitats and species potentially relevant to the Proposed Development.

A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the proposed scheme on different ecological receptors; and, an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any international nature conservation designations within 10 km of the Site boundary; other statutory nature conservation designations within 2 km of the Site boundary; and, local non-statutory nature conservation designations and protected and notable habitats and species within 2 km of the Site boundary.

The desk study was carried out using the data sources detailed in Table 1. Protected / notable habitats and species include those listed under Schedules 1, 5 and 8 of the WCA; Schedules 2 and 4 of the Habitats Regulations; species and habitats of principal importance for nature conservation in England listed under section 41 (S41) of the NERC Act; and other species that are Nationally Rare, Nationally Scarce or listed in national or local Red Data Lists and Biodiversity Action Plans.

Table 1. Desk study data sources

Data Source	Accessed	Data Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) website	July 2018	International statutory designations within 10 km. Other statutory designations within 2 km. Ancient woodlands and notable habitats within 2 km.
Ordnance Survey 1:2500 Pathfinder maps and aerial photography	July 2018	Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints.
Kent and Medway Biological Records Centre	July 2018	Sites designated for their nature conservation value (SSSIs, LNRs, LWS) within 2 km of the Site boundary. Protected / notable species within 2 km of the Site boundary.

3.2 Field Survey

3.2.1 Phase 1 Habitat Survey

A Phase 1 Habitat survey was undertaken in accordance with the standard survey method (Joint Nature Conservation Committee, 2010)¹. Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 Habitat survey method can be “extended” to record target notes on protected, notable and invasive species.

3.2.2 Appraisal of the Potential Suitability of Habitats for Protected and Notable Species

An appraisal was made of the potential suitability of the habitats present to support protected / notable species of plants or animals (as defined in Section 3.1). Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys were carried out for any particular species.

¹ Joint Nature Conservation Committee (2010) Handbook for phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough

3.2.3 Great Crested Newt Habitat Appraisal

Prior to undertaking the extended Phase 1 Habitat survey, aerial photography and 1:2,500 Ordnance Survey mapping were examined to attempt to identify all ponds and waterbodies within 500 m of the site (see Figure 2). This process could not guarantee to definitively identify all waterbodies present, but is the best that can be achieved within the limits of available data.

Specific searches were made during the extended Phase 1 habitat survey (as described in Section 3.2.1) for ponds or other waterbodies and watercourses within and adjacent to the site that could support Great Crested Newt

3.3 Desk Study and Field Survey Limitations

The aim of a desk study is to help characterise the baseline context of a Proposed Development and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed development.

Where habitat boundaries coincide with physical boundaries recorded on OS maps, the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held GPS. Where areas of habitat are given they are approximate and should be verified by measurement on site where required for design or construction. While indicative locations of trees are recorded this does not replace requirements for detailed specialist arboricultural survey to British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction.

The majority of ecological data is valid only for short periods due to the inherently transient nature of the subject (CIEEM, 2019¹). On this basis, it is recommended that the PEA and desk study will need repeating in two years (*i.e.* in 2020).

¹ CIEEM: Advice Note on the lifespan of ecological surveys and reports <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf> (Accessed May 2019)

4. Results

4.1 Nature Conservation Designations

4.1.1 Statutory Designations

The desk study identified seven statutory sites of International importance within 10 km of the Site, (as per the method in Section 3.1 of this report). These sites, designated for ecological reasons, are detailed in Table 2 and are listed in descending order, with those closest to the Site listed first (see Figure 3). Site designation details are summarised in Table 2 and are taken from citation documents, published online by the Joint Nature Conservation Committee (JNCC) for the individual sites.

Table 2. International Statutory Nature Conservation Designated sites within 10 km of the Site

Site Name and Designation	Reason(s) for Designation	Area (ha)	Approximate distance from the Site (km)	Connectivity to the Site
Thames Estuary and Marshes Ramsar / SPA	The site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates and supports populations and an assemblage of waterbirds occurring at levels of international importance.	5,588.59	0.0	Potential for ecological connections between interest features of the Ramsar / SPA and the Site.
Medway Estuary and Marshes Ramsar / SPA	The site holds several nationally scarce plants and a total of at least twelve British Red Data Book species of wetland invertebrates. The site also holds a significant number of non-wetland British Red Data Book species and supports populations and an assemblage of waterbirds occurring at levels of international importance.	4,696.74	1.1	Potential for ecological connections between interest features of the Ramsar / SPA and the Site.
Outer Thames Estuary SPA	The site qualifies for supporting breeding Common Tern <i>Sterna hirundo</i> , Little Tern <i>Sternula albigrons</i> and non-breeding Red-throated Diver <i>Gavia stellata</i>	392451.66	2.2	No connectivity between the SPA and the Site, although birds associated with the SPA may forage offshore from the Site.
Benfleet and Southend Marshes Ramsar / SPA	The site supports populations and an assemblage of waterbirds occurring at levels of international importance.	2,251.31	4.2	No connectivity between the Site and the Ramsar / SPA, although it is acknowledged that there is likely to be interchange of waterbirds between designated wetland sites in the region.
Essex Estuaries SAC	The site comprise of mainly Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>), representing over 10% of the UK resource. The site also includes intertidal and subtidal sediment, mud, rock, sand and seagrass beds.	4,6111.43	4.8	No connectivity between the Site and the SAC.
Foulness (Mid-Essex Coast Phase 5) Ramsar / SPA	The site contains extensive saltmarsh habitat, with areas supporting full and representative sequences of saltmarsh plant communities covering the range of variation in Britain. The site also supports a number of nationally-rare and nationally-scarce plants species and British Red Data Book invertebrates. Furthermore Foulness supports populations of waterbirds occurring at levels of	10,932.95	4.9	No connectivity between the Site and the Ramsar / SPA, although it is acknowledged that there is likely to be interchange of waterbirds between designated wetland sites in the region.

Site Name and Designation	Reason(s) for Designation	Area (ha)	Approximate distance from the Site (km)	Connectivity to the Site
	international importance			
The Swale Ramsar / SPA	The site supports nationally scarce plants and at least seven British Red Data book invertebrates. The site also supports populations of waterfowl occurring at levels of international importance.	6,514.71	7.1	No connectivity between the Site and the Ramsar / SPA, although it is acknowledged that there is likely to be interchange of waterbirds between designated wetland sites in the region.

The desk study identified three statutory sites of national importance within 2 km of the Site, (as per the method in Section 3.1 of this report). These sites, designated for ecological reasons, are detailed in Table 3 and are listed in descending order, with those closest to the Site listed first (see Figure 3). Site designation details are summarised in Table 3 and are taken from citation documents, published online by the JNCC for the individual sites.

Table 3. National Statutory Nature Conservation Designated sites within 2 km of the Site

Site Name and Designation	Reason(s) for Designation	Area (ha)	Approximate distance from the Site (km)	Connectivity to the Site
South Thames Estuary and Marshes SSSI	The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000. Many species regularly occur in nationally important numbers and some species regularly use the site in internationally important numbers. The breeding bird community is also of particular interest and the diverse habitats support a number of nationally rare and scarce invertebrate species and an assemblage of nationally scarce plants.	5,449.14	0.0	Potential for ecological connections between interest features of the SSSI and the Site.
Medway Estuary and Marshes SSSI	The site forms the largest area of intertidal habitats which have been identified as value for nature conservation in Kent. The area holds internationally important populations of wintering and passage birds and is also important for its breeding birds. An outstanding assemblage of plant species also occurs on site.	6,840.14	0.5	Potential for ecological connections between interest features of the SSSI and the Site.
Medway Estuary MCZ	Medway Estuary MCZ is an inshore site located on the Kent coast. It encompasses the Medway Estuary from Rochester down to its mouth, and extends seaward to include an area between Sheerness and the Isle of Grain. One species and eight different habitats and their associated wildlife are protected by the Medway Estuary MCZ. Such a range of habitats creates an environment that is capable of supporting some of the most diverse communities of animals in the South-East region.	6,000.00	0.0	Potential for ecological connections between interest features of the MCA and the Site.

4.1.2 Non-statutory Designations

One non-statutory designated site (a Local Wildlife Site (LWS)) was identified during the desk study (based on the method given in Section 3.1 of this report) and more details of this site are presented in Table 4.

Table 4. Site with non-statutory designations for nature conservation

Site Name and Designation	Reason(s) for Designation	Area (ha)	Approximate Distance from the Site (km)	Connectivity to the Site
ME16 Grain Pit LWS	The mosaic of habitats within the LWS site (including neutral grassland and reedbed) are of local importance.	29.56	0.01	ME16 Grain Pit LWS is located immediately adjacent to the east of the Proposed DC cable corridor.

4.2 Habitats

The Phase 1 habitat survey was undertaken on 26th April 2018 and 16th August 2018 by suitably qualified AECOM ecologists who recorded and mapped all habitat types present within the survey area, along with any associated relevant ecological receptors observed.

Where relevant ecological receptors were present, target notes (Appendix B) were recorded and the position of these is shown on the Phase 1 Habitat map (Figure 4). Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey. This was not intended to be a detailed inventory of the plant species present in the survey area, as this is not required for the purposes of Phase 1 Habitat survey.

4.2.1 Phase 1 Habitat Types

The habitats recorded and their extent is shown in Table 5, with the distribution of each habitat shown on Figure 4. Illustrative photographs are provided as appropriate in Appendix C.

Table 5. Broad habitat types present on Site

Habitat	Area (ha)	% of site
Scrub, Scattered	0.22	1.0
Scrub, Dense/continuous	1.76	8.1
Neutral grassland, Semi-improved	0.06	0.3
Improved Grassland	0.48	2.2
Maritime Cliffs and Slopes (Hard Cliff)	0.01	0.0
Swamp	0.11	0.5
Cultivated/disturbed land, Arable	16.59	76.2
Cultivated/disturbed land, Ephemeral/short perennial	0.11	0.5
Other, Tall ruderal	1.37	6.3
Hardstanding	0.73	3.3

4.2.1.1 Scrub

There are a number of areas of scrub, particularly along the DC cable corridor and this consisted of Bramble *Rubus fruticosus agg.*, Butterfly-bush *Buddleja davidii*, Common Nettle *Urtica dioica*, Common Ragwort *Senecio jacobaea*, Dog Rose *Rosa canina agg.*, Hawthorn *Crataegus monogyna*, Hemlock *Conium maculatum* and Spear Thistle *Cirsium vulgare*.

4.2.1.2 Semi-improved Neutral Grassland

There is a small area of neutral grassland which consists of Cocksfoot, Common Bent, Common Mouse-ear, Creeping Cinquefoil, Cut-leaved Cranesbill, Grass Vetchling, Red Fescue, Ribwort Plantain, Sand Couch, Sheep's Sorrel, Wild Carrot, Yarrow, Yellow Oat-grass and Yorkshire Fog.

4.2.1.3 Swamp

Swamp vegetation, consisting of Common Reed, Common Reed-mace *Typha latifolia* and Sea Club-rush is located in wetland habitats within the DC cable corridor.

4.2.1.4 Arable

In the western part of the Site, within the proposed converter station and substation locations, there are a number of arable fields, this extends to the edge of the fields without arable margins present.

4.2.1.5 Ephemeral/short perennial

There is a large area of ephemeral / short perennial habitat, to the east of the DC cable corridor (but 0.11 ha within the Site boundary) which consists of a very sandy substrate and mound of sand. Plant species within this habitat consisted of Annual beard-grass *Polypogon monspeliensis*, Birds-foot Clover *Trifolium ornithopodioides*, Birds-foot Trefoil *Lotus corniculatus*, Black Medick *Medicago lupulina*, Blue Fleabane *Erigeron acer*, Buckshorn Plantain *Plantago coronopus*, Canadian Fleabane *Erigeron canadensis*, Common Bent *Agrostis capilaris*, Common Knotgrass *Polygonum aviculare*, Common Vervain *Verbena officinalis*, Fern Grass *Catapodium rigidum*, Hop Trefoil *Trifolium campestre*, Narrow-leaved Ragwort *Senecio inaequidens*, Procumbent Pearlwort *Sagina procumbens*, Red Clover *Trifolium pratense* and Ribwort Plantain *Plantago lanceolata*.

4.2.1.6 Tall Ruderal

The DC cable corridor runs through an area of tall ruderal habitat, which comprises of Spear Thistle, Broad-leaved Dock, False Oat-grass, Common Ragwort, Cocksfoot, Creeping Thistle, Red Fescue, Common Bent, Common Fleabane, Goats-rue, Curled Dock *Rumex crispus*.

4.2.1.7 Running Water

There is a small stream which runs from Pond 3 to the large former quarry of Pond 1. This contains small amounts of Sea Club-rush and Annual Beard-grass.

4.3 Notable Habitats

Table 6 provides a summary of notable habitats within the Site boundary based on the results of the Phase 1 Habitat survey and with reference to guidance for the recognition of NERC Act S41 (Maddock, 2010)¹ and LBAP². Further surveys may be required to investigate the value of habitats further, as detailed in Section 5 of this report.

Table 6. Notable habitats within the Site

Habitat	NERC Act	LBAP	Supporting Comments
Reedbeds		✓	An area of reedbed is present within the swamp area along the DC cable corridor. However, it is small in extent (0.11 ha) and does not qualify for County Wildlife Site selection in Kent ³ as it is: <ul style="list-style-type: none"> • Not >1 ha; and • Is <1 ha, but not contiguous with other habitats which qualify for designation.
Maritime cliffs and slopes		✓	An area of hard cliff is present within the DC cable corridor. However, it is small in extent

¹ Maddock, A. (2010) UK Biodiversity Action Plan Priority Habitat Descriptions. JNCC, Peterborough.

² The Kent Biodiversity Action Plan: A framework for the future of Kent's wildlife. Kent Biodiversity Action Plan Steering Group (1997)

³ Local Wildlife Sites in Kent: Criteria for Selection and Delineation, Version 1.5: August 2015 (Accessed April 2019)

Habitat	NERC Act	LBAP	Supporting Comments
			(0.01 ha) and does not qualify for County Wildlife Site selection in Kent ¹ as it is: <ul style="list-style-type: none"> • Not >2 ha in continuous extent; and • Is <2 ha, but not contiguous with other habitats which qualify for designation.

Key to symbols: ✓ = yes, x = no, ? = possible, further survey required to determine this

4.4 Protected and Notable Species

Table 7 provides a summary of potentially relevant species identified through a combination of desk study and field survey. The table summarizes the conservation status of each species and provides comment on the likelihood of presence.

Where species are identified in Table 7 as likely or possible, they are likely to represent legal constraints or may be material to determination of a planning application. Further surveys will or may be required to determine presence or probable absence.

