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Bradwell B Ground Investigation - Ecological Appraisal Report

wood.

Report for

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P01	Draft Report for client review	December 2019
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Contents

1. Introduction

1.1 Terms of Reference

Bradwell Power Generation Company Ltd intends to construct and operate a twin HPR1000 nuclear power station, 'Bradwell B', near Bradwell-on-Sea on the Dengie Peninsula, Essex. The new power station would be located on land east and south-east of the existing Bradwell power station, which is currently being decommissioned. Ground investigations of the site are required to be carried out to inform the design of the new power station.

1.2 Purpose of this Report

This report details the approach to, and results and conclusions of, the Ecological Appraisal of the Ground Investigation (GI) proposals. It summarises the potential ecological constraints on the GI in different areas of the site and identifies the precautionary working practices that will be implemented to avoid or minimise adverse effects on ecological receptors, also minimising any risk of non-compliance with relevant nature conservation legislation (**Appendix A**). The report builds on the Ecological Appraisal prepared for the previous phase of GI undertaken over the winter of 2017-2018.

Taking into account the proximity of the proposed ground investigations to the Dengie (Mid Essex Coast Phase 1) and Blackwater Estuary (Mid-Essex Coast Phase 4) Special Protection Areas (SPAs), the appraisal also compiles the information that is expected to be required by Maldon District Council to assist them in undertaking a Habitats Regulations Assessment (HRA) of the proposed development.

Section 2 of the report presents the description of the development, whilst Sections 3 and 4 detail the approach to, and results of, the ecological appraisal, including a desk-based study and an extended Phase 1 Habitat Survey of the Site and surrounding land. Based on the results of the desk-based study and extended Phase 1 Habitat Survey, Section 5 summarises the main potential ecological constraints on the proposed GI. Section 5 also sets out the proposed control measures that are to be implemented to avoid and minimise potential significant adverse ecological effects. Section 6 presents information to inform the Council's HRA of the proposals on relevant Natura 2000 designated sites.

1.3 Background

The proposed scope of the ground investigation (GI) is set out in the Planning Statement (reference BBX32200001GPDO00TR) and is summarised as follows:

- Rotary / sonic drilled (cored) exploratory holes;
- Cable percussion boreholes;
- Associated *in situ* testing including strength and permeability testing;
- Cone Penetration Test (CPT) probing;
- Trial pits and observation pits;
- Establishment of a load test facility, including an excavation 200m by 100m wide and 8 to 10m deep, with plate load tests and instrument heave tests within the facility, and earth fill tests undertaken adjacent to the excavations;
- Establishment of two temporary site compounds; and

- Geophysical investigations, comprising cross hole geophysics and seismic cone penetration tests (SCPTs) and multi-channel analysis of surface wave geophysics using geophones.

The site for the GI works is shown in **Figure 1** and the indicative locations of the proposed exploratory holes and load test area are shown in **Figure 2**. These are consistent with those shown on drawing 412657-MMD-00-XX-DR-C-0005 submitted with the Planning Statement.

The GI and load test works are scheduled to commence in Q3 2020. The GI will last for up to two years (with some instrumentation being retained for up to ten years). The load test is scheduled to last for up to three years.

The planning application aims to strike a balance between achieving appropriate development control over the works while allowing some flexibility as to the number and precise location of the proposed exploratory holes. This is important to allow for potential changes in location resulting from impediments to drilling/excavation that may be encountered during the works, such as buried services, and also to allow for potential refinements in scope that may be required as the work progresses on-site.

1.4 The Site

Site Location

The site is located approximately 1km north east of the village of Bradwell on Sea, Essex and is approximately centred at National Grid Reference (NGR) 600780E, 207970N.

The site is located on the southern shore of the Blackwater Estuary, adjacent to the point at which the Estuary feeds into the North Sea. The existing Bradwell power station is located immediately west of the site.

The location of the site is shown in **Figure 1** and is enclosed by the red line planning application boundary.

Site Description

The site is irregular in shape and covers an area of approximately 466 hectares (ha). The majority of the site is located at an elevation of between 4 and 5m above ordnance datum (AOD), increasing to 10.9m AOD in the south west and reducing to 0.4m AOD in the north east and along the Weymarks River.

The eastern half of the site is currently occupied by agricultural land, with key features limited to:

- Two farms, comprising Weymarks Farm located centrally and East Hall Farm located in the south on the planning application boundary;
- Irrigation reservoirs located towards the southern area;
- A storage yard, containing farming equipment, located immediately south of the irrigation reservoirs; and
- Weymarks River, which bisects the eastern area, connecting with Borrow Dyke adjacent to the perimeter of the site.

The western half of the site comprises the remnant infrastructure of the former Bradwell Bay Airfield. Features which remain include concrete hardstanding associated with the former runways, taxiways and an area of raised concrete (of differing levels) located on the northern periphery of the runway.

Within the western half of the site, the most northern part of the former runway/taxiway footprint is currently occupied in part by a redundant electricity switching station, mature trees and scrubland. Part of the 'Bradwell Nature Trail' is located within this area of vegetation.

The south western part of the runway/taxiway footprint is now occupied by Downhall Farm, a commercial scale poultry farm and cold storage facility, whilst the south east part of the runway/taxiway is occupied by a linear area of dense vegetation (mature trees) and a warehouse and storage yard.

Beyond the above, very few buildings are located within the western area of the site. Those which are present predominantly comprise large corrugated steel buildings. Temporary structures (metal cabin and wooden shed) are located in the south of the site in the area of the proposed site compound. The RAF Bradwell Bay War Memorial is present in the far southwestern corner of the site.

An extensive network of ditches is present within the site, with ditches predominantly located in the northern and eastern areas, connecting with the Weymarks River in the east of the site and the Borrow Dyke, which is located adjacent to the northern and eastern perimeter of the site at the landward toe of the existing sea defences. Only one outfall to the marine environment is known, Weymarks Sluice, an Environment Agency managed asset running from the Borrow Dyke into the marine environment.

Surrounding Area

The land-use for the surrounding area, outwith the planning application boundary, is summarised as follows:

- North and East – land immediately north and east comprises the coastline of the Blackwater Estuary to the north and the North Sea to the east. The coastline, in part comprises a raised grassy area which forms part of the existing sea defences. A public footpath is located on top of the sea defences, running parallel to the coast. Beyond the sea defences is a sandy beach associated with the Blackwater Estuary to the north and the North Sea to the east. Buildings associated with 'The Othona Community Settlement' and 'Othona Coastal Park' are located between the eastern boundary of the site and the coastline;
- South – land immediately south of the site is occupied by a combination of agricultural land, Eastmeadows Country Park (caravan site), Downhall Residential Care Home and the villages of East End and Bradwell-on-Sea;
- West – the area immediately west of the site is occupied by the existing Bradwell power station and agricultural land, with Bradwell Waterside located further westwards.

2. Development Description

The proposed GI works will comprise two separate packages of work as set out below:

- Ground investigation; and
- Load test investigation.

2.1 Ground Investigation

The GI includes:

- Up to 30 rotary / sonic drilled (cored) exploratory holes, to a proposed maximum depth of approximately 100 metres below ground level (m bgl);
- Up to 130 cable percussion boreholes, to a proposed maximum depth of 50m bgl;
- Associated *in situ* testing including strength and permeability testing;
- Up to 60 Cone Penetration Test (CPT) probing, to a proposed maximum depth of 50m bgl; and
- Up to 30 trial pits and observation pits, to a proposed maximum depth of 5m bgl.

Most boreholes would be grouted up after drilling using an inert cement/bentonite grout. Several will be installed with groundwater monitoring wells.

Slug tests will be performed in monitoring wells in the currently proposed footprint of the permanent development and immediate surrounding area. These tests involve inducing a rapid water-level change within a well and measuring the rate the water level in the well returns to its initial level. The initial water-level change can be induced by either introducing or withdrawing a volume of water or displacement device into or out of the well. A one off 24-hour constant rate pumping test will also be undertaken using five boreholes in proposed footprint of main power blocks. This involves pumping a well at a constant rate and measuring the water-level response (drawdown) in surrounding observation wells. Wastewater resulting from the test will be collected in tanks and transferred off site in a tanker for management and disposal.

The trial pits and observation pits (approximately 1m wide, 3m long and 4.5m deep) will be backfilled with soil arisings from the excavation.

Samples from the boreholes and trial pits will be sent for laboratory testing.

A range of geophysical surveys will also be undertaken at the GI locations. The geophysical surveys can be grouped into:

- Geophysical investigations contained with exploratory holes; and
- Geophysical investigations undertaken across the ground surface.

Within the boreholes down hole and cross hole, geophysics will be undertaken, investigating the soil properties using instrumentation contained within the boreholes. The non-intrusive surface geophysical investigations will utilise strings of geophones lain across the ground surface.

2.2 Load Test Investigation

A load test cut area will be excavated, creating a trench approximately 200m long, 100m wide and 8-10m deep. The spoil will be used to create two engineered and instrumented earth berms (one rectangular 90m

wide, 100m long, 6m high embankment and one irregular (up to 115m long by 110m wide), 8m high). The rest of the spoil will be deposited adjacent to the berms (one spoil area up to approximately 125m long, 90m wide and up to 8m high; the other 160m long, 160m wide and up to 8m high). Two smaller areas, up to 2m high, will accommodate some of the top soil/soft soil.

Within the cut area, two 4m diameter load tests, one 7m diameter load test and a heave test will be applied. This will involve installing load test reaction frames (essentially steel girders supported on piles driven or bored into the ground), and applying pressure using hydraulic jacks. The frames will sit below the surface level of the ground.

2.3 Equipment

The following equipment will be present on site:

1. Two site compound areas including welfare unit (lockers, kitchen, showers, toilets), offices, storage, parking, skips and fuel, oil, lubricant, in appropriate storage unit/with secondary containment as required. Located at TM010080 (load test compound) and TM004077 (GI compound);
2. GI site establishment – heavy goods vehicle (two to four deliveries per day); light goods vehicle (three to five deliveries/internal transport per day); and worker's cars;
3. Vehicle movements during GI - heavy goods vehicle (three to six deliveries per week; light goods vehicle (five to six deliveries/internal transport per day); and worker's cars;
4. Trial pit locations – wheeled backhoe or <10 tonne tracked excavator, four-wheel drive vehicle;
5. Boreholes/sampling/cone penetration testing - mobile drilling/testing rig (approximately 6.6m high during operation for the cable percussive boreholes and 12m high during operation for the rotary/sonic drill), CPT truck (approximately 4m high), bowser and, four-wheel drive vehicle;
6. Load testing vehicle movements - heavy goods vehicle (two to four deliveries per day during site establishment; four to eight per week during excavation and load test set up; one to two per week during monitoring); light goods vehicle (four to six journeys per day during site establishment; five to eight per week during excavation and load test set up; two to four per week during monitoring); three to five concrete wagon journeys per day during load test equipment set up; and worker's cars;
7. Load testing – delivery vans, articulated lorries, excavators, dump trucks, concrete mixers, bulldozers, road cleaners, drilling rig, load testing reaction frame, low loader (to deliver reaction frame and plant), crane (to install reaction frame and reinforcement) up to approximately 35m high(height TBC), piling rig up to 33m high, hydraulic jacks, compactor/rollers, pumping equipment for water management, attenuation tanks, floodlighting, generator, etc;
8. Geophysical works – four-wheeled drive vehicle, geophones and associated cabling and seismic source (either dropped weight or hammer); and
9. Groundwater monitoring/pump tests - generators and/or batteries, floodlights, four-wheeled drive vehicle.

The main site access will be via existing areas of hardstanding associated with the former Bradwell airfield, and farm access tracks. Access to specific ground investigation sites will follow the most appropriate route through existing field gates and will use existing surfaced trackways where possible. Where this is not possible, track matting or float mats will be used to minimise rutting.

All refuelling of vehicles and maintenance will take place at the site compounds. Only specific quantities of fuel and expendables etc. required to sustain drilling equipment during the completion of each exploratory hole will be transported to the works area.

Arisings from the trial pits (topsoil, subsoil) not otherwise associated with the load test investigation will be temporarily stored adjacent to the pits (typically at a height of up to 1.5m) for subsequent reinstatement. After soil samples are collected, the spoil will be backfilled into the pit. Each pit will be open for several hours at a time. No pits will be left open overnight.

Soil arisings from the various boreholes and wastes will be promptly removed from the ground investigation site (as cores for investigation, as drill trimmings and/or as segregated waste streams for off-site disposal). The temporary storage/collection for disposal of these materials will be located within the site compounds or the existing core logging facility, as required.

Wastewater resulting from the boreholes, pump tests and trial pits will be collected in tanks and transferred off site in a tanker for management and disposal. Water removed from the load test excavation site will be collected in an attenuation tank and discharged to a surface water ditch.

Spill kits, drip trays and an emergency response plan will be developed by the contractor for the management of any leaks or spillages that may occur associated with the operation/movement of plant.

2.4 Programme

The indicative programme for the GI works and load test investigation are set out as follows:

Programme for the GI

- Site establishment – three weeks from commencement;
- GI – Up to 1.5 years from site establishment;
- Potential additional GI – three to four additional months;
- Demobilisation/site reclamation – Up to three weeks from completion of ground investigation.

The total period for the ground investigation is up to two years. Monitoring equipment such as piezometers and seismic instrumentation, installed in selected boreholes, would be retained for up to ten years.

For the purposes of assessment, it is assumed that up to three rotary/sonic rigs (each operating for up to two weeks per borehole location), up to five cable percussive rigs (each operating for up to two weeks per location), up to five CPT rigs (each operating for up to one day per location), and up to four trial trench excavators (each operating for up to two days per location) will operate at the same time.

Programme for the Load Test Investigation

- Site establishment – three weeks from commencement;
- Pile set up – 1.5 months to two months from site establishment (or potentially in parallel with the end of the excavation and earthworks phase);
- Excavation and earthwork – three to five months from pile set up (or potentially from site establishment if piling takes place towards end of excavation and earthworks);
- Load test equipment set up – four to six weeks mostly in parallel with last month of excavation and earthwork;
- Monitoring period – up to 1.5 years from load test set up;

- Potential extended monitoring period – extending six months from main monitoring period, if required;
- Backfill of excavation/demobilisation – up to six months from completion of load test.

The total duration of the load test is up to three years from site establishment with the more intensive activities and earthworks in the first seven months and last six months. During the monitoring period, the instrumentation will be data logged remotely with occasional manual survey and site maintenance (i.e. minimal construction activities).

For the purposes of assessment, it is assumed that the GI campaign and load test set up and monitoring will take place concurrently.

Working hours will be 0700 – 2000 Monday to Friday and alternative weekends (Saturday and Sunday), and no work on bank holidays. Exploratory field-based work such as borehole drilling and trial pitting would be restricted to daylight hours. Boreholes close to noise sensitive receptors will only be worked during daytime periods at weekends. Work associated with the construction of the load test, including the excavation of the load test pit, would be not be restricted by daylight hours.

3. Methodology

3.1 Desk Study

The desk study involved collating and reviewing existing information on the ecology of the Site and its immediate surroundings. This includes details of sites that have been designated for nature conservation, on a statutory and/or non-statutory basis, that are situated within 1km of the Site. Records of legally protected species, as well as priority habitats and species (**Boxes 3.1 and 3.2**) that are known to occur or have previously been recorded within 1km of the Site were also collated and reviewed. This information was obtained mainly from Essex Wildlife Trust Biological Records Centre. A review of the Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.defra.gov.uk) was also undertaken in order to gather details of the following:

- Statutory designated sites (**Box 3.1**) of nature conservation value situated within 1 km of the Site, e.g. Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar Sites, Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR);
- Priority habitats (**Box 3.1**) that are known to occur within 1 km of the Site, including Habitats of Principal Importance for the Conservation of Biological Diversity in England, as defined by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006; and
- Information on agri-environment schemes within the site and Site.

Waterbodies located on the site or within 500m of the site boundary were identified from 1:25,000 scale Ordnance Survey maps and aerial photographs (Google Earth Pro) of the area. This is because 500m is the distance that, in the absence of significant barriers to their dispersal, great crested newts (*Triturus cristatus*) are likely to travel from their breeding ponds to colonise new ponds and/or to occupy terrestrial habitats where they forage, seek refuge or hibernate. Natural England recommends that where development-related activity is proposed within 500m of a waterbody, its potential to support great crested newts (English Nature, 2001) should be taken into account. However, 250m is the distance over which great crested newts more commonly disperse and this area forms the majority of their terrestrial habitat (Langton et al 2001). Flowing water tends to be less suitable habitat for great crested newts (Oldham et al., 2000).

Natural England was consulted to obtain local knowledge on the use of the site by birds, such as waterfowl and hen harrier and on agri-environment schemes within the site.

The desk study was completed in 2017 to inform the appraisal prepared for the previous phase of GI undertaken over the winter of 2017-2018. A further request for data records was not made in 2019 as the geographic extent of the 2017 request covered the area that is now subject to GI proposals (i.e. the Site boundary) and a minimum 250m buffer, the data are considered sufficiently recent that significant change is unlikely, and the ecological features of the area are sufficiently known and understood.

Box 3.1 Designated Wildlife Sites and Priority Habitats and Species

Statutory nature conservation sites

Internationally important sites: Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites and European offshore marine sites. SACs and SPAs are referred to collectively as European Sites.

Nationally important sites: Sites of Special Scientific Interest (SSSIs) that are not subject to international designations, National Nature Reserves (NNRs) and Marine Conservation Zones.

Local Nature Reserves (LNRs) are statutory sites that are of importance for recreation and education as well as nature conservation. Their level of importance is defined by their other statutory or any non-statutory designation (e.g. if an LNR is also an SSSI but is not an internationally important site, it will be of national importance). If an LNR has no other statutory or non-statutory designation it should be treated as being of district-level importance for biodiversity (although it may be of greater socio-economic value).

Non-statutory nature conservation sites

These sites are designated alongside the statutorily protected areas, as they constitute the most important sites for wildlife in each county. In Essex, the term Local Wildlife Site (LWS) is applied to these sites.

Priority habitats and species

The term priority species and/or habitat includes the following:

- Habitats and species of principal importance for the conservation of biological diversity in England, defined by the Secretary of State in Accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. These are listed on: http://publications.naturalengland.org.uk/publication/4958719460769792;
- Species listed as being of conservation concern in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern (Eaton et al 2015) Red List;
- Nationally Scarce species, which are species recorded from 16-100 10 x 10km squares of the national grid;
- Ancient woodland (i.e. areas that have been under continuous woodland cover since at least 1600);
- Species listed in the Essex BAP.

Box 3.2 Legally Protected and Controlled Species

Legally protected species

Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection refers to:

- Species included on Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended), excluding species that are only protected in relation to their sale (see Section 9 [5] and 13 [2]), reflecting the fact that the proposed development does not include any proposals relating to the sale of species;
- Species included on Schedules 2 and 5 of The Conservation of Habitats and Species Regulations 2017; and
- Badgers, which are protected under the Protection of Badgers Act 1992.

Legally controlled species

Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) lists species of animal that it an offence to release or allow to escape into the wild and species of plant that it is an offence to plant or otherwise cause to grow in the wild.

3.2 Extended Phase 1 Habitat Survey

The Phase 1 habitat survey for this report comprises a combination of field survey, undertaken in 2017, and analysis of remote sensing data from 2019. The 2019 Phase 1 Survey Area comprises the Site boundary plus a 500m buffer (**Figure 2**). The Site boundary and buffer extends beyond the 2017 Survey Area by up to approximately 1km, predominantly along its southern edge.

Field Survey

An extended Phase 1 Habitat Survey was carried out between the 15th and 18th August 2017 by a Senior Consultant Ecologist. The survey area predominantly covered the BRB GenCo landholding, and land to the east that was to be subject to GI. This updated an earlier Phase 1 Habitat Survey undertaken by Amec Foster Wheeler Environment & Infrastructure UK Ltd (formerly Entec UK Ltd) in 2007 and 2008.

The site survey was undertaken in accordance with good practice (IEEM, 2012, now CIEEM, 2017) and the standard Phase 1 Habitat Survey method (JNCC 2010). Distinct habitat types were identified and mapped, applying standard habitat definitions and using standard colour coding and/or acronyms. Any habitats and/or habitat features of potentially notable nature conservation value were mapped and recorded in a series of Target Notes (TN). The survey was extended (IEA, 1995) to include an assessment of the site's potential to support legally protected species, legally controlled species and/or priority species. Any evidence of the activity of these species was also recorded in Target Notes.

An external inspection of potential bat roosts, such as built structures (e.g. buildings, bridges, culvert, retaining walls) and mature trees was undertaken to assess their potential to support roosting bats in accordance with good practice (Collins, 2016). The suitability, for great crested newts, of any accessible waterbodies/ponds situated within the 2017 Survey Area was assessed, applying the Habitat Suitability Index (HSI) method (Oldham et al, 2000). HSI is an index of habitat quality that combines an assessment of ten

habitat/environmental variables that are known to influence the suitability of waterbodies for great crested newts.

Remote Sensing

Habitats lying outside the 2017 Survey Area have been identified using remote sensing techniques, and satellite imagery. Advanced remote sensing and machine learning methods have been used to classify habitats present in 2019 (image date: 25th August 2019) adopting an object-based image analysis to create a habitat map. By creating samples of habitat from the 2017 field survey, and areas digitised from the satellite images by ecologists with knowledge of the area the model was trained to recognise 16 land cover categories. However it was only possible to obtain satellite images with 4 spectral bands for the study area instead of the 8 bands which would normally be available. As a result the 4 band imagery in this area did not allow for the disaggregation of sub categories for grasslands and woodlands. Therefore the end categorisation only includes 11 classes: Ditch, Standing water, Intertidal - mud/sand, Shingles/cobbles, Saltmarsh, Hardstanding, Intact hedge, Scrub, Woodland, Grassland and Arable. A statistical accuracy assessment, found that 97% of the area in the 2019 image was classified correctly. Further information on the approach used in provided in **Appendix B**.

3.3 Survey and Data Interpretation Constraints

There were no constraints on the 2017 survey as all land within and around the previous Site was accessible or clearly visible to the surveying ecologists, with the exception of the compound, which is hard standing, and the two adjacent waterbodies and surrounding semi-improved grassland, where no ground investigations are currently proposed.

Land access was not available to areas outside of the BRB GenCo Landholding at the time this report was being prepared. As a result, the 2019 habitat survey was completed using remote sensing (as detailed in Section 3.2). Remote sensing allows the identification of habitat types but does not directly identify the presence, or potential for presence, of protected or conservation notable species, or small scale habitat features, such as rubble piles for example, that may support these species. Nonetheless, by reference to the 2017 survey data, it has been possible to identify significant habitat features with potential to support legally protected species, legally controlled species and/or priority species across the full 2019 Survey Area. It is recognised however that small scale features, such as rubble piles, and direct evidence of presence of protected species, such as badger setts, or water vole burrows, will need to be identified, and accounted for, prior to work commencing.

4. Results

4.1 Desk Study

Statutory and Non-Statutory Sites

There are five statutory nature conservation designations within ~1km of the Site. These are detailed in Table 3.1 and marked on **Figure 3**. All lie adjacent to the Site.

There is one non-statutory site within ~1km of the Site: Bradwell Cemetery LWS is located ~0.7km to the south of the Site. It is part of the cemetery supporting unimproved grassland/turf supporting common knapweed (*Centaurea nigra*), agrimony (*Agrimonia eupatoria*) and meadow vetchling (*Lathyrus pratensis*). The nationally scarce lesser calamint (*Calamintha nepta*) has also been recorded. The proposed GI are likely to have no effects on this site and it is not considered further in this report.

Protected Species

There are a number of records of legally protected species and species of notable nature conservation value on and in the near vicinity of the Site, and these are summarised in Table 4.2 and marked on **Figure 4**.

It is also of particular note that surveys undertaken previously of waterbodies on and around the site for great crested newts have concluded that the species is absent from this area.

Priority Habitats

The desk study recorded the following Priority Habitats within ~1km of the Site:

- Deciduous woodland;
- Coastal saltmarsh; and
- Reedbeds

All of the above habitat types are present within, or immediately adjacent to, the Site. The MAGIC website also identifies a linear strip of habitats as '*no main habitat but additional habitat exists*'. This extends along the northern boundary of the Site and corresponds with the coastal grassland habitat identified during the Phase 1 Habitat Survey (**Section 4.2)**. This is treated therefore as an area of habitat of potentially notable nature conservation value.

Waterbodies

A review of Ordnance Survey maps and aerial photographs identified 17 waterbodies on and in the immediate vicinity of the Phase 1 Survey Area, including four ponds and two irrigation reservoirs within the Survey Area. Numerous drainage ditches are also present within the Survey Area and the River Blackwater Estuary is adjacent to the northern boundary of the Survey Area.

Agri-environment Schemes

In 2017, based on information included on MAGIC website approximately the western half of the site was under Entry Level Stewardship (ELS) and the eastern half of the site is under Entry Level plus Higher Level Stewardship (HLS). However there is now no indication on MAGIC that the Survey Area is covered by agri-environment schemes. It is therefore assumed that these have lapsed.

Table 4.1 Statutory Designated Sites within 1km of the Site

Site	Designation	Proximity to Site	Reasons for designation
Dengie (Mid Essex Coast Phase 1)	Ramsar	Adjacent to the Site	Designated for the following: • The extent and diversity of the salt marsh habitat present; • Nationally scarce plants; sea kale (*Crambe maritima*), sea barley (*Hordeum marinum*), golden samphire (*Inula crithmoides*), lax flowered sea lavender (*Limonium humile*), the glassworts (*Sarcocornia perennis* and *Salicornia pusilla*), small cord-grass (*Spartina maritima*), shrubby sea-blite (*Suaeda vera*), and the eel grasses (*Zostera angustifolia, Z. marina* and *Z. noltei*); • Red Data Book invertebrates; a weevil (*Baris scolopacea*), a horsefly (*Atylotus latistriatus*) and a jumping spider (*Euophrys browning*); • The full and representative sequences of saltmarsh plant communities covering the range of variation in Britain; ▸ The relevant details relating to birds are included in Section 5.
Dengie (Mid Essex Coast Phase 1)	SPA	Adjacent to the Site	The relevant details of this SPA are included in Section 5
Blackwater Estuary (Mid-Essex Coast Phase 4)	SPA	West of the Site	The relevant details of this SPA are included in Section 5
Blackwater Estuary (Mid-Essex Coast Phase 4)	Ramsar	West of the Site	Designated for the following: • The extent and diversity of the salt marsh habitat present; • Invertebrate fauna, including 16 Red Data Book beetle species; • The full and representative sequences of saltmarsh plant communities covering the range of variation in Britain; The relevant details relating to birds are included in Section 5

Site	Designation	Proximity to Site	Reasons for designation
Essex Estuaries	SAC	Adjacent to the Site	This Survey Area is designated as a result of the presence of the following Annex 1 habitats, which are the primary reason for selection of this site: • Estuaries; • Mudflats and sandflats not covered by sea water at low tide; • Salicornia and other annuals colonizing mud and sand; • *Spartina* swards (*Spartinion maritimae*); • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); and • Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*). The Survey Area also supports Annex 1 habitats that are qualifying features and not primary reasons for site selection: • Sandbanks which are slightly covered by sea water all the time.
Dengie	SSSI	Adjacent to the Site	The notified features are: • Mudflat; • Saltmarsh, the largest continuous example of its type in Essex which supports an outstanding assemblage of rare coastal flora including; • Supports a wide range of breeding species and the extensive reedbeds are nesting habitat for reed bunting (*Emberiza schoeniclus),* reed warbler (*Acrocephalus scirpaceus*) and the nationally rare bearded tit (*Panurus biarmicus*), and • The flats between the tides support internationally important assemblages of wintering brent geese and grey plover (nearly 2% of the world and 2.5% of N. Europe populations respectively) and nationally significant numbers of knot, dunlin and turnstone (*Arenaria interpres*).
Blackwater Estuary	SSSI	West of the Site	• Mudflats and saltmarsh supporting internationally and nationally important numbers of waterfowl; • Surrounding terrestrial habitats - sea wall, ancient grazing marsh and its associated fleet and ditch systems, plus semi-improved grassland;

Site	Designation	Proximity to Site	Reasons for designation
			• Outstanding assemblage of nationally scarce plants and a nationally important assemblage of rare invertebrates: 16 Red Data Book species and 94 notable and local species; and • Holds 4.7 percent of the world population of dark-bellied brent geese and internationally significant numbers of ringed plover and dunlin. A further nine species attain nationally important numbers: shelduck, gadwall, teal, goldeneye, grey plover, black-tailed godwit, curlew, spotted redshank and redshank.
Dengie	NNR	Adjacent to the Site	The notified features are: • Tidal mudflats; and • Saltmarsh. The Survey Area is of international importance to the following birds: bar-tailed godwit; hen harrier; grey plover; knot; black-tailed godwit; dunlin; lapwing; oystercatcher; dark-bellied brent goose; cormorant; and great crested grebe.