Table 7. Protected and notable species relevant or potentially relevant to the proposed development

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present on Site?	Present / Potentially Present in Wider Zone of Influence?	Supporting Comments
Plants	✓	✓	✓	?	?	The data search returned records of 34 protected / notable plant species recorded within the last ten years and within 2 km from the Site. No legally protected plant species were recorded on the Site. Divided Sedge <i>Carex divisa</i> and Sea Buckthorn <i>Hippophae rhamnoides</i> , both Kent Rare Plant Register (RPR) species, were recorded outside of the Site boundary.
Terrestrial invertebrates	x	✓	✓	?	✓	The data search returned a large number of notable terrestrial invertebrate species, including moths, butterflies, beetles and bees. The habitats on the Site were assessed to have limited potential to support a diverse community of terrestrial invertebrates, including notable species. However, better quality habitats were identified outside of the Site boundary.
Freshwater Invertebrates	x	x	✓	?	✓	The data search returned records of protected / notable aquatic invertebrates, including Dainty Damselfly <i>Coenagrion scitulum</i> from 2010. The ditch running adjacent to the proposed DC cable route has potential to support notable aquatic invertebrates.
Breeding birds	✓	✓	✓	?	✓	The data search returned records of 148 notable species recorded within the last ten years and within 2 km of the Site. Trees, scrub and wetland habitats occurring on Site are likely to support nesting birds during the breeding season, including notable species.
Non-breeding (wintering and passage) birds	-	✓	✓	✓	✓	The habitat present on Site has the potential to support non-breeding bird species, including over-wintering thrushes including Redwing

¹ Local Wildlife Sites in Kent: Criteria for Selection and Delineation, Version 1.5: August 2015 (Accessed April 2019)

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present on Site?	Present / Potentially Present in Wider Zone of Influence?	Supporting Comments
						<p><i>Turdus iliacus</i> and Fieldfare <i>Turdus pilaris</i>. The intertidal habitat adjacent to the Site forms part of the Thames Estuary and Marshes Ramsar / SPA and is likely to support qualifying species.</p>
Reptiles	✓	✓	-	?	✓	<p>The data search returned nine records of reptiles recorded within 2 km of the Proposed Development area and within the last ten years. These were:</p> <ul style="list-style-type: none"> • A single record of Adder, c.100 m from the Site, in 2010; • Two records of Grass Snake, with one recorded c. 100 m from the Site in 2010; and • Six records of Common Lizard, with the closest record located c. 60m from the Site in 2010 and the most recent record was found within 200 m of the Site in 2013. <p>The mixture of grassland and scrub habitat on Site is likely to support populations of reptiles, with all species recorded from the data search potentially present.</p>
Badger <i>Meles meles</i>	✓	✓	-	✓	✓	<p>No recent records (within the last ten years) of Badger were identified during the data search from within 2 km of the Site. Badger latrines and snuffle holes were recorded on Site during the field survey, although no Badger setts were recorded within the Site boundary or within 50 m of the Site boundary.</p>
Amphibians	✓	✓	-	?	✓	<p>The desk study identified eight waterbodies within 500 m of the Site (excluding rivers / channels). The data search returned three records of Great Crested Newts from 2009. Waterbodies have the potential to support breeding Great Crested Newt. The terrestrial habitat on Site has the potential to support foraging and commuting Great Crested Newt and Common Toad <i>Bufo bufo</i>.</p>
Water Vole	✓	✓	-	?	✓	<p>The data search returned 12 records of Water Vole, with 5 records located within 1 km from the Site in 2012 and 2014. The waterbodies and ditches on the Site have potential to support Water Vole.</p>
Bats	✓	✓	-	?	?	<p>The data search returned three records of flying, grounded or dead bat from within 2 km of the Site and within the last ten years. These records were:</p> <ul style="list-style-type: none"> • a dead Pipistrelle sp. in 2015 -1.5 km to SSW of the proposed converter station; • a grounded Nathusius's Pipistrelle in 2016, 1.5km SSW of the proposed converter station; and • an unidentified bat, in 2014, c. 500m to the east of the proposed DC cable corridor. <p>Additionally, the data search also returned records of historical (>10 years) records of bat roosts within 2 km of the Site, the closest of which was of a Pipistrelle bat <i>Pipistrellus</i> sp. roost c. 200 m west of the proposed DC cable corridor, although this was recorded in 1995. There are no features of interest (mature trees,</p>

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present / Potentially Present in Wider Zone of Influence?	Present on Site?	Supporting Comments
						buildings) to support roosting bats within the Site boundary. The mosaic of scrub and wetland habitats around the Site provides foraging resources for bats across the Site.
Invasive Non-native species (INNS)						The data search returned six records of INNS within 2 km of the Site and within the last ten years. These (along with their distances from the Site) were: Bluebell <i>Hyacinthoides non-scripta x hispanica</i> = <i>H. x massartiana</i> (1.9 km), Curly Waterweed <i>Lagarosiphon major</i> (0.2 km), New Zealand Pigmyweed <i>Crassula helmsii</i> (0.3 km), Japanese Rose <i>Rosa rugosa</i> (1.2 km), American Slipper Limpet <i>Crepidula fornicata</i> (0.5 km) and Portuguese Oyster <i>Crassostrea gigas</i> (0.5 km). No INNS were recorded on Site during Ecological survey. Marsh Frog <i>Pelophylax ridibundus</i> was recorded within all off-Site waterbodies, including the ditch running adjacent to the proposed DC cable corridor. Marsh Frog is listed on Schedule 9 of the Wildlife and Countryside Act, which makes it illegal to distribute or allow the release of Marsh Frog into the wild.
West European Hedgehog <i>Erinaceus europaeus</i>						The data search did not return any recent (within the last ten years) records of Hedgehog from within 2 km from the Site. However, this species is likely to occur on Site within the grassland and scrub habitats.
Brown Hare <i>Lepus europaeus</i>						The data search did not return any recent (within the last ten years) records of Brown Hare from within 2 km from the Site. This species is likely to occur in the grassland and arable habitats on Site.

Key to symbols: ✓ = yes, x = no, ? = possibly, see Supporting Comments for further rationale.

Species present on site are those for which recent direct observation or field signs confirmed presence. Species which are possibly present are those for which there is potentially suitable habitat based on the results of the Phase 1 Habitat survey, or this combined with desk study records.

Legally protected species are those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); and, Schedules 2 and 4 of The Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2018.

Species of Principal Importance as those listed under Section 41 of the NERC Act. Planning Authorities have a legal duty under Section 40 of the same Act to consider such species when determining planning applications.

Other notable species include native species of conservation concern listed in the LBAP (except species that are also of Principal Importance), those that are Nationally Rare, Scarce or Red Data List, and non-native controlled weed species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

5. Identification of Ecological Constraints and Recommendations

5.1 Approach to the Identification of Ecological Constraints

Relevant ecological receptors that may represent constraints to the Proposed Development, or that provide opportunities to deliver ecological enhancement in accordance with planning policy, are identified in Section 4.

The NPPF and local planning policy (summarised in Section 2 of this report) specify requirements for the protection of features of importance for biodiversity. Planning policy is of material consideration when determining planning applications.

Compliance with planning policy requires that the proposed development considers and engages the following mitigation hierarchy where there is potential for impacts on relevant ecological receptors:

1. Avoid features where possible;
2. Minimise impact by design, method of working or other measures (mitigation) e.g. by enhancing existing features; and
3. Compensate for significant residual impacts, e.g. by providing suitable habitats elsewhere (whether in the control of NeuConnect Britain Limited or otherwise legally enforceable through planning condition or Section 106 agreement).

This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered. The rationale for the proposed mitigation and/or compensation should be provided with planning applications, including sufficient detail to show that these measures are feasible and would be provided.

In pursuance of the objective within the NPPF of providing net gains in biodiversity where possible, consideration should be given to the scope for enhancement as part of the proposed development. This should represent biodiversity gain over and above that achieved through mitigation and compensation. Enhancement could be achieved on and / or off the Site.

The likelihood of the relevant ecological receptors constraining the proposed development has been assessed with reference to the scale described in Table 8. The higher the importance of the ecological receptor for the conservation of biodiversity at national and local scales, the more likely it is to be a material consideration during determination of the planning application for the proposed development.

Opportunities for ecological enhancement are not scaled in Table 8, but are identified in the accompanying appraisal (Section 5.5 of this report). There may be scope for ecological enhancement where existing habitat features could be improved or enhanced within the proposed development as designed, or with only minor amendment to the design of the proposed development. Ecological enhancement may not be possible where there is little scope to accommodate enhancement within the proposed development, e.g. due to a lack of utilisable space, or where land is required for essential mitigation. Consideration could be given to enhancing biodiversity in the vicinity of the Site.

Table 8. Scale of Constraint to Development

Likelihood	Definition
High	An actual or potential constraint that is subject to relevant legal protection and is likely to be a material consideration in determining the planning application (e.g. statutory nature conservation designations and European/nationally protected species). Further survey likely to be required (as detailed in this report) to support a planning application.
Medium	An actual or potential constraint that is covered by national or local planning policy and, depending on the level of the potential impact as a result of the proposed development, may be a material consideration in determining the planning application. Further survey may be required (as detailed in this report) to support a planning application.
Low	Unlikely to be a constraint to development or require further survey prior to submission of a planning application. Mitigation is likely to be covered under a Construction Environmental Management Plan (CEMP) or precautionary working method statement (e.g. generic requirements for the management of nesting bird risks).

5.2 Constraints and Requirements for Further Survey: Designations

5.2.1 Statutory Designated Sites

The terrestrial elements of the GB onshore scheme, above the Mean High Water Spring (MHWS), will not result in any direct impacts to statutory designated sites. Surveys of the intertidal areas for waterbirds associated with Natura 2000 sites and the South Thames Estuary and Marshes SSSI will be required to identify whether construction activities may result in disturbance to qualifying species.

Any potential impacts arising from the Proposed Development between the MHWS and Mean Low Water Spring (MLWS) are reported separately within the offshore element for the Proposed Development.

5.2.2 Non-statutory Sites

Grain Pit LWS is located to the immediate east of the Proposed DC cable corridor. The route of the underground DC cable from the converter station to the landfall point will run adjacent to the boundary of the LWS. Providing the working area required during construction to lay the cable avoids the LWS, there will be no direct impacts on Grain Pit LWS. To prevent accidental ingress of construction traffic and personnel into the LWS, it is recommended that Heras fencing is erected along the boundary of the LWS. There is potential for indirect impacts during construction, to the LWS, through disturbance to species or degradation of habitats associated with the LWS. Therefore, avoidance and mitigation of any potential effects to off-site habitats should be formalised through implementation of a Construction Environmental Management Plan and / or precautionary working method statement.

5.3 Constraints and Requirements for Further Survey: Habitats

Providing that the Proposed Development seeks to avoid the hard cliff, above the MHWS, there will be no requirement for mitigation of this notable habitat.

If the DC cable corridor is installed above ground, then there will be a temporary loss of 0.11 ha of reedbed habitat during construction. Post-construction, this habitat can be reinstated.

There will be no impacts upon the reedbed habitat where drilling under wetland habitats is used.

Indirect impacts to notable habitats (such as through dust emissions, lighting and noise) are considered to be minimal and can be adequately mitigated by following standard best practice construction guidelines.

5.4 Constraints and Requirements for Further Survey: Species

5.4.1 Terrestrial Invertebrates

The Site comprises habitats that may support notable terrestrial invertebrates or invertebrate communities, as identified as being present within the wider ZoI during the desk study. However, these habitats are limited in quality and extent and the majority of habitats likely to support notable terrestrial invertebrates / invertebrate communities are outside of the Site boundary. Any unnecessary damage to retained habitats outside the direct footprint of the Proposed Development should be avoided. This might include the use of temporary fencing to protect such habitats and these avoidance measures should be formalised into a Construction Environmental Management Plan. If construction of the DC cable corridor cannot avoid these habitats, then further surveys may be required to determine the potential impacts on terrestrial invertebrates.

5.4.2 Aquatic Invertebrates

The wetland habitats within the Site boundary have the potential to support notable aquatic invertebrate species and assemblages. The Proposed Development, particularly the underground DC cable from the converter station to the landfall point, has the potential to directly impact on minor ditches which may need to be crossed (or directionally drilled underneath). The Proposed Development also has the potential for indirect impacts to ditches / drains in the vicinity of the Site through pollution runoff during construction. Mitigation is likely to be required through implementation of a Construction Environmental Management Plan and / or precautionary working method statement. Further surveys, to determine the assemblages of aquatic invertebrates present are recommended.

5.4.3 Great Crested Newt

The desk study identified eight waterbodies within 500m of the Site boundary and the data search returned records of Great Crested Newt from the wider Zol. The Proposed Development has the potential to have adverse effects on Great Crested both in terms of loss of habitat (breeding and terrestrial) and connectivity (isolating populations), if present.

Further surveys of waterbodies within the wider Zol are required to determine the presence (and, if present, the population size) or absence of Great Crested Newt. Should the presence of Great Crested Newt be confirmed, then adequate mitigation may be required and development subject to successful application for a European Protected Species Mitigation Licence (EPSML) from Natural England.

The Proposed Development will seek to avoid direct loss of waterbodies which may support breeding populations of Great Crested Newt. Any indirect impacts may be mitigated through the implementation of a Construction Environmental Management Plan and / or precautionary working method statement.

5.4.4 Reptiles

The habitats present on Site have the potential to support reptiles and three species of reptile (Adder, Grass Snake and Common Lizard) were identified during the desk study as being present in the wider Zol. The Proposed Development has the potential to result in reptile mortality due to the removal of habitats potentially supporting reptiles. Further surveys following standard guidelines¹ are recommended to determine the presence or absence of reptiles and if present, their distribution, within the Proposed Development area. Depending on the outcomes of these surveys, mitigation may be required to avoid injuring or harming reptiles during construction. The creation of habitats for reptile species may also be required to mitigate any losses.

5.4.5 Breeding Birds

The data search returned records of species included on Schedule 1 of the Wildlife and Countryside Act (1981, as amended), (Barn Owl *Tyto alba*, Marsh Harrier *Circus aeruginosus* and Cetti's Warbler *Cettia cetti*) which have been recorded from within 250 m of the Site. Scrub on the Site is likely to support nesting birds during the breeding season, including those of conservation concern such as Song Thrush *Turdus philomelos*.

The Proposed Development, therefore, may result in the direct loss of habitat potentially used by protected and notable bird species and indirect impacts, such as noise and visual disturbance to sensitive breeding species outside of the Site boundary. Further surveys of the breeding bird assemblage are required to determine appropriate avoidance measures and mitigation.

5.4.6 Non-breeding Birds

The habitats present on Site are likely to support birds during the non-breeding season, including species of conservation concern. Additionally, the adjacent intertidal habitats are likely to support assemblages of non-breeding waterbirds associated with designated sites.

Therefore, surveys to determine the terrestrial and intertidal non-breeding bird assemblages should be undertaken.

5.4.7 Bats

The data search returned three records of flying, grounded or dead bat from within 2 km of the Site and within the last ten years.

There are no buildings or mature trees within the Site boundary. The Proposed Development will not result in the direct loss of features used by roosting bats and is unlikely to indirectly impact upon any features (buildings / mature trees) used by roosting bats in off-site habitats (through habitat severance, lighting, noise). Therefore, further surveys for roosting bats are not considered necessary.

The Site is of limited value for commuting and foraging bats, but the mixture of terrestrial habitats, including scrub and a ditch, does provide some foraging and commuting habitat for bats, if present in the wider area. The Site is of low suitability for commuting and foraging bats, but could be used by small numbers of common and

¹ Gent T and Gibson S (2003). Herpetofauna Workers Manual. JNCC, Peterborough.

widespread species. Surveys of bat activity, in line with current best practice guidelines¹ will be required. If key bat flight lines are identified, these should be retained or mitigated for (if lost).

5.4.8 Badger

The field survey recorded Badger latrines, snuffle holes and mammal paths on Site. A single large hole was found in the bank of the ditch, within the DC cable corridor, but was in use by Rabbit, with no signs of Badger activity. No Badger setts were recorded within the Site boundary or within 50 m of the Site.

Therefore, further surveys for Badger are not required.

5.4.9 Water Vole

A number of waterbodies are located outside the Site boundary and a ditch and one waterbody (small section) is located immediately adjacent to the Proposed DC cable corridor. These habitats have potential to support Water Vole and therefore it is recommended that a survey of these wetland habitats should be carried out to determine presence or absence of Water Vole. The results of these surveys will identify whether mitigation is required should the Proposed Development result in direct loss of habitats used by Water Vole or indirect impacts, such that may occur during construction.

5.4.10 Otter

No records of Otter were returned from the data search, but the waterbodies present outside of the Site have the potential to provide habitats suitable for Otter. Further surveys of waterbodies are recommended to identify whether the Site is used by Otter.

5.4.11 Other species

West European Hedgehog and Brown Hare may use the Site. Both receive limited legal protection but are Species of Principal Importance on S41 of the NERC Act. As such precautions are recommended to ensure they are not harmed during construction through a Construction Environmental Management Plan or precautionary working method statement.

New habitat provision would help mitigate potential losses of Hedgehog habitats.

It is recommended that the Proposed Development is planned to take account of likely mitigation requirements for these species. This will include timing of site clearance to avoid Brown Hare during their breeding season. This is concordant with the requirements for nesting birds. As such, it is recommended that site clearance and preparatory works be undertaken over the autumn/winter period between September and February inclusive.

Any unnecessary damage to retained habitats outside the direct footprint of the Proposed Development should be avoided. This might include the use of temporary fencing to protect such habitats. This is concordant with the expected requirements for any tree protection zones. During construction, any open pits / holes should be covered at night or where not possible a wooden plank positioned at a 45° angle from the base to the top of the hole so that mammals can escape.

¹ Collins, J. (ed.) (2016) Bat surveys for professional ecologists good practice guidelines 3rd Edition. The Bat Conservation Trust, London

6. Conclusions

Overall, the PEA identified notable habitats and species detailed in Section 4.3 and 4.4.

A summary appraisal of ecological constraints and the recommended further requirements can be found in Table 9 below.