Table 4.2 Protected and Notable Species Recorded on and in the Near Vicinity of the Site

Common Name	Latin name	Additional Information	Legal/Policy Status	NGR	Proximity to Site
Bat	Chiroptera	18 records	Species dependent (all are EPS)	TM006077 TM004069	Within the Site
Brown long-eared bat	*Plecotus auritus*	-	EPS; S41; WCA - Schedule 5; and Essex BAP	TL994078	0.8km west
Soprano pipistrelle	*Pipistrellus pygmaeus*	-	EPS; S41; WCA - Schedule 5; Essex BAP	TM003071	0.4km south-west
Common pipistrelle	*Pipistrellus*	1 hibernation roost; 3 field records	EPS; S41; WCA - Schedule 5; Essex BAP	TM004069	0.5km south-west
Water vole	*Arvicola amphibius*	3 records	WCA - Schedule 5; S41; Essex BAP	TM029088	Within the Site
Brown hare	*Lepus europaeus*	3 records	S41; Essex BAP	TM020078	Within the Site
Common porpoise	*Phocoena phocoena*	13 records	EPS; S41	TM034084	0.4km east of the Site
Adder	*Vipera berus*	-	S41; WCA - Schedule 5	TL999089	0.5km west
Beetle	*Agabus (Gaurodytes) conspersus*	-	Notably scarce	TM0009	Within 1km
Beetle	*Enochrus bicolor*	6 records	Notably scarce	TM0109	Within 1km
Beetle	*Cosmobaris scolopacea*	-	Notably scarce	TM0307	Within 1km

Common Name	Latin name	Additional Information	Legal/Policy Status	NGR	Proximity to Site
Beetle	*Hygrotus (Coelambus) parallelogrammus*	-	Notably scarce	TM0009	Within 1km
Beetle	*Mecinus collaris*	Record	Notably scarce	TM01	Within 1km
Beetle	*Neophytobius muricatus*	3 records	Notably scarce	TM01	Within 1km
Beetle	*Oxystoma cerdo*	-	Notably scarce	TM01	Within 1km
Beetle	*Pelenomus waltoni*	3 records	Notably scarce	TM01	Within 1km
Beetle	*Protapion varipes*	-	Notably scarce	TM01	Within 1km
Beetle	*Tournotaris bimaculatus*	-	Notably scarce	TM01	Within 1km
Small heath butterfly	*Coenonympha pamphilus*	6 records	S41	TM0108	Within 1km
White-letter hairstreak butterfly	*Satyrium w-album*	2 records	S41; RLGB - endangered	TM031082	Adjacent to the Site
Latticed heath moth	*Chiasmia clathrata*	-	S41	TM031081	Adjacent to the Site
European eel	*Anguilla anguilla*	2 records	S41	TM019094	Within the Site
Sea clover	*Trifolium squamosum*	7 records	Nationally scarce	TL993076	0.9km west

Common Name	Latin name	Additional Information	Legal/Policy Status	NGR	Proximity to Site
Shrubby sea-blite	*Suaeda vera*	16 records	Nationally scarce	TM031079	0.2km south
Perennial glasswort	*Sarcocornia perennis*	4 records	Nationally scarce	TL996081	0.5km west
Stiff saltmarsh-grass	*Puccinellia rupestris*	4 records	Nationally scarce	TM0109	Within 1km
Borrer's saltmarsh-grass	*Puccinellia fasciculata*	6 records	Nationally scarce	TM030085	Adjacent to the Site
Golden samphire	*Inula crithmoides*	6 records	Nationally scarce	TM032076	0.6km south
Sea barley	*Hordeum marinum*	4 records	Nationally scarce	TL993076	0.9km west
Slender hare's-ear	*Bupleurum tenuissimum*	4 records	Nationally scarce	TL993076	0.9km west
Divided sedge	*Carex divisa*	-	Nationally scarce	TL996081	0.5km west
Hen harrier	*Circus cyaneus*	-	WCA Schedule 1; S41	TM002087	0.15km west
Cuckoo	*Cuculus canorus*	2 records	S41	TL994077	0.8km west
Kestrel	*Falco tinnunculus*	-	S41	TL999089	0.5km west

EPS - European Protected Species (Conservation of Habitats and Species Regulations 2017)
WCA (Relevant Schedule) - Wildlife and Countryside Act 1981 (as amended)
S41 - Species of Principal Importance for the Conservation of Biodiversity in England (Natural Environment and Rural Communities Act (NERC) 2006)

Common Name	Latin name	Additional Information	Legal/Policy Status	NGR	Proximity to Site
Essex BAP = Essex Biodiversity Action Plan RLGB: endangered = Red List Data Book: Endangered					

4.2 Extended Phase 1 Habitat Survey

The habitats recorded by remote sensing are indicated on **Figure 5**. The 2017 Phase 1 habitats and associated Target Note (TN) locations are marked on **Figure C.1.** The accompanying/corresponding Target Notes are also included in **Appendix C**. The target notes presented on Figure C.1 have been supplemented with observations made by the contractor's ecologist during the GI undertaken in 2018 (TN59 – 61).

Habitat Distribution

The distribution of habitats mapped in 2019 is very similar to 2017 comprising predominantly arable, woodland, hedgerow, coastal grassland, semi-improved grassland, waterbodies and wetland habitats, saltmarsh, hardstanding and buildings, with smaller areas of scrub, tall ruderal and ephemeral and short perennial vegetation. Differences relate predominantly to the different mapping approaches (field survey and hand annotation in 2017, remote sensing of satellite imagery in 2019), as follows:

- The remote sensing method has not been able to differentiate different types of grassland or woodland (as detailed in Section 3.3). These have therefore been allocated to the 2017 category manually where within the 2017 survey area, but where outside this area they have been allocated, based on professional judgment, to the most commonly occurring, or appropriate, type for the area;
- The remote sensing has mapped areas of intertidal mud/sand and shingles/cobbles that were not mapped in 2017 as these were predominantly outside the 2017 survey area;
- The remote sensing cannot discern areas of mosaic habitat, so typically allocates to the most abundant type, and has resulted in increased areas of scrub for example in 2019;
- The remote sensing technique identifies what it 'sees' which has resulted in many of ditches being mapped flanked by grassland in 2019. This was almost certainly also the situation in 2017, but the narrow strips of grassland were not mapped as such at that time;
- Areas mapped as 2-3 individual trees in 2017, have typically been allocated to a woodland or scrub category in 2019;
- Ephemeral / short perennial vegetation mapped in 2017 has either not been detected in 2019 or, where detected, been allocated to scrub, albeit possible that the vegetation has grown in the last couple of years.

However, none of these minor differences significantly affects the results overall.

Habitat Descriptions

The 2019 Survey Area encompasses the 2017 Survey Area and extends it into contiguous areas of similar habitat. Therefore, the descriptions provided for the habitats in 2017 are still considered appropriate and are presented below, with additional observations made with respect to the 2019 data where appropriate.

Arable

The Survey Area is predominantly agricultural fields, comprising a combination of wheat and lucerne cover crop. The fields are generally large, a number of field boundaries having been removed, and the field margins are generally approximately 1m to 2m width. The margins are dominated by grasses, largely false oat-grass (*Arrhenatherum elatius*) and cock's-foot (*Dactylis glomerata*), with some broadleaved dock (*Rumex obtusifolius*) and scattered bramble scrub (*Rubus fruticosus*).

Woodland

There are a number of pockets of broadleaved, coniferous and mixed woodland habitat throughout the Survey Area (**Figure 5**), the majority of which are semi-natural and well established.

There is a cluster of three areas of mature, predominantly coniferous woodland at the eastern edge of the Survey Area (**Figure 5**). In addition to mature coniferous species, the edges of these areas support elder, oak (*Quercus* sp.), willow (*Salix* sp.) and ash (*Fraxinus excelsior*). Ground flora in these areas is predominantly nettle and bramble. Between the blocks of coniferous woodland there is a small area of establishing broadleaved woodland (TN 37, Figure C.1), comprising hawthorn, hornbeam (*Carpinus betulus*), blackthorn, plum (*Prunus* sp.), white willow (*Salix alba*), hazel, apple, oak, gorse (*Ulex europaeus*) and dog rose.

There is a strip of semi-natural mixed woodland to the south of the 2017 Survey Area (TN 33 in **Appendix C**), comprising Scot's pine (*Pinus sylvestris*), elder, sycamore (*Acer pseudoplatanus*), dog rose, oak and hawthorn. The ground flora associated with this woodland appears to be predominantly nettle (*Urtica dioica*) and ivy (*Hedera helix*), although access constraints prevented close inspection of this area.

There are small pockets of broadleaved woodland to the west of the Survey Area (TN 9), along the southern boundary (TN 51 and TN 56) and immediately east (TN 28). The planted block of woodland along the southern boundary (TN 51) is particularly varied with a range of semi-mature trees, including field maple, apple, hornbeam, spindle (*Euonymus europaeus*), ash, oak, elder, hazel, blackthorn, silver birch (*Betula pendula*), ash, sycamore and willow species.

Hedgerows

There are few hedgerows within the Survey Area (**Figure 5**) due to historical removal of field boundaries. A species-rich, planted hedgerow (TN11, **Figure C.1**) extends along the eastern boundary of the power station, and terminates at a car park. This is adjoined by scrub and woodland immediately to the east. Species recorded within this hedge include hawthorn (*Crataegus monogyna*), dog rose (*Rosa canina*), field maple (*Acer campestre*), hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*) and cherry (Prunus sp.). Linked to the hedgerow is a Leylandii sp. hedge surrounding agricultural units.

A further species-rich (planted) hedgerow (TN32) extends along an existing access track to the south of the former runway, and comprises hawthorn, blackthorn, field maple, elder (*Sambucus nigra*), guelder rose (*Viburnum opulus*), apple, wayfaring tree (*Viburnum lantana*), dogwood (*Cornus sanguinea*) and hazel. The hedgerow has little established ground flora. There is a longer, intact hedgerow, forming a field boundary towards the east of the Survey Area, although in 2017 this could only be viewed from a distance, due to land access constraints.

Coastal Grassland

A clay embankment, incorporating concrete blocks, forms a sea wall extending along the northern boundary of the Survey Area, parallel to the River Blackwater estuary. On the landward side of the sea wall is a strip of coastal grassland (**Figure 5** and also TN 13, **Figure C.1**) interspersed with ruderal vegetation. Species recorded within this grassland include sea couch (*Elymus pycanthus*), common couch (*Elymus repens*), red fescue (*Festuca rubra*), Alexanders (*Smyrnium olusatrum*), prickly sow thistle (*Sonchus asper*), common mallow (*Malva sylvestris*) and sea beet (*Beta vulgaris*). Barren brome (*Bromus sterilis*), false oat-grass, cock's foot, common reed (*Phragmites australis*) and creeping thistle (*Cirsium arvense)* are encroaching this grassland in places. Within proximity to the coastal path and associated bare earth patches there are stands of common reed, sea couch and alexanders, along with sea spurrey (*Spergularia* sp.), annual sea-blite (*Suada maritima*) and sea purslane (*Atriplex portulacoides*) (TN 31).

Semi-improved Grassland

Areas of semi-improved grassland are restricted in extent within the Survey Area. There is a small area (TN 38, **Figure C.1**) immediately to the south of an electricity switch station. This is a short sward, heavily grazed by rabbits, and including patches of bare earth. This grassland supports birds-foot trefoil (*Lotus corniculatus*), sheep sorrel (*Rumex acetosella*) and hawkbit (*Leontodon* sp.), with areas of scrub (hawthorn and bramble) encroachment. This area has been mapped as scrub in 2019, whereas it was grassland with scattered scrub in 2017. Other areas of semi-improved grasslands in proximity to the irrigation reservoirs and potentially within the grounds of residential properties were inaccessible at the time of 2017 survey.

Additional grassland areas were identified in 2019, outside of the 2017 Survey Area. Given the intensively managed nature of the area, these are expected to be similar to those surveyed in 2017, and unlikely to be of greater value.

Amenity Grassland

Areas of amenity grassland have been identified in 2019 where they occur within gardens.

Waterbodies and Wetland Habitats

Extending parallel and to the south of the coastal grassland strip is a coastal Borrow Dyke approximately 10m in width. This consists of a linear swamp dominated by common reed, with occasional areas of open water. No other aquatic or emergent plant species were apparent at the time of 2017 survey. The water appeared clear and a number of aquatic invertebrates were observed in 2017.

Throughout the Survey Area there are a number of drainage ditches associated with field boundaries. The majority have steep earth banks and channels choked with common reed, with occasional club rush (*Scirpus* sp.). These habitats could also be considered as swamp. The water levels were low or the ditches dry at the time of survey in 2017. The ditch margins (~1m width) and predominantly comprised false oat-grass and occasional patches of bramble scrub. Given the intensively managed nature of the area, ditches identified outside the 2017 Survey Area are expected to be similar to those surveyed and unlikely to be of greater value.

A single section of ditch immediately to the north of two irrigation reservoirs contains open water (TN 57, **Figure C.1**). The channel is approximately 4m wide and the water covered is covered with duckweed (*Lemna* sp.). Branched bur-reed (*Sparganium erectum*) and common reed were also recorded in the channel. Club rush (*Scirpus* sp.), willowherb (*Epilobium* sp.), rushes (*Juncus* sp.) and scattered hawthorn and willow scrub were recorded along the banks.

There are 15 ponds within the Survey Area (four within the Site), in addition to two irrigation reservoirs. One of these ponds (TN 10) is at the western boundary of the Site and covers an area of approximately 15m by 8m. It has gradually sloping mud banks and is heavily shaded by encroaching willow scrub. Common reed also dominates the edges of this pond to the north and west. A HSI of 0.62 was calculated for this pond following the 2017 survey, indicating that is of 'average' suitability for great crested newts. Other waterbodies were inaccessible at the time of the 2017 survey or have only been detected by remote sensing where further afield.

Saltmarsh

There are a number of areas of saltmarsh at the northern boundary of the Survey Area, on the shore of the Blackwater Estuary. A small fragmented area of saltmarsh (TN19, **Figure C.1**) is approximately 750m east of the Bradwell power station. Species characteristic of these areas include shrubby sea blite (*Suada vera*), glasswort (Salicornia sp.), sea purslane, glass leaved orache and sea lavender and rare occurrences of common cord grass (*Spartina anglica*). The saltmarsh area is interspersed with small pools of open water. A much larger tract of saltmarsh (TN20) is located a further 100m east, which is similar in species composition.

The intertidal areas are dominated by shrubby sea blite, also supporting sea purslane, sea couch, sea sandwort and occasional frosted orache. Creeks intersect these areas of saltmarsh.

Hardstanding and Buildings

The Survey Area includes redundant infrastructure associated with a WWII airfield. The tracks and airstrip (**Figure 5** and TN2 and TN3 on **Figure C.1**) comprise concrete. When surveyed in 2017 the concrete had been colonised by ephemeral species and species associated with early succession of vegetation, including stonecrop (*Sedum* sp.), common mallow, black medic (*Medicago lupulina*) and knotgrass (*Polygonum aviculare*), with occasional spoil mounds colonised by bramble scrub. This vegetation has either not been detected in 2019 or, where detected, been allocated to scrub, albeit possible (but unlikely) that the vegetation has grown in the last couple of years.

The Survey Area includes a number of farm buildings and residential properties. There is also a WWII pill box (TN6 on **Figure C.1**) in an arable field north of the airstrip and a series of approximately 5 pill boxes embedded in the sea wall.

Legally Protected Species

During the 2017 survey three reptile species were recorded: common lizard (*Zootoca vivipara*) (TN 7, TN 12, TN 17, TN 29, **Figure C.1**), slow worm (*Anguis fragilis*) (TN 29) and adder (*Vipera berus*) (TN 42).

A number of species records are omitted from this report due to the sensitive nature of this information, however it is included in a separate confidential appendix (**Appendix D**).

5. Ecological Constraints and Control Measures

5.1 Appraisal of Potential Ecological Constraints

Designated Sites

There are five statutory nature conservation designations within ~1km of the Site. All lie adjacent to the Site. These comprise Dengie Ramsar, SPA, SSSI, Essex Estuaries SAC and Dengie NNR. These designated sites are outside of the planning application boundary ('the Site') and ground investigations are not currently proposed within, or at the edge of, these areas. Potential effects on designated sites are therefore likely to be restricted to the effects of noise, vibration and/or visual disturbance of the associated bird species/assemblages. These sites/effects are therefore addressed in this report within the context of the Habitats Regulations Assessment (**Section 6**). The assessment of potential noise effects on breeding bearded tit, which is one of the reasons for the notification of Dengie SSSI, is detailed below.

Dengie SSSI Qualifying Feature: Bearded Tit

The Phase 1 habitat survey and analysis of aerial photography confirmed that the Borrow Dyke at Bradwell provides suitable nesting habitat for breeding bearded tit (a feature of the Dengie SSSI). Large areas of the dyke have been colonised by reeds and approximately 60% of the dyke adjacent to the Site is potentially suitable nesting habitat for this species. The most suitable area runs west from Sales Point where the dyke is at its' widest point and Natural England have advised that there have been previous breeding records from this area. There is also a moderately suitable area of broken reedbed to the east of the current power station. During the Site visit in August 2017, with an ornithologist present for three consecutive days and actively looking for sensitive bird species, no bearded tits were recorded, despite this being a time when family parties would be conspicuous. This suggests that if bearded tits were present, then it is likely they were in low numbers.

Noise Assessment - Bearded Tit

Noise modelling has been completed in respect of potential breeding breaded tits within the Borrow Dyke on the landward side of the sea wall. This is based on broadly the same assumptions as described for the SPA (see Section 5) but using both LA_{max} and LA_{eq} and using three different receptor locations (SSSI Receptors 1-5, **Figure 7**). These locations were selected at representative locations along the Borrow Dyke. As in the noise modelling for the SPA receptors, it was conservatively assumed that drilling was carried out simultaneously at the three loudest indicative borehole locations to each receptor location for the LA_{eq} assessment, which is unlikely.

It is not deemed appropriate to sum the LA_{max} from three individual activities, as per the $LA_{eq,,}$ assumption. This is due to the LA_{max} being a single event level instead of an average noise level over a period of time. For this reason, the LA_{max} level for the three loudest activities in relation to the ecological receptors have been calculated, and the individual loudest noise level will be used to assess against the 70 dB threshold level.

Table 5.1 details the noise modelling results for both LA_{eq} and LA_{max} at each of these receptor locations.

A full description of the noise modelling methods is provided within the Bradwell B Noise Appraisal report (Wood, 2019).

Table 5.1 Summary Noise Calculations for SSSI receptors using LA_{max} and LA_{eq}

Location (Figure 7)	GI Reference (Refer to Figure 2)	Activity Description	Activity LA_{max}	TOTAL LA_{max}	Activity LA_{eq}	TOTAL LA_{eq} (3 No. Closest Drilling Operations)
SSSI Receptor 1	BHCP-2050	Seismic CPT Boreholes	75	**75**	60	**60**
	BHCP-2051	Seismic CPT Boreholes	58		43	
	BHCP-2067	Seismic CPT Boreholes	57		42	
SSSI Receptor 2	BHCP-2087	Seismic CPT Boreholes	84	**84**	69	**69**
	BHCP-2001	Seismic CPT Boreholes	65		50	
	BHCP-2002	Seismic CPT Boreholes	60		45	
SSSI Receptor 3	BHCP-2044	Seismic CPT Boreholes	77	**77**	62	**63**
	BHCP-2070	Seismic CPT Boreholes	72		57	
	BHCP-2069	Seismic CPT Boreholes	55		40	
SSSI Receptor 4	BHCP-2073	Seismic CPT Boreholes	77	**77**	62	**62**
	BHCP-2098	Seismic CPT Boreholes	57		42	
	BHCP-2076	Seismic CPT Boreholes	51		36	
SSSI Receptor 5	BHCP-2099	Seismic CPT Boreholes	68	**68**	53	**53**

Location (Figure 7)	GI Reference (Refer to Figure 2)	Activity Description	Activity LA_{max}	TOTAL LA_{max}	Activity LA_{eq}	TOTAL LA_{eq} (3 No. Closest Drilling Operations)
	BHCP-2096	Seismic CPT Boreholes	51		36	
	BHCP-2098	Seismic CPT Boreholes	50		35	

Noise Disturbance of Breeding Birds

Anthropogenic noise can acoustically mask, and decrease the efficacy of avian vocal communication (Schroeder *et al.* 2012). It is well-documented that many bird species are less abundant near busy roads (van der Zande, ter Keurs and van der Weijden, 1980; Reijnen and Foppen, 1991; Reijnen *et al.*, 1995) and are often less-experienced juveniles with resultant small clutch sizes and poor fledging success (Habib, Bayne and Boutin, 2007). Francis, Ortega and Cruz (2009) discovered that anthropogenic noise may force spatial shifts because of their negative effects on breeding success, mate attraction, body condition, or survival rates. This idea was previously cited by Stone (2000) who found that there was a negative correlation between the number of species and anthropogenic noise levels (Slabbekoorn and Ripmeester, 2008). Studies on farmland have shown that bird distribution is affected at levels of noise higher than around 40-50dB, which may at least in part be attributed to lower levels of vigilance (Reijnen *et al.*, 1996; in Devereux *et al.*, 2008). These studies suggest that the detection of predators may be compromised by levels of increased low-level noise, although predators also rely on auditory cues for detecting prey so they should equally be affected by background noise (Krams, 2001). Slabbekoorn and Ripmeester (2008) found that robins show increased vigilance in noisier areas at the expense of feeding and that chaffinches spent less time foraging during periods of artificially increased noise levels. Diaz *et al* (2011) also concluded that levels of singing when exceeding 60% of daylight hours are detrimental to bird health and survival.

Assessment of Impacts on Bearded Tits

Noise modelling indicates that for the loudest activities to the SSSI, assuming three GI locations are active concurrently, then the LA_{eq} is 53 dB at receptor 5, between 60 – 63 dB (receptors 1, 3, 4) and 69dB at Receptor 2. For any bearded tit nests located close to these receptor locations, such operations could potentially adversely impact on the breeding success and productivity of the nests. The majority of the GI locations are greater than 300m from the Borrow Dyke (only 15 boreholes, 2 trail pits and 2 cone penetration tests are within 300m) beyond this distance it is considered unlikely that noise impacts would be significant. Mitigation measures are included for those works within 300m of any bearded tit breeding locations, to ensure that the risk of such impacts is minimised, and these are detailed in **Section 5.2**.

Assessment of Impacts on Dengie SSSI listed wildfowl and waders

An assessment of impacts, effects and any appropriate mitigation is contained within the HRA (**Section6**)

Legally Protected and Priority Species

A number of legally protected species (relevant legislation is summarised in **Appendix A**) and priority species could occur throughout the area, potentially close to locations where ground investigations are planned and the associated access routes and/or the compound and/or storage area:

- **Bats** – there are a number of built structures (residential dwellings) located towards the centre of the site, although they are excluded from the site boundary. These have the

potential to support roosting bats. A small number of scattered trees and small wooded areas may also have bat roost potential. Works within proximity to these features may therefore have the potential to disturb bat roosts. This risk is however limited as the majority of the GI and associated access tracks are within arable fields and not close to potential bat roosts;

- **Badgers** – there will be no excavations or drilling works within 30m of a badger sett. The relevant badger records are omitted from this report. Due to the sensitive nature of this information it is included in a separate confidential appendix (**Appendix D**);
- **Otter and water vole** - water voles have been recorded within the Site in the last 10 years and the network of ditches throughout the site has the potential to support this species. The ditches also have limited potential to support otter, providing potential commuting / foraging routes. The GI may therefore have the potential to disturb water voles or otters, with a limited risk of harm caused by plant/machinery. The risk of harming/disturbing otters/water voles is generally limited, as the majority of the GI will take place within arable fields, with increasing risk in proximity to watercourses/ditches;
- **Other mammal species** – brown hare have been recorded within the Site. There is a low risk of plant/machinery harming brown hare, for example juvenile hares (leverets) within arable fields. Hedgehog (also a Species of Principal Importance) may also occur within the site and may be vulnerable to harm from plant/machinery, including in the event that this species seeks shelter in compound/storage areas;
- **Great Crested Newts** – there are fifteen ponds within 500m of the Site, including nine ponds and two larger reservoirs located within the site boundary. In wetter periods the ditch network may also include suitable habitat for breeding great crested newts. Suitable terrestrial habitat is also present including ditch margins, woodlands, hedgerows and areas of scrub. The works may therefore have the potential to harm and/or disturb any great crested newts that use the site for foraging or refuge. The risk of harming/disturbing great crested newts is generally limited because previous surveys have concluded the species is absent from the site and surrounds and because the majority of the GI will take place within arable fields, which provide poor habitat for this species, with increasing risk at GI locations that are in proximity to waterbodies/ditches, woodland, scrub, rank grassland, field margins and hedgerows and where GI activities occur at such locations for an extended period;
- **Reptiles** – during the Phase 1 walkover survey three common reptile species were recorded within or immediately adjacent to the Site, including adder, slow worm and common lizard. These species have the potential to be present within ground investigation areas, particularly along field margins and ditch edges. The small blocks of woodland, scrub and hedgerows also provide suitable habitat. The proposed works therefore have the potential to harm reptiles. The risk of harming/disturbing reptiles is generally limited, as the majority of the GI will take place within arable fields, which are poor habitat for these species, with increasing risk at GI locations that are in proximity to waterbodies/ditches, woodland, scrub, rank grassland, field margins and hedgerows;
- **Birds -** Hen harrier has previously been recorded within 1km of the site in the last ten years and there is a barn owl nest near the site (details included in **Appendix C**), with the potential to support breeding barn owl (Schedule 1 species). Other bird species are likely to nest on the ground or amongst/in scrub/trees. Breeding birds are therefore potentially at risk of being disturbed during any GI undertaken during the birds' breeding season (March to August inclusive);
- **Eel** – a Species of Principal Importance for the Conservation of Biodiversity that has been recorded within the Site and may occur in ditches within the site (or in some cases cross

terrestrial habitats in wet/damp conditions). The risk of harming/disturbing this species is however low, as the majority of the GI will take place within arable fields and no ground investigation targeting drainage ditches are planned; and

- **Invertebrates** – a number of notable invertebrate species have been recorded near to the Site, including a number of Nationally Scarce beetle species and the white letter hairstreak butterfly, latticed heath moth and small heath butterfly, which are Species of Principal Importance for the Conservation of Biodiversity. However, the majority of the proposed GI are likely to affect localised areas of mainly arable farmland and therefore substantive effects on invertebrate species and/or assemblages are unlikely.

Invasive Non-native Species and Legally Controlled Species

Incidental observations of non-native, invasive species were recorded during the 2017 Phase 1 habitat survey, including Japanese rose within ornamental planting around the Bradwell power station car park and on the coast. Whilst these are outside the area now subject to GI proposals and unlikely to be a constraint on the ground investigation, it is possible that such species will be present in areas covered solely by remote sensing.

Habitats of Notable Nature Conservation Value

The following habitat types (**Figure 5** and **Figure C.1**) occur within the site and are of potentially notable nature conservation value and/or potentially support protected or notable species:

- Woodland and mature trees;
- Scrub;
- Hedgerows;
- Swamp;
- Semi-improved grassland; and
- Ponds and ditches.

The proposed investigations may therefore have limited potential to damage these habitats although the majority of the GI generally avoid these habitat types. However, where indicative exploratory locations are located very close to habitats of conservation value precautions would need to be taken to avoid damage to habitat or impacts on protected species that may be present – see **Section 4.2.**

5.2 Proposed Control Measures

Overview

As indicated above the majority of the proposed GI are within arable farmland and the risk of adverse effects on designated sites; legally protected and notable species; and habitats of notable nature conservation value is limited. Ground investigations also typically result in only limited and localised ground disturbance and there is a degree of flexibility in selecting/tailoring GI locations, and in applying the proposed working practices, to further avoid potential ecological constraints. This section summarises the control measures to be implemented to minimise the risk of adverse effects on ecological receptors and to avoid or minimise any risk of legal non-compliance during the ground investigations. That these measures were all implemented, and were effective, during the previous ground investigation works on Site.

Recommended Working Practices - General

- **Pre-works inspection (ground investigation locations, access routes, site compound and storage area)**: the Principal Contractor and Ecologist will complete pre-works inspections of all proposed GI locations and unsurfaced access routes, and the work areas and access routes will be adjusted, as far as practicable, to avoid identified buffer zones (see below) and minimise the potential for damage and/or disturbance of ecological receptors including, but not limited to, habitats, breeding birds (March to August inclusive), badger, roosting bats, water voles, otter and reptiles; and ensure compliance with nature conservation legislation;

- **Tool Box Talk**: an Ecologist will brief ('tool box talk') the Principal Contractor prior to the start of ground investigations and/or preparatory works e.g. vegetation clearance / trackway installation. This will provide the contractor with an overview of the nature and locations of ecological constraints within the site boundary and the necessary working practices. Thereafter, in the event of any uncertainty on the part of the contractor regarding ecological constraints an Ecologist will be consulted;

- **Ecological Constraints Plan:** The Principal Contractor will hold copies of the Ecological Constraints Plan (**Figure 6**) and ensure site staff and contractors work in a manner that avoids ecological constraints, ensuring that the investigations and associated plant/equipment movements remain outside the conservation notable habitats, and any defined buffer zones, summarised below.

  - Swamp (priority habitat). Potential for otter, water vole, reptiles and great crested newt habitat – minimum 10m buffer;
  - Woodland (priority habitat). Potential for badger, great crested newt and reptile habitat – minimum 30m buffer;
  - Hedgerow (priority habitat) – minimum 10m buffer;
  - Pond (priority habitat) – minimum 10m buffer;
  - Potential bat roost (built structures) – minimum 30m buffer;
  - Potential bat roost (individual mature trees) – minimum 30m buffer;
  - Optimal / sensitive reptile habitat.

  In addition to these habitat-based, mappable potential constraints, should an active nest of a non-Schedule 1 bird be identified during a pre-works check, a minimum 5m exclusion zones should be established, or the works delayed until nesting has finished.

  In the event of any uncertainty on the part of the contractor regarding ecological constraints an Ecologist will be consulted. A confidential version of the Ecological Constraints Plan is included in **Appendix D** and includes badger records, Schedule 1 bird features, and associated buffer/exclusion zones around these locations as at 2017. Its circulation will be restricted and limited to the appropriate members of the Developer and Principal Contractor teams, as well as key consultees and regulators as required;

- **Watching brief (Ecologist)** - all works (vegetation clearance, installation and removal of trackway, active drilling or other investigations), in areas of habitat that are identified by the Ecologist as having the potential to be used by or support protected species, taking account of seasonality, will be supervised by an Ecologist. These include works:

  - Occurring near, within 10m of the buffer zones identified above;

- Within 500m of a pond with the potential to support great crested newts. Works should avoid disturbing any amphibian refugia;
- That could disturb field margins or scrub habitat;
- Within habitat identified as optimal / sensitive for reptiles. Works should avoid disturbing any reptile refugia.