Table 9. Summary Appraisal of features of Ecological Constraints and Recommended Further Requirements

Receptor	Scale of constraint	Further requirements, including potential mitigation requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design Before planning application	Pre-constructio	
Freshwater Invertebrates	Medium	Scoping survey to appraise habitats and suitability to support protected / notable aquatic invertebrates / aquatic invertebrate communities	One	March to May, and Autumn: September to November	Habitat Regulations (2017), WCA 1981, NERC Act 2006, UKBAP, LBAP	✓	✓	✓
Great Crested Newt	High	Identify Great Crested Newt presence / absence and, if present, undertake a population size assessment.	Four survey visits to be undertaken and, if present, a further two surveys required for the population size class assessment.	March to June	Habitat Regulations (2017), WCA 1981, NERC Act 2006, UKBAP, LBAP	✓	✓	✓
Reptiles	High	Identify reptile presence / absence and dependent on the survey results, these will be used to determine appropriate mitigation for reptiles, if present.	Seven survey visits and an additional visit to set out refugia	September to October and / or April to May	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Breeding birds	High	Further surveys required to determine the breeding bird assemblage on Site and presence of Schedule 1 species (Barn Owl, Marsh Harrier and Cetti's Warbler) in the wider Zol. Retain habitats used by nesting birds where possible. Where vegetation is to be cleared, this should be done outside of breeding bird season (typically March to August inclusive). Other mitigation potentially required depending on species present on Site.	Six survey visits	March to June	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Non-breeding birds	Medium	Further surveys to determine the presence of notable species and the assemblage of non-breeding birds occurring within the Site.	Six survey visits	October to March		✓	✓	✓
Bats	Medium	Surveys to identify important areas on Site	Activity survey required seasonally.	April to October	Habitat Regulations	✓	✓	?

Receptor	Scale of constraint	Further requirements, including potential mitigation requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before planning application	Pre-constructio
		used by commuting and foraging bats. Identify potential severance issues and identify and implement requirements for construction phase and / or habitat mitigation to address this.			(2017), WCA 1981, LBAP, UKBAP, NERC Act 2006			
Badger	Low	Pre-commencement survey to confirm that no Badger are present within the Site boundary.	N/A	N/A	Protection of Badger Act 1992	✓	✓	✓
Water Vole	Medium	Survey for Water Vole presence / absence along the banks of the ditch and waterbodies. Surveys will follow the standard survey methodology of Dean <i>et al.</i> , (2016)	Initially, a single survey and dependent on the survey results, a second survey may be required.	April to June and July to September	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	?
Otter	Low	Survey to look for evidence of Otter within the waterbodies on Site and off-site	At least one per season	Spring is best, but the survey can be undertaken at any time of year	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	?
Hedgehog / Brown Hare	Low	Retain habitats and ensure that connectivity is maintained throughout the Site and into the wider area.	N/A	-	NERC Act 2006	✓	✓	✓

6.1 Opportunities for Ecological Enhancement

There are opportunities to achieve beneficial ecological enhancement and net biodiversity gain within the Site boundary and adjacent habitats, using guidance within the LBAP. These include:

- retention and enhancement of existing waterbodies off-Site, as well as creation of new waterbodies and wetland areas for biodiversity;
- creation of suitable floristically diverse grassland habitats similar to those in the local environs and identified as priority habitats in the region;
- establishment of new habitats through the planting of suitable native plants and trees to maintain and enhance ecological connectivity, as well as providing shelter and foraging opportunities for a wide range of fauna;
- establish new hedgerows, including such species as Hawthorn *Crataegus monogyna* and Beech *Fagus* to promote connectivity across the site through wildlife corridors; and
- provision of bat and bird boxes.

Appendix A Legislation and Planning Policy

The Conservation of Habitats & Species and Planning Regulations (Various Amendments) (England and Wales) 2018

The Habitats Regulations consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The Regulations came into force on 30th October 1994. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

Under the Regulations, competent authorities i.e. any Minister, Government department, public body, or person holding public office, have a general duty, in the exercise of any of their functions, to have regard to the EC Habitats Directive.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. Once the Commission and EU Member States have agreed that the sites submitted are worthy of designation, they are identified as Sites of Community Importance (SCIs). The EU Member States must then designate these sites as Special Areas of Conservation (SACs) within six years. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000.

The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation. If the agency is unable to conclude such an agreement, or if an agreement is breached, it may acquire the interest in the land compulsorily. The agency may also use its powers to make byelaws to protect European sites. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through Appropriate Assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the country agencies apply the precautionary principle' i.e. consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.

In instances where damage could occur, the appropriate Minister may, if necessary, make special nature conservation orders, prohibiting any person from carrying out the operation. However, an operation may proceed where it is or forms part of a plan or project with no alternative solutions, which must be carried out for reasons of overriding public interest. In such instances the Secretary of State must secure compensation to ensure the overall integrity of the Natura 2000 system. The country agencies are required to review consents previously granted under the Wildlife and Countryside Act 1981 for land within a European site, and may modify or withdraw those that are incompatible with the conservation objectives of the site.

The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

The Regulations make special provisions for the protection of European marine sites, requiring the country agencies to advise other authorities of the conservation objectives for a site, and also of the operations which may affect its integrity. The Regulations also enable the establishment of management schemes and byelaws by the relevant authorities and country agencies respectively, for the management and protection of European marine sites.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 is the major domestic legal instrument for wildlife protection in the UK, and is the primary means by which the following are implemented:

- The Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention'); and
The Council Directive 79/409/EEC on the Conservation of Wild birds (the 'Bird Directive')

Wild Birds

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally:

- kill, injure, or take any wild bird,
- take, damage or destroy the nest of any wild bird while that nest is in use or being built (also [take, damage or destroy the nest of a wild bird included in Schedule ZA1] under the Natural Environment and Rural Communities Act 2006), or
- take or destroy an egg of any wild bird.

Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

Other Animals

The Act makes it an offence (subject to exceptions) to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Flora, Fungi and Lichens

The Act makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy:

- any wild plant listed in Schedule 8, or
- unless an authorised person, to intentionally uproot any wild plant not included in Schedule 8,
- to sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Non-native Species

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

Countryside and Rights of Way (CRoW) Act 2000

The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.

The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

Schedule 9 of the Act amends the SSSI provisions of the Wildlife and Countryside Act 1981, including increased powers for their protection and management of SSSIs. The provisions extend powers for entering into management agreements; place a duty on public bodies to further the conservation and enhancement of SSSIs; increase penalties on conviction where the provisions are breached; and include an offence whereby third parties can be convicted for damaging SSSIs.

Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', include an offence

of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

Natural Environment and Rural Communities (NERC) Act 2006

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act required the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list was drawn up in consultation with Natural England, as required by the Act.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the (now withdrawn) UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and subtidal sands and gravels.

There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the (now withdrawn) UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.

Protection of Badgers Act 1992

Badgers and their setts (burrows) are protected under the Act. This makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett.

Licences to permit otherwise prohibited actions can be granted under section 10 of the Act for various purposes. This includes licences to interfere with a badger sett for the purpose of development as defined by section 55(1) of the Town and Country Planning Act 1990.

Licences may be granted in order to close down setts, or parts of setts, prior to development or to permit activities close to a badger sett that might result in disturbance. A licence will be required if a sett is likely to be damaged or destroyed in the course of development or if the badger(s) occupying the sett will be disturbed.

Licences can be applied for at any time, but a licence for development will not normally be issued unless full planning permission has been granted. The closure of setts under licence is normally only permitted during July to November, inclusive.

The Hedgerow Regulations 1997

The intention of the Act is to protect important countryside hedges from destruction or damage. The Act does not apply where planning permission has been granted. There are various other exemptions under the Act, including:

- To make a new opening in substitution for an existing one that gives access to land. For example, a gate. However, the old opening must be filled in within 8 months;
- To obtain access to land where other means are not available or are only available at disproportionate cost;
- For the proper management of the hedgerow. This means real management, such as coppicing. But if the hedgerow is deliberately 'over-managed' this might qualify as removal.

If the proposed works are not exempt or subject to a current planning permission then the landowner must serve a Hedgerow Removal Notice in writing on their local planning authority. The authority then has 42 days (which period can be extended if the applicant agrees) to determine whether or not the hedge is considered 'important' under the regulations, and if so, whether or not to issue a Hedgerow Retention Notice. The local authority does not have to issue a Retention Notice, even if the hedgerow counts as important. If they do not issue a notice for an important hedge this is often on condition that certain things are done, e.g. reinstatement or replanting to a certain standard, or creation of an equivalent boundary elsewhere.

National Planning Policy Framework

The latest version of the NPPF came into being in February 2019, relevant sections are as follows:
Section 15 of the NPPF relates specifically to 'Conserving and Enhancing the Natural Environment'. Paragraph 170 states that '*Planning policies and decision should contribute to and enhance the natural and local environment by:*

- *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- *recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- *maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
- *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.'*

Paragraph 171 states that '*Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.*'

Paragraph 174 states that '*To protect and enhance biodiversity and geodiversity, plans should:*

- *Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*'

Paragraph 175 states that '*When determining planning application, local planning authorities should apply the following principles:*

- *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.'*

Paragraph 176 states that '*The following should be given the same protection as habitats sites:*

- *potential Special Protection Areas and possible Special Areas of Conservation;*
- *listed or proposed Ramsar sites; and*
- *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.*

Paragraph 177 states that *'The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site'*

Appendix B: Target Notes

- TN1 Pond 1, with waterfowl present, reeds on some edge as well willows and small area of sea club-rush
- TN2 Pond 2, reeds and reedmace, waterfowl present, along northern edge New Zealand Pygmyweed present
- TN3 Pond 3, small area of reeds and sea club-rush and many marsh frogs
- TN4 Pond 7, reeds present not accessible due to deep ditch and dense scrub
- TN5 Pond 5, small areas of reed, waterfowl present and large water pump at eastern end.
- TN6 Pond 6, areas of reeds, waterfowl present.
- TN7 Pond 4, fishing lake with waterfowl and cloudy, disturbed water
- TN8 Badger latrine
- TN9 Badger latrine
- TN10 Badger latrine
- TN11 House with bat roost potential. Tile missing below chimney and damaged soffit boards
- TN12 Old barn, with potential for roosting Barn Owl.
- TN13 Old barn, with potential for roosting barn owl and bat roost potential.

Appendix C: Photographs



Photo 1 - Pond 1: View from north end



Photo 2 - Pond 1: View from southern end.



Photo 3 - Pond 2



Photo 4 - Pond 3



Photo 5 - Pond 4



Photo 6 - Pond 5



Photo 7 – Old ruined barn



Photo 8 – Perry's Farm

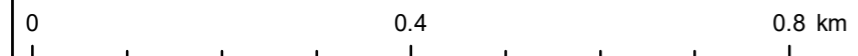
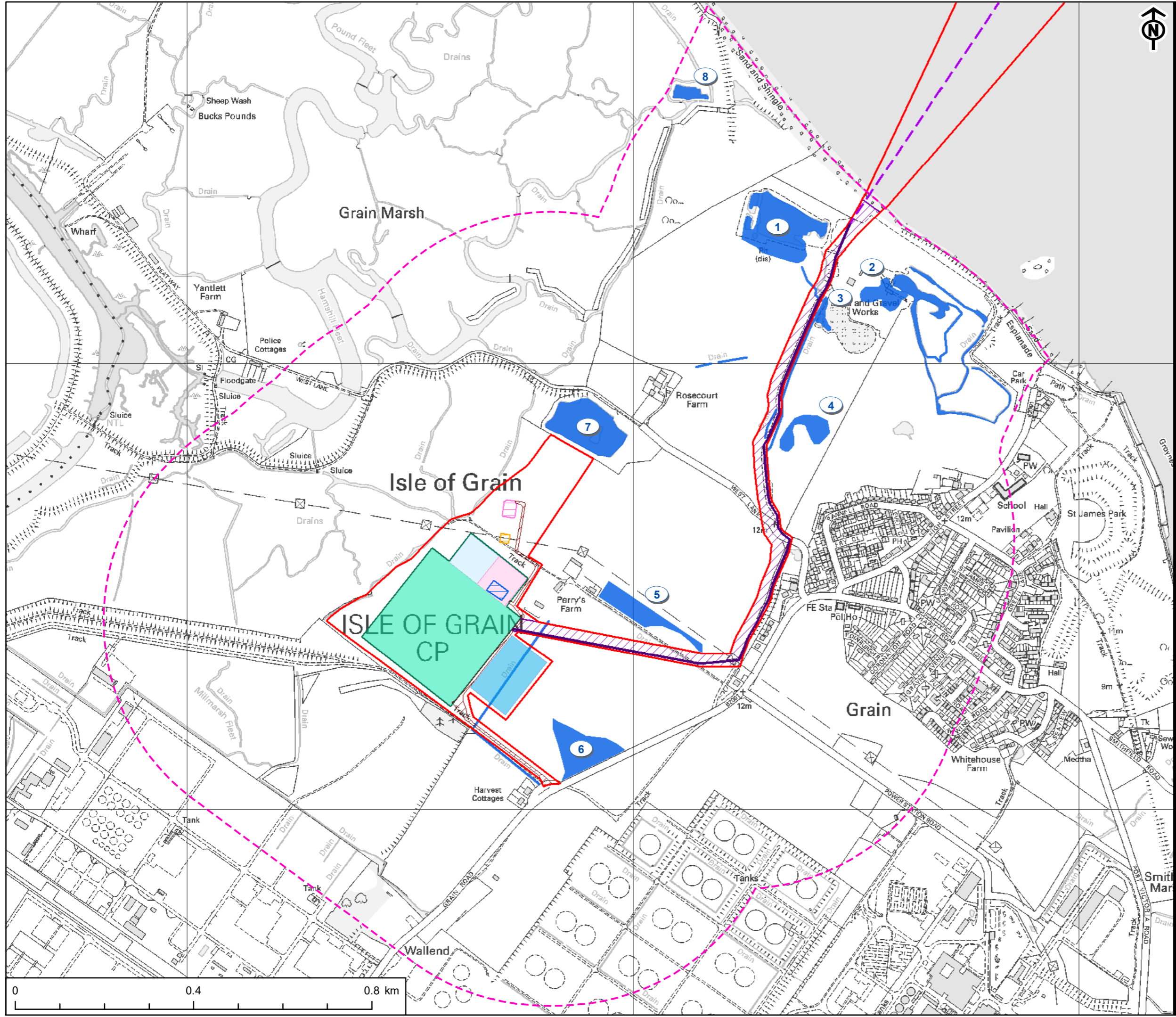
PROJECT
NEUCONNECT

CLIENT
NeuConnect Britain Ltd.

- KEY**
- Application Boundary
 - 500m site boundary buffer
 - Indicative Offshore Cable Route
 - Indicative DC Cable Route
 - DC Cable Route - 30m Working Width
 - Converter Station and Substation Platform - 2m Fence Line Security & Maintenance Corridor
 - Access Road
 - Converter Station Platform
 - Substation Platform
 - Construction Laydown Area
 - Construction Laydown Area and Potential Substation Expansion Site
 - National Grid Proposed Tower
 - National Grid Proposed Sealing End Compound
 - National Grid Proposed GIS Building
 - Waterbody, within 500m for the site

Project Management Initials: ## Designer: BF Checked: PC Approved: NG

Scale @ A3 1:8,000



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TITLE
FIGURE 2
LOCATIONS OF WATERBODIES
WITHIN 500M OF THE SITE

REFERENCE
NC_190808_ECO_2_v1

SHEET NUMBER
1 of 1

DATE
08/08/19

PROJECT
NEUCONNECT

CLIENT
NeuConnect Britain Ltd.

- KEY
- Application Boundary
 - Indicative Offshore Cable Route
 - Indicative DC Cable Route
 - DC Cable Route - 30m Working Width
 - Converter Station and Substation Platform - 2m Fence Line Security & Maintenance Corridor
 - Access Road
 - Converter Station Platform
 - Substation Platform
 - Construction Laydown Area
 - Construction Laydown Area and Potential Substation Expansion Site
 - National Grid Proposed Tower
 - National Grid Proposed Sealing End Compound
 - National Grid Proposed GIS Building

- Search area
- Special Protection Area (SPA)
- Ramsar
- Marine Conservation Zone (MCZ)

TITLE
FIGURE 3
DESIGNATED SITES WITHIN 2 KM OF THE SITE

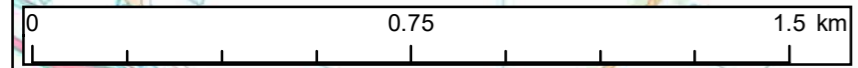
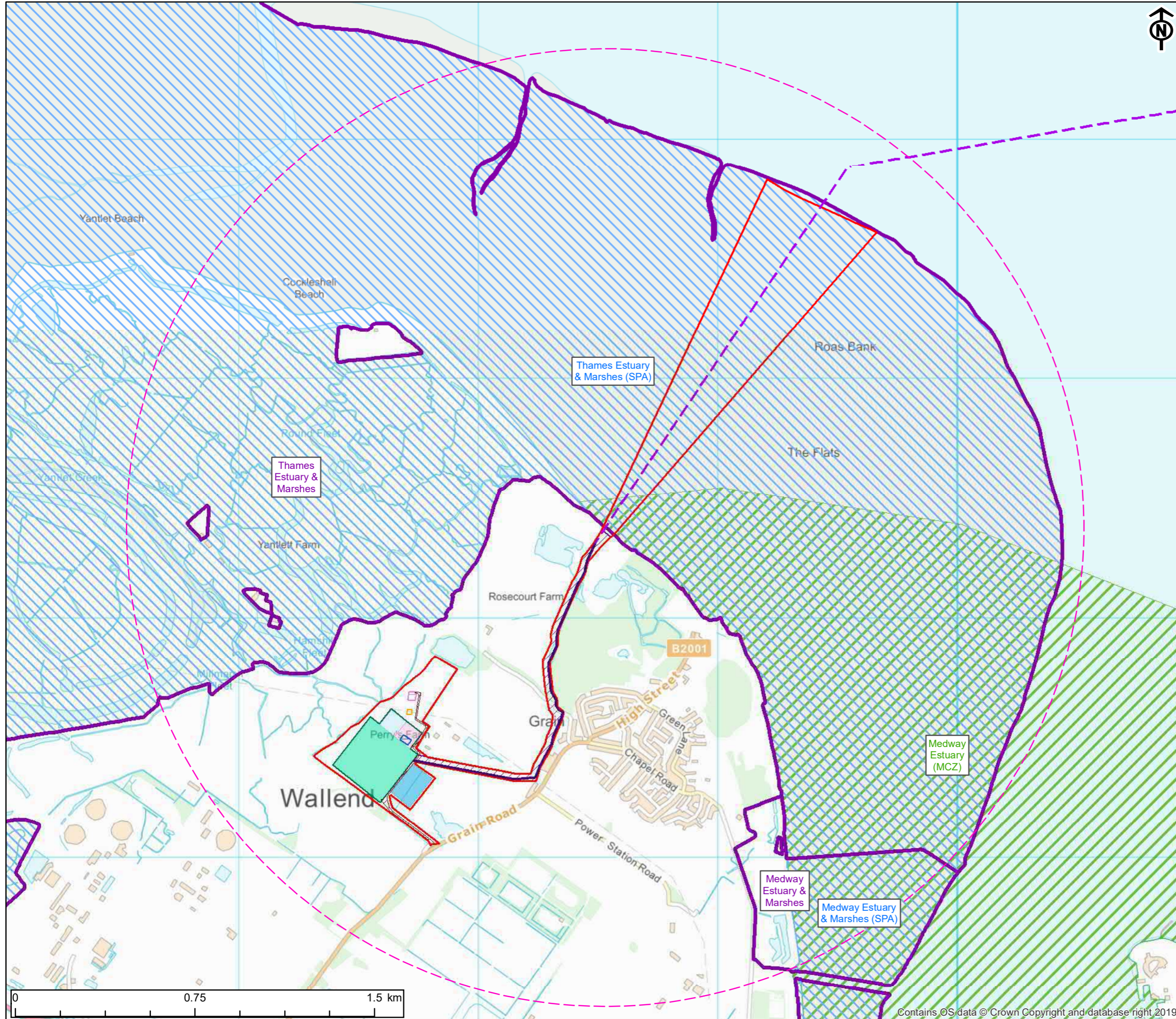
REFERENCE
NC_190808_UKON_ECO_3_v1

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1 of 1

DATE
08/08/19

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PROJECT
NEUCONNECT

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- KEY**
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 - Converter Station Platform
 - Substation Platform
 - Construction Laydown Area
 - Construction Laydown Area and Potential Substation Expansion Site
 - National Grid Proposed Tower
 - National Grid Proposed Sealing End Compound
 - National Grid Proposed GIS Building
 - Phase 1 habitat**
 - Dense/continuous scrub
 - Scattered scrub
 - Semi-improved neutral grassland
 - Improved grassland
 - Tall ruderal
 - Swamp
 - Standing water
 - Shingle above high tide mark
 - Maritime cliff and slope
 - Ephemeral/short perennial
 - Arable
 - Hard surface
 - Running water
 - Species-poor intact hedge
 - Dry ditch
 - Broad-leaved tree
 - × Scattered scrub
 - Target Note

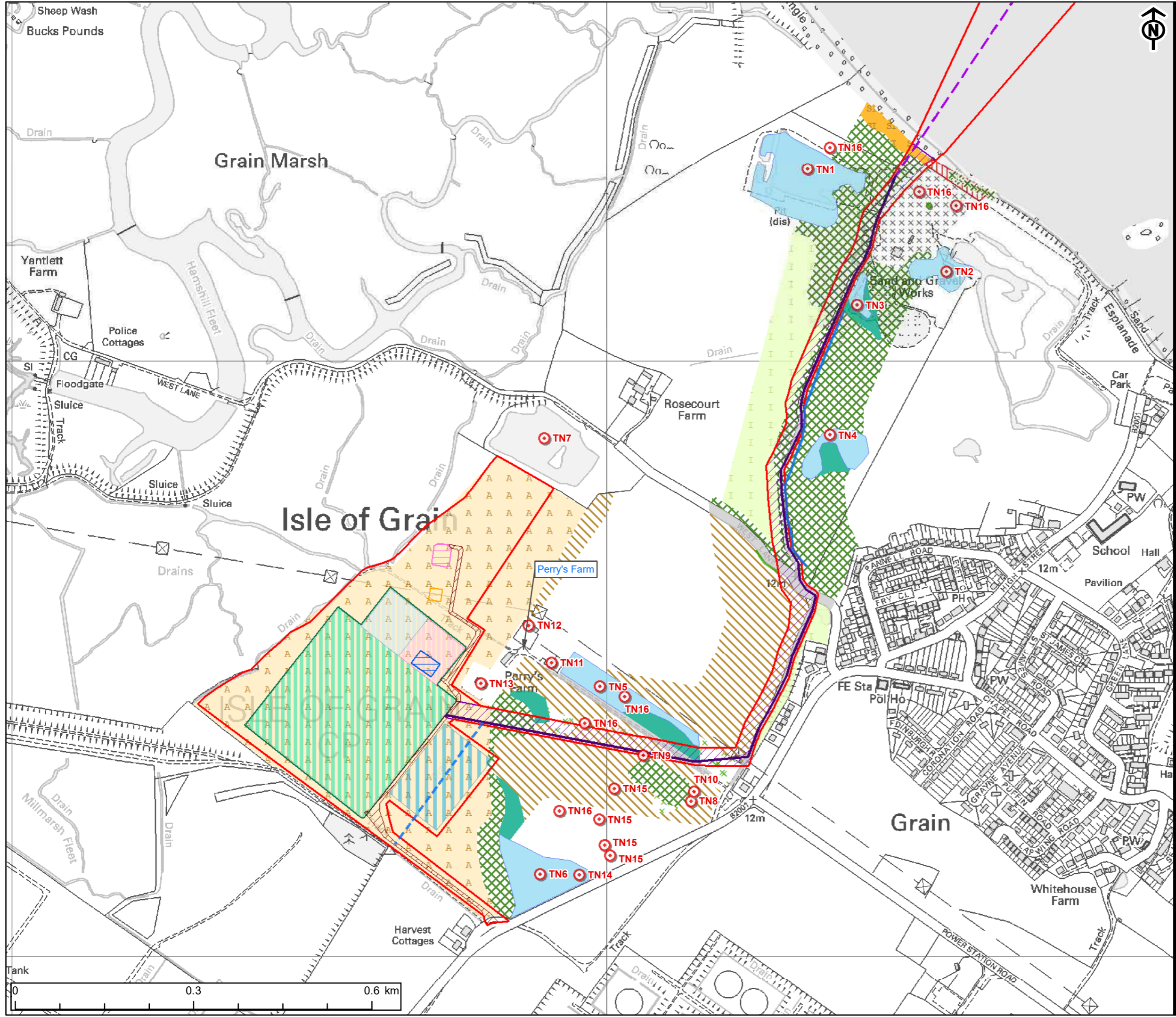
TITLE
FIGURE 4
PHASE 1 HABITAT

REFERENCE
NC_190808_UKON_ECO_4_v1

SHEET NUMBER 1 of 1
DATE 08/08/19

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Appendix 6.B – Report on Surveys of Breeding Birds

NeuConnect: Great Britain to Germany Interconnector

GB Onshore Scheme

Environmental Statement
Appendix 6B – Report on Surveys for
Breeding Birds

NeuConnect Britain Ltd

July 2019

Quality information

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1. Introduction

- 1.1 AECOM was instructed by NeuConnect Britain Limited (the Applicant) to undertake a survey of breeding birds for the terrestrial area (*i.e.* non-estuarine) for the NeuConnect project (the Proposed Development) at Grain, Isle of Grain. The Preliminary Ecological Appraisal (PEA¹), undertaken in 2018, identified that the habitat within the Proposed Development area was suitable to support breeding birds and that further surveys were required to determine the presence and, or absence of notable species and the assemblage of any bird species found to be breeding.

1.1 Proposed Development

- 1.2 NeuConnect (the 'Project'), is a 1400 megawatt (MW) interconnector between Great Britain and Germany. The Project will create the first direct electricity link between Great Britain and German energy networks. The new link will create a connection for electricity to be passed in either direction between Great Britain and Germany. The Project will be formed by approximately 700 kilometres (km) of subsea and underground High Voltage Direct Current (HVDC) cables, with on-shore converter stations linking into the existing electricity grids in Great Britain and Germany.
- 1.3 The Proposed Development will comprise of three structures, a converter station, sub-station and a direct current (DC) cable route (see Figure 1).
- 1.4 The footprint of the proposed converter station to the perimeter security fence is expected to be up to approximately 250 metres (m) by 250 m with a maximum height of up to 26 m (Figure 1).
- 1.5 The footprint of the proposed substation to the perimeter security fence is expected to be approximately 80 m by 80 m , with a maximum height of 14 m (Figure 1).
- 1.6 The proposed DC cable route will be approximately 1.6 km long (from landfall to the converter station). The preferred installation method will be underground, which will result in a temporary loss of land during installation. The working corridor for the installation of the DC cable route will be 30 m, hereby known as DC cable corridor (Figure 1).
- 1.7 Additional laydown areas will be required for construction, comprising 1.5 hectare (ha) for the converter laydown and 0.3 ha for the substation laydown (Figure 1).

1.2 Site Description

- 1.8 The Site boundary (the Site) is entirely within the boundary of Medway Council and is centred on the Isle of Grain located at the tip of the Hoo Peninsula between the Thames Estuary to the north and the Medway Estuary to the south. The Site is located to the west of the village of Grain, Isle of Grain, Kent at Ordnance Survey (OS) central grid reference TQ 88205 76727. Land use comprises a mix of industrial development to the south, the small settlement of Grain to the south-east and undeveloped land, much of which is designated for ecological interests, to the north (along the coastline) and to the west. Land within the Site and in the immediate vicinity has historically been used for the extraction of gravel and sand and the resultant voids used for landfill.
- 1.9 The Site boundary and proposed location of each structure are shown in Figure 1.

¹ AECOM, NeuConnect, Isle of Grain: Preliminary Ecological Appraisal Report, 2019.

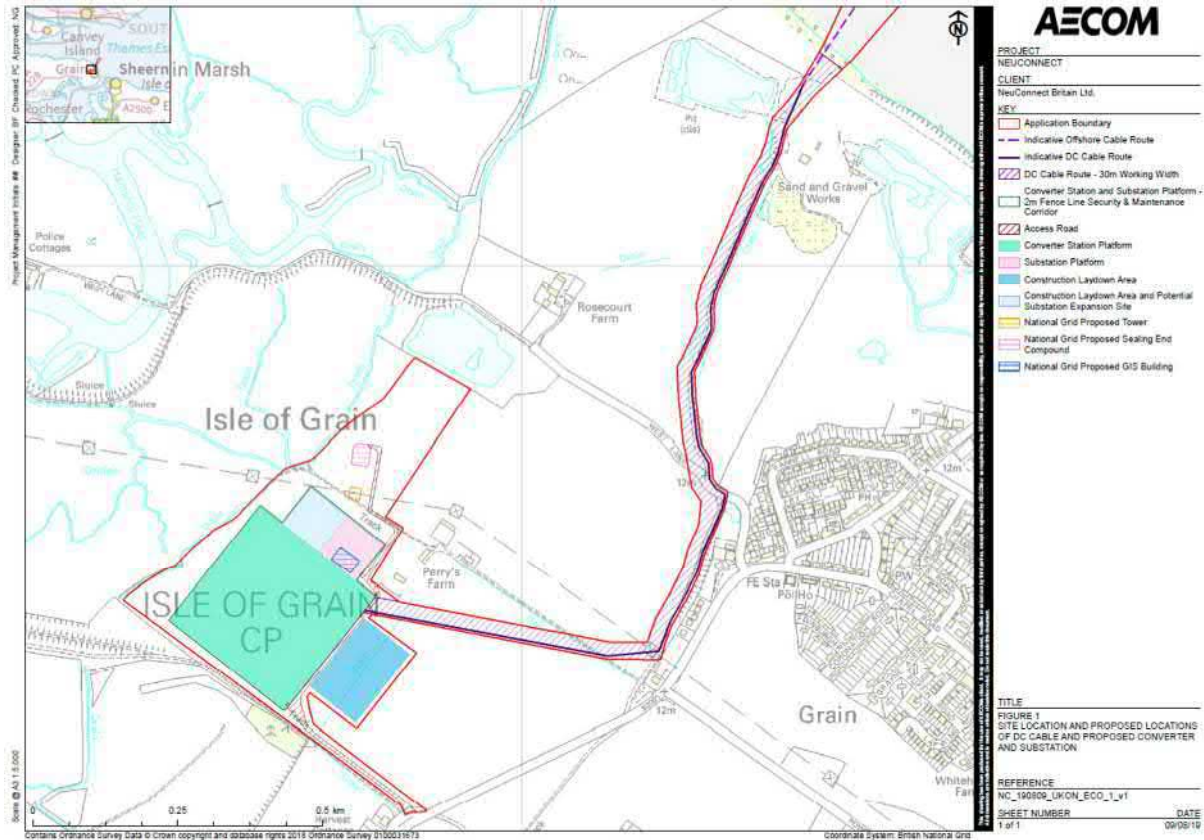


Figure 1 - Site boundary and proposed locations of DC cable corridor, converter station and substation.

1.3 Survey Area

1.10 The survey area included all terrestrial (*i.e.* non-estuarine) habitats within the Site boundary and a 50 m buffer.

1.4 Scope of Report

1.11 The objective of the breeding bird survey, reported in this document, is to determine the presence and assemblage of breeding bird species within the Site boundary and surrounding areas.

2. Conservation Status

2.1 Legislation and Policy

- 1.12 The legislative provisions for the protection of wild birds in the UK are contained primarily in Sections 1-7 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Under the WCA, a wild bird is defined as any bird of a species that occurs in a wild state as a resident or a visitor to the European Territory of any member state.
- 1.13 When breeding, all birds, their nest, eggs and nestlings are afforded protection under the WCA 1981, as updated by the Countryside Right of Way Act 2000. Therefore, during the bird breeding season (typically March-August inclusive) it is an offence to:
- intentionally kill, injure or take any wild bird;
 - intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
 - intentionally take or destroy the eggs of any wild bird.
- 1.14 Additionally, special penalties exist for offences related to species listed on Schedule 1 of the WCA, for which there are additional offences for disturbing these birds at their nest, or their dependent young. Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. No licences are available for disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

2.2 Assessment Criteria

- 1.15 An assessment of the ornithological importance of the survey area during the breeding season was also made by evaluating any species afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest. These include:
- species listed on Annex 1 of the EU Birds Directive²;
 - species listed on Schedule 1 of the WCA³;
 - Natural Environment and Rural Communities (NERC) Species of Principal Importance⁴;
 - species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists (Eaton et al., 2015); and
 - those occurring within the survey area in nationally, regionally or locally important numbers.
- 1.16 The Directive of the Conservation of Wild Birds (EU Birds Directive) lists 194 species, or sub-species, of birds in Annex 1 which are:
- in danger of extinction;
 - are rare, or have restricted local distribution;
 - are vulnerable to specific changes in their habitat; or
 - require particular attention for reasons of the specific nature of habitat.
- 1.17 These species are afforded enhanced legal protection and EU member states have a responsibility to maintain the populations of these species at a level that corresponds to their

² European Commission, 2009. *Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version)*. EC, Brussels.

³ Anon, 1981. *The Wildlife & Countryside Act*. HMSO, London.

⁴ Anon, 2006. *The Natural Environment and Rural Communities Act*. HMSO, London.

⁵ Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. and Gregory, R., 2015. *Birds of Conservation Concern 4. The population status of birds in the United Kingdom, Channel Islands and Isle of Man*. British Birds 108: 708-746.

ecological, scientific and cultural requirements (Article 2). This Directive is transposed into English law through The Habitats and Species Regulations 2018.