Where the Principal Contractor is in any doubt regarding any ecological constraints on the works or has any ecology-related or nature conservation-related queries relating to the works they will seek advice from the Ecologist. They will also seek advice in the event of any need to deviate from the agreed scope of work;

- **Pollution Prevention:** the ground investigations will employ good practice in pollution prevention, complying with the Environment Agency's Pollution Prevention Guidelines, or similar good practice, to prevent the pollution of controlled water (groundwater and surface water) to prevent pollution incidents and to safeguard legally protected species. Any potentially polluting materials should be stored in appropriate containers and kept in a secure location. Standard pollution prevention measures, following good practice guidelines, should also be undertaken to prevent sediment mobilisation and ingress to ditches, irrigation reservoirs and other waterbodies. See Phase 1 Contaminated Land Desk Study for further details;
- **Vehicles and Plant:** Vehicle/plant movements on-site will comply with a speed limit of 15mph on Primary routes and 10mph on all other routes as specified in the Planning Statement, to minimise the collision risk with wildlife;
- **Open excavations:** excavations shall be back-filled/grouted up and reinstated as soon as practicable following completion of the works and excavations that need to be left open overnight shall be inspected daily to ensure no wildlife has become trapped. In the event of wildlife being encountered in any excavation, the advice of an Ecologist shall be sought;
- **Invasive Non-native Species:** no Invasive Non-native Species have been recorded within the investigation areas although the areas only surveyed to date by remote sensing remain to be checked. However, the pre-works inspections referred to above will identify any invasive non-native species at/near GI locations, access routes and/or compounds. The Ecologist will direct the contractors to work at locations to avoid disturbance of these areas. Where deemed necessary by the Ecologist a 'no disturbance zone' will be demarcated around stands of Invasive Non-native species;
- **Bearded tit nest sites:** any active bearded tit nests within 300m of planned drilling or excavation works and/or vehicle access routes will be identified by pre-works checks of suitable reedbed habitat within the Borrow Dyke section of the SSSI, during the breeding season (March to August inclusive). If present active bearded tit nests will be shielded from disturbance, using noise attenuating barriers (e.g. comprising hay bales) deployed around works within 300m of any nests or by other appropriate means to be agreed with the Ecologist/Ornithologist, including changes to working practices and limiting the number of exploratory locations being drilled nearby. Also, where deemed necessary, to be directed by the Ecologist or Ornithologist, a further precaution would be to avoid excavation/drilling within 300m of active bearded tit nests during the early morning period (within three hours of dawn) when bearded tits tend to be most active.

6. Habitats Regulations Assessment

6.1 Introduction

The process of identifying, screening and assessing the effects of development on Natura 2000 sites is referred to as Habitats Regulations Assessment (HRA).

If a project has the potential to affect a European site[2], the applicant must provide a HRA report detailing the European site(s) that may be impacted together with sufficient information to enable the competent authority to screen the project for Likely Significant Effects (LSE), and make an Appropriate Assessment (AA) if likely significant effects cannot be ruled out.

The Habitats Directive[3] protects habitats and species of European nature conservation importance. Together with the Birds Directive[4], it establishes a network of internationally important sites designated for their ecological status. Special Areas of Conservation (SACs) and Sites of Community Importance (SCIs) are designated under the Habitats Directive and promote the protection of flora, fauna and habitats. Special Protection Areas (SPAs) are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds. These designated sites together create a Europe-wide 'Natura 2000' network of designated sites, which are hereafter referred to as 'European sites'.

In addition, internationally important wetlands designated under the Ramsar Convention 1971 (Ramsar sites) are afforded the same protection as SPAs and SACs for the purpose of considering development proposals that may affect them.

The Habitats Regulations provide, *inter alia*, a framework for the protection of European sites on land and within 12 nautical miles of mean high water.

Amongst other things, the Habitats Regulations define the process for the assessment of the implications of plans or projects on European sites. This process is termed the HRA and the competent authority must comply with Regulation 63 of the Habitat Regulations, as set out below:

> *"63 (1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which:*
>
> *a) Is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in combination with other plans or projects), and*
>
> *b) Is not directly connected with or necessary to the management of that site,*
>
> *Must make an appropriate assessment of the implications for that site in view of that site's conservation objectives."*

In undertaking an AA, the competent authority must consult the appropriate nature conservation body (Natural England (NE)) and have regard to any representations that it makes within the timeframe specified

[2] Under The Conservation of Habitats and Species Regulations 2017 (SI 2017 No. 1012), European sites (also known as Natura 2000 sites) are defined as Special Areas of Conservation (SACs), candidate SACs (cSACs), Sites of Community Importance (SCI), Special Protection Areas (SPA) and European Marine Sites (EMS), which are marine areas designated as SACs and SPAs. UK policy extends the requirements pertaining to European sites to include listed or proposed Ramsar sites, potential SPAs (pSPAs; and this would include proposed extensions or alterations to existing SPAs), possible SACs, and sites identified, or required, as compensatory measures for adverse effects on Natura 2000 sites, pSPAs, possible SACs, and listed or proposed Ramsar sites.

[3] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

[4] DIRECTIVE 2009/147/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 November 2009 on the conservation of wild birds (codified version).

by the competent authority. NE is also commonly consulted in the process of screening projects to establish whether and to what extent an AA is required.

HRA can involve up to four stages, as detailed in Box 6.1.

Box 6.1 Stages of Habitats Regulations Assessment

Stage 1 – Screening:

This stage identifies the likely impacts upon a European Site of a project or Plan, either alone or 'in combination' with other projects or plans and considers whether these impacts are likely to be significant.

Stage 2 – Appropriate Assessment:

Where there are likely significant impacts, this stage considers the impacts of the Plan or project on the integrity of the relevant European Sites, either alone or 'in combination' with other projects or plans, with respect to the sites' structure and function and their conservation objectives. Where there are adverse impacts, it also includes an assessment of the potential mitigation for those impacts.

Stage 3 – Assessment of Alternative Solutions:

Where adverse impacts [on the integrity of the site] are predicted, this stage examines [whether or not there are] alternative ways of achieving the objectives of the project or Plan that avoid adverse impacts on the integrity of European Sites.

Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain:

This stage assesses compensatory measures where it is deemed that the project or Plan should proceed for imperative reasons of overriding public interest (IROPI).

Stages 1 and 2 are covered by Regulation 63 and Stages 3 and 4 are covered by Regulation 64 and 68.

With respect to Stage 2, the integrity of a European Site relates to the site's conservation objectives and has been defined in guidance as "*the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated*"[5]. An adverse effect on integrity, therefore, is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. The HRA screening process uses the threshold of LSE to determine whether effects on European sites should be the subject of further assessment. The Habitats Regulations do not define the term LSE. However, in the Waddenzee case (Case C-127/02)[6]the European Court of Justice found that an LSE should be presumed and an AA carried out if "*it cannot be excluded on the basis of objective information that the plan or project will not have significant effects on the conservation objectives of the site concerned, whether alone or in-combination with any other project*. The Advocate General's opinion of the Sweetman case (Case C-258/11)[7] further clarifies the position by noting that for a conclusion of an LSE to be made "*there is no need to **establish** such an effect…it is merely necessary to determine that there **may** be such an effect*" (original emphasis).

[5] Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, at section 4.6.3 (Updated Version, November 2018).
[6] Judgment of the Court (Grand Chamber) of 7 September 2004. Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij. Reference for a preliminary ruling: Raad van State - Netherlands. Case C-127/02.
[7] Judgment of the Court (Third Chamber), 11 April 2013 Peter Sweetman and Others v An Bord Pleanála. Request for a preliminary ruling from the Supreme Court (Ireland) Case C-258/11.

For the reasons highlighted above the assessment process follows precautionary principle throughout and the word 'likely' is regarded as a description of a risk (or possibility) rather than in a legal sense an expression of probability.

Screening can be used to screen-out European sites and elements of works from further assessment, if it is possible to determine that significant effects are unlikely (e.g. if sites or interest features are clearly not vulnerable (exposed and / or sensitive) to the outcomes of the proposal due to the absence of any reasonable impact pathways).

The screening process has three potential conclusions, namely that the proposed development, alone or in combination with other developments, could result in:

- No effects on any of the designated features of the site;
- An effect on the site that is not likely to undermine the site's conservation objectives and hence is not significant; or
- An effect on one or more of the qualifying features of the site that could undermine the site's conservation objectives. This would be a likely significant effect (LSE).

Only the last of these three outcomes will trigger an Appropriate Assessment. If one or more LSE are identified, or cannot be ruled out, it is then necessary to proceed to Stage 2 and produce an AA.

On 12 April 2018, the Court of Justice of the European Union (CJEU) issued a judgment on Case C323/17 (People over Wind, Peter Sweetman v Coillte Teoranta) which stated (at paragraph 41):

"*Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site*."

This means that any mitigation relating to protected sites under the Habitat Regulations 2017 Regulation 63 (1) will no longer be considered at the screening stage but taken forward and considered at the appropriate assessment stage to inform a decision on whether no adverse effects on site integrity can be demonstrated.

The screening assessment provided within this HRA takes into account the CJEU ruling on 'People over Wind'. It has also adopted a strong precautionary principle; if a pathway of effect is established between the Proposed Development and a European Site, then that site is taken through to appropriate assessment. This ensures all effects are captured, including *de minimis* effects.

A precautionary approach has been taken to the screening process for the Proposed Development. Only those designated features and European sites where it can be demonstrated that there is no likelihood of a significant effect occurring have been screened out.

Within this assessment, each potential effect is considered using information from surveys undertaken to inform the HRA process, published literature (where available), other available baseline data, modelling outputs, and professional judgement (informed by Chartered Institute of Ecology and Environmental Management (CIEEM)[8]).

6.2 HRA Stage 1 – Screening Step 1

Regulation 63 of the Habitats Regulations applies to plans or projects that are not directly related to the conservation management of a Natura 2000 site. This first step of the screening process was therefore to

[8] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

identify whether the plan or project in question is related to the conservation management of any European sites.

The European Commission guidance makes it clear that, for a project or plan to be 'directly' connected with or necessary to the management of a European site, the management must refer to measures that are for conservation purposes, with the 'directly' element referring to measures that are solely conceived for the conservation management of a site and not direct or indirect consequences of other activities.

The Proposed Development is a 'plan or project', for the purpose of the Habitat Regulations, but is not directly connected with or necessary for the management of any European site. An Appropriate Assessment (AA) may, therefore, still be required and so it is necessary to proceed to Step 2 of the Screening Process.

6.3 HRA Stage 1 - Screening Step 2: Description of the Scheme

This step requires an understanding of the location and description of the elements of the Proposed Development that could result in effects on a European Site. The description must identify the elements of the Proposed Development that may directly affect a European Site (e.g. land-take), those that may in-directly affect a European Site (e.g. emissions to air) and those that may act in-combination with other plans or projects.

The proposed GI works will comprise two separate packages of work: ground investigation; and load test investigation. Full details of which are contained within Section 2.

6.4 HRA Stage 1 - Screening Step 3: Identification of Potential Effects on European Sites

Essex Estuaries SAC is designated for the conservation of coastal habitats. Since no ground investigations are proposed within the designation, and given the geological and hydrogeological site conditions, there is no potential impact pathway associated with potential surface water or groundwater pollution (see Phase 1 Contaminated Land Desk Study Report that accompanies the planning application for further details). Hence no likely significant effects through changes in surface water or groundwater quality would occur and therefore potential impacts on the SAC are not considered further in this report.

Taking into account the proximity of the site to the Dengie (Mid-Essex Coast Phase 1) SPA/ Ramsar and Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/ Ramsar and the potential for disturbance of bird species/assemblages for which these sites are designated, this section compiles the information that is expected to be required by the Competent Authority to inform their Habitats Regulations Assessment (HRA) of the proposed ground investigations.

Proximity to Ground Investigations

At its closest point the Dengie (Mid Essex Coast Phase 1) SPA is located adjacent to the Site and extends around the coastline to the north and east of the Site. The Blackwater Estuary SPA (Mid Essex Coast Phase 4) is located approximately 250m to the north-west of the Site at its closest point and extends around the coastline to the north and west of Bradwell power station. The locations of these two SPAs in relation to the site boundary, indicative GI locations and noise modelling locations within the SPA are illustrated in **Figure 7**.

Qualifying Features

The SPA Qualifying Features, identified from the Natura 2000 Standard Data Forms (January 2016):

Dengie (Mid-Essex Coast Phase 1) SPA

- Dark-bellied brent goose (wintering) – 2,308 individuals;
- Knot (wintering) – 8,393 individuals;
- Hen harrier (wintering) – 1-19 individuals;
- Grey plover (wintering) – 2,411 individuals; and
- Waterfowl assemblage – 31,454 individuals (*5-year mean of 51,876 overwintering individuals [Frost et al., 2017]).*

Blackwater Estuary (Mid-Essex Coast Phase 4) SPA

- Dark-bellied brent goose (wintering) – 15,392 individuals;
- Pochard (breeding) – 1-15 pairs;
- Hen harrier (wintering) – 1-19 individuals;
- Ringed plover (breeding) – 1-135 pairs;
- Ringed plover (wintering) - 347 individuals;
- Grey plover (non-breeding) – 5,090 individuals;
- Dunlin (non-breeding) – 33,267 individuals;
- Black-tailed godwit (non-breeding) – 1,280 individuals;
- Little tern (breeding) – 21 pairs; and
- Waterbird assemblage - 109,964 individuals (5-year mean of 78,380 overwintering individuals [Frost et al., 2017]).

Dengie (Mid-Essex Coast Phase 1) Ramsar

The Ramsar Information Sheet UK11018 – Dengie (Mid-Essex Coast Phase 1) (version 3, 2008) advises that the estuary is designated under the following criteria for birds.

Ramsar Criterion 5 – Assemblages of international importance

- 43,828 waterfowl (5 year peak mean 1998/99 – 2002/03).

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

Identified at designation:

- Dark-bellied brent goose – 2,000 individuals (1998/99-2002/03);
- Grey plover – 4,582 individuals (1998/99-2002/03);
- Knot (wintering) – 14,528 individuals (1998/99-2002/03).

Identified subsequent to designation for possible future consideration under criterion 6:

Species with peak counts in winter:

- Bar-tailed godwit – 2,593 individuals (1998/99-2002/03).

In addition, 'noteworthy fauna' include those species occurring at levels of national importance:

Species with peak counts in spring/autumn:

- Ringed plover – 325 individuals (1998/99-2002/03);
- Black-tailed godwit – 225 individuals (1998/99-2002/03);
- Greenshank – 17 individuals (1998/99-2002/03).

Species with peak counts in winter:

- Red-throated diver – 101 individuals;
- Hen harrier - <19 individuals;
- Dunlin – 10,494 individuals.

Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar

The Ramsar Information Sheet UK11007 – Blackwater Estuary (Mid-Essex Coast Phase 4) (version 3, 2008) advises that the estuary is designated under the following criteria for birds.

Ramsar Criterion 5 – Assemblages of international importance

- 105061 waterfowl (5 year peak mean 1998/99 – 2002/03).

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

Identified at designation:

- Dark-bellied brent goose – 8,689 individuals (1998/99-2002/03);
- Grey plover – 4,215 individuals (1998/99-2002/03);
- Dunlin – 27,655 individuals (1998/99-2002/03);
- Black-tailed godwit – 2,174 individuals (1998/9-2002/03).

Identified subsequent to designation for possible future consideration under criterion 6:

- Shelduck – 3,141 individuals (1998/99-2002/03);
- Golden plover – 16,083 individuals (1998/99-2002/03);
- Redshank – 4,169 individuals (1998/99-2002/03).

In addition, 'noteworthy fauna' include those species occurring at levels of national importance:

Species supported during the breeding season:

- Mediterranean gull – 4 apparently occupied nests (2000);
- Common tern – 121 apparently occupied nests (2000);
- Little tern – 99 apparently occupied nests (2000).

Species with peak counts in spring/autumn:

- Ringed plover – 714 individuals (1998/99-2002/03);
- Whimbrel – 272 individuals (1998/99-2002/03);
- Curlew – 1,959 individuals (1998/99-2002/03);
- Spotted redshank – 36 individuals (1998/99-2002/03);

- Greenshank – 149 individuals (1998/99-2002/03);
- Turnstone – 664 individuals (1998/99-2002/03).

Species with peak counts in winter:

- Slavonian grebe – 11 individuals (1998/99-2002/03);
- Cormorant – 286 individuals (1998/99-2002/03);
- Little egret – 33 individuals (1998/99-2002/03);
- Wigeon – 5,614 individuals (1998/99-2002/03);
- Teal – 2,932 individuals (1998/99-2002/03);
- Pintail – 396 individuals (1998/99-2002/03);
- Goldeneye – 260 individuals (1998/99-2002/03);
- Red-breasted merganser – 129 individuals (1998/99-2002/03);
- Hen harrier - <19 individuals (1987/88-1991/92);
- Water rail – 9 individuals (1998/99-2002/03);
- Avocet – 424 individuals (1998/99-2002/03);
- Lapwing – 16,944 individuals (1998/99-2002/03);
- Knot (wintering) – 3,864 individuals (1998/99-2002/03);
- Sanderling – 229 individuals (1998/99-2002/03);
- Ruff – 42 individuals (1998/99-2002/03).

SPA Conservation Objectives

Dengie (Mid-Essex Coast Phase 1) and Blackwater Estuary (Mid-Essex Coast Phase 4)

The conservation objectives as stated within the Natural England publications of 30 June 2014 (Version 2):

'With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

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

Baseline

Overview of Predicted Bird Distribution

Areas of cockle shell spits and saltmarsh along the Dengie peninsular are utilised by waders as high tide roosts. Numbers of roosting waders can reach around 20,000 at high tide during the winter (Essex Wildlife Trust, 2017[9]). Species using the roost would be likely to comprise: dunlin, ringed plover, grey plover, black-tailed godwit, knot, turnstone, curlew, redshank and spotted redshank. During the spring and summer months areas of cockle shell spits are utilised by breeding ringed plover. The adjacent mudflats will be used by all the SPA (and SSSI) listed wildfowl and waders. During the highest tides, habitat on the landward side of the sea wall or the sea wall itself may be utilised by roosting waders as the saltmarsh becomes inundated by spring tides. Based on the notes taken on current arable field types within the survey area during the 2017 Phase 1 habitat survey, combined with the 2018 cropping plans and consultation with the land agent, the arable field types over winter 2017/18 are shown in **Figure 9**. This shows that the dominant crop type within the survey area was ploughed land (c77ha – spring crops), with c76ha of oil seed rape, 20ha of Lucerne and 22ha of winter wheat. Winter wheat fields are adjacent to the survey area, to the south-east. The 2019 remote sensing Phase 1 classification identifies as similar pattern of agricultural use, although different fields would be expected to be planted with different crops on a year by year rotational cropping plan the overall crop composition of the Site as a whole is comparable with 2017.

For dark-bellied brent geese, eelgrass remains a preferred food, especially in early winter, with marine algae and saltmarsh plants also important (Brown & Grice 2005). Saltmarsh grasses and succulents can also be important in late winter and spring when the preferred eelgrass and algae are depleted. Inland feeding habitats around the Dengie Estuary are known to be winter cereals and oilseed rape, with use of winter cereals in the autumn, and a combination of winter cereals (predominantly) and rape fields in the core winter and spring (Rowell & Robinson, 2004).

Golden plover gather in flocks on cultivated bare earth, stubble, fallow and root crops, earthworm rich permanent pastures, coastal grazing marshes, saltmarshes and mudflats (Balmer *et al.* 2013). They frequently associate with lapwings, which they use to indicate rich food sources. Birds appear to prefer to feed on older, earthworm-rich permanent pastures during winter, but are also attracted to newly ploughed land in autumn (Barnard and Thompson, 1985). In eastern England, where permanent pastures are scarce, the birds use sugar beet stubbles and winter cereals: recent nocturnal surveys here have found that up to 80% of the birds feed at night and often in areas rarely used in the day such as in fields of oilseed rape (Gillings, 2003). Coastal habitats, ploughed land and flooded gravel pits are preferred for roosting. Given that golden plover will utilise a variety of arable field types, there is potential for them to utilise fields on Site, albeit there will be a large amount of alternative and more suitable habitat in the surrounding area.

Curlew will feed on earthworms and larval and adult insects taken from adjacent agricultural land (they favour intertidal habitats – curlew densities are strongly correlated with the densities of their preferred ragworm prey in southeast England [Goss-Custard *et al.* 1977]), where flocks often forage and roost at high water. Curlew utilisation of on-site habitats is therefore likely to be mainly at high tide periods, primarily for roosting.

There are minimal areas of permanent grassland on the Site, it being predominantly arable land given over to wheat and oilseed rape. Areas for spring sown crops will be autumn ploughed with no stubble remaining over winter. The crop mosaic includes only c98 ha of potential foraging resource (winter wheat and oil seed rape) for brent geese and as such represents a very small amount of foraging habitat especially when compared to the wider availability of preferred feeding areas with the SPAs and functionally linked land.

It is understood that there was previously a Higher Level Stewardship (HLS) agreement in place across the eastern half of the Site, expiring in April 2017, the focus of which was the retention of permanent grassland

[9] http//www.essexwt.org.uk/reserves/bradwell-shell-bank.

along the sea defences, hedge cutting every 3 years rather than every year, and areas of bird cover crops. Based on EDF Energy consultations with the relevant land managers, these schemes did not target benefits for wintering birds although the HLS agreement for Strutt and Parker's agricultural holding included permanent grassland around Glebe Farm and Sandbeach (Bradwell Marshes – to the south of the Site) which was to provide benefit for wintering wildfowl and these grassland areas are available.

WeBS Data

Wetland Bird Survey (WeBS) data have been obtained from the British Trust for Ornithology (BTO), pertaining to the Dengie Flats and Bradwell to Sales Point sector and covering the five year period winter 2011/12 to winter 2015/16. This sector covers a much larger area than the coastline around the Site, extending approximately 1km to the west and 5km to the south of the Site and incorporating parts of both the Dengie and Blackwater Estuary SPAs (**Figure 8**). The data is included in **Appendix E** and is summarised for the SPA qualifying species in **Table 6.1**.

Table 6.1 Summary WeBS Data for SPA Qualifying Species

SPA Qualifying Feature*	Dengie SPA Population	Blackwater Estuary SPA population	Assumed Months Present	Winter 2011/12		Winter 2012/13		Winter 2013/14		Winter 2014/15		Winter 2015/16	
				Peak Count	Average Count	Peak Count	Average Count	Peak Count	Average Count	Peak Count	Average Count	Peak Count	Average Count
Dark-bellied brent goose	2,308	15,392	Sep-Apr	1,793	723	987	392	1,116	298	2,067	692	1,710	780
Knot	8393	N/A	Sep-Apr	6,900	2,748	13,800	2,985	7,500	2,313	9,100	4,111	12,800	4,829
Grey plover	2411	5090	Sep-Apr	2,000	1,465	3,650	1,102	4,530	891	2,880	1,192	985	559
Ringed plover	N/A	347	Sep-Apr	615	153	30	8	25	4	54	14	62	8
Dunlin	N/A	33267	Sep-Apr	5,700	2,623	4,250	1,478	2,540	789	3,360	1,750	6,750	1,559
Black-tailed godwit	N/A	1280	Sep-Apr	20	2.5	4	0.5	0	0	0	0	0	0

*Only wintering species are included as breeding populations are not monitored in detail as part of the WeBS survey.

Potential effects on European Sites

A summary of the proposed works is included in Section 1. The ground investigation (GI) locations are illustrated in **Figure 2**. The locations are indicative, allowing a degree of flexibility to adjust locations in response to environmental constraints, amongst other reasons. The investigations are planned to last for approximately 18 months (Main Campaign) and a further 3-4 months should any potential additional works be required.

The potential impacts of the proposed works on the qualifying features using intertidal habitats of the Dengie and Blackwater Estuary SPAs are likely to be limited to disturbance of birds as a result of noise, especially from drilling. Visual disturbance is unlikely to be of concern because there is a 2.5m high floodbank along the coast screening the Application Site from the SPAs. Artificial lighting used during the proposed ground investigations is also unlikely to be disturbing to birds as drilling work will be restricted to daylight hours and the only lighting that is proposed is PIR security lighting and suitably shrouded task lighting within the GI site compound and load test site compound (**Figure 8**), which are both located more than 500m from the edge of the SPAs at their nearest point.

This report therefore focusses mainly on the potential noise-related impacts of the ground investigations on SPA qualifying features and noise and visual disturbance to SPA Functionally Linked Land (FLL), in light of SPA bird species that may utilise the farmland and reed filled ditches within the Site.

Pollution

Although the ground investigations will employ good practice in pollution prevention, complying with the Environment Agency's Pollution Prevention Guidelines, or similar good practice, without this mitigation there is potential for LSE. Therefore, pollution as a potential LSE is taken though to the Stage 2 section to inform an appropriate assessment.

Water Abstraction

As detailed within the H1, assessment (Atkins, 2020), which supports the environmental permitting requirements, the load test excavation will incorporate an impermeable geomembrane around its perimeter, to the full depth of the superficial deposits, to preclude groundwater ingress (nuisance water) from perched water within the deposits. This membrane will also serve to redirect existing groundwater flows around the load test excavation, avoiding wide-scale drawdown. The excavation will be served by a sump to collect water, an estimated 81% of which will be groundwater inflows, for pumping to an attenuation/settlement pond.

The proposed GI boreholes are intended to recover geological information on the strata beneath the site. Any fluids generated during the drilling of these boreholes will be collected for off-site disposal as required. Appropriate measures (suitable shaft caps) will be used to ensure that no groundwater is released if slightly artesian conditions are encountered. Upon completion of testing the borehole will be sealed.

The SAC, SPA and Ramsar sites are not groundwater dependent. Additionally there are no wetland areas within the FLL that could be affected. Therefore there are no impact pathways associated with water abstraction that could potentially result in LSE for any European Site.

Water Discharge

The water discharge to the Ordinary Watercourse is required to facilitate surface drainage and dewatering of the load test investigation being undertaken to support the engineering and geotechnical design of the proposed new nuclear power station development. The load test area covers an area of circa 10 hectares of which 7.3 hectares are subject to drainage management.

As described previously, water collected in the load test excavation will be transferred by sump to an attenuation/settlement pond, from which it will be discharged to the adjacent tributary of the Weymarks River at natural greenfield runoff rates. This water will drain through 2.5km of the low-lying ditch network across the site towards the system's outlet through the tidal flood defence and into the marine environment.

Water discharge will comprise a combination of rainfall runoff and groundwater dewatered from the load test area excavation, with no additions of substances prior to discharge.

The H1 assessment (Atkins, 2020) assumes that groundwater abstracted will have a water quality equivalent to (or better) than that measured in the receiving water course (an unnamed Ordinary Watercourse). There are no identified anthropogenic sources of hazardous pollutants present within the footprint of the proposed load test area and substances likely to be present in abstracted water will be naturally occurring or reflective of background water quality.

Prior to discharge, the combined rainwater/groundwater flows will be directed to an attenuation pond that will provide storage to manage peak rainfall events and to enable sediment load to drop out. No additional treatment is deemed necessary other than possible further physical treatment to reduce sediment load.

It is expected that the nature of the discharge will result in a slight net increase in flow within the Ordinary Watercourse. There will be no net impact on the water quality of the Ordinary Watercourse as the discharged water will be representative of background water quality with no additions. Further, all abstracted groundwater from the load test excavation will be subject to dilution with surface water runoff from the surcharge test, soil bunds and peripheral areas. It is considered that this dilution will sufficiently mitigate any potential impacts to the quality of water discharged to the Ordinary Watercourse. There will be no net impact on the quality of Weymarks River or any of the identified downstream surface water abstractions and therefore no pathway for LSE via the watercourse into any marine European site.

SPA-Hen Harrier

Overwintering hen harrier is a qualifying feature of Dengie SPA/ Ramsar and Blackwater Estuary SPA/ Ramsar. Hen harrier typically utilise saltmarsh, coastal pastures and marshes, farmland, rough grassland and rank vegetation for foraging and roosting. Desk study and consultation has not identified any historical or anecdotal evidence of hen harrier roosts on or close to the site. Whilst occasional birds may cross the site there is minimal preferred foraging habitats on the Site which is predominantly arable farmland and has limited permanent grassland habitat. During the winter months much of the site will be ploughed, with no overwinter stubbles and the remainder of the Site consists of winter wheat, oil seed rape and lucerne.

Potential disturbance effects on hen harrier are therefore also screened out due to the lack of the foraging habitat preferred by this species and no historic or active roost sites recorded on or near the Site.

SPA/Ramsar Site Noise Modelling

A full description of the noise modelling methods is provided within the Bradwell B Noise Appraisal report (Wood PLC, 2019).

Please refer to Section 5.1 for the noise modelling results in relation to the Borrow Dyke, which constitutes SPA FLL that may support breeding pochard.

Noise modelling has been completed based on L_{Aeq} (effectively a measurement of average noise levels) and L_{Amax} (effectively maximum noise levels), with noise levels calculated from the loudest 3 No. borehole locations to 5 No. receptor locations within the SPA (Receptors 1 to 5, **Figure 7**) which is precautionary. It has been assumed for the purpose of the Screening assessment, that each receptor location has a position 10m from the toe of the sea wall on the seaward side and that the sea wall is uniformly approximately 2.5m high. The receptor locations have also been chosen to reflect the highest noise levels from the GI works and

noise levels were calculated for each receptor location based on the assumption that all 3 No boreholes are worked simultaneously for the L_{Aeq} and individually for the L_{Amax}.

In the absence of data on L_{Amax} levels from GI cable percussion drilling activities and the other plant typically used on GI sites, the noise levels have been calculated in terms of L_{Aeq} for each of the 3 No. loudest activities (drilling of boreholes) at each receptor.

The determination of L_{Amax} data has been obtained by adding 15 dB(A) to the shell & auger rig $L_{Aeq,}$ levels and 6 dB to the $L_{Aeq,}$ levels for the remaining items of plant. The shell & auger rig has a higher L_{Amax} addition to take into consideration the impact noise from the weighted dolly hitting the casing and the revving of the winch engine to rewind the dolly.

The 6 dB difference for all other items of plant, is based on Wood PLC's experience of measuring sound levels from many different types of drilling rigs and other plant and equipment in mines, quarries and on construction sites, where the differences between the L_{Aeq} and L_{Amax} levels are usually in the region of 3 – 6 dB(A); depending on the item of plant. This figure will therefore take account of, for example, the impact of excavator buckets on the trench walls and floors during trial pitting and the use of hammers to loosen drill rods when rotary core drilling.