- 1.18 Species listed on Annex 1 of the Birds Directive are those for which the UK Government is also required to take special measures, including the designation of Special Protection Areas, to ensure the survival and reproduction of these species throughout their area of distribution.
- 1.19 The Natural Environment and Rural Communities (NERC) list of Species of Principal Importance is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 2006; under Section 40 every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. In addition, with regard to those species on the list of Species of Principal Importance prepared under Section 41 (S41), the Secretary of State must:
- “(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this Section, or
 - (b) promote the taking by others of such steps.”
- 1.20 The UK Biodiversity Action Plan (UKBAP)⁶ was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority habitats and species of conservation concern were published, and have subsequently been succeeded by the UK Post-2010 Biodiversity Framework (July 2012). The UK list of priority species and habitats, however, remains an important reference source and has been used to help draw up statutory lists of priority habitats and species in England, Scotland, Wales and Northern Ireland. For the purpose of this assessment, the UK BAP is still used as one of the criteria to assist in assigning national value to an ecological receptor.
- 1.21 The Kent Biodiversity Action Plan (1997⁷) includes one bird species, Nightingale *Luscinia megarhynchos*.
- 1.22 The Kent Red Data Book (Waite, 1999⁸) (KRDB) provides information on Kent’s rarest and most threatened flora and fauna. For breeding birds the Kent Red Data Book list includes:
- species for which Kent holds >15% of the British breeding population;
 - species that breed in 20 or fewer tetrads in Kent;
 - county rare species (25 or fewer breeding pairs in Kent);
 - nationally rare species (<1,000 breeding pairs in Britain);
 - nationally localised species (breeding in <15% of hectad (i.e. < 406) in Britain) (a hectad is a unit of land area, 10 km x 10 km, i.e. 100 km²);
 - red list Birds of Conservation Concern (RSPB 1996); and
 - BTO high alert species (Crick 1998).
- 1.23 Of the 62 bird species listed on the KRDB, 58 are included for their breeding populations and the KRDB is further classified into 1 of 3 categories, depending on their breeding status in Kent. These are as follows:
- KRDB1 - Breeding species with 25 pairs or fewer pairs in Kent;
 - KRDB2 - Breeding species with more than 25 pairs in Kent but red listed for their breeding decline (Eaton et al. 2015); or
 - KRDB3 - The remaining species on the KRDB list, including the ‘high alert’ species.
- 1.24 Species listed on the Birds of Conservation Concern (BoCC) Red List are those that have declined in numbers by 50% over the last 25 years, those that have shown an historical

⁶ Anon, 2008. *UK Biodiversity Action Plan*.

⁷ Anon, 1997. *The Kent Biodiversity Action Plan*. Kent Biodiversity Action Plan Steering Group, Kent County Council.

⁸ Waite, A., 1999. *Kent Red Data Book*. Kent Wildlife Trust.

population decline between 1800 and 1995 and species that are of global conservation concern. There are 67 species on the Red List that are of the most urgent conservation concern.

- 1.25 Species listed on the BoCC Amber List, of which there are currently 96, include those that have shown a moderate decline in numbers (25%-49%) over the last 25 years and those with total populations of less than 300 breeding pairs. Also included are those species which represent a significant proportion (greater than 20%) of the European breeding or wintering population, those for which at least 50% of the British population is limited to 10 sites or less, and those of unfavourable conservation status in Europe.
- 1.26 The remaining species are placed on the Green List, indicating that they are of low conservation priority.

2.3 National and Local Planning Policy

- 1.27 The National Planning Policy Framework (NPPF) was originally published on 27th March 2012 and detailed the Government's planning policies for England and how these are expected to be applied. The NPPF was then revised on 24th July 2018 and 19th February 2019. The NPPF states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible.
- 1.28
- 1.29 It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.
- 1.30 The NPPF is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.
- 1.31 National and local planning policy relevant to nature conservation is provided in detail in the Preliminary Ecological Appraisal for the Proposed Development (AECOM, 2019).

3. Methodology

3.1 Desk Study

1.32 A desk study was undertaken in July 2018 through Kent & Medway Biological Records Centre (KMBRC), to obtain records of protected and notable bird species within a 2 km radius of the Site. This data request was limited to records of protected / notable bird species recorded within the last ten years of the request date.

3.2 Field Survey

1.33 The survey was undertaken based on a standard territory mapping methodology for surveying breeding birds as detailed in Gilbert *et al.* (1998⁹) and Bibby *et al.* (2000¹⁰).

1.34 This method is based on the principle that many species during the breeding season are territorial. This is found particularly amongst passerines, where territories are often marked by conspicuous song, display and periodic disputes with neighbouring individuals.

1.35 The transect route was selected to include the whole survey area, including walking all field boundaries within the survey area to within, where possible, 50 meters from the Site boundary. The whole survey area was covered in each visit, using suitable optical equipment to observe bird behaviour. Survey routes were mapped and the direction walked alternated on each visit, to ensure that all areas were covered at various times of day across the duration of the survey. Surveys were undertaken early in the morning, commencing just after sunrise and finishing before midday.

1.36 Surveys for breeding birds within the DC cable corridor and surrounding area were undertaken between April and June 2018. Surveys for breeding birds within the areas proposed for the Substation and Converter Station were undertaken between April and May 2019. Each survey was undertaken during appropriate weather conditions and avoided, where possible, on days with adverse weather conditions such as heavy rain or strong winds as birds may be harder to detect in such conditions.

1.37 The survey dates and weather conditions for each survey visit are detailed in Table 1.

Table 1. Survey dates and weather conditions during surveys for breeding birds at NeuConnect in 2018 and 2019

Year	Visit number	Survey date	Weather conditions
2018	1	18/04/2018	16°C, cloud 1/8, wind F1S
	2	25/04/2018	11°C, cloud 4/8, wind F3SW
	3	17/05/2018	11°C, cloud 4/8, wind F3NW
	4	24/05/2018	16°C, cloud 7/8, wind F3NE
	5	14/06/2018	16°C, cloud 8/8, wind F5SW
	6	22/06/2018	19°C, cloud 2/8, wind F2NW
2019	1	25/03/2019	6°C, cloud 3/8, wind F3SE

⁹ Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods: A manual of techniques for key species. RSPB/BTO/JNCC/WWT/ITE/The Seabird Group. RSPB/BTO, Sandy, Beds.

¹⁰ Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000). Bird Census Techniques: 2nd edition. Academic Press, London.

Year	Visit number	Survey date	Weather conditions
	2	08/04/2019	9°C, cloud 7/8, wind F1S
	3	24/04/2019	10°C, cloud 3/8, wind F1S
	4	02/05/2019	10°C, cloud 8/8, wind F1E.
	5	16/05/2019	9°C, cloud 1/8, wind F1S.
	6	28/05/2019	10°C, cloud 4/8, wind F2E.

Notes on Table 1: Wind speed is shown using the Beaufort scale, which is an empirical measure of force 0-12 that relates wind speed to observed conditions. Cloud cover is shown in a scale of 0-8 where the number represents the amount of cloud cover e.g. 2/8 is 25% cover, 4/8 is 50% etc.

- 1.38 On each visit, the route was walked at a slow pace with start and finish times noted. All birds seen and heard were recorded directly on an ArcGIS base map using ESRI software on hand-held PDA devices, with a 1:10,000 scale Ordnance Survey base map of the survey area. A fresh map was used for each survey. Registrations of birds were recorded using standard British Trust for Ornithology (BTO) two letter species codes. Specific codes were used to record bird behaviour, including singing, calling, flights and movements between areas, carrying food, nest building, aggressive encounters and other bird behaviour.
- 1.39 All bird species were recorded, whether breeding or not and mapped across the whole survey area.
- 1.40 The expected outcome from the surveys is that mapped registrations fall into clusters, approximately coinciding with territories. A cluster is generally a spatially distinct group of registrations that represent the activity of not more than one pair. Ideally, clusters include registrations of territorial behaviour across all visits and are clearly demarcated from adjacent clusters by simultaneous recording of neighbouring birds. Where a species has closely packed territories, the mapping of simultaneously singing birds becomes essential. Territory boundaries are assumed to be between such birds.
- 1.41 Territory mapping methods produce analysis maps of non-overlapping ellipses encircling clusters of records thought to relate to separate pairs of breeding birds. These ellipses may not show the entire extent of the pairs' actual breeding territory which may be significantly larger; however, they are likely to show those areas in which the pair is most active.
- 1.42 On completion of the surveys, analysis maps were produced for each species, consisting of all registrations recorded during the surveys in 2018 and 2019. From these species maps, the number of territories was calculated by identifying the number of clusters present from both years. Any duplicated territories, where the survey areas overlapped between years, were discounted.
- 1.43 For late-arriving migrants, e.g. Spotted Flycatcher *Muscicapa striata*, for which fewer potential contacts are possible, only one registration is required to form a territory cluster. A number of species are not territorial and are dealt with appropriately, e.g. Linnet *Linaria cannabina*, where data represent aggregations or loose colonies.
- 1.44 Standard registration mapping techniques were also used to record non-breeding species.
- 1.45 The following definitions have been used to identify the breeding status of the species recorded:
- Confirmed: includes species for which territories were positively identified as a result of the number of registrations recorded; the location of an active nest; or the presence of recently fledged young / downy young
 - Probable: includes a species pair observed in suitable nesting habitat during surveys; or agitated behaviour / anxiety calls from adults (suggesting the presence of a nest or young nearby). Behaviour was observed on insufficient occasions to confirm the presence of a territory.

- Possible: includes species observed during surveys in suitable nesting habitat; or a singing male present (or breeding calls heard) in suitable breeding habitat.
- Non-breeding: species-specific information was used to determine fly-over species, or species suspected to be summering non-breeder.

3.3 Assessment of Ornithological Importance

- 1.46 To support a focussed assessment of the population of breeding birds within the survey area, their biodiversity value has been defined with reference to the geographical level at which it matters. The frames of reference used in this appendix were made using the values presented in the *Guidelines for Ecological Impact Assessment in the United Kingdom: Terrestrial, Freshwater* (CIEEM 2017¹¹).
- 1.47 The evaluation uses a framework, linked to a geographical scale at which the receptor has been valued (*i.e.* international, national, regional, county, local or site) and this method represents best practice guidance. This assessment criteria, set out in Table 2, has been used to assess the biodiversity value of the breeding bird populations recorded during the field surveys.

Table 2. Importance of Ornithological Features

Importance of Ornithological Features	Descriptors and Examples of Criteria
International European	<p>or An internationally designated site or candidate site including Special Protection Area (SPA), potential SPAs (pSPAs)¹; and Ramsar sites (wetlands of international importance).</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Resident or regularly occurring populations of species which may be considered at an international or European level² where:</p> <ul style="list-style-type: none"> - the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale; - the population forms a critical part³ of a wider population at this scale; or - the species is at a critical phase⁴ of its life cycle at this scale.
UK or National	<p>Sites designated at UK or national level e.g. Site of Special Scientific Interest (SSSI).</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Areas of key or priority species identified in the <u>UK Post-2010 Biodiversity Framework</u> <i>i.e.</i> UK Biodiversity Action Plan (BAP), including those published in accordance with Section 41 of the Natural Environment and Rural Communities Act (2006) and those considered to be of principal importance for the conservation of biodiversity.</p> <p>Resident or regularly occurring populations of species which may be considered at a UK or a national level⁵ where:</p> <ul style="list-style-type: none"> - the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale; - the population forms a critical part of a wider population at this scale; or - the species is at a critical phase⁴ of its life cycle at this scale.

¹¹ CIEEM, 2017. *Guidelines for Ecological Impact Assessment in the United Kingdom: Terrestrial, Freshwater*.

Importance of Descriptors and Examples of Criteria Ornithological Features

Regional	<p>Populations of species of value at a regional level (<i>i.e.</i> South East). Resident or regularly occurring populations of species which may be considered at a regional level⁶ where:</p> <ul style="list-style-type: none"> - the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale; - the population forms a critical part of a wider population at this scale; or - the species is at a critical phase of its life cycle at this scale.
County or Unitary Authority or District	<p>Populations of species of value at a County (<i>i.e.</i> Kent) level or District (<i>i.e.</i> Medway District Council).</p> <p>Designated sites, such as County Wildlife Site (CWS), Local Wildlife Site (LWS) or Sites of Importance for Nature Conservation (SINC) and Local Nature Reserve (LNR) designated in the county or unitary authority area <i>i.e.</i> District context.</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Areas of key or priority habitats identified in the Local Biodiversity Action Plan (LBAP).</p> <p>Resident or regularly occurring populations of species which may be considered at a County (or District) level⁷ where:</p> <ul style="list-style-type: none"> - the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale; - the population forms a critical part of a wider population at this scale; or - the species is at a critical phase of its life cycle at this scale.
Local	<p>Species populations of value in a local (<i>i.e.</i> within ~ 5 km of the site) context. Designated sites include LNRs designated in the local context.</p> <p>Populations and, or communities of species considered to appreciably enrich the habitat resource within the local context (such as veteran trees), including features of value for migration, dispersal or genetic exchange.</p>
Site	<p>Habitats and associated species that is of value in the context of the site only. Populations of common and widespread species.</p>

1. pSPAs are sites which UK Government has been formally advised of but have not yet been submitted to the European Commission. These sites should be valued at an international (European) level on the basis that they meet the relevant selection criteria for a SPA but are not yet designated as such.
2. Such species include those listed within the Directive 2009/147/EC on the Conservation of Wild Birds (*i.e.* EC Birds Directive) (codified version of Council Directive 79/409/EEC as amended) or animal or plant species listed within Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (*i.e.* Habitats Directive).
3. Such populations include sub-populations that are essential to maintenance of meta-population dynamics, *e.g.* critical emigration and, or immigration links between otherwise discrete populations.
4. Seasonal activity or behaviour upon which survival or reproduction depends.
5. Species which may be considered at the UK or national level mean: birds, other animals and plants which receive legal protection on the basis of their conservation interest (those listed within the Wildlife and Countryside Act 1981 (as amended) Schedule 1, 5 and 8); species listed for their principal importance for biodiversity (in accordance with the Natural Environment and Communities Act 2006 Section 41 England), priority species listed within the UK Post 2010 Biodiversity Framework (*i.e.* UK Biodiversity Action Plan (UKBAP)), or species listed within the Red Data Book.
6. Such species include those listed in the appropriate Natural Character Area description.

Importance of Descriptors and Examples of Criteria Ornithological Features

7. Such species include those at county level (*i.e.* Kent) including unitary authority area *i.e.* District level (*i.e.* Medway); as listed on the LBAPs; and listed as a county designated site.

*As well as assigning importance there is also a need to identify all legally protected species that could be affected by the Proposed Development in order that measures can be taken to ensure that adherence to the relevant legislation is observed. This may include the adoption of mitigation and appropriate licensing which are acceptable to Natural England.

3.3.1 Species Abundance Assessment

- 1.48 In addition to evaluating a site based on its populations of breeding birds in relation to legal status, rarity and conservation value, consideration has to be given to the value of the Site for the population of individual species that it supports. This can be done by comparing the population present within the study area with the national and county breeding population for certain species. National estimates for breeding birds are published in *Population estimates of birds in Great Britain and the United Kingdom* (Musgrove *et al.* 2013¹²). The *Bird Atlas 2007-2011* (Balmer *et al.* 2013¹³) was also reviewed for species information on a national level.
- 1.49 For information on the population status of breeding bird species at a county level in Kent, the *Kent Breeding Bird Atlas 2008 – 2013* (Kent Ornithological Society, 2016¹⁴) and Rare Breeding Bird Panel (Holling, 2016)¹⁵ provided a useful source of information. Where presented, current county-level estimates on the breeding bird populations of the majority of species in Kent were sourced from county avifauna reports.

3.3.2 Species Diversity Assessment

- 1.50 The number of species recorded in an area is a simple measure of diversity that can indicate its importance at each season of the year. Table 3 shows the breeding species diversity criteria as outlined in Fuller (1980¹⁶), which provided a method for assessing the ornithological interest of sites for conservation.

Table 3. Breeding Species Diversity Criteria (Fuller, 1980)

Local	County	Regional	National
25-49	50-69	70-84	85+

- 1.51 It should be noted that Fuller's analysis was developed in the 1970s and, since then, species diversity has declined significantly. As a result, Fuller's thresholds are, in most circumstances, too high for today's breeding bird populations.
- 1.52 The '*Guidelines for selection of Biological SSSIs*' (Drewitt *et al.*, 2015¹⁷) provide a scoring system for habitats based on the breeding presence of certain key species which are characteristic of the habitat and give a threshold value for SSSI selection based on the score. Each species listed is given an index of abundance from 0 to 6, which refers to the total numbers of breeding pairs in Britain.
- 1.53 Local Wildlife Sites (LWS) are among the most important places for wildlife in Kent, together with legally protected land such as Sites of Special Scientific Interest (SSSIs). An individual LWS can

¹² Musgrove, A., Aebischer, N., Eaton, M., Hearn, R., Newson, S., Noble, D., Parsons, M., Risely, K, and Stroud, D. (2013) Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 106, 64-100.

¹³ Balmer, D., Gillings, S., Caffrey, B., Swann, B., Downie, I and Fuller, R., 2013. *Bird Atlas 2007-2011, 2013*.

¹⁴ Kent Ornithological Society., 2016. *Kent Breeding Bird Atlas 2008 – 2013*. Kent.

¹⁵ Holling, M. and the Rare Breeding Bird Panel., 2016. Rare breeding birds in the United Kingdom in 2013. *British Birds* 108, 373-422.

¹⁶ Fuller, R.J., 1980. A method for assessing the ornithological interest of sites for conservation.

¹⁷ Drewitt, A.L., Whitehead, S. and Cohe, S., 2015. *Guidelines for the Selection of Biological SSSIs, Part 2. Detailed Guidelines for Habitats and Species Groups*. JNCC.

be considered for selection for birds in the county if it meets the criteria within the '*Criteria for Selection and Delineation*' (Kent Wildlife Trust, 2015)¹⁸.

1.54 A site should be selected as a Local Wildlife Site if it can be considered as a single, identifiable unit in terms of its bird fauna and where:

- It is occupied regularly by at least 2.5% of the county population of any one or more bird species, based on the most recent and authoritative data.
- It is occupied regularly as a breeding site by species with a Kent population of 50 or fewer territories.
- It holds ten or more Kent Red Data Book 2 (KRDB2) species in the breeding season.
- It holds three or more Kent Red Data Book 3 (KRDB3) species at the appropriate time of year (normally this should not include a combination of breeding and wintering species). or
- It has been recorded as being regularly used in recent years by at least 50 breeding bird species;

1.55 The LWS selection criteria for Kent, recognises:

- the rarity of certain breeding bird species;
- birds which may be considered vulnerable because their populations are in decline;
- birds which are vulnerable because of their colonial nesting habitats; and
- sites of importance for the presence of a diversity of species.

3.4 Survey Limitations

The breeding bird survey had to be completed over two years, as in 2018 only the northern section of the DC cable route was confirmed. Therefore a further six survey visits had to be completed in 2019, to include the southern section of the Proposed Development where the location of the converter, substation and southern section of the DC cable route had been confirmed. All areas of the Site were subject to six survey visits and so this is not considered a limitation to the survey and will not have affected the outcome.

The majority of ecological data is valid only for short periods due to the inherently transient nature of the subject (CIEEM, 2019¹⁹). On this basis, it is recommended that the surveys for breeding birds will need repeating in two years (*i.e.* in 2020).

¹⁸ Kent Wildlife Trust, 2015. *Local Wildlife Sites in Kent, Criteria for Selection and Delineation*. Kent.

¹⁹ CIEEM: Advice Note on the lifespan of ecological surveys and reports <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf> (Accessed July 2019)

4. Results

4.1 Desk Study

- 1.56 The KMBRC data search returned records of 213 bird species from within 2 km of the Site and within the last ten years. Of these 213 bird species, 150 are protected or notable and a full list of the 150 protected / notable bird species recorded during the data search is included in Appendix A.

4.2 Field Survey

- 1.57 A total of 74 species were recorded during the survey of breeding birds between April and June 2018 and April and May 2019. Of these 74 species, territories of 26 species were confirmed and territories of a further 12 species were considered to be probable or possible within the survey area, resulting in a breeding bird assemblage of 38 species. Records relating to the remaining 36 species were considered to be of non-breeding species.
- 1.58 A summary of the breeding and conservation status of the 74 species recorded during the survey, with the numbers of territories identified (or thought likely in the case of probable and possible records) is provided below in Table 4.

Table 4. The breeding and conservation status of bird species recorded during surveys at NeuConnect between April & June 2018 and April & May 2019.

Species (English name)	Scientific name	Breeding Status	Total Number of territories within the survey area (where applicable)	Annex 1	WCA Schedule 1	UKBAP Priority Species	NERC Species	BoCC Species	Kent Red Data Book
Canada Goose	<i>Branta canadensis</i>	Non-breeding	0	-	-	-	-	-	-
Greylag Goose	<i>Anser anser</i>	Non-breeding	0	-	-	-	-	-	-
Shelduck	<i>Tadorna tadorna</i>	Non-breeding	0	-	-	-	-	Amber	-
Gadwall	<i>Mareca strepera</i>	Non-breeding	0	-	-	-	-	Amber	-
Wigeon	<i>Mareca Penelope</i>	Non-breeding	0	-	-	-	-	Amber	-
Mallard	<i>Anas platyrhynchos</i>	Confirmed	2	-	-	-	-	Amber	-
Pochard	<i>Aythya ferina</i>	Non-breeding	0	-	-	-	-	Red	KRDB3
Tufted Duck	<i>Aythya fuligula</i>	Possible	1	-	-	-	-	-	-
Red-legged Partridge	<i>Alectoris rufa</i>	Non-breeding	0	-	-	-	-	-	-
Pheasant	<i>Phasianus colchicus</i>	Probable	3	-	-	-	-	-	-
Little Grebe	<i>Tachybaptus ruficollis</i>	Confirmed	2	-	-	-	-	-	-
Grey Heron	<i>Ardea cinerea</i>	Non-breeding	0	-	-	-	-	-	-
Little Egret	<i>Egretta garzetta</i>	Non-breeding	0	✓	-	-	-	-	-
Cormorant	<i>Phalacrocorax carbo</i>	Non-breeding	0	-	-	-	-	-	KRDB3
Sparrowhawk	<i>Accipiter nisus</i>	Non-breeding	0	-	-	-	-	-	-
Marsh Harrier	<i>Circus aeruginosus</i>	Confirmed	1	✓	✓	-	-	Amber	-
Buzzard	<i>Buteo buteo</i>	Non-breeding	0	-	-	-	-	-	-
Moorhen	<i>Gallinula chloropus</i>	Probable	1	-	-	-	-	-	-
Coot	<i>Fulica atra</i>	Confirmed	2	-	-	-	-	-	-
Oystercatcher	<i>Haematopus ostralegus</i>	Non-breeding	0	-	-	-	-	Amber	-
Snipe	<i>Gallinago gallinago</i>	Non-breeding	0	-	-	-	-	Amber	-
Green Sandpiper	<i>Tringa ochropus</i>	Non-breeding	0	-	-	-	-	Amber	-

Species (English name)	Scientific name	Breeding Status	Total Number of territories within the survey area (where applicable)	Annex 1	WCA Schedule 1	UKBAP Priority Species	NERC Species	BoCC Species	Kent Red Data Book
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Non-breeding	0	-	-	-	-	Amber	-
Herring Gull	<i>Larus argentatus</i>	Non-breeding	0	-	-	✓	✓	Red	KRDB2
Lesser Black-backed Gull	<i>Larus fuscus</i>	Non-breeding	0	-	-	-	-	Amber	-
Stock Dove	<i>Columba oenas</i>	Confirmed	1	-	-	-	-	Amber	-
Turtle Dove	<i>Streptopelia turtur</i>	Non-breeding	0	-	-	✓	✓	Red	KRDB2
Wood Pigeon	<i>Columba palumbus</i>	Confirmed	1	-	-	-	-	-	-
Collared Dove	<i>Streptopelia decaocto</i>	Probable	1	-	-	-	-	-	-
Cuckoo	<i>Cuculus canorus</i>	Confirmed	2	-	-	✓	✓	Red	KRDB2
Little Owl	<i>Athene noctua</i>	Non-breeding	0	-	-	-	-	-	-
Swift	<i>Apus apus</i>	Non-breeding	0	-	-	-	-	Amber	-
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Confirmed	1	-	-	-	-	-	-
Green Woodpecker	<i>Picus viridis</i>	Confirmed	1	-	-	-	-	-	-
Kestrel	<i>Falco tinnunculus</i>	Non-breeding	0	-	-	-	-	Amber	-
Peregrine	<i>Falco peregrinus</i>	Non-breeding	0	✓	✓	-	-	-	KRDB1
Jay	<i>Garrulus glandarius</i>	Non-breeding	0	-	-	-	-	-	-
Magpie	<i>Pica pica</i>	Confirmed	1	-	-	-	-	-	-
Jackdaw	<i>Coloeus monedula</i>	Non-breeding	0	-	-	-	-	-	-
Rook	<i>Corvus frugilegus</i>	Non-breeding	0	-	-	-	-	-	-
Carrion Crow	<i>Corvus corone</i>	Probable	3	-	-	-	-	-	-
Blue Tit	<i>Cyanistes caeruleus</i>	Confirmed	3	-	-	-	-	-	-
Great Tit	<i>Parus major</i>	Confirmed	4	-	-	-	-	-	-
Skylark	<i>Alauda arvensis</i>	Confirmed	6	-	-	✓	✓	Red	KRDB2
Swallow	<i>Hirundo rustica</i>	Non-breeding	0	-	-	-	-	Amber	-

Species (English name)	Scientific name	Breeding Status	Total Number of territories within the survey area (where applicable)	Annex 1	WCA Schedule 1	UKBAP Priority Species	NERC Species	BoCC Species	Kent Red Data Book
House Martin	<i>Delichon urbicum</i>	Non-breeding	0	-	-	-	-	Amber	-
Cetti's Warbler	<i>Cettia cetti</i>	Confirmed	6	-	✓	-	-	-	-
Long-tailed Tit	<i>Aegithalos caudatus</i>	Non-breeding	0	-	-	-	-	-	-
Willow Warbler	<i>Phylloscopus trochilus</i>	Possible	1	-	-	-	-	Amber	-
Chiffchaff	<i>Phylloscopus collybita</i>	Confirmed	4	-	-	-	-	-	-
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Probable	1	-	-	-	-	-	-
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Confirmed	2	-	-	-	-	-	KRDB3
Blackcap	<i>Sylvia atricapilla</i>	Confirmed	10	-	-	-	-	-	-
Garden Warbler	<i>Sylvia borin</i>	Non-breeding	0	-	-	-	-	-	-
Lesser Whitethroat	<i>Sylvia curruca</i>	Confirmed	2	-	-	-	-	-	-
Whitethroat	<i>Sylvia communis</i>	Confirmed	23	-	-	-	-	-	-
Goldcrest	<i>Regulus regulus</i>	Non-breeding	0	-	-	-	-	-	KRDB3
Wren	<i>Troglodytes troglodytes</i>	Confirmed	20	-	-	-	-	-	-
Starling	<i>Sturnus vulgaris</i>	Non-breeding	0	-	-	✓	✓	Red	KRDB2
Blackbird	<i>Turdus merula</i>	Confirmed	7	-	-	-	-	-	-
Song Thrush	<i>Turdus philomelos</i>	Possible	1	-	-	✓	✓	Red	KRDB2
Mistle Thrush	<i>Turdus viscivorus</i>	Non-breeding	0	-	-	-	-	Red	-
Robin	<i>Erithacus rubecula</i>	Confirmed	2	-	-	-	-	-	-
Nightingale*	<i>Luscinia megarhynchos</i>	Probable	1	-	-	-	-	Red	-
House Sparrow	<i>Passer domesticus</i>	Confirmed	3	-	-	✓	✓	Red	KRDB3(High alert)

Species (English name)	Scientific name	Breeding Status	Total Number of territories within the survey area (where applicable)	Annex 1	WCA Schedule 1	UKBAP Priority Species	NERC Species	BoCC Species	Kent Red Data Book
Dunnock	<i>Prunella modularis</i>	Confirmed	11	-	-	✓	✓	Amber	-
Pied Wagtail	<i>Motacilla alba</i>	Non-breeding	0	-	-	-	-	-	-
Meadow Pipit	<i>Anthus pratensis</i>	Non-breeding	0	-	-	-	-	Amber	-
Chaffinch	<i>Fringilla coelebs</i>	Confirmed	5	-	-	-	-	-	-
Greenfinch	<i>Chloris chloris</i>	Probable	2	-	-	-	-	-	-
Linnet	<i>Linaria cannabina</i>	Confirmed	3	-	-	✓	✓	Red	KRDB2
Goldfinch	<i>Carduelis carduelis</i>	Confirmed	3	-	-	-	-	-	-
Corn Bunting	<i>Emberiza calandra</i>	Non-breeding	0	-	-	✓	✓	Red	KRDB2
Reed Bunting	<i>Emberiza schoeniclus</i>	Possible	1	-	-	✓	✓	Amber	-

Notes on Table 4: *Kent Biodiversity Action Plan species

1.59 A total of 38 species had breeding territories confirmed or thought probable / possible within the survey area. The number of territories for each species and where they were recorded within the survey area is summarised below in Table 5.

Table 5. Location of breeding bird territories

Species (English name)	Total number of territories within the survey area	Total number of territories within the site boundary	Total number of territories outside of site boundary
Mallard	2	-	2
Tufted Duck	1	-	1
Pheasant	3	-	3
Little Grebe	3	-	3
Marsh Harrier	1	-	1
Moorhen	1	-	1
Coot	4	-	4
Stock Dove	1	1	-
Wood Pigeon	2	-	2
Collared Dove	1	1	
Cuckoo	2	1	1
Great Spotted Woodpecker	1	-	1
Green Woodpecker	2	-	2
Magpie	1	1	-
Carrion Crow	3	3	-
Blue Tit	2	1	1
Great Tit	4	2	2
Skylark	2	2	-
Cetti's Warbler	6	1	5
Willow Warbler	1	1	-
Chiffchaff	4	1	3
Sedge Warbler	1	1	-
Reed Warbler	3	-	3
Blackcap	10	5	5
Lesser Whitethroat	2	2	
Whitethroat	23	15	8
Wren	20	9	11
Blackbird	7	3	4
Song Thrush	1	1	-
Robin	2	1	1
Nightingale	1	-	1
House Sparrow	3	1	2
Dunnock	11	5	6
Chaffinch	5	3	2
Greenfinch	3	1	2
Linnet	3	1	2
Goldfinch	3	2	1
Reed Bunting	1	-	1

5. Evaluation

5.1 Desk Study

- 1.60 Records of 150 protected and, or notable species were returned from the KMBRC data search. Of these 150 species:
 - 1.61 36 are listed on Annex 1 of the EU Birds Directive;
 - 1.62 51 are listed on Schedule 1 of the Wildlife and Countryside Act, 1981;
 - 1.63 30 are listed as priority species on the UK Biodiversity Action Plan and as a species of principal importance under Section 41 of the NERC Act;
 - 1.64 79 species are included on the Birds of Conservation Concern Amber List;
 - 1.65 43 species are included on the Birds of Conservation Concern Red List;
 - 1.66 21 species are listed as a breeding species with 25 pairs or less in Kent in the Kent Red Data Book (KRDB1);
 - 1.67 15 species are listed as a breeding species with more than 25 pairs in Kent but red listed for their breeding decline (RSPB 1996) – but not the ‘high alert’ species (KRDB2); and
 - 1.68 13 species are listed on the Kent Red Data Book bird list (KRDB3) for their breeding populations in Kent. These includes House Sparrow and Yellowhammer which are also listed as high alert species.

5.2 Field Survey

- 1.69 Of the 150 protected and, or notable species returned from the data search, 33 species have the potential to occur (and possibly breed) within the survey area during the breeding season and 15 of those 34 were confirmed as having breeding territories, or were probably or possibly on territory, within the survey area during field surveys. The 18 species that were identified during the desk study that have the potential to breed within the survey area, but were either not recorded during the field surveys or were recorded within the survey area but not breeding were:

- Mute Swan;
- Shelduck;
- Gadwall;
- Pochard;
- Hobby;
- Water Rail;
- Marsh Warbler;
- Grey Partridge;
- Lapwing;
- Turtle Dove;
- Meadow Pipit;
- Yellow Wagtail;
- Grey Wagtail;
- Wheatear;
- Mistle Thrush;
- Goldcrest

- Yellowhammer *Emberiza citrinella*; and
- Corn Bunting *Emberiza calandra*.

5.2.1 Specially Protected Species

Annex 1 species

- 1.70 Marsh Harrier was confirmed to have a breeding territory within the survey area, just east of the DC cable route and south of sand and gravel works.
- 1.71 Peregrine was recorded within the survey area during surveys for breeding birds in 2018 and 2019, but not confirmed (or thought probable or possible) to be breeding.
- 1.72 Marsh Harrier and Peregrine are also included on Schedule 1 of the Wildlife and Countryside Act (1981, as amended).

Schedule 1 listed species

- 1.73 A single Cetti's Warbler territory was confirmed within the Site boundary, with a further five territories confirmed outside the Site boundary and within the survey area. These six territories were confirmed within the swamp and scrub habitat found in the southern section of the survey area.