To put all this into context, it should be noted that an increase in sound levels of 3 dB(A) represents a doubling of the sound energy emitted by the source and that an increase of 10 dB(A) is perceived as sounding twice as loud to an observer. A difference of 15 dB(A) between L_{Aeq} and L_{Amax} levels for the cable percussion drilling rigs is therefore a more than doubling of the perceived sound level and can therefore again be considered to be a robust case.

The predicted noise levels at the receptor locations on the seaward side of the sea wall are all at or below 75 dB L_{Amax} (**Table 6.2**).

Table 6.2 Summary Noise Calculations for SPA Receptors using L_{Amax}

Location (Figure 7)	**GI Reference (Refer to Figure 2)**	**Activity Description**	**Activity L_{Aeq}**	**Activity L_{Amax} at receptor**
SPA Receptor 1	BHCP-2050	Seismic CPT Boreholes	54	
	BHCP-2067	Seismic CPT Boreholes	41	
	BHCP-2051	Seismic CPT Boreholes	41	**69**
SPA Receptor 2	BHCP-2087	Seismic CPT Boreholes	58	
	BHCP-2001	Seismic CPT Boreholes	47	
	BHCP-2002	Seismic CPT Boreholes	44	**73**
SPA Receptor 3	BHCP-2044	Seismic CPT Boreholes	54	

Location (Figure 7)	GI Reference (Refer to Figure 2)	Activity Description	Activity L_{Aeq}	Activity L_{Amax} at receptor
	BHCP-2070	Seismic CPT Boreholes	53	
	BHCP-2069	Seismic CPT Boreholes	39	**69**
SPA Receptor 4	BHCP-2073	Seismic CPT Boreholes	55	
	BHCP-2098	Seismic CPT Boreholes	40	
	BHCP-2099	Seismic CPT Boreholes	35	**70**
SPA Receptor 5	BHCP-2099	Seismic CPT Boreholes	60	
	BHCP-2096	Seismic CPT Boreholes	36	
	BHCP-2098	Seismic CPT Boreholes	35	**75**

Bird Responses to Disturbance Stimuli

There are two main forms of disturbance to birds, visual and aural, and the issue is complex, for example, different species vary in their tolerance to disturbance, as do individuals of the same species, and this tolerance also varies between sites and throughout the residency period. A study carried out by Tuite *et al* (1984) found that the species most sensitive to recreational disturbance were teal, shoveler and goldeneye, with mute swan, tufted duck, pochard and mallard being the most disturbance-tolerant. On a site-by-site basis, several studies, for example Cooke (1980), Titus and van Druff, (1981) and Keller (1989), found that the distances at which several bird species reacted to humans was shorter in areas of high disturbance than in undisturbed areas. Owens (1977) found that brent geese tended to avoid disturbed areas of shore and those with poor visibility during early winter, however these areas were utilised later in the winter, as food resources elsewhere were depleted.

There are a variety of bird responses to disturbance, however typically birds take flight, expending unnecessary energy, before either resuming activity within the same area or re-locating elsewhere. The overall effect of this on a bird population is dependent on a number of factors including, for example, the frequency of disturbance, tolerance to disturbance, availability of other suitable habitat and the number of birds (if adjacent areas are at carrying capacity).

Many of the MOD's training estates are important areas for a number of breeding birds, despite the training activities that take place in those areas. A number of bird species are also known to habituate to noise from bird scarers, which are used to protect crops and disperse birds from airports. However, several studies, for example Riejnen & Foppen (1994), have found that breeding success can be reduced as a result of disturbance, often as a result of nest desertion and increased predation of eggs and young.

Hockin *et al* (1992) considered that industrial areas, which may create low-levels of continuous noise, will be more disturbing to birds if site activities are not screened to conceal their presence and recommended that *"serious effort should be devoted to screening and reducing all sources of disturbance"*. Research investigating whether fences protect birds from human disturbance also found that where barriers were present, birds within highly visited areas (i.e. areas with a high level of disturbance) of wetland sites in California behaved similarly to birds within undisturbed areas (Ikuta & Blumstein 2003). Several other measures to mitigate disturbance effects on birds were also considered by Hockin *et al* (1992), including the creation of buffer zones and the management of compensatory areas to benefit birds.

Cutts *et al.* (2009) focussed on construction disturbance of non-breeding waterfowl. This study concludes that regular construction noise below 50dB (at the receptor, i.e. the bird) has little or no effect on the birds. Noise levels between 50-70dB, such as those associated with piling or machinery such as cranes or dumper trucks, generally result in a low or moderate level of effect, with birds turning their heads ('scanning') resulting in reduced feeding activity or alternatively displacement over short distances. It was also found that birds tend to habituate to regular ambient construction noise levels of up to 70dB. Noise levels of between 70-85dB result in a moderate to high level of disturbance effect, with noise levels above 85dB resulting in the maximum response i.e. birds flying out of the area. Decay of noise over distance is subject to the inverse square rule such that as distance doubles, the noise level drops by 6dB. Cutts *et al.* (2013) provides a chart illustrating the standard distance decay rates for noise, for example a noise of 100dB at source decays such that the distance at which the effect on birds will be minor (i.e. below 70dB at the receptor) is 21m.

At the South Humber Bank Power Station construction site the screening of the mudflats from working areas by the seawall was effective in minimising disturbance effects and birds were seen arriving to feed during periods of piling activity (Cutts *et al* 2009).

Spencer & Cutts (2012) report the monitoring of disturbance to birds at three Environment Agency construction sites in England. Construction noise was not found to be a major cause of disturbance at any of the three study sites, despite high sound levels being reached at source on occasion. Occasional quieter noises were more likely to cause a greater disturbance response than continuous louder noises.

A *"Waterbird Disturbance Mitigation Toolkit"* produced by Cutts *et al.* (2013) categorises the sensitivities of 16 common species of estuarine waterbirds and details of those that are relevant to the two SPAs are detailed below (**Table 6.3**).

Table 6.3 Sensitivity to Disturbance of Estuarine Waterbirds (Cutts *et al.* 2013)

Sensitivity	Species
Low	Dunlin and Ringed Plover
Moderate	Black-tailed Godwit and Grey Plover
High	Brent Goose and Knot

Based on the research referenced above, the following principles are apparent:

- Where works are screened from the view of shorebirds, they demonstrate tolerance of high noise levels, with potential significant effects only arising from noise levels in excess of 70dB L_{Amax}. Noise levels rapidly attenuate from source, such that most screened construction works will have little effect on birds beyond a distance of c.50m; and
- The sensitivity to disturbance varies between species, individuals, throughout the residency period and depending on the degree to which birds have become habituated to disturbance.

6.5 HRA Stage 1 - Screening Step 4: Assessing Significance of Effects on European Sites

In order to determine whether the project is likely to have a significant effect on the Blackwater Estuary and Dengie SPA/Ramsar sites, the likely impacts in respect of each of the conservation objectives, based on the evidence provided in **Sections 6.3 and 6.4**, are considered below in relation to qualifying features utilising the foreshore and intertidal habitats (waders, brent geese and terns) and those using the terrestrial FLL (waders, brent geese and breeding pochard):

The extent and distribution of the habitats of the qualifying features.

The proposed works are located away from the SPA boundaries, there are no impact pathways and therefore there will be is no LSE on the extent and distribution of habitats within the SPA with the exception of potential LSE associated with pollution:

The structure and function of the habitats of the qualifying features.

The proposed works are located away from the SPA boundaries, there are no impact pathways and therefore there will be is no LSE on the extent and distribution of habitats within the SPA with the exception of potential LSE associated with pollution:

The supporting processes on which the habitats of the qualifying features rely.

The proposed works are located away from the SPA boundaries, there are no impact pathways and therefore there will be is no LSE on the extent and distribution of habitats within the SPA with the exception of potential LSE associated with pollution:

The population of each of the qualifying features.

There is potential for LSE due to noise disturbance to the Dengie SPA/Ramsar qualifying features utilising the foreshore and intertidal habitats and noise and visual disturbance to Blackwater Estuary SPA/Ramsar and Dengie SPA/Ramsar features utilising the terrestrial FLL.

The distribution of the qualifying features within the site'.

There is potential for LSE due to noise disturbance to the Dengie SPA/Ramsar qualifying features utilising the foreshore and intertidal habitats and noise and visual disturbance to Blackwater Estuary SPA/Ramsar and Dengie SPA/Ramsar features utilising the terrestrial FLL.

6.6 HRA Stage 2: Section to Inform an Appropriate Assessment

The Screening (Stage 1) has indicated that, in the absence of mitigation, the following European sites and their qualifying features have potential for LSE due to noise disturbance to the SPA qualifying features utilising the foreshore and intertidal habitats and noise and visual disturbance to those features utilising the terrestrial FLL:

Dengie (Mid-Essex Coast Phase 1) SPA

- Dark-bellied brent goose (wintering) – 2,308 individuals;
- Knot (wintering) – 8,393 individuals;
- Hen harrier (wintering) – 1-19 individuals;
- Grey plover (wintering) – 2,411 individuals; and

- Waterbird assemblage – 31,454 individuals (*5-year mean of 51,876 overwintering individuals [Frost et al., 2017]).*

Blackwater Estuary (Mid-Essex Coast Phase 4) SPA

- Dark-bellied brent goose (wintering) – 15,392 individuals;
- Pochard (breeding) – 1-15 pairs;
- Hen harrier (wintering) – 1-19 individuals;
- Ringed plover (breeding) – 1-15 pairs;
- Ringed plover (wintering) - 347 individuals;
- Grey plover (non-breeding) – 5,090 individuals;
- Dunlin (non-breeding) – 33,267 individuals;
- Black-tailed godwit (non-breeding) – 1,280 individuals;
- Little tern (breeding) – 21 pairs; and
- Waterbird assemblage - 109,964 individuals (*5-year mean of 78,380 overwintering individuals [Frost et al., 2017]*).

Dengie (Mid-Essex Coast Phase 1) Ramsar

Ramsar Criterion 5 – Assemblages of international importance

- 43,828 waterfowl (5 year peak mean 1998/99 – 2002/03).

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

- Dark-bellied brent goose – 2,000 individuals (1998/99-2002/03);
- Grey plover – 4,582 individuals (1998/99-2002/03);
- Knot (wintering) – 14,528 individuals (1998/99-2002/03).

Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar

Ramsar Criterion 5 – Assemblages of international importance

- 105061 waterfowl (5 year peak mean 1998/99 – 2002/03).

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

- Dark-bellied brent goose – 8,689 individuals (1998/99-2002/03);
- Grey plover – 4,215 individuals (1998/99-2002/03);
- Dunlin – 27,655 individuals (1998/99-2002/03);
- Black-tailed godwit – 2,174 individuals (1998/9-2002/03).

Assessment of LSE on Site Integrity

Pollution

The ground investigations will employ good practice in pollution prevention, complying with the Environment Agency's Pollution Prevention Guidelines, or similar good practice, to prevent the pollution of controlled water (groundwater and surface water) to prevent pollution incidents and to safeguard legally protected species. Any potentially polluting materials would be stored in appropriate containers and kept in a secure location. Standard pollution prevention measures, following good practice guidelines, would also be undertaken to prevent sediment mobilisation and ingress to ditches, irrigation reservoirs and other waterbodies. See Phase 1 Contaminated Land Desk Study for further details.

Therefore, adoption of the proposed mitigation measures would ensure any potential effects are minimised and that no adverse effects would occur on the conservation objectives for any qualifying feature of Blackwater Estuary SPA/Ramsar and Dengie SPA/Ramsar sites and there would be no adverse effect on the integrity of any European site.

Furthermore, additional controls surrounding water abstraction and water discharge are integral to the engineering works and are built into the H1 assessment (Atkins, 2020) (see Section 6.4).

Disturbance from noise on qualifying features utilising foreshore and intertidal habitats

As detailed within the Bradwell B Noise Appraisal report (Wood PLC, 2019), noise modelling has been completed based on L_{Aeq} (effectively a measurement of average noise levels) and L_{Amax} (effectively maximum noise levels), with noise levels calculated from the loudest 3 No. borehole locations to 5 No. receptor locations on the foreshore/landward edge of the intertidal Dengie SPA/Ramsar habitats (Receptors 1 to 5, **Figure 7**) which is precautionary. It has been assumed for the purpose of the Screening assessment, that each receptor location has a position 10m from the toe of the sea wall on the seaward side and that the sea wall is uniformly approximately 2.5m high. The receptor locations have also been chosen to reflect the highest noise levels from the GI works and noise levels were calculated for each receptor location based on the assumption that all 3 No boreholes are worked simultaneously for the L_{Aeq} and individually for the L_{Amax}.

As detailed within section 6.4, discernible noise disturbance to birds is likely to begin to occur above the 70dB L_{Amax} noise parameter. The noise calculations, which are themselves precautionary, predict that the ground investigations could potentially cause the 70dB L_{Amax} threshold to be exceeded at the SPA boundary, for SPA noise receptors 2, 4 and 5 (73, 70 and 75 respectively. To mitigate these potential effects associated with the GI works at these locations, the SPA would be shielded from noise disturbance by using noise attenuating barriers (e.g. comprising hay bales) deployed around works or by other appropriate means to be agreed with the works Ecologist/Ornithologist, including changes to working practices and limiting the number of exploratory locations being drilled nearby.

Adoption of the proposed mitigation measures would ensure any potential effects are minimised on any qualifying features utilising foreshore and intertidal habitats and that therefore no adverse effects would occur on the conservation objectives and there would be no effect on the site integrity of the Dengie SPA/Ramsar.

Disturbance from noise/visual stimuli on qualifying features utilising terrestrial FLL

Borrow Dyke noise modelling indicates that for the loudest activities to the Borrow Dyke (contiguous to the SSSI boundary), assuming three GI locations are active concurrently, then the L_{Aeq} is 53 Db at receptor 5, between 60 – 63 dB (receptors 1, 3, 4) and 69dB at Receptor 2. For any breeding pochard located close to these receptor locations, such operations could potentially adversely impact on the breeding success and productivity of the nests. The majority of the GI locations are greater than 300m from the Borrow Dyke (only

15 boreholes, 2 trail pits and 2 cone penetration tests are within 300m) beyond this distance it is considered unlikely that noise impacts would be significant.

Mitigation measures are included for those works within 300m of the Borrow Dyke during the pochard breeding season (April to July inclusive), and would include shielding the Borrow Dyke from noise (and visual) disturbance by using noise attenuating barriers (e.g. comprising hay bales) deployed around works or by other appropriate means to be agreed with the works Ecologist/Ornithologist, including changes to working practices and limiting the number of exploratory locations being drilled nearby. These measures would ensure that these effects are minimised and that no adverse effects on the Blackwater Estuary SPA qualifying feature breeding pochard would occur.

For dark-bellied brent geese, eelgrass remains a preferred food, especially in early winter, with marine algae and saltmarsh plants also important (Brown & Grice 2005). Saltmarsh grasses and succulents can also be important in late winter and spring when the preferred eelgrass and algae are depleted. Inland feeding habitats around the Dengie Estuary are known to be winter cereals and oilseed rape, with use of winter cereals in the autumn, and a combination of winter cereals (predominantly) and rape fields in the core winter and spring (Rowell & Robinson, 2004).

There is limited permanent grassland habitat within the Site, which is primarily arable, and winter field types are shown in **Figure 9** and described in Section 6.3 in relation to key species habitat utilisation. During the winter months much of this will be ploughed, with no winter stubbles remaining. Some planting of winter sown wheat crops would be undertaken. However, given the small area of potential foraging habitat (c.98 ha in 2017/18– most of which is oilseed rape which is less favoured than winter cereals by brent geese), the wide availability of other such suboptimal habitat and availability of alternative areas of more suitable habitats to the south, particularly around Glebe Farm / Sandbeach at Bradwell Marshes, it is likely that numbers of SPA qualifying bird species utilising the site for foraging will be limited and any potential short term displacement of low numbers of SPA qualifying birds would not therefore give rise to adverse effects on Blackwater Estuary SPA/Ramsar and Dengie SPA/Ramsar qualifying features.

On particularly high tides, especially spring tides, the habitats within the SPA/Ramsar boundaries may become inundated, temporarily displacing birds inland until the tide recedes. On such occasion's birds from the Bradwell Spit roost may move onto the adjacent seawall grassland, or potentially spill over onto the arable land within the Site. Therefore, as a further precaution, during spring high tides the works ornithologist will monitor the development of any roosts within a 500m buffer of the Site boundary to determine their location(s) species composition and abundance. If as a result of tidal inundation, a significant roost should spill over onto the seawall or onto the Site, any works being undertaken at GI locations within a 500m buffer of the roost location will cease until such time as the roost disbands. A significant roost is defined as any aggregation where a qualifying species is present in numbers greater than 1% of its SPA designated population. The length of each monitoring period will be determined by consulting tide tables relevant for the area to determine peak periods of inundation for each spring tide cycle.

Adoption of the proposed mitigation measures would ensure any potential effects are minimised on any qualifying features utilising terrestrial FLL and therefore no adverse effects would occur on the conservation objectives and there would be no effect on the integrity of the Blackwater Estuary SPA/Ramsar and Dengie SPA/Ramsar sites.

6.7 HRA In-combination Assessment

Effects on European sites may result from a proposed development alone and/or in combination with other plans or projects; these potential cumulative effects are described as 'in-combination effects' in the Habitats Regulations.

The identification of other plans and projects to include within the in-combination assessment follows the same methodology as that for the identification of European sites relevant to the specific subject under

consideration. Key to the inclusion of other plans and projects within the assessment are the spatial and temporal overlaps that may occur due to the scale of potential changes (e.g. overlaps in the zones of disturbance caused by simultaneous construction activity) or the areas over which potential receptors may travel (e.g. a bird may pass through several areas where development is proposed when moving between roosting and feeding grounds).

Within the search area the types of projects included within the assessment of in-combination effects are:

- Existing completed projects;
- Approved but uncompleted projects;
- Ongoing activities;
- Plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
- Plans and projects which are reasonably foreseeable, i.e. those in screening but for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Following the identification of plans and projects within the search areas, an initial screening is then undertaken to filter out minor proposals (e.g. extensions to existing dwellings, minor street works, changes of use etc.) and those with no potential to overlap with a project due to differing timescales. Adverse effects on a European Site's integrity may not occur when considering this application alone, but in-combination with other developments, effects may be significant. The context in which in-combination effects are considered depends upon the ecology of the species or habitat in question.

Specific guidance has also been provided for assessment of cumulative impacts of onshore wind farms on bird populations (SNH, 2018). Projects to be included in such an assessment must include existing projects as well as those consented but not yet built.

In order to undertake a cumulative impact assessment, it is necessary to define:

- The ornithological features affected by the Proposed Development that may be subject to significant cumulative effects in combination with other projects; and
- The relevant projects for which cumulative effects must be considered.

Methodology

To inform the in-combination effects assessment, a search of Local Planning Authorities (LPA) websites, the Marine Management Organisation (MMO) website and the National Infrastructure Planning (Planning Inspectorate - PINS) website was conducted by Wood Environment and Infrastructure Solutions (E&IS). The aim of the search was to identify planning applications or marine licence applications that would result in developments that could have potential combined effects with the GI.

The following criteria were established to screen applications, ensuring only developments that may result in combined effects are considered further:

- Include planning or marine licence applications for developments:
  - Located within 10km of the onshore Bradwell B site red line boundary;
  - AND that have been submitted to the LPA/MMO/PINS in the past five years (between the years 20/01/2015 – 20/01/2020);
  - AND include a Habitats Regulation Assessment (HRA) in the application documentation;

- AND where the HRA considers the same European Sites being assessed in the onshore GI HRA.

The following online planning application databases were searched on the 21st January 2020 for applications meeting the above criteria:

- Maldon District Council: https://publicaccess.maldon.gov.uk/online-applications/
- Colchester Borough Council: http://datashare.colchester.gov.uk:8010/connect/analyst/mobile/#/main?mapcfg=Planning
- Tendring District Council: https://idox.tendringdc.gov.uk/online-applications/search.do?action=simple&searchType=Application
- Marine Management Organisation: http://defra.maps.arcgis.com/apps/webappviewer/index.html?id=3dc94e81a22e41a6ace0bd327af4f346
- National Infrastructure Planning: https://infrastructure.planninginspectorate.gov.uk/projects/

On the Maldon and Tendring District Council websites, the advanced search function was employed to screen applications by date and ward. The following wards were searched:

- Maldon District Council: Tillingham, Southminster, Mayland and Heybridge East;
- Tendring Council: St Osyth, Brightlingsea.

Colchester Borough Council's interactive map was used to search for planning applications.

The MMO's Marine Information System interactive map was employed to identify marine licence applications within the search area. The applications were then screened by date and were checked to see if they contained a relevant HRA.

The National Infrastructure Planning website's all projects map was searched to identify any projects within the search area.

Having conducted the searches outlined above, only one planning application was identified as meeting the inclusion criteria: 17/01128/FUL within the Maldon District Council administrative area. This application is for the initial GI undertaken at the Bradwell B site in 2017.

The MMO application search revealed 14 applications meeting the inclusion criteria. These applications all related to activities in the marine environment.

In addition to the above, it is also known that Offshore Ground Investigations are proposed to be undertaken in 2020 to inform the design of the Bradwell B nuclear power station. An application has yet to be submitted for these works.

Current and future applications have been screened for their potential to result in in-combination effects with the onshore GI. The only plan or project with potential for in-combination effects screened in for further consideration is the Bradwell Offshore Gi (adjacent to the proposed Bradwell onshore geotechnical investigations).

The Bradwell Offshore Ground Investigations Marine Licence Supporting Environmental Information (Cefas 2020) details that works are anticipated to begin in spring or early summer 2020 and take approximately 6 months to complete (end of September). There is no temporal overlap between the offshore GI works and the presence of key overwintering qualifying features, as these offshore works would not coincide with the presence (between October and March) of the overwintering qualifying features. Therefore, there is no pathway for any in-combination effects on the overwintering qualifying features of Blackwater Estuary

SPA/Ramsar and Dengie SPA/Ramsar sites potentially utilising the FLL within the red line planning application boundary

The Bradwell offshore GI HRA (Cefas 2020) identified potential LSE for breeding and passage qualifying features of Blackwater Estuary SPA/Ramsar (little tern and ringed plover) however neither of these species would utilise the terrestrial FLL. Little tern forage solely in the marine environment (near and offshore) and ringed plover forage in the intertidal and nest along the shoreline of the estuary, therefore there are no potential LSE either alone or in-combination for these qualifying features associated with the terrestrial onshore GI.

7. Conclusion

7.1 Effects on European Sites

No intrusive ground investigations are proposed within any European Site.

The conclusions of HRA stage 2 (appropriate assessment) are that on implementation of the precautionary mitigation measure summarised in Section 5.4, the proposed GI and load testing are not predicted to result in adverse effects on the Dengie (Mid Essex Coast Phase 1) SPA/Ramsar or the Blackwater Estuary (Mid Essex Coast Phase 4) SPA/Ramsar.

No in-combination effects were identified on Dengie (Mid Essex Coast Phase 1) SPA/Ramsar or the Blackwater Estuary (Mid Essex Coast Phase 4) SPA/Ramsar or any other European sites (Section 6.7).

7.2 Effects on Other Ecological Receptors

As the GI will be predominantly within arable farmland (which is suboptimal habitat for the other ecological receptors) and will result in localised ground disturbance, the recommended working practices summarised in Section 4 are likely to ensure that the risk of adverse effects on sensitive ecological receptors and any risk of failure to comply with nature conservation legislation is minimal. In respect of the load testing, although the area of ground disturbance will be more extensive and for an extended duration, it will be predominantly limited to arable agricultural land. Therefore, as for the GI, the recommended working practices and control measures, summarised in Section 5 are likely to ensure that the risk of adverse effects on sensitive ecological receptors and any risk of failure to comply with nature conservation legislation is minimal.

Bibliography

Atkins (2020). Bradwell B Nuclear Power Plant - Load Test Pit - Discharge Consent Application – Surface water pollution risk assessment.

Cefas (2020). Bradwell Offshore Ground Investigations Marine Licence Supporting Environmental Information. BTR007.

Chartered Institute of Ecology and Environmental Management (CIEEM), (2017). Guidelines for Preliminary Ecological Appraisal.

Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition. The Bat Conservation Trust, London.

Cooke, A.S. (1980). Observation on how close certain passerine species will tolerate an approaching human in rural and suburban areas. Biological Conservation 18, 85 88.

Cutts, N., Phelps, A. & Burdon, D. (2009). Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull.

Cutts, N., Phelps, A. & Burdon, D. (2009). Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull.

Cutts, N., Hemingway, K. & Spencer, J. (2013). Waterbirds Disturbance Mitigation Toolkit: Informing Estuarine Planning & Construction Projects. Institute of Estuarine and Coastal Studies, University of Hull.

Devereux, C. L., Denny, M. J. H. and Whittingham, M. J. (2008). 'Minimal Effects of Wind Turbines on the Distribution of Wintering Farmland Birds' In: Journal of Applied Ecology, 45, 1689-1694.

Diaz, M., Parra, A. and Gallardo, C. (2011). 'Serins Respond to Anthropogenic Noise by Increasing Vocal Activity' In: Behavioural Ecology, 332-336.

Drewitt, A.L. & Langston, R.H.W. (2006). Assessing the impacts of wind farms on birds. Ibis, 148, 29-42.

English Nature. (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.

European Court of Justice (ECJ) on 7 Sept 2004 case C-127/02 Wadenzee cockle fishing.

Francis C. D., Ortega C. P., Cruz, A. (2009). 'Noise Pollution Changes Avian Communities and Species Interactions' In: Current Biology, 19, 1415–1419.

Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hall, C., Hearn, R.D., Stroud, D.A., Wotton, S.R. & Balmer, D.E. 2017. Waterbirds in the UK 2015/16: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.

Habib, L., Bayne, E.M. and Boutin, S. (2007). 'Chronic Industrial Noise Affects Pairing Success and Age Structure of Ovenbirds, Seiurus aurocapilla' In: Journal of Applied Ecology, 44, 176-184.

Hilton, G. M., Ruxton, G. D. and Cresswell, W. (1999). 'Choice of Foraging Area with Respect to Predation Risk in Redshanks: The Effects of Weather and Predator Activity' In: Oikos, 87, 295-302.

Hockin, D. Ounsted, M. Gorman, M. Hill, D. Keller, V. and Barker, M.A. (1992). Examination of the Effects of Disturbance on Birds with Reference to its Importance in Ecological Assessments. Journal of Environmental Management 36, 253-286.

Ikuta, L.A. Blumstein, D.T. (2003). Do fences protect birds from human disturbance? Biological Conservation 112, 447-452.

Institute of Environmental Assessment (1995). Guidelines for Baseline Ecological Assessment. E and F Spon.

JNCC (2010). Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit. ISBN 0 86139 636 7.

JNCC, January 2016. Natura 2000 Standard Data Form. Blackwater Estuary (Mid Essex Coast Phase 4).

JNCC, January 2016. Natura 2000 Standard Data Form. Dengie (Mid Essex Coast Phase 1).

Keller, V. (1989). Variations in the response of great crested grebes *Podiceps cristatus* to human disturbance a sign of adaption? Biological Conservation 49. 31 45.

Kiel, S., Lowther, S. & Gash, M. (2011). Review of Literature on Disturbance to Waterfowl by Wind Farms.

Krams, I. (2001). 'Communication in Crested Tits and the Risk of Predation' In: Animal Behaviour, 61, 1065-1068.

Langston, R.H.W. & Pullan, J.D. (2003). Windfarms and birds: an analysis of the effects of windfarms on birds, and guidance on environmental assessment criteria and site selection issues. Report T-PVS/inf (2003) 12, by BirdLife International to the Council of Europe, Bern Convention on the Conservation of European Wildlife and Natural Habitats. RSPB/BirdLife in the UK.

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001). Great Crested Newt Conservation Handbook. Froglife, Halesworth.

Lewis, L.J., Davenport, J. & Kelly, T.C. (2003). A study of the impact of a pipeline construction on estuarine benthic invertebrate communities. Part 2. Recolonization by benthic invertebrates after 1 year and response of estuarine birds. Estuarine, Coastal and Shelf Science, 57, 201-208.

Leyrer, J., Spaans, B., Camara, M., & Piersma, T. (2006). Small home ranges and high site fidelity in red knots (Calidris c. canutus) wintering on the Banc d'Arguin, Mauritania. Journal of Ornithology Volume 147, 376-384.

Marsden, S.J. (2000). Impact of Disturbance on Waterfowl Wintering in a UK Dockland Redevelopment Area. Environmental Management 26, 207-213.

Natural England, June 2014 (Version 2). European Site Conservation Objectives for Dengie (Mid Essex Coast Phase 1) Special Protection Area Site Code: UK9009242.

Natural England, June 2014 (Version 2). European Site Conservation Objectives for Blackwater Estuary (Mid Essex Coast Phase 4) Special Protection Area Site Code: UK9009245.

Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal, 10(4), 143-155.

Owens, N.W. (1977). Responses of wintering brent geese to human disturbance. Wildfowl 28, 5-14.

Rienjen, R. and Foppen, R. (1994). The effects of car traffic on breeding bird populations in woodland: Evidence of reduced habitat quality for willow warblers (Phylloscopus trochilus) breeding close to a highway. Journal of Applied Ecology, 31: 85-94.

Reijnen, R., Foppen, R., Terbraak, C. and Thissen, J. (1995). 'The Effects of Car Traffic on Breeding Bird Populations in Woodland. 3. Reduction of Density in Relation to the Proximity of Main Roads' In: Journal of Applied Ecology, 32, 187-202.

Reijnen, R., Foppen, R. & Meeuwsen, H. (1996). 'The Effects of Traffic on the Density of Breeding Birds in Dutch Agricultural Landscapes' In: Biological Conservation, 75, 255-260.

Rowell, H.E & Robinson, J.A. (2004). Feeding areas for Dark-bellied Brent Geese *Branta bernicla bernicla* around Special Protection Areas (SPAs) in the UK. The Wildfowl & Wetlands Trust, Slimbridge.

Slabbekoorn, H. and Ripmeester, E. A. P. (2008). 'Birdsong and Anthropogenic Noise: Implications and Applications for Conservation' In: Molecular Ecology, 17, 72-83.

SNH (2018). Assessing the cumulative impacts of onshore wind farms on birds: guidance.