Species of conservation importance

Priority species (UK Biodiversity Action Plan / Species of Principal Importance)

- 1.74 Breeding territories of six species (Cuckoo, Skylark, Song Thrush, House Sparrow, Dunnock and Linnet), included as priority species on the UK Biodiversity Action Plan and listed as Species of Principal Importance prepared under Section 41 of the Natural Environment and Rural Communities Act 2006, were confirmed or thought probable or possible within the Site boundary. A single Reed Bunting territory was confirmed outside the Site boundary, within the survey area.

Birds of Conservation Concern

- 1.75 Breeding territories were confirmed, or thought probable or possible, for five species within the Site boundary and survey area that are included on the Birds of Conservation Concern (BoCC) Red List. Each species and the reason for its placement on the Red List are provided below:
- Cuckoo - severe decline in the UK breeding population size (>50%) over 25 years; and severe decline in the UK breeding population of more than 50% over the entire period used for assessments;
 - Skylark - moderate (25-50%) decline in the UK breeding population in the last 25 years and severe (>50%) decline over the entire period used for assessments since the first BoCC review in 1969;
 - Song Thrush - severe (>50%) long-term decline in UK breeding population during the entire period used for assessments since the first BoCC review in 1969;
 - House Sparrow - moderate (25-50%) decline in the UK breeding population in the last 25 years and severe (>50%) decline over the entire period used for assessments since the first BoCC review in 1969; and
 - Linnet - severe decline in the UK breeding population of more than 50% over the entire period used for assessments.
- 1.76 Breeding territories were confirmed, or thought probable or possible, for five species within the survey area that are included on the Birds of Conservation Concern Amber List. These species and the reasons for their placement on the Amber List are provided below:
- Mallard - moderate decline in the non-breeding population over the last 25 years;

- Marsh Harrier - previously Red-listed species due to historical decline, followed by an increase of at least 100% over 25 years or the longer-term period. Breeding is localised, with > 50% of the UK population found at ten or fewer sites.
 - Stock Dove - species breeding in international importance, with 20-30% of the European Population in the UK;
 - Dunnock - moderate decline in the UK breeding population of more than 25% but less than 50% over the entire period used for assessments; and
 - Reed Bunting - moderate decline in the UK breeding population of more than 25% but less than 50% over the entire period used for assessments.
- 1.77 Only Marsh Harrier and Dunnock had confirmed (or probable or possible) breeding territories within the Site boundary.

Kent Red Data Book: Birds

- 1.78 Breeding territories were confirmed, or thought probable or possible for a total of six Kent Red Data Book bird species (Cuckoo, Skylark, Song Thrush, Linnet, Reed Warbler and House Sparrow) within the survey area. Of these six species, Cuckoo, Skylark, Song Thrush and Linnet are listed as KRDB2, a breeding species with more than 25 pairs in Kent but red listed for their breeding decline (RSPB 1996). Reed Warbler and House Sparrow are listed as KRDB3 due to their breeding populations in Kent, with House Sparrow also listed as a high alert species.
- 1.79 Five of these species, Cuckoo, Skylark, Song Thrush, Linnet and House Sparrow had confirmed (or probable / possible) breeding territories within the Site boundary.

Kent Biodiversity Action Plan Species

- 1.80 One breeding territory of Nightingale was thought probable within woodland habitat south of the Site boundary within the survey area (see Figure 3 in Appendix B).

5.2.2 Species abundance

- 1.81 No species were present within the survey area in numbers of national significance, *i.e.* 1% or more of the UK population, when compared to national population estimates as given in Musgrove *et al.* (2013).
- 1.82 Two species (Marsh Harrier and Cetti's Warbler) were present in number approaching 1% of the county level, when compared to the breeding population estimates for the county as detailed in the Kent Breeding Bird Atlas 2008-2013.
- 1.83 The Kent Breeding Bird Atlas estimated the breeding population of Marsh Harrier at between 80 – 100 breeding females. Therefore the single Marsh Harrier territory recorded within the survey area, when evaluated against this figure, would represent 1.8% of the minimum number of territories within Kent and 1% of the maximum number of territories, resulting in the Site's population being of county level importance.
- 1.84 However, the national and county populations of Marsh Harrier from 2015, based on a five-year mean and reported by the Rare Breeding Birds Panel (RBBP) (Hollings *et al.* 2017) is estimated to be 354 breeding pairs and 46-47 pairs respectively. Therefore, one territory or pair present within the survey area would represent 0.3% of the estimated national population and 2.2 % of the minimum Kent population. Therefore, the single territory or pair of Marsh Harrier within the survey area is considered to be of importance, with a population approaching that of district importance based on breeding information as reported by the RBBP (Holling *et al.*, 2016).
- 1.85 Cetti's Warbler was confirmed to have six breeding territories within the survey area. The Kent Breeding Bird Atlas estimates the breeding population of Cetti's Warbler to be between 500 – 1,000 singing males. Therefore the six territories recorded would represent 1.2% of the minimum number of singing males within Kent and 0.6% of the maximum number of singing males, placing

the importance of the population of Cetti's Warbler at a value approaching that of district level, when evaluated against the Kent Breeding Bird Atlas.

- 1.86 The national and county populations of Cetti's Warbler from 2015, based on a five-year mean and reported by the RBBP (Hollings *et al.* 2017) is estimated to be 1,827 breeding pairs and 315 pairs respectively. Therefore, six territories within the survey area would represent 0.3% of the estimated national population and 1.9 % of the minimum Kent population Whilst the population within the survey area could be considered of district importance, when evaluated against reported data from the RBBP, this species continues to increase across England (the RBBP report notes a 64% national increase in territories between 2014 and 2015) and therefore, exact number of territories both nationally and in Kent is likely to be grossly under-recorded and much higher than those reported. Therefore, the six territories within the survey area are considered to be of local importance only.
- 1.87 No other species were recorded in figure approaching 1% of the county breeding population estimates, as detailed in Kent Breeding Bird Atlas.

5.2.3 Species diversity

- 1.88 To measure species diversity, the breeding assemblage recorded during field surveys of the survey area was evaluated against the criteria developed by Fuller (1980), as detailed in Section 3.4.2 of this report. The value of the breeding assemblage score of 38 species would be regarded as being of local importance for breeding birds.
- 1.89 The Joint Nature Conservation Committee Guidelines have developed a scoring system for the selection of '*Biological Sites of Special Scientific Interest*' which gives a threshold value for SSSI selection based on the total score of species that are characteristic of habitats, using the values within the selection criteria. This can be used as an indicator of the relative importance of habitat within a site, or area, for the breeding assemblage that it supports.
- 1.90 The score obtained for each habitat type included on the scoring system for the selection of '*Biological Sites of Special Scientific Interest*' that is found within the survey area are detailed in Table 6.

Table 6- Species Assemblage Scores for Habitats within the survey area

Habitat type	SSSI Threshold value	Area A Score
Lowland scrub (exc. heath)	15	8
Lowland open waters and their margins	39	14

- 1.91 Breeding bird assemblages for each habitat included on the scoring system for the selection of '*Biological Sites of Special Scientific Interest*' found within the Site did not meet the threshold value for SSSI selection.
- 1.92 Evaluation was made of the breeding species assemblage and numbers recorded during surveys of the survey area, with respect to the criteria for selection of Local Wildlife Sites (as detailed in Section 3.4.2). Using this criterion, the survey area does not meet any of the criteria for selection of a Local Wildlife Site in Kent.

5.2.4 Species distribution

- 1.93 Breeding bird territories were widely distributed throughout the survey area, with concentrations of birds found within the most suitable habitats to support breeding birds, including: dense / continuous scrub, swamp and tall ruderal (see Figure 2, 3 and 4 in Appendix B).
- 1.94 The dense and continuous scrub habitat within the survey area supported the most diverse community of breeding birds. This habitat had low (<10) numbers of species of conservation concern plus Wildlife & Countryside Act Schedule 1 species (Marsh Harrier and Cetti's Warbler) and a NERC Species of Principal Importance (Cuckoo), breeding.

- 1.95 The swamp habitat found next to the waterbodies within the survey area also supported a diverse community of breeding birds. This included Cuckoo, a NERC Species of Principal Importance, and low (<10) numbers of breeding species of conservation concern. Additionally, Marsh Harrier, an Annex 1 and Wildlife Conservation Act Schedule 1 species, was confirmed to be breeding in the swamp habitat surrounding waterbody TN4.
- 1.96 The tall ruderal habitat east of the Converter Station and Substation, within the southern section of the survey area also had a diverse community of breeding birds, with low (<10) numbers of species of conservation concern breeding, plus Wildlife & Countryside Act Schedule 1 species (Cetti's Warbler) and NERC Species of Principal Importance (Skylark)
- 1.97 The distribution of species of conservation importance recorded during the surveys for breeding birds are displayed in Figures 2 and 3 in Appendix B.

6. Identification of Constraints and Recommendation

6.1 Potential impacts of development on breeding birds

1.98 In the absence of mitigation, the Proposed Development has the potential to impact on the breeding bird assemblage identified on the Site. These potential impacts are:

- permanent habitat loss, fragmentation and a reduction in foraging opportunities, through construction of the substation and converter station;
- temporary habitat loss and fragmentation, including a reduction in prey assemblages, availability and foraging opportunities, through construction of the DC cable corridor;
- displacement and, or loss of nesting habitat during construction of the substation and converter station;
- temporary displacement and/or loss of breeding populations, during construction of DC cable corridor; and
- temporary disturbance (visual and noise), during construction.

6.2 Outline Mitigation Proposals

1.99 To reduce the potential impacts on the breeding bird assemblage, a number of measures can be included within the design of the Proposed Development. These outline measures are recommended to ensure that the impacts on the breeding bird assemblage are minimised and it is recommended that these proposals are formalised through a Construction Environmental Management Plan (CEMP) or precautionary working method statement for the Site.

Habitat Retention

1.100 During construction, the Proposed Development should seek to retain as much of the existing habitat as possible, outside of the working areas. To avoid unnecessary intrusion of work vehicles and site personnel into habitat outside of the working areas, which would cause unnecessary habitat loss and disturbance, fencing should be erected around the construction areas.

Habitat Loss, Creation and Restoration

1.101 The Proposed Development will incur permanent loss of the arable fields to the south and south-west of Perry's Farm (see Figure 1). This will result in loss of breeding territories for Skylark, a species of conservation concern, confirmed as breeding in this area.

1.102 Therefore, the landscaping for the Site should seek to include suitable habitat creation to alleviate the potential effects on Skylark in these arable fields and to enhance this habitat to create a more diverse breeding bird assemblage, to what is already present on Site. The creation of an area of grassland or dry swale would benefit Skylark and encourage more farmland passerines such as Reed Bunting (already present within the survey area) and Yellowhammer to breed within the Site. The opportunity should be sought to potentially manage any areas of redundant farmland generated by the Proposed Development in this way, as an increase in breeding bird assemblage would provide a net gain in biodiversity as described in Section 2.3 (NPPF, 2019).

1.103 The Proposed Development will also incur temporary habitat loss of scrub and tall ruderal habitat along the extent of the DC cable corridor. Post-construction, any habitat loss within the DC cable corridor should be restored on a like for like basis and habitat creation and, or restoration should include the planting of mixed native species of trees and scrub, including fruiting species such as Hawthorn *Crataegus monogyna* and Blackthorn *Prunus spinosa*, which will provide nesting habitat for breeding birds in the summer and foraging opportunities during the winter months.

1.104 Ideally, where any new habitats are proposed, these should be planted and functional in advance of construction, so that any displaced populations have alternative areas of habitats available.

Legislative Mitigation

- 1.105 Vegetation clearance works should be timed to be undertaken outside of the bird breeding season (*i.e.* between September and February) to avoid any additional constraints associated with this activity.
- 1.106 If it is not possible to undertake vegetation clearance outside of the typical bird breeding season (*i.e.* where works are planned between March and August inclusive), then it will be necessary for a suitably qualified ornithologist, acting as an Ecological Clerk of Works (ECoW) to conduct a survey for nesting birds in advance of planned clearance works. Due to Marsh Harrier and Cetti's Warbler Schedule 1 of the WCA status, it is an offence to intentionally disturb these birds whilst they are building a nest, or in, on or near a nest containing eggs or young. Therefore, as both species have been confirmed to be breeding within the survey area, a licence would need to be granted to determine the exact locations of the nests before any clearance of vegetation is to take place. Typically, this survey will be undertaken 24 hours ahead of any planned clearance works.
- 1.107 Should active bird nests be discovered by the ECoW, then appropriate measures will be put in place to ensure that any nest found is not disturbed. There is no licence available to damage or destroy an active nest of a breeding bird at any time of year.
- 1.108 Protective measures, on discovery of an active nest, will involve placing a buffer around the nest within which no works will be undertaken until the nest has been judged, by a suitably qualified ornithologist, to no longer be in use (*i.e.* fledged young have left the nest or the nesting attempt has failed).
- 1.109 The radius of the protective buffer and duration it is imposed will be dependent on the species present and stage of breeding (*i.e.* with eggs, chicks, etc.). For the majority of birds, this buffer could be in place for up to 30 days (on the assumption of a 'new' nest with recently laid eggs).
- 1.110 Where no active nests are located, vegetation clearance must proceed immediately and should be completed within 24 hours of the inspection.

Appendix A

Table A.1 - KMBRC Data Search List of protected / notable bird species within 2 km of the Site and within the last 10 years

Common Name	Scientific Name	Conservation Designation
Red-throated Diver	<i>Gavia stellata</i>	BirdsDir:A1; WCA1
Black-throated Diver	<i>Gavia arctica</i>	BAP; S41; BoCC4:Amber; BirdsDir:A1; WCA1
Great Northern Diver	<i>Gavia immer</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Black-necked Grebe	<i>Podiceps nigricollis</i>	BoCC4:Amber; KRDB1; WCA1
Fulmar	<i>Fulmarus glacialis</i>	BoCC4:Amber
Manx Shearwater	<i>Puffinus puffinus</i>	BoCC4:Amber
Leach's Petrel	<i>Oceanodroma leucorhoa</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Gannet	<i>Morus bassanus</i>	BoCC4:Amber
Shag	<i>Phalacrocorax aristotelis</i>	BoCC4:Red
Cormorant	<i>Phalacrocorax carbo</i>	KRDB3
Bittern	<i>Botaurus stellaris</i>	BAP; BoCC4:Amber; BirdsDir:A1; S41; WCA1
Little Egret	<i>Egretta garzetta</i>	BirdsDir:A1;
Great White Egret	<i>Ardea alba</i>	BirdsDir:A1
Spoonbill	<i>Platalea leucorodia</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Mute Swan	<i>Cygnus olor</i>	BoCC4:Amber
Bewick's Swan	<i>Cygnus columbianus</i>	BoCC4:Amber
Whooper Swan	<i>Cygnus cygnus</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Pink-footed Goose	<i>Anser brachyrhynchus</i>	BoCC4:Amber
White-fronted Goose	<i>Anser albifrons</i>	BAP; BoCC4:Red; KRDB3; S41
Greylag Goose	<i>Anser anser</i>	BoCC4:Amber
Barnacle Goose	<i>Branta leucopsis</i>	BoCC4:Amber; BirdsDir:A1
Brent Goose	<i>Branta bernicla</i>	BAP; BoCC4:Amber; S41
Ruddy Shelduck	<i>Tadorna ferruginea</i>	BirdsDir:A1
Shelduck	<i>Tadorna tadorna</i>	BoCC4:Amber
Wigeon	<i>Anas penelope</i>	BoCC4:Amber
Gadwall	<i>Anas strepera</i>	BoCC4:Amber
Teal	<i>Anas crecca</i>	BoCC4:Amber; KRDB1
Mallard	<i>Anas platyrhynchos</i>	BoCC4:Amber
Pintail	<i>Anas acuta</i>	BoCC4:Amber; WCA1
Garganey	<i>Spatula querquedula</i>	BoCC4:Amber; KRDB1; WCA1
Shoveler	<i>Anas clypeata</i>	BoCC4:Amber
Pochard	<i>Aythya ferina</i>	BoCC4:Red; KRDB3
Scaup	<i>Aythya marila</i>	BAP; BoCC4:Red; S41; WCA1; KRDB2
Eider	<i>Somateria mollissima</i>	BoCC4:Amber (subsp. Red)