Stone, E. (2000). Seperating the noise from the noise: a finding in support of the "niche hypothesis" that birds are influenced by human induced noise in natural habitats. Athrozoos 13, 225-231.

Titus, J.R. and Van Duff, L.W. (1981). Response of the common loon to recreational pressure in the boundary waters Conoe Area, north eastern Minnesota. Wildlife Monographs 79, 3 59.

Tuite, C.H. Hanson, P.R. and Owen, M. (1984). Some ecological factors affecting winter wildfowl distribution on inland waters in England and Wales, and the influence of water-based recreation. Journal of Applied Ecology 21, 41 62.

van der Zande, A. N., ter Keurs, W. J. and van der Weijden, W. J. (1980). 'The Impact of Roads on the Densities of Four Bird Species in an Open Field Habitat - Evidence of a Long-Distance Effect' In: Biological Conservation, 18, 299-321.

Ward, RM. (2004). *Dark-bellied Brent Goose* Branta bernicla bernicla *in Britain 1960/61 – 1999/2000*. Waterbird Review Series, The Wildfowl & Wetlands Trust/Joint Nature Conservation Committee, Slimbridge.

Wood (2019). Bradwell B Preliminary Ground Investigation. Noise Appraisal. Report for BRB GenCo.

Figures

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N

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Primary access route
- Secondary access route

0 200 400 600 800 1,000 1,200 1,400 m

Scale at A3: 1:25,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 1
Site location plan

February 2020

wood.

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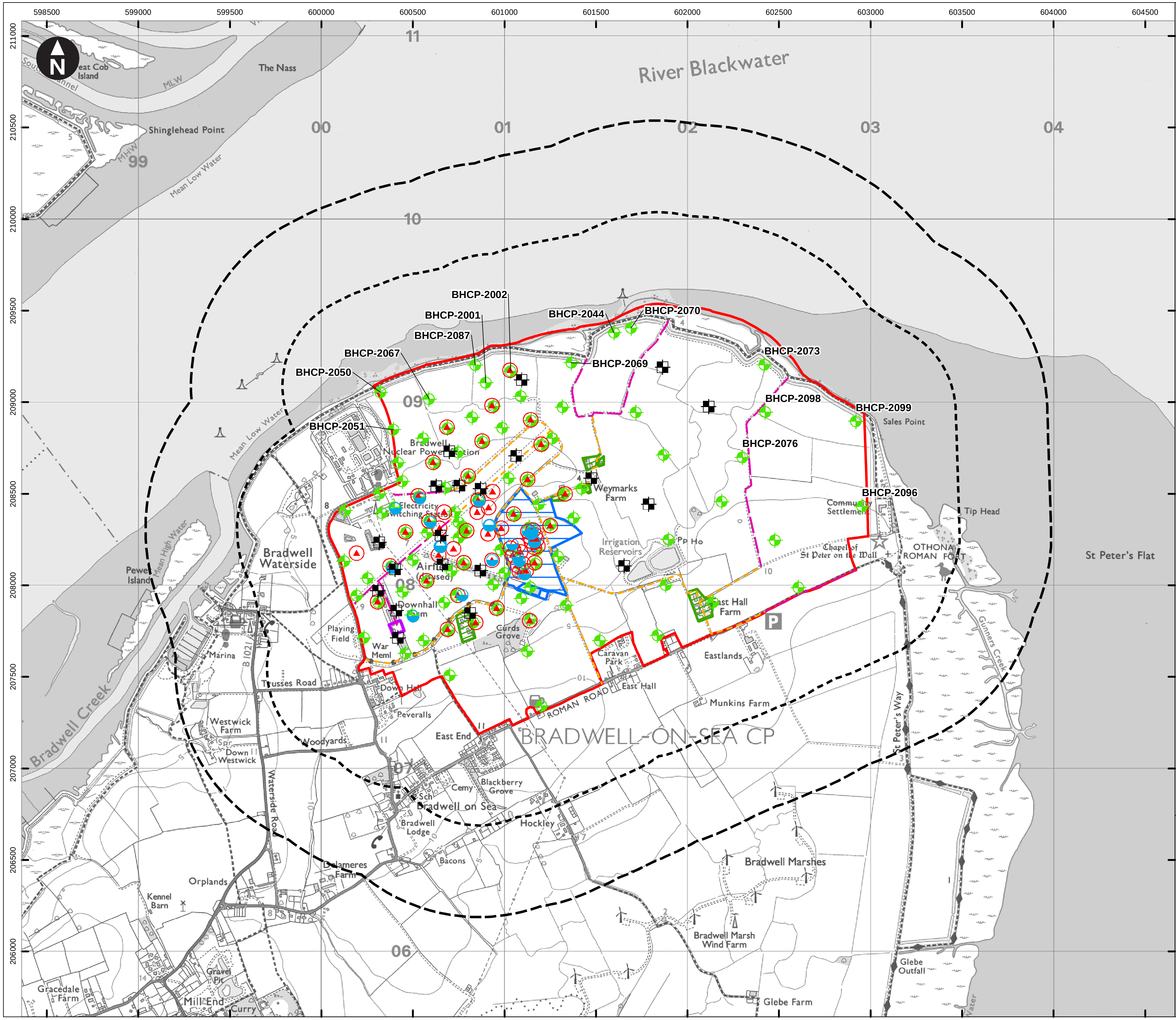

River Blackwater
The Nass
Shinglehead Point
Mean Low Water
Bradwell Waterside
Bradwell Creek
Pewet Island
Bradwell Nuclear Power Station
Electricity Switching Station
Airfield (disused)
Downhall Farm
Weymarks Farm
Irrigation Reservoirs
Community Settlement
Chapel of St Peter on the Wall
OTHONA ROMAN FORT
Sales Point
Tip Head
St Peter's Flat
East Hall Farm
Eastlands
Caravan Park
East Hall
Munkins Farm
ROMAN ROAD
BRADWELL-ON-SEA CP
Playing Field
War Meml
Curds Grove
Trusses Road
Down Hall
Peveralls
East End
Westwick Farm
Down Westwick
Woodyards
Marina
Waterside Road
Blackberry Grove
Bradwell on Sea
Bradwell Lodge
Hockley
Bacons
Delameres Farm
Orplands
Kennel Barn
Bradwell Marshes
Bradwell Marsh Wind Farm
St Peter's Way
Gunners Creek
Glebe Outfall
Glebe Farm
Gracedale Farm
Mill End
Curry
Gravel Pit
BHCP-2002
BHCP-2001
BHCP-2087
BHCP-2067
BHCP-2050
BHCP-2051
BHCP-2044
BHCP-2070
BHCP-2069
BHCP-2073
BHCP-2098
BHCP-2076
BHCP-2099
BHCP-2096

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Primary access route
- Secondary access route
- 500m buffer to the Application Site
- 1km search area
- Borehole - rotary / sonic drilling
- Cable percussion borehole
- Cone penetration test
- Trial pit

0 200 400 600 800 1,000 1,200 m

Scale at A3: 1:20,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 2
Location of ground investigation works

February 2020

wood.

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N

River Blackwater

Essex Estuaries SAC

Mean Low Water

Dengie NNR

Dengie (Mid-Essex Coast Phase 1) SPA

Dengie (Mid-Essex Coast Phase 1) Ramsar

Dengie SSSI

Blackwater Estuary SSSI

Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar

Blackwater Estuary (Mid-Essex Coast Phase 4) SPA

Sandbeach Meadows SSSI

BRADWELL-ON-SEA CP

Bradwell Nuclear Power Station

Electricity Switching Station

Weymarks Farm

Airfield (disused)

Downhall Farm

Curds Grove

East Hall Farm

Eastlands

Caravan Park

Irrigation Reservoirs

Pp Ho

Chapel of St Peter on the Wall

Community Settlement

Munkins Farm

ROMAN ROAD

East Hall

St Peter's Way

Bradwell Waterside

Marina

B 1021

Trusses Road

Down Hall

Peveralls

Playing Field

War Meml

Westwick Farm

Down Westwick

Woodyards

East End

Watersside Road

Cemy

Sch

Bradwell on Sea

Blackberry Grove

Bradwell Lodge

Hockley

Bacons

Delameres Farm

Orplands

Kennel Barn

Bradwell Marshes

Bradwell Marsh Wind Farm

Glebe Farm

Gracedale Farm

Gravel Pit

Mill End

Curry

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Primary access route
- Secondary access route
- 1km search area
- Special Protection Area
- Special Area of Conservation
- Site of Special Scientific Interest
- Ramsar Sites
- National Nature Reserve

0 200 400 600 800 1,000 1,200 m

Scale at A3: 1:20,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 3
Designated sites within the study area

February 2020

wood.

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River Blackwater

The Nass

Shinglehead Point

Mean Low Water

MLW

MHW

Bradwell Nuclear Power Station

Electricity Switching Station

Weymarks Farm

Airfield (disused)

Downhall Farm

Playing Field

War Meml

Curds Grove

Irrigation Reservoirs

PP Ho

East Hall Farm

Caravan Park

Eastlands

ROMAN ROAD

East Hall

Munkins Farm

Sales Point

Community Settlement

Tip Head

Chapel of St Peter on the Wall

OTHONA ROMAN FORT

St Peter's Flat

St Peter's Way

Gunners Creek

Bradwell Waterside

Bradwell Creek

Pewet Island

Mean High Water

Marina

B 1021

Trusses Road

Down Hall

Peveralls

Westwick Farm

Down Westwick

Woodyards

East End

BRADWELL-ON-SEA CP

Waterside Road

Cemy

Sch

Bradwell on Sea

Blackberry Grove

Bradwell Lodge

Hockley

Bacons

Delameres Farm

Orplands

Kennel Barn

Bradwell Marshes

Bradwell Marsh Wind Farm

Glebe Outfall

Glebe Farm

Gracedale Farm

Gravel Pit

Mill End

Curry

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Primary access route
- Secondary access route
- 1km search area

Mammal

- Bat
- Brown hare
- Brown long-eared bat
- Common pipistrelle
- Common porpoise
- Soprano pipistrelle
- Water vole

Flora

- Borrer's saltmarsh-grass
- Divided sedge
- Golden samphire
- Perennial glasswort
- Sea barley
- Sea clover
- Shrubby sea-blite
- Slender hare's-ear

Invertebrate

- Latticed heath moth
- White-letter hairstreak butterfly

Reptile

- (A) Adder

Birds

- Cuckoo
- Hen harrier
- Kestrel

Fish

- (E) European eel

0 200 400 600 800 1,000 1,200 m

Scale at A3: 1:20,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 4
Records of legally protected and priority species on and within the vicinity of the site

February 2020

wood.

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600000
600500
601000
209500
209000
208500

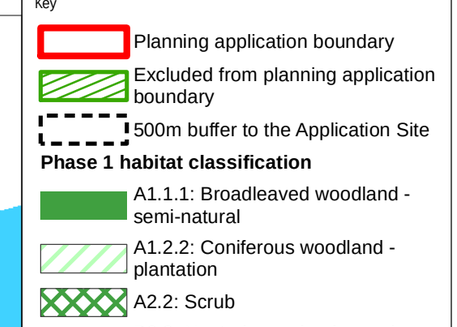
N

Key

- Planning application boundary
- Excluded from planning application boundary
- 500m buffer to the Application Site

Phase 1 habitat classification

- A1.1.1: Broadleaved woodland - semi-natural
- A1.2.2: Coniferous woodland - plantation
- A2.2: Scrub
- B2.2: Neutral grassland - semi-improved
- G1: Standing water
- H1.1: Intertidal - mud/sand
- H1.2: Shingles/cobbles
- H2: Saltmarsh
- H8.4: Coastal grassland
- J1.1: Arable
- J1.2: Amenity grassland
- J2.1: Intact hedge
- J2.3: Hedge and trees
- Hardstanding
- J3.6 Buildings



0 50 100 150 200 250 300 350 m

Scale at A3: 1:6,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 5a
Phase 1 habitats 2019

December 2019

wood.

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601500 602000 602500 603000

209500 209000 208500

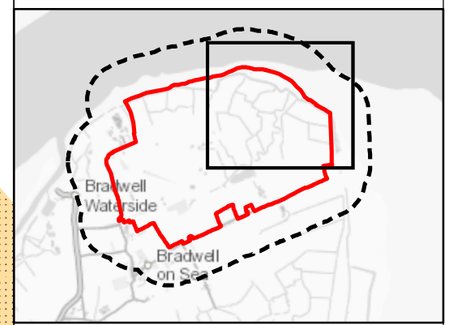
N

Key

- Planning application boundary
- Excluded from planning application boundary
- 500m buffer to the Application Site

Phase 1 habitat classification

- A1.1.1: Broadleaved woodland - semi-natural
- A1.2.2: Coniferous woodland - plantation
- A2.2: Scrub
- B2.2: Neutral grassland - semi-improved
- G1: Standing water
- H1.1: Intertidal - mud/sand
- H1.2: Shingles/cobbles
- H2: Saltmarsh
- H8.4: Coastal grassland
- J1.1: Arable
- J1.2: Amenity grassland
- J2.1: Intact hedge
- J2.3: Hedge and trees
- Hardstanding
- J3.6 Buildings



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Scale at A3: 1:6,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 5b
Phase 1 habitats 2019

December 2019

wood.

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602000
602500
603000
603500
209000
208500
208000

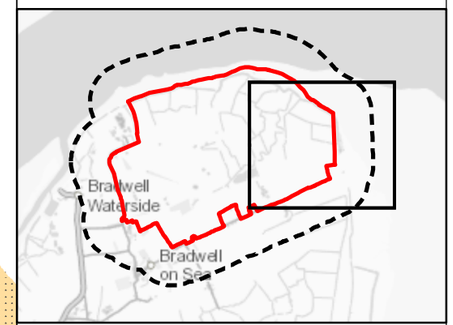
N

Key

- Planning application boundary
- Excluded from planning application boundary
- 500m buffer to the Application Site

Phase 1 habitat classification

- A1.1.1: Broadleaved woodland - semi-natural
- A1.2.2: Coniferous woodland - plantation
- A2.2: Scrub
- B2.2: Neutral grassland - semi-improved
- G1: Standing water
- H1.1: Intertidal - mud/sand
- H1.2: Shingles/cobbles
- H2: Saltmarsh
- H8.4: Coastal grassland
- J1.1: Arable
- J1.2: Amenity grassland
- J2.1: Intact hedge
- J2.3: Hedge and trees
- Hardstanding
- J3.6 Buildings



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Scale at A3: 1:6,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 5c
Phase 1 habitats 2019

December 2019

wood.

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600000
600500
601000
208000
207500
207000

N

Key

Planning application boundary

Excluded from planning application boundary

500m buffer to the Application Site

Phase 1 habitat classification

A1.1.1: Broadleaved woodland - semi-natural

A1.2.2: Coniferous woodland - plantation

A2.2: Scrub

B2.2: Neutral grassland - semi-improved

G1: Standing water

H1.1: Intertidal - mud/sand

H1.2: Shingles/cobbles

H2: Saltmarsh

H8.4: Coastal grassland

J1.1: Arable

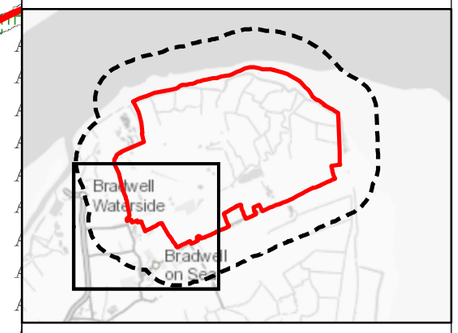
J1.2: Amenity grassland

J2.1: Intact hedge

J2.3: Hedge and trees

Hardstanding

J3.6 Buildings



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Scale at A3: 1:6,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 5d
Phase 1 habitats 2019

December 2019

wood.

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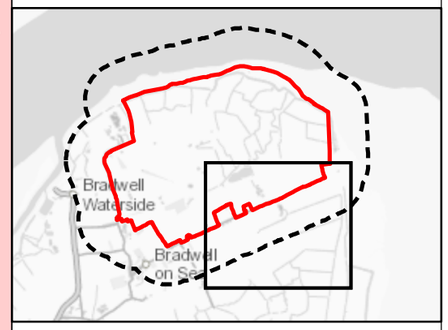
601500
602000
602500
603000
208000
207500
207000

Key

- Planning application boundary
- Excluded from planning application boundary
- 500m buffer to the Application Site

Phase 1 habitat classification

- A1.1.1: Broadleaved woodland - semi-natural
- A1.2.2: Coniferous woodland - plantation
- A2.2: Scrub
- B2.2: Neutral grassland - semi-improved
- G1: Standing water
- H1.1: Intertidal - mud/sand
- H1.2: Shingles/cobbles
- H2: Saltmarsh
- H8.4: Coastal grassland
- J1.1: Arable
- J1.2: Amenity grassland
- J2.1: Intact hedge
- J2.3: Hedge and trees
- Hardstanding
- J3.6 Buildings



0 50 100 150 200 250 300 350 m

Scale at A3: 1:6,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 5e
Phase 1 habitats 2019

December 2019

wood.

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600000
600500
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601500
209500
209000
208500

BHCP-2050
BHCP-2051
BHCP-2052
BHCP-2053
BHCP-2085
BHCP-2067
BHCP-2087
BHCP-2069
BHCP-2001
BHCP-2007
BHCP-2012
BHCP-2005
BHCP-2068
BHCP-2071
BHCP-2003
BHCP-2009
BHCP-2008
BHCP-2055
BHCP-2074
BHCP-2026
BHCP-2025
BHCP-2020
BHCP-2014
BHR-4008
BHCP-2013
BHR-4005
BHCP-2056
BHCP-2057
BHCP-2019
BHCP-2018
BHCP-2081
BHCP-2080
BHCP-2079
BHCP-2058
BHCP-2077
BHCP-2032
BHCP-2047
BHCP-2024
BHCP-2026
BHCP-2011
BHCP-2010
BHCP-2016
BHCP-2015
BHCP-2021
BHCP-2054

BHCPT-3001
BHCPT-3002
BHCPT-3003
BHCPT-3004
BHCPT-3005
BHCPT-3006
BHCPT-3007
BHCPT-3008
BHCPT-3009
BHCPT-3011
BHCPT-3012
BHCPT-3013
BHCPT-3017
BHCPT-3025
BHCPT-3026
BHCPT-3027
BHCPT-3028
BHCPT-3029
BHCPT-3033
BHCPT-3034
BHCPT-3035
BHCPT-3036
BHCPT-3038
BHCPT-3043
BHCPT-3050

BHCP-2002
BHCP-2004
BHCP-2006
BHCP-2027

TP-1004
TP-1002
TP-1003
TP-1008
TP-1009
TP-1015
TP-1017

BHR-4024
BHR-4021
BHR-4023
BHR-4028
BHR-4012
BHR-4013
BHR-4019
BHR-4016
BHR-4015
BHR-4006

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Borehole - rotary / sonic drilling
- Cable percussion borehole
- Cone penetration test
- Trial pit
- Optimal / sensitive reptile habitat
- Potential great crested newt habitat
- Hedgerow (priority habitat) - minimum 10m buffer
- Swamp (priority habitat). Potential for otter, water vole, reptiles and great crested new habitat - minimum 10m buffer
- Ponds (priority habitat) - minimum 50m buffer
- Woodland (priority habitat). Potential for badger, great crested newt and reptile habitat - minimum 30m buffer
- Potential bat roost (built structures) - minimum 30m buffer
- Potential bat roost (trees) - minimum 30m buffer

Designated sites: No works planned. Noise and vibration sensitive.

- Special Protection Area
- Special Area of Conservation
- Ramsar Sites
- National Nature Reserve
- Site of Special Scientific Interest

0 50 100 150 200 250 300 m

Scale at A3: 1:5,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 6a
Ecological constraints map

February 2020

wood.

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601500
602000
602500
603000
209500
209000
208500
N
BHCP-2070
BHCP-2044
TP-1016
BHCP-2073
TP-1020
BHCP-2072
BHCP-2098
BHCP-2099
BHCP-2075
BHCP-2076
TP-1017
TP-1018
BHCP-2049
BHCP-2096

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Borehole - rotary / sonic drilling
- Cable percussion borehole
- Cone penetration test
- Trial pit
- Optimal / sensitive reptile habitat
- Potential great crested newt habitat
- Hedgerow (priority habitat) - minimum 10m buffer
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- Ponds (priority habitat) - minimum 50m buffer
- Woodland (priority habitat). Potential for badger, great crested newt and reptile habitat - minimum 30m buffer
- Potential bat roost (built structures) - minimum 30m buffer
- Potential bat roost (trees) - minimum 30m buffer

Designated sites: No works planned. Noise and vibration sensitive.

- Special Protection Area
- Special Area of Conservation
- Ramsar Sites
- National Nature Reserve
- Site of Special Scientific Interest

0 50 100 150 200 250 300 m

Scale at A3: 1:5,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 6b
Ecological constraints map

February 2020

wood.

G:\MODEL\PROJECTS\EA-210\41843 Bradwell EIA Support\GIS\Workspaces\41843-WOOD-0129_v4.mxd Originator: Simon.Green2

600000 600500 601000 601500

208000 207500

BHCP-2013 BHR-4005 BHCP-2056 BHCP-2057 BHCP-2019 BHCPT-3012 BHCPT-3035 BHCPT-3034 BHCPT-3026 BHCP-2024 BHCP-2047 BHR-4012 BHCP-2077 BHCP-2032 BHCPT-3043 BHCPT-3017 BHCPT-3050 BHCP-2018 BHCPT-3028 BHR-4006 BHCP-2081 BHCP-2080 BHR-4024 BHR-4021 BHR-4023 BHR-4028 BHCPT-3036 BHCPT-3033 BHR-4013 BHR-4016 BHR-4019 BHR-4015 BHCPT-3011 BHCP-2017 BHCP-2058 BHCP-2079 BHCPT-3025 BHCPT-3044 BHR-4014 BHCPT-3046 BHCPT-3040 BHCPT-3045 BHCPT-3047 BHR-4011 BHR-4017 TP-1001 TP-1007 BHCP-2082 BHCP-2083 BHCPT-3032 BHCPT-3039 BHR-4020 BHCPT-3052 BHCP-2048 BHCP-2031 BHCP-2046 BHCPT-3051 BHR-4025 BHR-4027 BHR-4026 BHR-4022 BHCPT-3031 BHCPT-3010 BHCPT-3030 BHR-4001 BHCPT-3037 BHCPT-3041 BHCPT-3042 BHCP-2037 BHR-4018 BHCP-2060 BHCP-2084 BHCPT-3016 BHR-4009 BHCPT-3019 BHCPT-3024 BHCP-2023 TP-1012 BHCP-2061 BHCPT-3054 BHCP-2045 BHCP-2036 BHR-4004 BHCP-2030 TP-1013 BHCP-2035 BHCPT-3048 TP-1006 BHCP-2022 BHCPT-3049 BHCPT-3053 BHCPT-3015 BHCP-2029 BHR-4010 BHCP-2065 BHCP-2042 TP-1005 BHCP-2028 BHCP-2059 BHCP-2064 BHCPT-3018 BHR-4002 BHCP-2041 BHCP-2086 BHCPT-3014 BHCP-2027 BHCP-2034 BHCPT-3021 TP-1010 BHCP-2040 BHCP-2033 BHR-4003 TP-1014 BHCP-2066 BHCP-2043 BHCPT-3022 BHCPT-3023 BHCPT-3020 BHCP-2039 BHCP-2062 TP-1011 BHCP-2038 BHCP-2091 BHCP-2063 BHCP-2089 BHCP-2088 BHCP-2090

TRUSSES ROAD WOODYARDS HIGH STREET JOCKEY LANE EAST END ROAD

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Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Borehole - rotary / sonic drilling
- Cable percussion borehole
- Cone penetration test
- Trial pit
- Optimal / sensitive reptile habitat
- Potential great crested newt habitat
- Hedgerow (priority habitat) - minimum 10m buffer
- Swamp (priority habitat). Potential for otter, water vole, reptiles and great crested new habitat - minimum 10m buffer
- Ponds (priority habitat) - minimum 50m buffer
- Woodland (priority habitat). Potential for badger, great crested newt and reptile habitat - minimum 30m buffer
- Potential bat roost (built structures) - minimum 30m buffer
- Potential bat roost (trees) - minimum 30m buffer

Designated sites: No works planned. Noise and vibration sensitive.

- Special Protection Area
- Special Area of Conservation
- Ramsar Sites
- National Nature Reserve
- Site of Special Scientific Interest

0 50 100 150 200 250 300 m

Scale at A3: 1:5,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 6c
Ecological constraints map

February 2020

wood.

601500
602000
602500
603000
208000
207500

BHCP-2078
BHCP-2097
TP-1019
BHCP-2093
BHCP-2095
BHCP-2094
BHCP-2092
BHCP-2091

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Borehole - rotary / sonic drilling
- Cable percussion borehole
- Cone penetration test
- Trial pit
- Optimal / sensitive reptile habitat
- Potential great crested newt habitat
- Hedgerow (priority habitat) - minimum 10m buffer
- Swamp (priority habitat). Potential for otter, water vole, reptiles and great crested new habitat - minimum 10m buffer
- Ponds (priority habitat) - minimum 50m buffer
- Woodland (priority habitat). Potential for badger, great crested newt and reptile habitat - minimum 30m buffer
- Potential bat roost (built structures) - minimum 30m buffer
- Potential bat roost (trees) - minimum 30m buffer

Designated sites: No works planned. Noise and vibration sensitive.

- Special Protection Area
- Special Area of Conservation
- Ramsar Sites
- National Nature Reserve
- Site of Special Scientific Interest

0 50 100 150 200 250 300 m
Scale at A3: 1:5,000

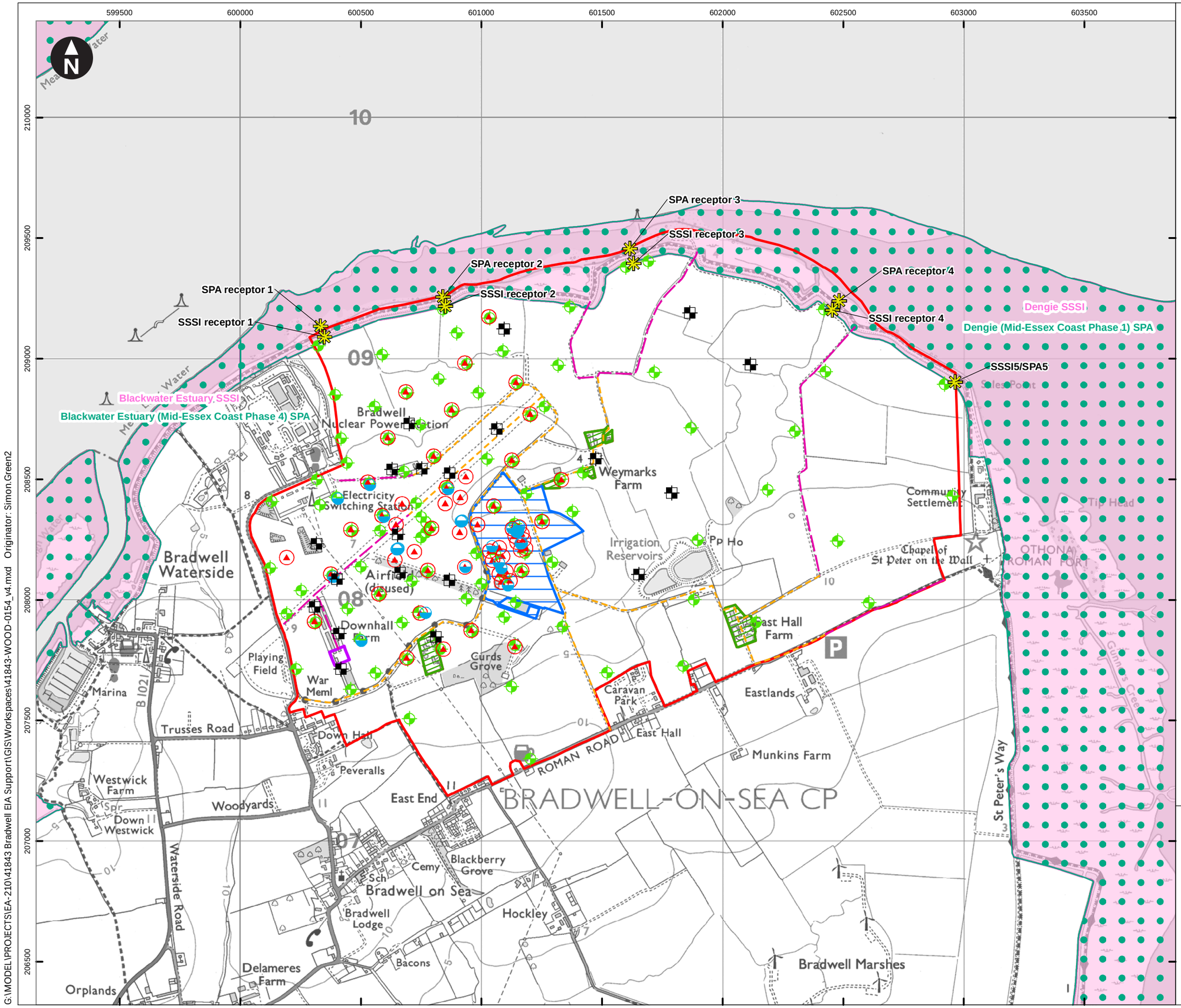
Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 6d
Ecological constraints map

February 2020

wood.

G:\MODEL\PROJECTS\EA-210\41843 Bradwell EIA Support\GIS\Workspaces\41843-WOOD-0129_v4.mxd Originator: Simon.Green2



Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 7
Noise modelling locations

February 2020

wood.

598000 600000 602000 604000 606000

210000 208000 206000 204000

N

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound
- Dengie Flats and Bradwell to Sales Point WeBS sector

0 250 500 750 1,000 1,250 1,500 1,750 m

Scale at A3: 1:30,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 8
Dengie Flats and Bradwell to Sales

February 2020

wood.