Common Name	Scientific Name	Conservation Designation
Long-tailed Duck	<i>Clangula hyemalis</i>	BoCC4:Red; WCA1
Common Scoter	<i>Melanitta nigra</i>	BAP; BoCC4:Red; S41; WCA1
Velvet Scoter	<i>Melanitta fusca</i>	BoCC4:Red; WCA1
Goldeneye	<i>Bucephala clangula</i>	BoCC4:Amber
Honey Buzzard	<i>Pernis apivorus</i>	BoCC4:Amber; BirdsDir:A1; KRDB1; WCA1
Black Kite	<i>Milvus migrans</i>	BirdsDir:A1
Red Kite	<i>Milvus milvus</i>	BirdsDir:A1; WCA1
Marsh Harrier	<i>Circus aeruginosus</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Hen Harrier	<i>Circus cyaneus</i>	BoCC4:Red; BirdsDir:A1; S41; WCA1
Montagu's Harrier	<i>Circus pygargus</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Osprey	<i>Pandion haliaetus</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Kestrel	<i>Falco tinnunculus</i>	BoCC4:Amber
Merlin	<i>Falco columbarius</i>	BoCC4:Red; BirdsDir:A1; WCA1
Hobby	<i>Falco subbuteo</i>	WCA1; KRDB3
Peregrine	<i>Falco peregrinus</i>	BirdsDir:A1; KRDB1; WCA1
Grey Partridge	<i>Perdix perdix</i>	BAP; BoCC4:Red; S41; KRDB2
Water Rail	<i>Rallus aquaticus</i>	KRDB3
Oystercatcher	<i>Haematopus ostralegus</i>	BoCC4:Amber
Avocet	<i>Recurvirostra avosetta</i>	BoCC4:Amber; ; BirdsDir:A1; KRDB3 WCA1
Little Ringed Plover	<i>Charadrius dubius</i>	WCA1; KRDB1
Ringed Plover	<i>Charadrius hiaticula</i>	BoCC4:Red
Golden Plover	<i>Pluvialis apricaria</i>	BirdsDir:A1
Grey Plover	<i>Pluvialis squatarola</i>	BoCC4:Amber
Lapwing	<i>Vanellus vanellus</i>	BAP; BoCC4:Red; S41; KRDB2
Knot	<i>Calidris canutus</i>	BoCC4:Amber;
Sanderling	<i>Calidris alba</i>	BoCC4:Amber
Curlew Sandpiper	<i>Calidris ferruginea</i>	BoCC4:Amber
Purple Sandpiper	<i>Calidris maritima</i>	BoCC4:Amber; WCA1
Dunlin	<i>Calidris alpina</i>	BoCC4:Amber; BirdsDir:A1; KRDB2
Ruff	<i>Calidris pugnax</i>	BirdsDir:A1; WCA1
Snipe	<i>Gallinago gallinago</i>	BoCC4:Amber; KRDB1
Woodcock	<i>Scolopax rusticola</i>	BoCC4:Red; KRDB3
Black-tailed Godwit	<i>Limosa limosa</i>	BAP; BoCC4:Red; S41; KRDB1; WCA1
Bar-tailed Godwit	<i>Limosa lapponica</i>	BoCC4:Amber; BirdsDir:A1
Whimbrel	<i>Numenius phaeopus</i>	BoCC4:Red; WCA1
Curlew	<i>Numenius arquata</i>	BAP; BoCC4:Red; S41
Spotted Redshank	<i>Tringa erythropus</i>	BoCC4:Amber
Redshank	<i>Tringa totanus</i>	BoCC4:Amber; KRDB3
Greenshank	<i>Tringa nebularia</i>	BoCC4:Amber; WCA1

Common Name	Scientific Name	Conservation Designation
Green Sandpiper	<i>Tringa ochropus</i>	BoCC4:Amber; WCA1
Wood Sandpiper	<i>Tringa glareola</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Common Sandpiper	<i>Actitis hypoleucos</i>	BoCC4:Amber
Turnstone	<i>Arenaria interpres</i>	BoCC4:Amber
Arctic Skua	<i>Stercorarius parasiticus</i>	BAP; S41; BoCC4:Red
Great Skua	<i>Stercorarius skua</i>	BoCC4:Amber
Mediterranean Gull	<i>Ichthyaetus melanocephalus</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Little Gull	<i>Larus minutus</i>	BirdsDir:A1; WCA1
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	BoCC4:Amber
Common Gull	<i>Larus canus</i>	BoCC4:Amber; KRDB1
Lesser Black-backed Gull	<i>Larus fuscus</i>	BoCC4:Amber
Herring Gull	<i>Larus argentatus</i>	BAP; BoCC4:Red; S41; KRDB2
Yellow-legged Gull	<i>Larus michahellis</i>	BoCC4:Amber
Glaucous Gull	<i>Larus hyperboreus</i>	BoCC4:Amber
Great Black-backed Gull	<i>Larus marinus</i>	BoCC4:Amber; KRDB1
Kittiwake	<i>Rissa tridactyla</i>	BoCC4:Red;
Sandwich Tern	<i>Thalasseus sandvicensis</i>	BoCC4:Amber; BirdsDir:A1;KRDB3
Common Tern	<i>Sterna hirundo</i>	BoCC4:Amber; BirdsDir:A1
Arctic Tern	<i>Sterna paradisaea</i>	BoCC4:Amber; BirdsDir:A1
Little Tern	<i>Sterna albifrons</i>	BoCC4:Amber; BirdsDir:A1; KRDB1; WCA1
Black Tern	<i>Chlidonias niger</i>	BoCC4:Amber; BirdsDir:A1; KRDB1; WCA1
Guillemot	<i>Uria aalge</i>	BoCC4:Amber
Razorbill	<i>Alca torda</i>	BoCC4:Amber
Puffin	<i>Fratercula arctica</i>	BoCC4:Red
Stock Dove	<i>Columba oenas</i>	BoCC4:Amber;
Turtle Dove	<i>Streptopelia turtur</i>	BAP; BoCC4:Red; S41; KRDB2
Cuckoo	<i>Cuculus canorus</i>	BAP; BoCC4:Red; S41; KRDB2
Barn Owl	<i>Tyto alba</i>	WCA1
Tawny Owl	<i>Strix aluco</i>	BoCC4:Amber
Long-eared Owl	<i>Asio otus</i>	KRDB1
Short-eared Owl	<i>Asio flammeus</i>	BoCC4:Amber; BirdsDir:A1
Swift	<i>Apus apus</i>	BoCC4:Amber
Kingfisher	<i>Alcedo atthis</i>	BoCC4:Amber (subsp. Red); BirdsDir:A1; WCA1
Marsh Warbler	<i>Acrocephalus palustris</i>	BoCC4:Red; WCA1
Wryneck	<i>Jynx torquilla</i>	BAP; S41; WCA1
Skylark	<i>Alauda arvensis</i>	BAP; BoCC4:Red; S41; KRDB2

Common Name	Scientific Name	Conservation Designation
Shore Lark	<i>Eremophila alpestris</i>	BoCC4:Amber; WCA1
House Martin	<i>Delichon urbica</i>	BoCC4:Amber
Tree Pipit	<i>Anthus trivialis</i>	BAP; BoCC4:Red; S41; KRDB2;
Meadow Pipit	<i>Anthus pratensis</i>	BoCC4:Amber
Rock Pipit	<i>Anthus petrosus</i>	KRDB1
Water Pipit	<i>Anthus spinoletta</i>	BoCC4:Amber
Yellow Wagtail	<i>Motacilla flava</i>	BAP; BoCC4:Red; S41; KRDB2
Grey Wagtail	<i>Motacilla cinerea</i>	BoCC4:Red
Dunnock	<i>Prunella modularis</i>	BAP; BoCC4:Amber; S41
Nightingale	<i>Luscinia megarhynchos</i>	BoCC4:Red
Black Redstart	<i>Phoenicurus ochruros</i>	BoCC4:Red; KRDB1; WCA1
Redstart	<i>Phoenicurus phoenicurus</i>	BoCC4:Amber; KRDB1
Whinchat	<i>Saxicola rubetra</i>	BoCC4:Red
Stonechat	<i>Saxicola rubicola</i>	KRDB1
Wheatear	<i>Oenanthe oenanthe</i>	KRDB1
Ring Ouzel	<i>Turdus torquatus</i>	KRDB1
Fieldfare	<i>Turdus pilaris</i>	BoCC4:Red; WCA1
Song Thrush	<i>Turdus philomelos</i>	BAP; BoCC4:Red; S41; KRDB2
Redwing	<i>Turdus iliacus</i>	BoCC4:Red; WCA1
Mistle Thrush	<i>Turdus viscivorus</i>	BoCC4:Red
Reed Warbler	<i>Acrocephalus scirpaceus</i>	KRDB3
Cetti's Warbler	<i>Cettia cetti</i>	WCA1
Dartford Warbler	<i>Sylvia undata</i>	BoCC4:Amber; BirdsDir:A1; WCA1
Willow Warbler	<i>Phylloscopus trochilus</i>	BoCC4:Amber
Goldcrest	<i>Regulus regulus</i>	KRDB3
Firecrest	<i>Regulus ignicapilla</i>	WCA1; KRDB1
Spotted Flycatcher	<i>Muscicapa striata</i>	BAP; BoCC4:Red; S41; KRDB2
Pied Flycatcher	<i>Ficedula hypoleuca</i>	BoCC4:Red
Bearded Tit	<i>Panurus biarmicus</i>	WCA1
Starling	<i>Sturnus vulgaris</i>	BAP; BoCC4:Red; ; S41; KRDB2
House Sparrow	<i>Passer domesticus</i>	BAP; BoCC4:Red; S41; KRDB3(High alert)
Brambling	<i>Fringilla montifringilla</i>	WCA1
Siskin	<i>Spinus spinus</i>	KRDB1
Linnet	<i>Linaria cannabina</i>	BAP; BoCC4:Red; S41; KRDB2
Twite	<i>Linaria flavirostris</i>	BAP; BoCC4:Red; S41
Lesser Redpoll	<i>Acanthis cabaret</i>	BAP; BoCC4:Red; S41; KRDB1
Lapland Bunting	<i>Calcarius lapponicus</i>	BoCC4:Amber; WCA1

Common Name	Scientific Name	Conservation Designation
Snow Bunting	<i>Plectrophenax nivalis</i>	BoCC4:Amber; WCA1
Yellowhammer	<i>Emberiza citrinella</i>	BAP; BoCC4:Red; S41; KRDB3(High alert)
Reed Bunting	<i>Emberiza schoeniclus</i>	BAP; BoCC4:Amber; S41
Corn Bunting	<i>Emberiza calandra</i>	BAP; BoCC4:Red; S41; KRDB2

* BirdsDir:A1 = Species listed on Annex 1 of the Birds Directive; WCA1 = Species listed on Schedule 1 of the Wildlife Countryside Act; S41 = The Natural Environment and Rural Communities (NERC) list of Species of Principal Importance; BAP = UK Biodiversity Action Plan (BAP) priority bird species; BoCC4 = Birds of Conservation Concern; KRDB1 = Kent Red Data Book breeding bird species with 25 pairs or fewer in Kent; KRDB2 = Kent Red Data Book breeding species with more than 25 pairs in Kent but red listed for their breeding decline (RSPB 1996) and KRDB3 = Remaining Kent Red Data Book, including high alert bird species.

Appendix B

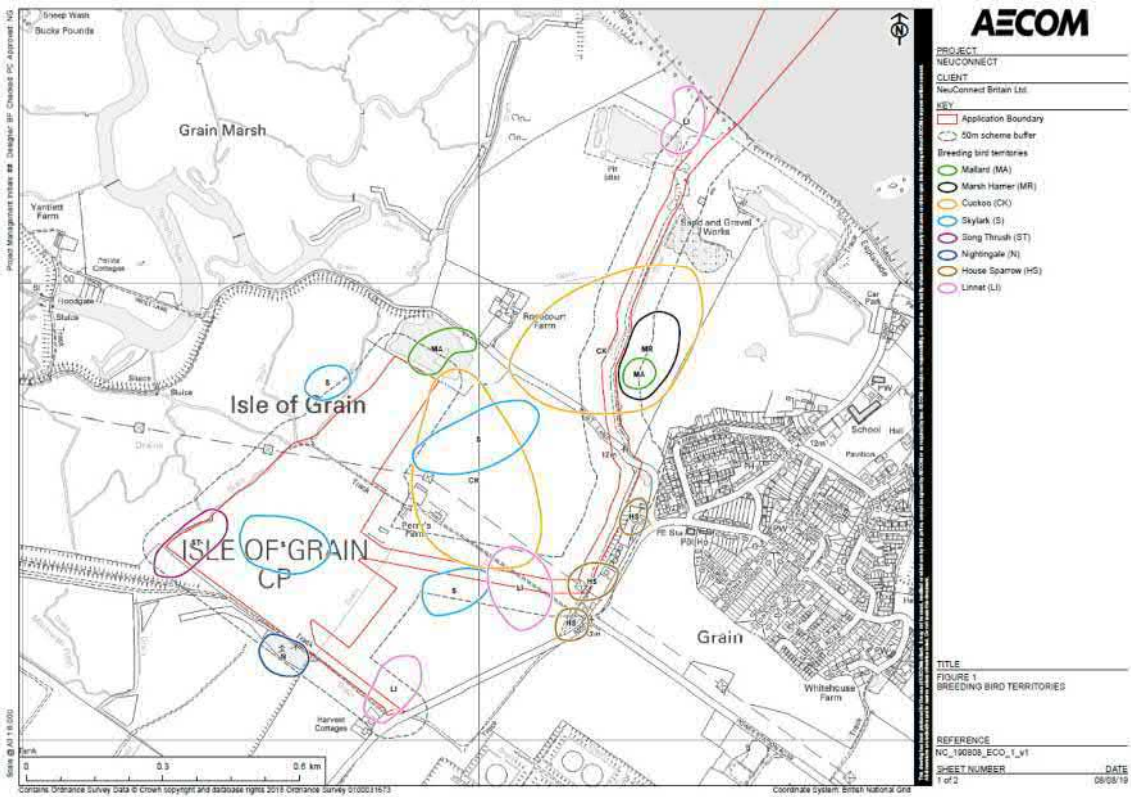


Figure 2 - Distribution of breeding territories for species of conservation concern

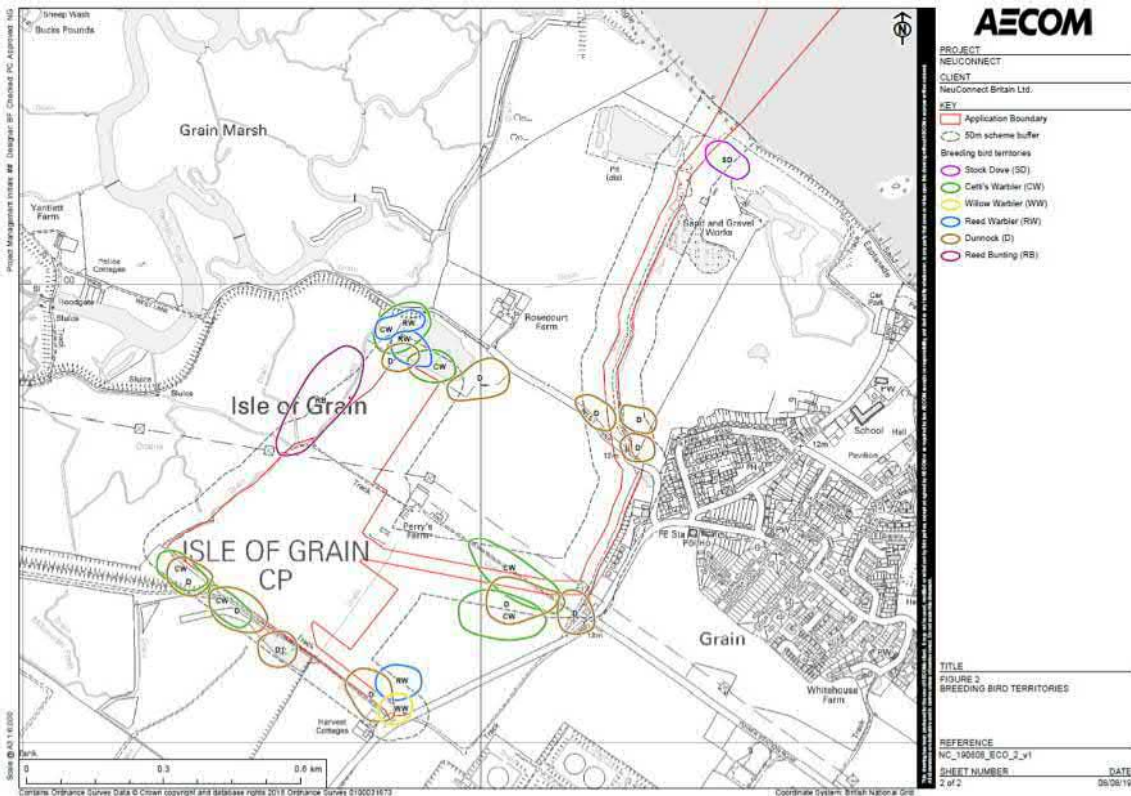


Figure 3 - Distribution of breeding territories for species of conservation concern