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599500 600000 600500 601000 601500 602000 602500 603000 603500

210000 209500 209000 208500 208000 207500 207000 206500

N

Mean Low Water

10 09 08 07

Bradwell Nuclear Power Station

Electricity Switching Station

Weymarks Farm

Irrigation Reservoirs

PP Ho

Community Settlement

Sales Point

Tip Head

OTHONA ROMAN FORT

Chapel of St Peter on the Wall

Bradwell Waterside

Airfield (disused)

Downhall Farm

Playing Field

War Meml

Curds Grove

East Hall Farm

Caravan Park

Eastlands

Marina

B 1021

Trusses Road

Down Hall

Peveralls

ROMAN ROAD

East Hall

Munkins Farm

Westwick Farm

Spr

Down Westwick

Woodyards

East End

BRADWELL-ON-SEA CP

St Peter's Way

Gunners Creek

Waterside Road

Cemy

Sch

Blackberry Grove

Bradwell on Sea

Bradwell Lodge

Hockley

Bacons

Delameres Farm

Orplands

Bradwell Marshes

Key

- Planning application boundary
- Excluded from planning application boundary
- Load test area and load test site compound
- GI site compound

Field type

- Lucerne
- Overwinter ploughed (spring wheat/beans/peas)
- Winter oil seed rape
- Winter wheat

0 100 200 300 400 500 600 700 800 900 m

Scale at A3: 1:15,000

Bradwell B Nuclear Power Plant Project
Ground Investigation Planning Application

Figure 9
Arable field type Winter/Spring 2017/18

February 2020

wood.

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Appendix A
Relevant Protected Species Legislation

Otter (*Lutra lutra*)

Otters are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2017*. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- Deliberately capture, injure or kill any such animal;
- Deliberately disturb any such animal, in particular in such a way as to be likely to:
  - Impair their ability to survive, breed or reproduce, or rear or nurture their young;
  - Impair their ability to hibernate or migrate; and
  - Affect significantly the local distribution or abundance of that species.
- Damage or destroy a breeding site or resting place of any such animal;
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Bats (Rhinolophidae and Vespertilionidae)

All British bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, inter alia, to:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb a bat (this applies anywhere, not just at its roost), in particular in such a way as to be likely to:
  - Impair their ability to survive, breed or reproduce, or rear or nurture their young;
  - Impair their ability to hibernate or migrate; and
  - Affect significantly the local distribution or abundance of that bat species.
- Damage or destroy a breeding site or resting place of any bat;
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not).

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat (Rhinolophus ferrumequinum);
- Lesser horseshoe bat (Rhinolophus hipposideros);

- Bechstein's bat (*Myotis bechsteinii*);
- Barbastelle (Barbastella barbastellus); and
- Greater mouse-eared bat (*Myotis myotis*).

In certain circumstances where these species are found the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favourable conservation status. Outside SACs, the level of legal protection that these species receive is the same as for other bat species.

Water Vole (*Arvicola amphibius*)

The water vole is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- Intentionally kill, injure, or take (handle) a water vole;
- Intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection; and
- Intentionally or recklessly disturb water voles while they are using such a structure or place.

Badger (*Meles meles*)

The Protection of Badgers Act 1992 makes it an offence to:

- Wilfully kill, injure or take a badger;
- Attempt to kill, injure or take a badger; or
- Cruelly ill-treat a badger.

It is also an offence to interfere with a badger sett by:

- Damaging a badger sett or any part of it;
- Destroying a badger sett;
- Obstructing access to, or any entrance of, a badger sett;
- Disturbing a badger when it is occupying a badger sett; or
- Intending to do any of those things or being reckless as to whether his actions would have any of those consequences.

Great Crested Newt (*Triturus cristatus*)

The great crested newt is listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2017*. It is afforded protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- Deliberately capture, injure or kill any such newt;
- Deliberately disturb any such newt, in particular in such a way as to be likely to:
  - Impair their ability to survive, breed or reproduce, or rear or nurture their young;
  - Impair their ability to hibernate or migrate; and
  - Affect significantly the local distribution or abundance of that species.

- Deliberately take or destroy the eggs of such a newt;
- Damage or destroy a breeding site or resting place of any such newt;
- Intentionally or recklessly disturb any such newt while it is occupying a structure or place that it uses for shelter or protection;
- Intentionally or recklessly obstruct access to any place that any such newt uses for shelter or protection; and
- This relates to both the aquatic and terrestrial habitat they occupy. The legislation applies to all life stages of this species.

Reptiles

The four widespread[10] species of reptile that are native to Britain, namely common or viviparous lizard (Zootoca (*Lacerta) vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix natrix (Naturix helvetica*)), are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- Intentionally kill or injure any of these species.

Birds

With certain exceptions[11], all wild birds, their nests and eggs are protected by Section 1 of the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, 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; or
- Intentionally take or destroy the egg of any wild bird.

These offences do not apply to hunting of birds listed in Schedule 2 of the Act subject to various controls.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- Intentionally or recklessly disturb the dependent young of any such bird.

[10] The other native species of British reptile (sand lizard and smooth snake) receive a higher level of protection under the Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended). However, the distribution of these species is restricted to only a very few sites. All marine turtles (Cheloniidae and Dermochelyidae) are also protected.

[11] Some species, such as game birds, are exempt in certain circumstances.

Appendix B
Phase 1 Habitat Survey: Remote Sensing Method

Habitats lying outside the 2017 Survey Area have been identified using remote sensing techniques and satellite imagery.

Advanced remote sensing and machine learning methods have been used to classify habitats present in 2019 (image date: 25th August 2019) adopting an object-based image analysis to create a habitat map.

A supervised classification methodology was used which requires samples for each of the habitat classes. Habitat samples can be collected during field surveys and created during a desktop exercise using satellite imagery for reference and expert knowledge of the area. Field survey is the favoured method for collection as it will typically produce higher quality sample data, although this is not always possible to collect data at the same time as the satellite image is captured, as in this case. A field survey from 2017 and a desktop exercise for both 2017 and 2019 were used. Once created the samples were randomly divided into two groups for model training (50%) and testing (50%). The training data will be used for training the machine learning classification algorithm test data will be used for statistical accuracy assessment of the final habitat map. The samples used to train this model were limited by the amount of field work undertaken and the small size and homogeneity of the study area, affecting the accuracy of the classification.

To prepare the satellite images the geometric and radiometric accuracies were investigated, as well as orthorectification and co-registration. Cloud masking was performed to remove areas obscured by cloud from the analysis. Areas covered in cloud will not be classified using the model and must be added manually which can be undertaken as part of the validation process. Pan sharpening was applied to the optical images to improve the spatial resolution of the multispectral bands. Finally, all the layers produced are layer-stacked to be ingested in the classification algorithm.

It was only possible to obtain images with 4 spectral bands for the study area instead of the 8 bands which would normally be available. This will have an impact on the level of subdivision of categories that is possible and the accuracy of the classification. The spectral bands used were Blue, Green, Red, Infrared. Ratio and spectral indices used were: $\frac{Blue}{Brightness}$, $\frac{Green}{Brightness}$, $\frac{Red}{Brightness}$, $\frac{Infrared}{Brightness}$, Normalized Difference Water Index= $\frac{\text{Green}-\text{NIR}}{\text{Green}+\text{NIR}}$ Normalized Difference Vegetation Index= $\frac{\text{NIR}-\text{Red}}{\text{NIR}+\text{Red}}$. The Grey Level Co-occurrence Matrix (GLCM) and spatial features such as shape and size of features were also used.

The object-based segmentation was performed in eCognition software, which provides hundreds of valuable toolboxes to perform segmentation and increase classification accuracy compared to commonly used software packages like ArcGIS. The Random Forest machine learning algorithm was used to create decision trees, each of which possess several nodes dividing the input pixels into mutually exclusive groups, which contains the most homogeneous pixels. The division continues until each node is representative of one of the final classes.

Once the habitat classifications have been created, they require validation. The classifications were inspected against the satellite images and Ordnance Survey MasterMap data. Segments which had been wrongly assigned were reallocated. Incorrect classification can be caused by spectral similarity when two classes share similar ecological and spectral characteristics, their spectral information can be wrongly assigned by the machine learning algorithm. This can present a challenge in discriminating habitat subclasses and must be closely monitored during validation. In the case it is not possible to determine a subclass it can be combined. As the resolution of the satellite image is not high enough to clearly depict linear features such as roads and drainage ditches the relevant layers from MasterMap are overlain. It is only possible to detect water bodies such as ponds which are under tree canopy using L-band RADAR sensors such as the ALOS-2 satellite.

Therefore MasterMap water bodies were also overlain. The satellite imagery is high resolution, but small but important patches of habitat will still be difficult to delineate and may be missed compared to a field survey.

A statistical accuracy assessment performed using the test data (i.e., 50% of field samples) to obtain the classification accuracy values through analysing the confusion matrix, found that 97% of the area of the test samples in the 2019 image was classified correctly. When classifying habitat using remote sensing part of the methodology is to validate the habitat assignment by manually inspecting the land parcels. It was found that although overall the classification accuracy was high in terms of area the smaller harder to identify habitats were affected by issues such as spectral similarity. Linear features in particular were difficult to classify and there were large areas assigned as intact hedgerow which were found to be Ditch habitat on inspection. As the resolution of the satellite image is not high enough to clearly depict linear features such as roads and drainage ditches the relevant layers from MasterMap are overlain. The satellite imagery is high resolution, but small but important patches of habitat will still be difficult to delineate and may be missed compared to a field survey. The classification was able to assign habitat type with a high level of accuracy over the 25km2 area but certain habitat categories had lower levels of accuracy as demonstrated by the producer statistic for woodland 96% and grassland 91% due to spectral similarity and ditch 64% due to capacity of the model to cope with linear features at this resolution.

Appendix C
Phase 1 Habitat Survey: Target Notes and Maps

Target Note Location[12] (Figure C.1)	Grid reference	Target Note
1	601479 208582	Dead tree with lifted bark. Negligible to low bat roost potential
2	600902 208558	Ephemeral vegetation extending along the edge of disused air strip and associated access tracks, supporting stonecrop, mosses, common mallow, black medic and knotgrass. Occasional spoil mounds along the verges of the disused air strip with some crushed rubble, which are colonised with bramble scrub.
3	601242 208811	Two spoil mounds at entrance to disused air strip: common orache, barren brome and prickly sow thistle.
4	600672 208523	Small area of scrub surrounding disused agricultural shed: bramble, elder, nettle, hawthorn and dog rose; two small apple trees.
5	600710 208523	Disused agricultural shed - corrugated metal, with interior metal supports. No bat roost features.
6	600697 208729	WWII pill box. Small pentagon shaped structure with smooth concrete walls and flat concrete roof. No internal inspection. Possible bat roost potential.
7	600425 208472	Dense scrub, predominantly bramble, with common nettle, immature ash and a small number of mature crack willow. A single willow (grid reference 600388 208464) has a rotting trunk - low bat roost potential. Common lizard observed basking at edge of scrub (600401 208459).
9	600397 208607	Small block of broadleaved woodland, comprising native species including elder, blackthorn, hornbeam, apple, hawthorn, dog rose, field maple, crack willow and honeysuckle. Bird box located at 600405 208672.
10	600390 208664	Waterbody (approximately 15m x 8m), with soft flat mud banks. Willow scrub surrounds pond, casting heavy shade with common reed dominating pond edges to north and west.
11	600396 208562	Planted, species-rich hedgerow: hawthorn, dog rose, field maple, hazel, blackthorn and cherry.

[12] The numbering of target notes is not consecutive because a number of target notes, containing sensitive information have been omitted.

Target Note Location[12] (Figure C.1)	Grid reference	Target Note
12	600345 208879	Drainage ditch choked with common reed and occasional club rush, spreading into surrounding habitat, creating a linear strip of swamp habitat. Common lizard observed at 600345 208879.
13	600365 209094	Strip of coastal grassland on landward side of sea wall. The tall and tussocky grassland has a notable ruderal component in places. Species include sea couch, common couch, red fescue, Alexanders, prickly sow thistle, common mallow and sea beet. Barren brome, false oat grass, cock's-foot, common reed and creeping thistle encroaching in places.
14	600387 209129	Seaward side of the sea wall – shrubby and salt tolerant species, including shrubby sea blite, sea sandwort, Alexanders, sea aster, sea beet and sea couch.
15	600255 209084	Linear strip of Japanese rose
16	600272 209095	Stands (x2) of Japanese rose. Largest approximately 6m x 6m.
17	601458 209277	Common lizard (sub-adult)
18	601452 209273	Adder (female) moving towards wooden board
19	601379 209321	Small fragmented area of saltmarsh. Species include shrubby sea blite, glasswort species, sea purslane, glass-leaved orache and sea lavender and rare occurrence of common cord grass. The saltmarsh area is interspersed with pools/open water.
20	601996 209437	Larger intact area of saltmarsh habitat. Similar in composition to TN 19. Intertidal areas dominated by shrubby sea blite, sea purslane, sea couch, sea sandwort and infrequent occurrence of frosted orache. Creeks are present and other species recorded include glasswort species, annual sea blite, common cord grass, glass-leaved orache and sea lavender.
21	600575 209198	Series of 5 WWII pill boxes along coastline located within sea wall. Exposed location likely to reduce suitability for roosting bats.
22	601526 208670	New Waymarks Cottages. Semi-detached, two storey residential properties, with rendered walls and tiled roof. Two brick chimney stacks. One slipped tile on northern aspect of building. Low bat roost potential.
23	601478 208664	Abandoned farm house, surrounded by heras fencing. Rendered walls, with slate tile roof and two brick chimney stacks. Roof has collapsed to front left of the property and numerous missing roofing tiles. Some render has fallen off exposing brick work. Windows missing at front and rear of building; heavily ivy clad. Missing bricks from front left chimney.

Target Note Location[12] (Figure C.1)	Grid reference	Target Note
		High bat roost potential. Grounds of building have also been left unmanaged, with tall ruderal and scattered scrub vegetation to rear and scrub / trees to front, offering potential foraging opportunities for bats.
24	601448, 208680	Pear Tree Cottages. Semi-detached property with rendered walls and clay tiled roof. Four dormer windows to front. Double-glazed. Three chimney stacks appear in good condition. Lifted tiles observed and two slipped tiles to rear. Moderate bat roost potential.
25	601446 208529	New House. Two story rendered property with tiled roof. Double glazed with two brick chimney stacks which appear in good condition. One missing tile noted to northeast aspect of property. Low bat roost potential. To rear of property metal corrugated shed, with negligible bat roost potential.
26	601311 208483	The Bungalow. Single story rendered property, with tiled roof. Wooden fascia board. Potential for lifted tiles. Low - moderate bat roost potential.
28	603090 208656	Area of establishing woodland: hornbeam, oak, bramble, blackthorn, dog rose, silver birch and hazel. Common reed spreading at ground level.
29	603065 208536	Pond owned by Essex Wildlife Trust. Approximately 15m x 15m. Stand of common reed at centre of pond and duck weed covering open water. Potential for water vole. Slow worm (female) and common lizard (female) found in vegetation in proximity to pond.
30	603061 208739	Seaward side of wall: sea couch, bird's-foot trefoil, sea sandwort, sea holly, prickly sow thistle, sea purslane, sea beet, shrubby sea blite and occasional marram grass and sea spurge.
31	603048 208723	On landward side of sea wall coastal grassland comprises common reed, sea couch, A|exanders, sea spurrey, annual sea blite and sea purslane on bare patches of coastal footpath.
32	601207 208636	Species rich (planted) hedgerow extending along access track: hawthorn, blackthorn, field maple, elder, guelder rose, apple, wayfaring tree, dogwood and hazel.
33	600812 208077	Strip of semi-natural mixed woodland: Scot's pine, elder, sycamore, dog rose, oak and hawthorn. Due to access constraints a close inspection of trees was not possible and bat roost potential remains unknown.
34	600114 208368; and 600159 208257	Semi-natural coniferous woodland. Mature pine species, with some elder and oak, willow and ash at periphery. These are likely remnants of a larger plantation that has been fragmented.

Target Note Location[12] (Figure C.1)	Grid reference	Target Note
		Approximately 6 schwegler bird boxes are located within the block of coniferous woodland immediately west of the electricity switching station.
35	600146 208379	Disused hard standing path with hawthorn and elder scrub along edge. Vegetation establishing on path includes stonecrop, moss species, daisy, field madder, doves-foot cranesbill and speedwell species.
36	600262 208376	Scrub line adjacent to electricity switching station includes hawthorn, apple and bramble.
37	600241 208339	Area of establishing broadleaved woodland: hawthorn, hornbeam, blackthorn, plum, white willow, hazel, apple, oak, gorse and dog rose.
38	600315 208281	Semi-improved grassland heavily grazed by rabbits with bare earth patches. Species include bird's-foot trefoil, sheep's sorrel and hawkbit species. Scattered scrub is establishing to south including hawthorn, bramble, oak, apple and dog rose.
42	600346 208289	Female adder observed at edge of scrub.
48	600134 208336	White willow with dying limbs at height and flaking bark. Low bat roost potential.
49	600299 208858	Semi-improved grassland: white clover, wild carrot, bird's-foot trefoil, prickly sow thistle, cock's-foot and red fescue.
50	602068 208409	Mature hornbeam with four woodpecker holes in trunk. Moderate - high bat roost potential.
51	602094 208421	Planted broadleaved woodland. All tree species are semi-mature and include field maple, apple, hornbeam, spindle, ash, oak, elder, hazel, blackthorn, silver birch, ash, sycamore and willow species. Negligible bat roost potential. Ground flora includes grasses, nettle, knapweed and meadow vetchling.
52	602054 208431	Mature hornbeam with split and rotting trunk. Moderate bat roost potential.
53	602040 208343	Three dead, ivy-clad willow trees. Low bat roost potential.
55	602042 208326	Multi-stemmed willow. Three woodpecker holes in branch and broken and rotten branches. Moderate bat roost potential
56	601767 208215; and 601900 208242	Small woodland blocks used for clay pigeon shooting. Semi-mature trees include ash, cherry, white willow, hazel with bramble, cow parsley and nettle ground flora.

Target Note Location[12] (Figure C.1)	Grid reference	Target Note
57	601812 208246	Watercourse (approximately 3-4m wide). Steep earth banks. Some branched bur-reed and common reed in the water in places. Vegetation on the banks comprises clubrush species, willowherb species, rushes, with scattered hawthorn and willow scrub. Suitable for water vole.
58	600351 208540	Japanese rose
59	-	Evidence of Water voles, including latrines and burrows
60	-	Evidence of Water voles, including latrines and burrows
61	-	Rubble piles which offer suitable reptile habitat

Appendix D
Confidential Appendix

Due to the sensitive nature of the information contained in Appendix D it is a separate confidential document for restricted circulation within the developer/contractor team and amongst key consultees and statutory regulators.

Appendix E
WeBS Data

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
MS	Mute Swan	100	Mar-15	2	Good
MS	Mute Swan	100	Feb-15	5	Good
MS	Mute Swan	100	Jan-15	7	Good
MS	Mute Swan	100	Dec-14	4	Poor
MS	Mute Swan	100	Oct-14	2	Good
MS	Mute Swan	100	Jun-14	2	Good
MS	Mute Swan	100	May-14	2	Good
MS	Mute Swan	100	Apr-14	2	Good
MS	Mute Swan	100	Mar-14	3	Good
MS	Mute Swan	100	Oct-13	2	Good
MS	Mute Swan	100	Feb-13	2	Good
MS	Mute Swan	100	Jan-13	2	Good
MS	Mute Swan	100	Apr-12	2	Good
JA	Greylag Goose (British/Irish)	2450	May-16	1	Good
JA	Greylag Goose (British/Irish)	2450	Apr-16	2	Good
JA	Greylag Goose (British/Irish)	2450	Mar-16	2	Good
JA	Greylag Goose (British/Irish)	2450	May-15	2	Good
JA	Greylag Goose (British/Irish)	2450	Sep-14	2	Good
JA	Greylag Goose (British/Irish)	2450	May-14	2	Good
JA	Greylag Goose (British/Irish)	2450	Mar-14	2	Good
JA	Greylag Goose (British/Irish)	2450	May-12	1	Good
JA	Greylag Goose (British/Irish)	2450	Apr-12	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
JA	Greylag Goose (British/Irish)	2450	Dec-11	2	Good
JA	Greylag Goose (British/Irish)	2450	Aug-11	3	Good
CG	Canada Goose	3200	Sep-15	6	Good
CG	Canada Goose	3200	Sep-14	10	Good
DB	Brent Goose (Dark-bellied)	4500	Apr-16	41	Good
DB	Brent Goose (Dark-bellied)	4500	Mar-16	1710	Good
DB	Brent Goose (Dark-bellied)	4500	Feb-16	690	Good
DB	Brent Goose (Dark-bellied)	4500	Jan-16	1475	Good
DB	Brent Goose (Dark-bellied)	4500	Dec-15	840	Good
DB	Brent Goose (Dark-bellied)	4500	Nov-15	1200	Good
DB	Brent Goose (Dark-bellied)	4500	Oct-15	265	Good
DB	Brent Goose (Dark-bellied)	4500	Sep-15	20	Good
DB	Brent Goose (Dark-bellied)	4500	May-15	1	Good
DB	Brent Goose (Dark-bellied)	4500	Mar-15	1950	Good
DB	Brent Goose (Dark-bellied)	4500	Feb-15	840	Good
DB	Brent Goose (Dark-bellied)	4500	Jan-15	2067	Good
DB	Brent Goose (Dark-bellied)	4500	Dec-14	45	Poor
DB	Brent Goose (Dark-bellied)	4500	Nov-14	431	Good
DB	Brent Goose (Dark-bellied)	4500	Oct-14	200	Good
DB	Brent Goose (Dark-bellied)	4500	Apr-14	3	Good
DB	Brent Goose (Dark-bellied)	4500	Mar-14	907	Good
DB	Brent Goose (Dark-bellied)	4500	Nov-13	1116	Good
DB	Brent Goose (Dark-bellied)	4500	Oct-13	310	Good
DB	Brent Goose (Dark-bellied)	4500	Sep-13	45	Good
DB	Brent Goose (Dark-bellied)	4500	May-13	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
DB	Brent Goose (Dark-bellied)	4500	Apr-13	73	Good
DB	Brent Goose (Dark-bellied)	4500	Mar-13	635	Poor
DB	Brent Goose (Dark-bellied)	4500	Feb-13	987	Good
DB	Brent Goose (Dark-bellied)	4500	Jan-13	850	Good
DB	Brent Goose (Dark-bellied)	4500	Dec-12	425	Good
DB	Brent Goose (Dark-bellied)	4500	Oct-12	161	Good
DB	Brent Goose (Dark-bellied)	4500	Sep-12	1	Good
DB	Brent Goose (Dark-bellied)	4500	Aug-12	7	Good
DB	Brent Goose (Dark-bellied)	4500	Jun-12	3	Good
DB	Brent Goose (Dark-bellied)	4500	May-12	2	Good
DB	Brent Goose (Dark-bellied)	4500	Apr-12	11	Good
DB	Brent Goose (Dark-bellied)	4500	Mar-12	458	Good
DB	Brent Goose (Dark-bellied)	4500	Feb-12	1793	Good
DB	Brent Goose (Dark-bellied)	4500	Jan-12	1321	Good
DB	Brent Goose (Dark-bellied)	4500	Dec-11	528	Good
DB	Brent Goose (Dark-bellied)	4500	Nov-11	1426	Good
DB	Brent Goose (Dark-bellied)	4500	Oct-11	250	Good
QS	Brent Goose (Svalbard Light-bellied)	4800	Feb-12	2	Good
BB	Brent Goose (Black Brant)	4900	Dec-15	1	Good
SU	Shelduck	6100	Jun-16	4	Good
SU	Shelduck	6100	May-16	37	Good
SU	Shelduck	6100	Apr-16	47	Good
SU	Shelduck	6100	Mar-16	120	Good
SU	Shelduck	6100	Feb-16	26	Good
SU	Shelduck	6100	Jan-16	219	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
SU	Shelduck	6100	Dec-15	25	Good
SU	Shelduck	6100	May-15	8	Good
SU	Shelduck	6100	Mar-15	218	Good
SU	Shelduck	6100	Feb-15	183	Good
SU	Shelduck	6100	Jan-15	347	Good
SU	Shelduck	6100	Nov-14	18	Good
SU	Shelduck	6100	Sep-14	3	Good
SU	Shelduck	6100	Aug-14	1	Good
SU	Shelduck	6100	Jun-14	8	Good
SU	Shelduck	6100	May-14	4	Good
SU	Shelduck	6100	Apr-14	18	Good
SU	Shelduck	6100	Mar-14	27	Good
SU	Shelduck	6100	Nov-13	44	Good
SU	Shelduck	6100	Oct-13	28	Good
SU	Shelduck	6100	Sep-13	8	Good
SU	Shelduck	6100	May-13	10	Good
SU	Shelduck	6100	Apr-13	30	Good
SU	Shelduck	6100	Feb-13	241	Good
SU	Shelduck	6100	Jan-13	340	Good
SU	Shelduck	6100	Dec-12	64	Good
SU	Shelduck	6100	Oct-12	26	Good
SU	Shelduck	6100	Jun-12	4	Good
SU	Shelduck	6100	May-12	35	Good
SU	Shelduck	6100	Apr-12	11	Good
SU	Shelduck	6100	Mar-12	67	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
SU	Shelduck	6100	Feb-12	160	Good
SU	Shelduck	6100	Jan-12	28	Good
SU	Shelduck	6100	Dec-11	53	Good
SU	Shelduck	6100	Nov-11	25	Good
SU	Shelduck	6100	Sep-11	5	Good
WN	Wigeon	6900	Feb-16	25	Good
WN	Wigeon	6900	Jan-16	55	Good
WN	Wigeon	6900	Dec-15	120	Good
WN	Wigeon	6900	Nov-15	175	Good
WN	Wigeon	6900	Oct-15	145	Good
WN	Wigeon	6900	Aug-15	3	Good
WN	Wigeon	6900	Mar-15	24	Good
WN	Wigeon	6900	Feb-15	138	Good
WN	Wigeon	6900	Jan-15	210	Good
WN	Wigeon	6900	Dec-14	240	Poor
WN	Wigeon	6900	Nov-14	595	Good
WN	Wigeon	6900	Oct-14	166	Good
WN	Wigeon	6900	Sep-14	54	Good
WN	Wigeon	6900	Nov-13	264	Good
WN	Wigeon	6900	Oct-13	120	Good
WN	Wigeon	6900	Sep-13	10	Good
WN	Wigeon	6900	Aug-13	52	Good
WN	Wigeon	6900	Feb-13	17	Good
WN	Wigeon	6900	Jan-13	109	Good
WN	Wigeon	6900	Dec-12	140	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
WN	Wigeon	6900	Oct-12	75	Good
WN	Wigeon	6900	Jan-12	35	Good
WN	Wigeon	6900	Dec-11	78	Good
WN	Wigeon	6900	Nov-11	48	Good
WN	Wigeon	6900	Oct-11	21	Good
WN	Wigeon	6900	Aug-11	14	Good
GA	Gadwall	7300	Jun-16	2	Good
GA	Gadwall	7300	Jan-15	3	Good
GA	Gadwall	7300	Nov-14	3	Good
GA	Gadwall	7300	May-14	2	Good
GA	Gadwall	7300	Nov-13	3	Good
GA	Gadwall	7300	Aug-12	1	Good
T.	Teal	7600	Mar-16	18	Good
T.	Teal	7600	Jan-16	30	Good
T.	Teal	7600	Dec-15	5	Good
T.	Teal	7600	Aug-15	5	Good
T.	Teal	7600	Mar-15	1	Good
T.	Teal	7600	Feb-15	75	Good
T.	Teal	7600	Jan-15	330	Good
T.	Teal	7600	Nov-14	35	Good
T.	Teal	7600	Oct-14	1	Good
T.	Teal	7600	Nov-13	35	Good
T.	Teal	7600	Sep-13	70	Good
T.	Teal	7600	Aug-13	32	Good
T.	Teal	7600	Jul-13	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
T.	Teal	7600	Apr-13	13	Good
T.	Teal	7600	Feb-13	26	Good
T.	Teal	7600	Jan-13	1	Good
T.	Teal	7600	Oct-12	10	Good
T.	Teal	7600	Mar-12	4	Good
T.	Teal	7600	Feb-12	5	Good
T.	Teal	7600	Dec-11	7	Good
T.	Teal	7600	Nov-11	7	Good
T.	Teal	7600	Oct-11	3	Good
T.	Teal	7600	Sep-11	6	Good
T.	Teal	7600	Aug-11	32	Good
MA	Mallard	8000	Jun-16	38	Good
MA	Mallard	8000	May-16	27	Good
MA	Mallard	8000	Apr-16	23	Good
MA	Mallard	8000	Mar-16	15	Good
MA	Mallard	8000	Feb-16	90	Good
MA	Mallard	8000	Jan-16	11	Good
MA	Mallard	8000	Dec-15	17	Good
MA	Mallard	8000	Nov-15	23	Good
MA	Mallard	8000	Oct-15	12	Good
MA	Mallard	8000	Sep-15	44	Good
MA	Mallard	8000	Aug-15	21	Good
MA	Mallard	8000	May-15	15	Good
MA	Mallard	8000	Mar-15	60	Good
MA	Mallard	8000	Feb-15	80	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
MA	Mallard	8000	Jan-15	250	Good
MA	Mallard	8000	Dec-14	65	Poor
MA	Mallard	8000	Nov-14	85	Good
MA	Mallard	8000	Oct-14	28	Good
MA	Mallard	8000	Sep-14	27	Good
MA	Mallard	8000	Aug-14	2	Good
MA	Mallard	8000	Jul-14	6	Good
MA	Mallard	8000	Jun-14	21	Good
MA	Mallard	8000	May-14	22	Good
MA	Mallard	8000	Apr-14	12	Good
MA	Mallard	8000	Mar-14	6	Good
MA	Mallard	8000	Nov-13	95	Good
MA	Mallard	8000	Oct-13	28	Good
MA	Mallard	8000	Sep-13	31	Good
MA	Mallard	8000	Aug-13	156	Good
MA	Mallard	8000	Jul-13	7	Good
MA	Mallard	8000	May-13	42	Good
MA	Mallard	8000	Apr-13	24	Good
MA	Mallard	8000	Feb-13	135	Good
MA	Mallard	8000	Jan-13	270	Good
MA	Mallard	8000	Dec-12	90	Good
MA	Mallard	8000	Oct-12	91	Good
MA	Mallard	8000	Sep-12	121	Good
MA	Mallard	8000	Aug-12	14	Good
MA	Mallard	8000	Jul-12	17	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
MA	Mallard	8000	Jun-12	46	Good
MA	Mallard	8000	May-12	22	Good
MA	Mallard	8000	Apr-12	20	Good
MA	Mallard	8000	Mar-12	26	Good
MA	Mallard	8000	Feb-12	59	Good
MA	Mallard	8000	Jan-12	36	Good
MA	Mallard	8000	Dec-11	95	Good
MA	Mallard	8000	Nov-11	160	Good
MA	Mallard	8000	Oct-11	74	Good
MA	Mallard	8000	Sep-11	85	Good
MA	Mallard	8000	Aug-11	11	Good
PT	Pintail	8500	Feb-16	92	Good
PT	Pintail	8500	Jan-16	190	Good
PT	Pintail	8500	Dec-15	250	Good
PT	Pintail	8500	Nov-15	14	Good
PT	Pintail	8500	Oct-15	2	Good
PT	Pintail	8500	Feb-15	117	Good
PT	Pintail	8500	Jan-15	125	Good
PT	Pintail	8500	Dec-14	36	Poor
PT	Pintail	8500	Nov-14	97	Good
PT	Pintail	8500	Oct-14	2	Good
PT	Pintail	8500	Sep-14	4	Good
PT	Pintail	8500	Nov-13	31	Good
PT	Pintail	8500	Oct-13	5	Good
PT	Pintail	8500	Feb-13	63	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
PT	Pintail	8500	Jan-13	39	Good
PT	Pintail	8500	Dec-12	100	Good
PT	Pintail	8500	Oct-12	4	Good
PT	Pintail	8500	Feb-12	15	Good
PT	Pintail	8500	Jan-12	74	Good
PT	Pintail	8500	Dec-11	78	Good
SV	Shoveler	9200	Dec-15	1	Good
SV	Shoveler	9200	Jan-15	26	Good
SV	Shoveler	9200	Nov-14	3	Good
SV	Shoveler	9200	May-14	1	Good
SV	Shoveler	9200	Feb-13	1	Good
SV	Shoveler	9200	Dec-12	5	Good
PO	Pochard	10000	May-15	5	Good
PO	Pochard	10000	Jul-14	2	Good
PO	Pochard	10000	Jun-14	3	Good
PO	Pochard	10000	May-14	2	Good
PO	Pochard	10000	May-13	5	Good
PO	Pochard	10000	Jul-12	2	Good
PO	Pochard	10000	Jun-12	5	Good
PO	Pochard	10000	May-12	4	Good
TU	Tufted Duck	10600	May-14	2	Good
TU	Tufted Duck	10600	May-13	4	Good
TU	Tufted Duck	10600	Jul-12	4	Good
TU	Tufted Duck	10600	Jun-12	1	Good
EE	Eider (except Shetland)	11001	Oct-15	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
EE	Eider (except Shetland)	11001	Aug-14	1	Good
EE	Eider (except Shetland)	11001	Aug-11	1	Good
LN	Long-tailed Duck	11400	Nov-14	2	Good
CX	Common Scoter	11500	Dec-15	4	Good
CX	Common Scoter	11500	Oct-15	2	Good
CX	Common Scoter	11500	Aug-14	17	Good
CX	Common Scoter	11500	Oct-13	10	Good
CX	Common Scoter	11500	Sep-13	1	Good
CX	Common Scoter	11500	Jul-13	1	Good
CX	Common Scoter	11500	Oct-12	4	Good
CX	Common Scoter	11500	Feb-12	1	Good
CX	Common Scoter	11500	Dec-11	1	Good
CX	Common Scoter	11500	Sep-11	4	Good
RM	Red-breasted Merganser	12500	Dec-15	2	Good
RM	Red-breasted Merganser	12500	Oct-15	2	Good
RM	Red-breasted Merganser	12500	Mar-15	8	Good
RM	Red-breasted Merganser	12500	Feb-15	17	Good
RM	Red-breasted Merganser	12500	Jan-15	3	Good
RM	Red-breasted Merganser	12500	Nov-14	9	Good
RM	Red-breasted Merganser	12500	Oct-14	1	Good
RM	Red-breasted Merganser	12500	Mar-14	4	Good
RM	Red-breasted Merganser	12500	Nov-13	3	Good
RM	Red-breasted Merganser	12500	Oct-12	11	Good
RM	Red-breasted Merganser	12500	Mar-12	22	Good
RM	Red-breasted Merganser	12500	Jan-12	6	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
RM	Red-breasted Merganser	12500	Nov-11	1	Good
RM	Red-breasted Merganser	12500	Oct-11	7	Good
RH	Red-throated Diver	13100	Feb-16	3	Good
RH	Red-throated Diver	13100	Jan-16	3	Good
RH	Red-throated Diver	13100	Mar-15	2	Good
RH	Red-throated Diver	13100	Feb-15	120	Good
RH	Red-throated Diver	13100	Jan-15	800	Good
RH	Red-throated Diver	13100	Nov-14	2	Good
RH	Red-throated Diver	13100	Mar-14	4	Good
RH	Red-throated Diver	13100	Feb-13	1	Good
RH	Red-throated Diver	13100	Jan-13	17	Good
RH	Red-throated Diver	13100	Dec-12	44	Good
RH	Red-throated Diver	13100	Mar-12	133	Good
RH	Red-throated Diver	13100	Oct-11	1	Good
LG	Little Grebe	13700	Aug-15	2	Good
LG	Little Grebe	13700	May-15	2	Good
LG	Little Grebe	13700	Aug-14	2	Good
LG	Little Grebe	13700	Jul-14	2	Good
LG	Little Grebe	13700	Jun-14	1	Good
LG	Little Grebe	13700	May-13	4	Good
LG	Little Grebe	13700	Oct-12	2	Good
LG	Little Grebe	13700	Sep-12	2	Good
LG	Little Grebe	13700	Aug-12	1	Good
LG	Little Grebe	13700	Jun-12	1	Good
LG	Little Grebe	13700	May-12	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
LG	Little Grebe	13700	Aug-11	1	Good
GG	Great Crested Grebe	13800	May-15	1	Good
GG	Great Crested Grebe	13800	Mar-15	1	Good
GG	Great Crested Grebe	13800	Jan-15	9	Good
GG	Great Crested Grebe	13800	Dec-12	1	Good
GG	Great Crested Grebe	13800	Mar-12	6	Good
GG	Great Crested Grebe	13800	Feb-12	1	Good
GG	Great Crested Grebe	13800	Nov-11	1	Good
GG	Great Crested Grebe	13800	Oct-11	2	Good
GG	Great Crested Grebe	13800	Aug-11	3	Good
CA	Cormorant	14300	Jun-16	3	Good
CA	Cormorant	14300	May-16	2	Good
CA	Cormorant	14300	Apr-16	20	Good
CA	Cormorant	14300	Mar-16	15	Good
CA	Cormorant	14300	Feb-16	1	Good
CA	Cormorant	14300	Jan-16	5	Good
CA	Cormorant	14300	Dec-15	48	Good
CA	Cormorant	14300	Nov-15	12	Good
CA	Cormorant	14300	Oct-15	2	Good
CA	Cormorant	14300	Sep-15	3	Good
CA	Cormorant	14300	Aug-15	5	Good
CA	Cormorant	14300	May-15	5	Good
CA	Cormorant	14300	Mar-15	8	Good
CA	Cormorant	14300	Feb-15	8	Good
CA	Cormorant	14300	Jan-15	12	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CA	Cormorant	14300	Dec-14	3	Poor
CA	Cormorant	14300	Nov-14	8	Good
CA	Cormorant	14300	Oct-14	9	Good
CA	Cormorant	14300	Sep-14	14	Good
CA	Cormorant	14300	Aug-14	1	Good
CA	Cormorant	14300	Jul-14	10	Good
CA	Cormorant	14300	Jun-14	3	Good
CA	Cormorant	14300	May-14	2	Good
CA	Cormorant	14300	Apr-14	2	Good
CA	Cormorant	14300	Mar-14	5	Good
CA	Cormorant	14300	Nov-13	4	Good
CA	Cormorant	14300	Oct-13	9	Good
CA	Cormorant	14300	Sep-13	32	Good
CA	Cormorant	14300	Aug-13	3	Good
CA	Cormorant	14300	Jul-13	7	Good
CA	Cormorant	14300	May-13	8	Good
CA	Cormorant	14300	Apr-13	4	Good
CA	Cormorant	14300	Jan-13	3	Good
CA	Cormorant	14300	Dec-12	5	Good
CA	Cormorant	14300	Oct-12	7	Good
CA	Cormorant	14300	Aug-12	2	Good
CA	Cormorant	14300	Jul-12	6	Good
CA	Cormorant	14300	Jun-12	5	Good
CA	Cormorant	14300	May-12	2	Good
CA	Cormorant	14300	Apr-12	19	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CA	Cormorant	14300	Mar-12	7	Good
CA	Cormorant	14300	Feb-12	5	Good
CA	Cormorant	14300	Jan-12	10	Good
CA	Cormorant	14300	Dec-11	5	Good
CA	Cormorant	14300	Nov-11	2	Good
CA	Cormorant	14300	Oct-11	2	Good
CA	Cormorant	14300	Sep-11	2	Good
SA	Shag	14400	Apr-16	1	Good
ET	Little Egret	15300	Jun-16	7	Good
ET	Little Egret	15300	May-16	7	Good
ET	Little Egret	15300	Apr-16	8	Good
ET	Little Egret	15300	Mar-16	5	Good
ET	Little Egret	15300	Jan-16	3	Good
ET	Little Egret	15300	Dec-15	12	Good
ET	Little Egret	15300	Nov-15	9	Good
ET	Little Egret	15300	Oct-15	13	Good
ET	Little Egret	15300	Sep-15	22	Good
ET	Little Egret	15300	Aug-15	34	Good
ET	Little Egret	15300	May-15	13	Good
ET	Little Egret	15300	Mar-15	15	Good
ET	Little Egret	15300	Feb-15	4	Good
ET	Little Egret	15300	Jan-15	25	Good
ET	Little Egret	15300	Dec-14	6	Poor
ET	Little Egret	15300	Nov-14	50	Good
ET	Little Egret	15300	Oct-14	46	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
ET	Little Egret	15300	Sep-14	27	Good
ET	Little Egret	15300	Aug-14	24	Good
ET	Little Egret	15300	Jul-14	16	Good
ET	Little Egret	15300	Jun-14	18	Good
ET	Little Egret	15300	May-14	8	Good
ET	Little Egret	15300	Apr-14	7	Good
ET	Little Egret	15300	Mar-14	9	Good
ET	Little Egret	15300	Nov-13	32	Good
ET	Little Egret	15300	Oct-13	19	Good
ET	Little Egret	15300	Sep-13	33	Good
ET	Little Egret	15300	Aug-13	4	Good
ET	Little Egret	15300	Jul-13	19	Good
ET	Little Egret	15300	May-13	7	Good
ET	Little Egret	15300	Apr-13	10	Good
ET	Little Egret	15300	Mar-13	3	Poor
ET	Little Egret	15300	Feb-13	3	Good
ET	Little Egret	15300	Jan-13	3	Good
ET	Little Egret	15300	Dec-12	6	Good
ET	Little Egret	15300	Oct-12	28	Good
ET	Little Egret	15300	Sep-12	11	Good
ET	Little Egret	15300	Aug-12	10	Good
ET	Little Egret	15300	Jul-12	20	Good
ET	Little Egret	15300	Jun-12	10	Good
ET	Little Egret	15300	May-12	7	Good
ET	Little Egret	15300	Apr-12	4	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
ET	Little Egret	15300	Mar-12	3	Good
ET	Little Egret	15300	Feb-12	3	Good
ET	Little Egret	15300	Jan-12	3	Good
ET	Little Egret	15300	Dec-11	3	Good
ET	Little Egret	15300	Nov-11	23	Good
ET	Little Egret	15300	Oct-11	19	Good
ET	Little Egret	15300	Sep-11	18	Good
ET	Little Egret	15300	Aug-11	32	Good
H.	Grey Heron	15600	May-16	1	Good
H.	Grey Heron	15600	Dec-15	1	Good
H.	Grey Heron	15600	Nov-15	1	Good
H.	Grey Heron	15600	Oct-15	4	Good
H.	Grey Heron	15600	Sep-15	1	Good
H.	Grey Heron	15600	Aug-15	1	Good
H.	Grey Heron	15600	Nov-14	2	Good
H.	Grey Heron	15600	Sep-14	2	Good
H.	Grey Heron	15600	Aug-14	1	Good
H.	Grey Heron	15600	Jul-14	1	Good
H.	Grey Heron	15600	Jun-14	1	Good
H.	Grey Heron	15600	Apr-14	1	Good
H.	Grey Heron	15600	Nov-13	1	Good
H.	Grey Heron	15600	Sep-13	1	Good
H.	Grey Heron	15600	Jul-13	1	Good
H.	Grey Heron	15600	Feb-13	1	Good
H.	Grey Heron	15600	Dec-12	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
H.	Grey Heron	15600	Sep-12	1	Good
H.	Grey Heron	15600	Apr-12	1	Good
H.	Grey Heron	15600	Mar-12	1	Good
H.	Grey Heron	15600	Dec-11	1	Good
H.	Grey Heron	15600	Aug-11	1	Good
WA	Water Rail	20800	Dec-12	1	Good
MH	Moorhen	21400	Jun-16	4	Good
MH	Moorhen	21400	May-16	2	Good
MH	Moorhen	21400	Apr-16	2	Good
MH	Moorhen	21400	Jan-16	1	Good
MH	Moorhen	21400	Dec-15	1	Good
MH	Moorhen	21400	Nov-15	2	Good
MH	Moorhen	21400	Oct-15	3	Good
MH	Moorhen	21400	Sep-15	2	Good
MH	Moorhen	21400	Aug-15	5	Good
MH	Moorhen	21400	May-15	6	Good
MH	Moorhen	21400	Mar-15	1	Good
MH	Moorhen	21400	Feb-15	1	Good
MH	Moorhen	21400	Oct-14	2	Good
MH	Moorhen	21400	Sep-14	3	Good
MH	Moorhen	21400	Aug-14	3	Good
MH	Moorhen	21400	Jul-14	6	Good
MH	Moorhen	21400	Jun-14	6	Good
MH	Moorhen	21400	May-14	4	Good
MH	Moorhen	21400	Apr-14	3	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
MH	Moorhen	21400	Oct-13	6	Good
MH	Moorhen	21400	Sep-13	2	Good
MH	Moorhen	21400	Aug-13	6	Good
MH	Moorhen	21400	Jul-13	4	Good
MH	Moorhen	21400	May-13	2	Good
MH	Moorhen	21400	Apr-13	2	Good
MH	Moorhen	21400	Oct-12	3	Good
MH	Moorhen	21400	Sep-12	1	Good
MH	Moorhen	21400	Aug-12	3	Good
MH	Moorhen	21400	Jun-12	1	Good
MH	Moorhen	21400	May-12	1	Good
MH	Moorhen	21400	Apr-12	2	Good
MH	Moorhen	21400	Mar-12	1	Good
MH	Moorhen	21400	Feb-12	2	Good
MH	Moorhen	21400	Jan-12	1	Good
MH	Moorhen	21400	Dec-11	1	Good
MH	Moorhen	21400	Oct-11	6	Good
MH	Moorhen	21400	Sep-11	3	Good
MH	Moorhen	21400	Aug-11	2	Good
CO	Coot	21700	Jun-16	4	Good
CO	Coot	21700	May-16	2	Good
CO	Coot	21700	Mar-16	4	Good
CO	Coot	21700	Feb-16	2	Good
CO	Coot	21700	Aug-15	5	Good
CO	Coot	21700	May-15	20	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CO	Coot	21700	Mar-15	8	Good
CO	Coot	21700	Feb-15	1	Good
CO	Coot	21700	Sep-14	5	Good
CO	Coot	21700	Aug-14	8	Good
CO	Coot	21700	Jul-14	8	Good
CO	Coot	21700	Jun-14	2	Good
CO	Coot	21700	May-14	4	Good
CO	Coot	21700	Apr-14	2	Good
CO	Coot	21700	Mar-14	2	Good
CO	Coot	21700	Aug-13	9	Good
CO	Coot	21700	Jul-13	6	Good
CO	Coot	21700	May-13	6	Good
CO	Coot	21700	Sep-12	2	Good
CO	Coot	21700	Aug-12	7	Good
CO	Coot	21700	Jul-12	8	Good
CO	Coot	21700	Jun-12	2	Good
CO	Coot	21700	May-12	5	Good
CO	Coot	21700	Apr-12	4	Good
CO	Coot	21700	Mar-12	3	Good
CO	Coot	21700	Aug-11	9	Good
OC	Oystercatcher	22700	Jun-16	500	Good
OC	Oystercatcher	22700	May-16	875	Good
OC	Oystercatcher	22700	Apr-16	760	Good
OC	Oystercatcher	22700	Mar-16	540	Good
OC	Oystercatcher	22700	Feb-16	50	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
OC	Oystercatcher	22700	Jan-16	200	Good
OC	Oystercatcher	22700	Dec-15	440	Good
OC	Oystercatcher	22700	Nov-15	350	Good
OC	Oystercatcher	22700	Oct-15	700	Good
OC	Oystercatcher	22700	Sep-15	873	Good
OC	Oystercatcher	22700	Aug-15	654	Good
OC	Oystercatcher	22700	May-15	420	Good
OC	Oystercatcher	22700	Mar-15	300	Good
OC	Oystercatcher	22700	Feb-15	85	Good
OC	Oystercatcher	22700	Jan-15	1800	Good
OC	Oystercatcher	22700	Dec-14	350	Poor
OC	Oystercatcher	22700	Nov-14	1119	Good
OC	Oystercatcher	22700	Oct-14	500	Good
OC	Oystercatcher	22700	Sep-14	2250	Good
OC	Oystercatcher	22700	Aug-14	1600	Good
OC	Oystercatcher	22700	Jul-14	240	Good
OC	Oystercatcher	22700	Jun-14	63	Good
OC	Oystercatcher	22700	May-14	175	Good
OC	Oystercatcher	22700	Apr-14	750	Good
OC	Oystercatcher	22700	Mar-14	450	Good
OC	Oystercatcher	22700	Nov-13	331	Good
OC	Oystercatcher	22700	Oct-13	775	Good
OC	Oystercatcher	22700	Sep-13	2027	Good
OC	Oystercatcher	22700	Aug-13	2700	Good
OC	Oystercatcher	22700	Jul-13	764	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
OC	Oystercatcher	22700	May-13	142	Good
OC	Oystercatcher	22700	Apr-13	310	Good
OC	Oystercatcher	22700	Jan-13	322	Good
OC	Oystercatcher	22700	Dec-12	1300	Good
OC	Oystercatcher	22700	Oct-12	700	Good
OC	Oystercatcher	22700	Sep-12	65	Good
OC	Oystercatcher	22700	Aug-12	164	Good
OC	Oystercatcher	22700	Jul-12	117	Good
OC	Oystercatcher	22700	Jun-12	454	Good
OC	Oystercatcher	22700	May-12	82	Good
OC	Oystercatcher	22700	Apr-12	575	Good
OC	Oystercatcher	22700	Mar-12	531	Good
OC	Oystercatcher	22700	Feb-12	266	Good
OC	Oystercatcher	22700	Jan-12	700	Good
OC	Oystercatcher	22700	Dec-11	325	Good
OC	Oystercatcher	22700	Nov-11	129	Good
OC	Oystercatcher	22700	Oct-11	750	Good
OC	Oystercatcher	22700	Sep-11	550	Good
OC	Oystercatcher	22700	Aug-11	2000	Good
AV	Avocet	22900	Oct-13	1	Good
RP	Ringed Plover	23600	Sep-15	62	Good
RP	Ringed Plover	23600	Aug-15	75	Good
RP	Ringed Plover	23600	Mar-15	2	Good
RP	Ringed Plover	23600	Feb-15	1	Good
RP	Ringed Plover	23600	Jan-15	1	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
RP	Ringed Plover	23600	Nov-14	50	Good
RP	Ringed Plover	23600	Sep-14	54	Good
RP	Ringed Plover	23600	Aug-14	32	Good
RP	Ringed Plover	23600	May-14	19	Good
RP	Ringed Plover	23600	Mar-14	5	Good
RP	Ringed Plover	23600	Oct-13	25	Good
RP	Ringed Plover	23600	Sep-13	2	Good
RP	Ringed Plover	23600	Aug-13	17	Good
RP	Ringed Plover	23600	May-13	33	Good
RP	Ringed Plover	23600	Apr-13	1	Good
RP	Ringed Plover	23600	Dec-12	6	Good
RP	Ringed Plover	23600	Oct-12	30	Good
RP	Ringed Plover	23600	Sep-12	27	Good
RP	Ringed Plover	23600	Aug-12	21	Good
RP	Ringed Plover	23600	Jun-12	1	Good
RP	Ringed Plover	23600	May-12	33	Good
RP	Ringed Plover	23600	Mar-12	4	Good
RP	Ringed Plover	23600	Feb-12	1	Good
RP	Ringed Plover	23600	Oct-11	615	Good
RP	Ringed Plover	23600	Sep-11	600	Good
RP	Ringed Plover	23600	Aug-11	40	Good
GP	Golden Plover	24700	Mar-16	2760	Good
GP	Golden Plover	24700	Feb-16	18000	Good
GP	Golden Plover	24700	Jan-16	20000	Good
GP	Golden Plover	24700	Dec-15	15000	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
GP	Golden Plover	24700	Nov-15	4500	Good
GP	Golden Plover	24700	Oct-15	1630	Good
GP	Golden Plover	24700	Sep-15	322	Good
GP	Golden Plover	24700	Aug-15	800	Good
GP	Golden Plover	24700	Mar-15	4750	Good
GP	Golden Plover	24700	Feb-15	5000	Good
GP	Golden Plover	24700	Jan-15	9000	Good
GP	Golden Plover	24700	Dec-14	5500	Poor
GP	Golden Plover	24700	Nov-14	10200	Good
GP	Golden Plover	24700	Oct-14	3000	Good
GP	Golden Plover	24700	Sep-14	2000	Good
GP	Golden Plover	24700	Mar-14	1040	Good
GP	Golden Plover	24700	Nov-13	5750	Good
GP	Golden Plover	24700	Oct-13	1300	Good
GP	Golden Plover	24700	Sep-13	2500	Good
GP	Golden Plover	24700	Aug-13	700	Good
GP	Golden Plover	24700	Apr-13	350	Good
GP	Golden Plover	24700	Mar-13	2990	Poor
GP	Golden Plover	24700	Feb-13	330	Good
GP	Golden Plover	24700	Jan-13	2120	Good
GP	Golden Plover	24700	Dec-12	6500	Good
GP	Golden Plover	24700	Oct-12	4600	Good
GP	Golden Plover	24700	Sep-12	61	Good
GP	Golden Plover	24700	Aug-12	3	Good
GP	Golden Plover	24700	Apr-12	37	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
GP	Golden Plover	24700	Mar-12	36	Good
GP	Golden Plover	24700	Feb-12	490	Good
GP	Golden Plover	24700	Jan-12	5720	Good
GP	Golden Plover	24700	Dec-11	4000	Good
GP	Golden Plover	24700	Nov-11	1115	Good
GP	Golden Plover	24700	Oct-11	6900	Good
GP	Golden Plover	24700	Sep-11	652	Good
GP	Golden Plover	24700	Aug-11	70	Good
GV	Grey Plover	24800	Jun-16	28	Good
GV	Grey Plover	24800	May-16	2	Good
GV	Grey Plover	24800	Apr-16	83	Good
GV	Grey Plover	24800	Mar-16	685	Good
GV	Grey Plover	24800	Feb-16	600	Good
GV	Grey Plover	24800	Jan-16	675	Good
GV	Grey Plover	24800	Dec-15	335	Good
GV	Grey Plover	24800	Nov-15	985	Good
GV	Grey Plover	24800	Oct-15	750	Good
GV	Grey Plover	24800	Sep-15	357	Good
GV	Grey Plover	24800	Aug-15	100	Good
GV	Grey Plover	24800	Mar-15	1000	Good
GV	Grey Plover	24800	Feb-15	420	Good
GV	Grey Plover	24800	Jan-15	1000	Good
GV	Grey Plover	24800	Dec-14	750	Poor
GV	Grey Plover	24800	Nov-14	1936	Good
GV	Grey Plover	24800	Oct-14	1550	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
GV	Grey Plover	24800	Sep-14	2880	Good
GV	Grey Plover	24800	Aug-14	100	Good
GV	Grey Plover	24800	Jul-14	21	Good
GV	Grey Plover	24800	Jun-14	5	Good
GV	Grey Plover	24800	May-14	42	Good
GV	Grey Plover	24800	Apr-14	615	Good
GV	Grey Plover	24800	Mar-14	4530	Good
GV	Grey Plover	24800	Nov-13	1160	Good
GV	Grey Plover	24800	Oct-13	350	Good
GV	Grey Plover	24800	Sep-13	473	Good
GV	Grey Plover	24800	Aug-13	860	Good
GV	Grey Plover	24800	May-13	1	Good
GV	Grey Plover	24800	Apr-13	515	Good
GV	Grey Plover	24800	Mar-13	500	Poor
GV	Grey Plover	24800	Feb-13	1320	Good
GV	Grey Plover	24800	Jan-13	3650	Good
GV	Grey Plover	24800	Dec-12	645	Good
GV	Grey Plover	24800	Oct-12	1650	Good
GV	Grey Plover	24800	Sep-12	538	Good
GV	Grey Plover	24800	Aug-12	1732	Good
GV	Grey Plover	24800	Jun-12	4	Good
GV	Grey Plover	24800	May-12	88	Good
GV	Grey Plover	24800	Apr-12	2000	Good
GV	Grey Plover	24800	Mar-12	1604	Good
GV	Grey Plover	24800	Feb-12	1780	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
GV	Grey Plover	24800	Jan-12	1350	Good
GV	Grey Plover	24800	Dec-11	1350	Good
GV	Grey Plover	24800	Nov-11	1428	Good
GV	Grey Plover	24800	Oct-11	670	Good
GV	Grey Plover	24800	Sep-11	1540	Good
GV	Grey Plover	24800	Aug-11	360	Good
L.	Lapwing	25300	Feb-16	40	Good
L.	Lapwing	25300	Jan-16	1000	Good
L.	Lapwing	25300	Dec-15	1200	Good
L.	Lapwing	25300	Nov-15	415	Good
L.	Lapwing	25300	Feb-15	600	Good
L.	Lapwing	25300	Jan-15	4300	Good
L.	Lapwing	25300	Dec-14	460	Poor
L.	Lapwing	25300	Nov-14	340	Good
L.	Lapwing	25300	Oct-14	207	Good
L.	Lapwing	25300	Jul-14	1	Good
L.	Lapwing	25300	Jun-14	3	Good
L.	Lapwing	25300	Nov-13	317	Good
L.	Lapwing	25300	Oct-13	133	Good
L.	Lapwing	25300	Jul-13	1	Good
L.	Lapwing	25300	Feb-13	185	Good
L.	Lapwing	25300	Jan-13	705	Good
L.	Lapwing	25300	Dec-12	2870	Good
L.	Lapwing	25300	Oct-12	250	Good
L.	Lapwing	25300	Feb-12	190	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
L.	Lapwing	25300	Dec-11	2010	Good
L.	Lapwing	25300	Nov-11	670	Good
L.	Lapwing	25300	Oct-11	790	Good
KN	Knot	25500	Apr-16	45	Good
KN	Knot	25500	Mar-16	8040	Good
KN	Knot	25500	Feb-16	4500	Good
KN	Knot	25500	Jan-16	7500	Good
KN	Knot	25500	Dec-15	3000	Good
KN	Knot	25500	Nov-15	12800	Good
KN	Knot	25500	Oct-15	2400	Good
KN	Knot	25500	Sep-15	350	Good
KN	Knot	25500	Aug-15	10	Good
KN	Knot	25500	Mar-15	4500	Good
KN	Knot	25500	Feb-15	3500	Good
KN	Knot	25500	Jan-15	5000	Good
KN	Knot	25500	Dec-14	3000	Poor
KN	Knot	25500	Nov-14	9100	Good
KN	Knot	25500	Oct-14	7350	Good
KN	Knot	25500	Sep-14	440	Good
KN	Knot	25500	Apr-14	200	Good
KN	Knot	25500	Mar-14	3800	Good
KN	Knot	25500	Nov-13	7000	Good
KN	Knot	25500	Oct-13	7500	Good
KN	Knot	25500	Sep-13	3	Good
KN	Knot	25500	Aug-13	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
KN	Knot	25500	Apr-13	150	Good
KN	Knot	25500	Feb-13	1500	Good
KN	Knot	25500	Jan-13	1650	Good
KN	Knot	25500	Dec-12	6750	Good
KN	Knot	25500	Oct-12	13800	Good
KN	Knot	25500	Sep-12	30	Good
KN	Knot	25500	Aug-12	70	Good
KN	Knot	25500	Apr-12	320	Good
KN	Knot	25500	Mar-12	400	Good
KN	Knot	25500	Feb-12	3550	Good
KN	Knot	25500	Jan-12	4500	Good
KN	Knot	25500	Dec-11	2285	Good
KN	Knot	25500	Nov-11	3550	Good
KN	Knot	25500	Oct-11	6900	Good
KN	Knot	25500	Sep-11	475	Good
KN	Knot	25500	Aug-11	85	Good
SS	Sanderling	25600	Mar-16	11	Good
SS	Sanderling	25600	Dec-15	8	Good
SS	Sanderling	25600	Sep-15	116	Good
SS	Sanderling	25600	Jan-15	3	Good
SS	Sanderling	25600	Nov-14	20	Good
SS	Sanderling	25600	Sep-14	4	Good
SS	Sanderling	25600	Mar-14	9	Good
SS	Sanderling	25600	Nov-13	2	Good
SS	Sanderling	25600	Oct-13	5	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
SS	Sanderling	25600	Aug-13	1	Good
SS	Sanderling	25600	Dec-12	6	Good
SS	Sanderling	25600	Sep-12	1	Good
SS	Sanderling	25600	Aug-12	2	Good
SS	Sanderling	25600	Mar-12	13	Good
SS	Sanderling	25600	Feb-12	2	Good
SS	Sanderling	25600	Jan-12	7	Good
SS	Sanderling	25600	Nov-11	26	Good
SS	Sanderling	25600	Oct-11	26	Good
SS	Sanderling	25600	Aug-11	22	Good
LX	Little Stint	25900	Sep-13	1	Good
LX	Little Stint	25900	Feb-12	1	Good
CV	Curlew Sandpiper	26700	Oct-14	1	Good
DN	Dunlin	27000	Jun-16	20	Good
DN	Dunlin	27000	May-16	60	Good
DN	Dunlin	27000	Apr-16	350	Good
DN	Dunlin	27000	Mar-16	6750	Good
DN	Dunlin	27000	Jan-16	750	Good
DN	Dunlin	27000	Dec-15	300	Good
DN	Dunlin	27000	Nov-15	400	Good
DN	Dunlin	27000	Oct-15	3500	Good
DN	Dunlin	27000	Sep-15	420	Good
DN	Dunlin	27000	Aug-15	10	Good
DN	Dunlin	27000	Mar-15	2800	Good
DN	Dunlin	27000	Feb-15	3250	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
DN	Dunlin	27000	Jan-15	2500	Good
DN	Dunlin	27000	Dec-14	1000	Poor
DN	Dunlin	27000	Nov-14	356	Good
DN	Dunlin	27000	Oct-14	3360	Good
DN	Dunlin	27000	Sep-14	730	Good
DN	Dunlin	27000	Jul-14	52	Good
DN	Dunlin	27000	May-14	33	Good
DN	Dunlin	27000	Apr-14	1180	Good
DN	Dunlin	27000	Mar-14	2540	Good
DN	Dunlin	27000	Nov-13	1315	Good
DN	Dunlin	27000	Oct-13	635	Good
DN	Dunlin	27000	Sep-13	640	Good
DN	Dunlin	27000	Aug-13	156	Good
DN	Dunlin	27000	May-13	15	Good
DN	Dunlin	27000	Apr-13	440	Good
DN	Dunlin	27000	Feb-13	3325	Good
DN	Dunlin	27000	Jan-13	2710	Good
DN	Dunlin	27000	Dec-12	1075	Good
DN	Dunlin	27000	Oct-12	4250	Good
DN	Dunlin	27000	Sep-12	25	Good
DN	Dunlin	27000	Aug-12	175	Good
DN	Dunlin	27000	Jul-12	5	Good
DN	Dunlin	27000	Jun-12	1	Good
DN	Dunlin	27000	May-12	201	Good
DN	Dunlin	27000	Apr-12	2680	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
DN	Dunlin	27000	Mar-12	2000	Good
DN	Dunlin	27000	Feb-12	5700	Good
DN	Dunlin	27000	Jan-12	2500	Good
DN	Dunlin	27000	Dec-11	2500	Good
DN	Dunlin	27000	Nov-11	1950	Good
DN	Dunlin	27000	Oct-11	3000	Good
DN	Dunlin	27000	Sep-11	650	Good
DN	Dunlin	27000	Aug-11	900	Good
SN	Snipe	27900	Dec-15	4	Good
SN	Snipe	27900	Feb-15	1	Good
SN	Snipe	27900	Jan-15	2	Good
SN	Snipe	27900	Sep-13	2	Good
SN	Snipe	27900	Dec-12	4	Good
SN	Snipe	27900	Oct-11	1	Good
BW	Black-tailed Godwit	28400	May-16	1	Good
BW	Black-tailed Godwit	28400	Aug-14	8	Good
BW	Black-tailed Godwit	28400	Oct-13	4	Good
BW	Black-tailed Godwit	28400	Mar-12	20	Good
BA	Bar-tailed Godwit	28600	Jun-16	1	Good
BA	Bar-tailed Godwit	28600	Mar-16	330	Good
BA	Bar-tailed Godwit	28600	Feb-16	950	Good
BA	Bar-tailed Godwit	28600	Jan-16	1200	Good
BA	Bar-tailed Godwit	28600	Dec-15	500	Good
BA	Bar-tailed Godwit	28600	Nov-15	1100	Good
BA	Bar-tailed Godwit	28600	Oct-15	1400	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
BA	Bar-tailed Godwit	28600	Sep-15	450	Good
BA	Bar-tailed Godwit	28600	Mar-15	100	Good
BA	Bar-tailed Godwit	28600	Feb-15	600	Good
BA	Bar-tailed Godwit	28600	Jan-15	600	Good
BA	Bar-tailed Godwit	28600	Dec-14	140	Poor
BA	Bar-tailed Godwit	28600	Nov-14	70	Good
BA	Bar-tailed Godwit	28600	Oct-14	350	Good
BA	Bar-tailed Godwit	28600	Sep-14	340	Good
BA	Bar-tailed Godwit	28600	Apr-14	100	Good
BA	Bar-tailed Godwit	28600	Mar-14	400	Good
BA	Bar-tailed Godwit	28600	Nov-13	550	Good
BA	Bar-tailed Godwit	28600	Oct-13	20	Good
BA	Bar-tailed Godwit	28600	Aug-13	8	Good
BA	Bar-tailed Godwit	28600	May-13	150	Good
BA	Bar-tailed Godwit	28600	Apr-13	31	Good
BA	Bar-tailed Godwit	28600	Feb-13	40	Good
BA	Bar-tailed Godwit	28600	Jan-13	440	Good
BA	Bar-tailed Godwit	28600	Dec-12	1600	Good
BA	Bar-tailed Godwit	28600	Oct-12	500	Good
BA	Bar-tailed Godwit	28600	Sep-12	14	Good
BA	Bar-tailed Godwit	28600	Aug-12	64	Good
BA	Bar-tailed Godwit	28600	Jul-12	46	Good
BA	Bar-tailed Godwit	28600	Apr-12	85	Good
BA	Bar-tailed Godwit	28600	Mar-12	78	Good
BA	Bar-tailed Godwit	28600	Feb-12	1125	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
BA	Bar-tailed Godwit	28600	Jan-12	1650	Good
BA	Bar-tailed Godwit	28600	Dec-11	550	Good
BA	Bar-tailed Godwit	28600	Nov-11	900	Good
BA	Bar-tailed Godwit	28600	Oct-11	375	Good
BA	Bar-tailed Godwit	28600	Sep-11	440	Good
BA	Bar-tailed Godwit	28600	Aug-11	2360	Good
WM	Whimbrel	28900	May-16	13	Good
WM	Whimbrel	28900	Sep-15	2	Good
WM	Whimbrel	28900	Aug-15	10	Good
WM	Whimbrel	28900	Sep-14	1	Good
WM	Whimbrel	28900	Aug-14	17	Good
WM	Whimbrel	28900	Jul-14	2	Good
WM	Whimbrel	28900	May-14	4	Good
WM	Whimbrel	28900	Apr-14	4	Good
WM	Whimbrel	28900	Aug-13	6	Good
WM	Whimbrel	28900	Jul-13	1	Good
WM	Whimbrel	28900	May-13	12	Good
WM	Whimbrel	28900	Apr-13	1	Good
WM	Whimbrel	28900	Aug-12	2	Good
WM	Whimbrel	28900	Jul-12	3	Good
WM	Whimbrel	28900	Apr-12	1	Good
WM	Whimbrel	28900	Aug-11	19	Good
CU	Curlew	29000	Jun-16	1	Good
CU	Curlew	29000	May-16	14	Good
CU	Curlew	29000	Apr-16	26	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CU	Curlew	29000	Mar-16	39	Good
CU	Curlew	29000	Feb-16	53	Good
CU	Curlew	29000	Jan-16	137	Good
CU	Curlew	29000	Dec-15	70	Good
CU	Curlew	29000	Nov-15	88	Good
CU	Curlew	29000	Oct-15	150	Good
CU	Curlew	29000	Sep-15	65	Good
CU	Curlew	29000	Aug-15	60	Good
CU	Curlew	29000	Mar-15	100	Good
CU	Curlew	29000	Feb-15	167	Good
CU	Curlew	29000	Jan-15	450	Good
CU	Curlew	29000	Dec-14	150	Poor
CU	Curlew	29000	Nov-14	17	Good
CU	Curlew	29000	Oct-14	130	Good
CU	Curlew	29000	Sep-14	60	Good
CU	Curlew	29000	Jul-14	52	Good
CU	Curlew	29000	Jun-14	34	Good
CU	Curlew	29000	Apr-14	1	Good
CU	Curlew	29000	Mar-14	34	Good
CU	Curlew	29000	Nov-13	69	Good
CU	Curlew	29000	Oct-13	125	Good
CU	Curlew	29000	Sep-13	50	Good
CU	Curlew	29000	Aug-13	65	Good
CU	Curlew	29000	Jul-13	57	Good
CU	Curlew	29000	May-13	1	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CU	Curlew	29000	Apr-13	25	Good
CU	Curlew	29000	Feb-13	71	Good
CU	Curlew	29000	Jan-13	30	Good
CU	Curlew	29000	Dec-12	126	Good
CU	Curlew	29000	Oct-12	120	Good
CU	Curlew	29000	Sep-12	55	Good
CU	Curlew	29000	Aug-12	31	Good
CU	Curlew	29000	Jul-12	21	Good
CU	Curlew	29000	Jun-12	6	Good
CU	Curlew	29000	May-12	13	Good
CU	Curlew	29000	Apr-12	39	Good
CU	Curlew	29000	Mar-12	22	Good
CU	Curlew	29000	Feb-12	73	Good
CU	Curlew	29000	Jan-12	63	Good
CU	Curlew	29000	Dec-11	119	Good
CU	Curlew	29000	Nov-11	24	Good
CU	Curlew	29000	Oct-11	120	Good
CU	Curlew	29000	Sep-11	65	Good
CU	Curlew	29000	Aug-11	1	Good
CS	Common Sandpiper	29300	Aug-14	1	Good
CS	Common Sandpiper	29300	Aug-13	1	Good
CS	Common Sandpiper	29300	Aug-12	2	Good
CS	Common Sandpiper	29300	Sep-11	1	Good
GE	Green Sandpiper	29500	Nov-14	1	Good
GE	Green Sandpiper	29500	Jul-13	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
GE	Green Sandpiper	29500	May-13	1	Good
GE	Green Sandpiper	29500	Aug-12	2	Good
DR	Spotted Redshank	29700	Aug-11	1	Good
GK	Greenshank	29900	Jul-14	1	Good
GK	Greenshank	29900	Aug-12	3	Good
RK	Redshank	30300	Jun-16	32	Good
RK	Redshank	30300	May-16	40	Good
RK	Redshank	30300	Apr-16	41	Good
RK	Redshank	30300	Mar-16	193	Good
RK	Redshank	30300	Feb-16	480	Good
RK	Redshank	30300	Jan-16	275	Good
RK	Redshank	30300	Dec-15	225	Good
RK	Redshank	30300	Nov-15	125	Good
RK	Redshank	30300	Oct-15	185	Good
RK	Redshank	30300	Sep-15	20	Good
RK	Redshank	30300	Aug-15	21	Good
RK	Redshank	30300	May-15	8	Good
RK	Redshank	30300	Mar-15	60	Good
RK	Redshank	30300	Feb-15	245	Good
RK	Redshank	30300	Jan-15	250	Good
RK	Redshank	30300	Dec-14	175	Poor
RK	Redshank	30300	Nov-14	110	Good
RK	Redshank	30300	Oct-14	325	Good
RK	Redshank	30300	Sep-14	69	Good
RK	Redshank	30300	Aug-14	31	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
RK	Redshank	30300	Jul-14	9	Good
RK	Redshank	30300	Jun-14	24	Good
RK	Redshank	30300	May-14	29	Good
RK	Redshank	30300	Apr-14	37	Good
RK	Redshank	30300	Mar-14	115	Good
RK	Redshank	30300	Nov-13	300	Good
RK	Redshank	30300	Oct-13	121	Good
RK	Redshank	30300	Sep-13	48	Good
RK	Redshank	30300	Aug-13	73	Good
RK	Redshank	30300	Jul-13	28	Good
RK	Redshank	30300	May-13	19	Good
RK	Redshank	30300	Apr-13	185	Good
RK	Redshank	30300	Feb-13	145	Good
RK	Redshank	30300	Jan-13	180	Good
RK	Redshank	30300	Dec-12	190	Good
RK	Redshank	30300	Oct-12	220	Good
RK	Redshank	30300	Sep-12	250	Good
RK	Redshank	30300	Aug-12	200	Good
RK	Redshank	30300	Jul-12	48	Good
RK	Redshank	30300	Jun-12	25	Good
RK	Redshank	30300	May-12	17	Good
RK	Redshank	30300	Apr-12	170	Good
RK	Redshank	30300	Mar-12	150	Good
RK	Redshank	30300	Feb-12	506	Good
RK	Redshank	30300	Jan-12	70	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
RK	Redshank	30300	Dec-11	255	Good
RK	Redshank	30300	Nov-11	139	Good
RK	Redshank	30300	Oct-11	725	Good
RK	Redshank	30300	Sep-11	186	Good
RK	Redshank	30300	Aug-11	32	Good
TT	Turnstone	30600	Apr-16	6	Good
TT	Turnstone	30600	Feb-16	40	Good
TT	Turnstone	30600	Jan-16	2	Good
TT	Turnstone	30600	Dec-15	12	Good
TT	Turnstone	30600	Sep-15	50	Good
TT	Turnstone	30600	Aug-15	17	Good
TT	Turnstone	30600	Mar-15	21	Good
TT	Turnstone	30600	Feb-15	11	Good
TT	Turnstone	30600	Jan-15	6	Good
TT	Turnstone	30600	Nov-14	84	Good
TT	Turnstone	30600	Oct-14	2	Good
TT	Turnstone	30600	Sep-14	130	Good
TT	Turnstone	30600	Aug-14	8	Good
TT	Turnstone	30600	Apr-14	6	Good
TT	Turnstone	30600	Mar-14	43	Good
TT	Turnstone	30600	Nov-13	20	Good
TT	Turnstone	30600	Oct-13	37	Good
TT	Turnstone	30600	Sep-13	27	Good
TT	Turnstone	30600	Aug-13	21	Good
TT	Turnstone	30600	Jul-13	5	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
TT	Turnstone	30600	May-13	8	Good
TT	Turnstone	30600	Apr-13	11	Good
TT	Turnstone	30600	Feb-13	2	Good
TT	Turnstone	30600	Jan-13	92	Good
TT	Turnstone	30600	Dec-12	32	Good
TT	Turnstone	30600	Oct-12	5	Good
TT	Turnstone	30600	Jun-12	1	Good
TT	Turnstone	30600	May-12	1	Good
TT	Turnstone	30600	Apr-12	6	Good
TT	Turnstone	30600	Mar-12	33	Good
TT	Turnstone	30600	Feb-12	70	Good
TT	Turnstone	30600	Jan-12	10	Good
TT	Turnstone	30600	Nov-11	66	Good
TT	Turnstone	30600	Oct-11	19	Good
TT	Turnstone	30600	Sep-11	40	Good
TT	Turnstone	30600	Aug-11	58	Good
KI	Kittiwake	32000	Jan-12	1	Good
BH	Black-headed Gull	32200	Jun-16	53	Good
BH	Black-headed Gull	32200	May-16	69	Good
BH	Black-headed Gull	32200	Apr-16	37	Good
BH	Black-headed Gull	32200	Mar-16	25	Good
BH	Black-headed Gull	32200	Feb-16	46	Good
BH	Black-headed Gull	32200	Jan-16	50	Good
BH	Black-headed Gull	32200	Dec-15	60	Good
BH	Black-headed Gull	32200	Nov-15	18	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
BH	Black-headed Gull	32200	Oct-15	12	Good
BH	Black-headed Gull	32200	Sep-15	1043	Good
BH	Black-headed Gull	32200	Aug-15	59	Good
BH	Black-headed Gull	32200	May-15	31	Good
BH	Black-headed Gull	32200	Mar-15	54	Good
BH	Black-headed Gull	32200	Feb-15	145	Good
BH	Black-headed Gull	32200	Jan-15	35	Good
BH	Black-headed Gull	32200	Dec-14	45	Poor
BH	Black-headed Gull	32200	Nov-14	430	Good
BH	Black-headed Gull	32200	Oct-14	171	Good
BH	Black-headed Gull	32200	Sep-14	1080	Good
BH	Black-headed Gull	32200	Aug-14	400	Good
BH	Black-headed Gull	32200	Jul-14	498	Good
BH	Black-headed Gull	32200	Jun-14	75	Good
BH	Black-headed Gull	32200	May-14	46	Good
BH	Black-headed Gull	32200	Apr-14	37	Good
BH	Black-headed Gull	32200	Mar-14	462	Good
BH	Black-headed Gull	32200	Nov-13	52	Good
BH	Black-headed Gull	32200	Oct-13	219	Good
BH	Black-headed Gull	32200	Sep-13	1460	Good
BH	Black-headed Gull	32200	Aug-13	664	Good
BH	Black-headed Gull	32200	Jul-13	699	Good
BH	Black-headed Gull	32200	May-13	25	Good
BH	Black-headed Gull	32200	Apr-13	48	Good
BH	Black-headed Gull	32200	Feb-13	13	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
BH	Black-headed Gull	32200	Jan-13	85	Good
BH	Black-headed Gull	32200	Dec-12	250	Good
BH	Black-headed Gull	32200	Oct-12	160	Good
BH	Black-headed Gull	32200	Sep-12	429	Good
BH	Black-headed Gull	32200	Aug-12	1143	Good
BH	Black-headed Gull	32200	Jul-12	488	Good
BH	Black-headed Gull	32200	Jun-12	36	Good
BH	Black-headed Gull	32200	May-12	28	Good
BH	Black-headed Gull	32200	Apr-12	52	Good
BH	Black-headed Gull	32200	Mar-12	121	Good
BH	Black-headed Gull	32200	Feb-12	125	Good
BH	Black-headed Gull	32200	Dec-11	85	Good
BH	Black-headed Gull	32200	Nov-11	29	Good
BH	Black-headed Gull	32200	Oct-11	128	Good
BH	Black-headed Gull	32200	Sep-11	796	Good
BH	Black-headed Gull	32200	Aug-11	2020	Good
LU	Little Gull	32300	Jul-13	1	Good
MU	Mediterranean Gull	32800	Apr-16	4	Good
MU	Mediterranean Gull	32800	Mar-15	1	Good
MU	Mediterranean Gull	32800	Aug-13	1	Good
MU	Mediterranean Gull	32800	Jul-13	2	Good
MU	Mediterranean Gull	32800	Jun-12	1	Good
CM	Common Gull	32900	May-16	1	Good
CM	Common Gull	32900	Mar-16	26	Good
CM	Common Gull	32900	Feb-16	85	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CM	Common Gull	32900	Jan-16	150	Good
CM	Common Gull	32900	Nov-15	327	Good
CM	Common Gull	32900	Oct-15	51	Good
CM	Common Gull	32900	Sep-15	240	Good
CM	Common Gull	32900	Aug-15	20	Good
CM	Common Gull	32900	Mar-15	10	Good
CM	Common Gull	32900	Feb-15	250	Good
CM	Common Gull	32900	Jan-15	220	Good
CM	Common Gull	32900	Dec-14	38	Poor
CM	Common Gull	32900	Nov-14	13	Good
CM	Common Gull	32900	Oct-14	2	Good
CM	Common Gull	32900	Sep-14	607	Good
CM	Common Gull	32900	Aug-14	130	Good
CM	Common Gull	32900	Jul-14	55	Good
CM	Common Gull	32900	Apr-14	1	Good
CM	Common Gull	32900	Mar-14	57	Good
CM	Common Gull	32900	Nov-13	2	Good
CM	Common Gull	32900	Oct-13	5	Good
CM	Common Gull	32900	Sep-13	46	Good
CM	Common Gull	32900	Aug-13	106	Good
CM	Common Gull	32900	Jul-13	58	Good
CM	Common Gull	32900	Apr-13	34	Good
CM	Common Gull	32900	Feb-13	6	Good
CM	Common Gull	32900	Jan-13	133	Good
CM	Common Gull	32900	Dec-12	85	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
CM	Common Gull	32900	Oct-12	19	Good
CM	Common Gull	32900	Sep-12	40	Good
CM	Common Gull	32900	Aug-12	629	Good
CM	Common Gull	32900	Jul-12	104	Good
CM	Common Gull	32900	Jun-12	6	Good
CM	Common Gull	32900	Apr-12	16	Good
CM	Common Gull	32900	Mar-12	15	Good
CM	Common Gull	32900	Feb-12	33	Good
CM	Common Gull	32900	Jan-12	37	Good
CM	Common Gull	32900	Dec-11	78	Good
CM	Common Gull	32900	Nov-11	21	Good
CM	Common Gull	32900	Oct-11	125	Good
CM	Common Gull	32900	Sep-11	166	Good
CM	Common Gull	32900	Aug-11	825	Good
LB	Lesser Black-backed Gull	33100	Jun-16	3	Good
LB	Lesser Black-backed Gull	33100	Apr-16	6	Good
LB	Lesser Black-backed Gull	33100	Mar-16	5	Good
LB	Lesser Black-backed Gull	33100	Feb-16	1	Good
LB	Lesser Black-backed Gull	33100	Dec-15	2	Good
LB	Lesser Black-backed Gull	33100	Nov-15	1	Good
LB	Lesser Black-backed Gull	33100	Sep-15	1	Good
LB	Lesser Black-backed Gull	33100	May-15	7	Good
LB	Lesser Black-backed Gull	33100	Feb-15	5	Good
LB	Lesser Black-backed Gull	33100	Jan-15	8	Good
LB	Lesser Black-backed Gull	33100	Dec-14	15	Poor

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
LB	Lesser Black-backed Gull	33100	Nov-14	10	Good
LB	Lesser Black-backed Gull	33100	Oct-14	1	Good
LB	Lesser Black-backed Gull	33100	Sep-14	21	Good
LB	Lesser Black-backed Gull	33100	Aug-14	3	Good
LB	Lesser Black-backed Gull	33100	Jul-14	2	Good
LB	Lesser Black-backed Gull	33100	Jun-14	13	Good
LB	Lesser Black-backed Gull	33100	May-14	5	Good
LB	Lesser Black-backed Gull	33100	Apr-14	2	Good
LB	Lesser Black-backed Gull	33100	Mar-14	3	Good
LB	Lesser Black-backed Gull	33100	Nov-13	1	Good
LB	Lesser Black-backed Gull	33100	Oct-13	1	Good
LB	Lesser Black-backed Gull	33100	Sep-13	5	Good
LB	Lesser Black-backed Gull	33100	Aug-13	3	Good
LB	Lesser Black-backed Gull	33100	Jul-13	4	Good
LB	Lesser Black-backed Gull	33100	May-13	5	Good
LB	Lesser Black-backed Gull	33100	Apr-13	3	Good
LB	Lesser Black-backed Gull	33100	Jan-13	1	Good
LB	Lesser Black-backed Gull	33100	Dec-12	10	Good
LB	Lesser Black-backed Gull	33100	Oct-12	2	Good
LB	Lesser Black-backed Gull	33100	Jul-12	7	Good
LB	Lesser Black-backed Gull	33100	Jun-12	3	Good
LB	Lesser Black-backed Gull	33100	May-12	3	Good
LB	Lesser Black-backed Gull	33100	Apr-12	2	Good
LB	Lesser Black-backed Gull	33100	Mar-12	14	Good
LB	Lesser Black-backed Gull	33100	Feb-12	4	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
LB	Lesser Black-backed Gull	33100	Jan-12	4	Good
LB	Lesser Black-backed Gull	33100	Nov-11	1	Good
LB	Lesser Black-backed Gull	33100	Oct-11	1	Good
LB	Lesser Black-backed Gull	33100	Sep-11	5	Good
HG	Herring Gull	33200	Jun-16	164	Good
HG	Herring Gull	33200	May-16	122	Good
HG	Herring Gull	33200	Apr-16	129	Good
HG	Herring Gull	33200	Mar-16	53	Good
HG	Herring Gull	33200	Feb-16	105	Good
HG	Herring Gull	33200	Jan-16	23	Good
HG	Herring Gull	33200	Dec-15	70	Good
HG	Herring Gull	33200	Nov-15	34	Good
HG	Herring Gull	33200	Oct-15	98	Good
HG	Herring Gull	33200	Sep-15	113	Good
HG	Herring Gull	33200	Aug-15	175	Good
HG	Herring Gull	33200	May-15	89	Good
HG	Herring Gull	33200	Mar-15	50	Good
HG	Herring Gull	33200	Feb-15	105	Good
HG	Herring Gull	33200	Jan-15	70	Good
HG	Herring Gull	33200	Dec-14	34	Poor
HG	Herring Gull	33200	Nov-14	308	Good
HG	Herring Gull	33200	Oct-14	193	Good
HG	Herring Gull	33200	Sep-14	345	Good
HG	Herring Gull	33200	Aug-14	18	Good
HG	Herring Gull	33200	Jul-14	209	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
HG	Herring Gull	33200	Jun-14	156	Good
HG	Herring Gull	33200	May-14	100	Good
HG	Herring Gull	33200	Apr-14	80	Good
HG	Herring Gull	33200	Mar-14	25	Good
HG	Herring Gull	33200	Nov-13	44	Good
HG	Herring Gull	33200	Oct-13	156	Good
HG	Herring Gull	33200	Sep-13	89	Good
HG	Herring Gull	33200	Aug-13	74	Good
HG	Herring Gull	33200	Jul-13	151	Good
HG	Herring Gull	33200	May-13	60	Good
HG	Herring Gull	33200	Apr-13	103	Good
HG	Herring Gull	33200	Feb-13	32	Good
HG	Herring Gull	33200	Jan-13	72	Good
HG	Herring Gull	33200	Dec-12	149	Good
HG	Herring Gull	33200	Oct-12	73	Good
HG	Herring Gull	33200	Sep-12	190	Good
HG	Herring Gull	33200	Aug-12	359	Good
HG	Herring Gull	33200	Jul-12	85	Good
HG	Herring Gull	33200	Jun-12	385	Good
HG	Herring Gull	33200	May-12	104	Good
HG	Herring Gull	33200	Apr-12	47	Good
HG	Herring Gull	33200	Mar-12	70	Good
HG	Herring Gull	33200	Feb-12	83	Good
HG	Herring Gull	33200	Jan-12	139	Good
HG	Herring Gull	33200	Dec-11	78	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
HG	Herring Gull	33200	Nov-11	234	Good
HG	Herring Gull	33200	Oct-11	252	Good
HG	Herring Gull	33200	Sep-11	177	Good
HG	Herring Gull	33200	Aug-11	51	Good
YG	Yellow-legged Gull	33300	Sep-11	1	Good
GB	Great Black-backed Gull	33800	Apr-16	3	Good
GB	Great Black-backed Gull	33800	Mar-16	2	Good
GB	Great Black-backed Gull	33800	Feb-16	2	Good
GB	Great Black-backed Gull	33800	Jan-16	3	Good
GB	Great Black-backed Gull	33800	Dec-15	7	Good
GB	Great Black-backed Gull	33800	Nov-15	10	Good
GB	Great Black-backed Gull	33800	Oct-15	7	Good
GB	Great Black-backed Gull	33800	Sep-15	4	Good
GB	Great Black-backed Gull	33800	Aug-15	1	Good
GB	Great Black-backed Gull	33800	Mar-15	1	Good
GB	Great Black-backed Gull	33800	Feb-15	1	Good
GB	Great Black-backed Gull	33800	Jan-15	10	Good
GB	Great Black-backed Gull	33800	Nov-14	8	Good
GB	Great Black-backed Gull	33800	Oct-14	5	Good
GB	Great Black-backed Gull	33800	Sep-14	17	Good
GB	Great Black-backed Gull	33800	Jul-14	2	Good
GB	Great Black-backed Gull	33800	Jun-14	2	Good
GB	Great Black-backed Gull	33800	Mar-14	2	Good
GB	Great Black-backed Gull	33800	Nov-13	1	Good
GB	Great Black-backed Gull	33800	Oct-13	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
GB	Great Black-backed Gull	33800	Sep-13	18	Good
GB	Great Black-backed Gull	33800	Aug-13	3	Good
GB	Great Black-backed Gull	33800	Jul-13	10	Good
GB	Great Black-backed Gull	33800	May-13	3	Good
GB	Great Black-backed Gull	33800	Apr-13	2	Good
GB	Great Black-backed Gull	33800	Feb-13	3	Good
GB	Great Black-backed Gull	33800	Jan-13	7	Good
GB	Great Black-backed Gull	33800	Dec-12	5	Good
GB	Great Black-backed Gull	33800	Oct-12	7	Good
GB	Great Black-backed Gull	33800	Sep-12	1	Good
GB	Great Black-backed Gull	33800	Aug-12	26	Good
GB	Great Black-backed Gull	33800	Jul-12	4	Good
GB	Great Black-backed Gull	33800	Jun-12	1	Good
GB	Great Black-backed Gull	33800	May-12	3	Good
GB	Great Black-backed Gull	33800	Apr-12	3	Good
GB	Great Black-backed Gull	33800	Mar-12	1	Good
GB	Great Black-backed Gull	33800	Feb-12	4	Good
GB	Great Black-backed Gull	33800	Jan-12	9	Good
GB	Great Black-backed Gull	33800	Dec-11	3	Good
GB	Great Black-backed Gull	33800	Nov-11	10	Good
GB	Great Black-backed Gull	33800	Oct-11	16	Good
GB	Great Black-backed Gull	33800	Sep-11	2	Good
GB	Great Black-backed Gull	33800	Aug-11	16	Good
AF	Little Tern	35600	May-16	2	Good
AF	Little Tern	35600	Aug-14	2	Good

Species Code	Species	Taxon Sort	Visit	Count	Species Cover
AF	Little Tern	35600	Aug-13	1	Good
AF	Little Tern	35600	Jun-12	4	Good
AF	Little Tern	35600	Sep-11	16	Good
TE	Sandwich Tern	36200	Sep-15	2	Good
TE	Sandwich Tern	36200	Sep-14	2	Good
TE	Sandwich Tern	36200	Aug-13	5	Good
TE	Sandwich Tern	36200	Sep-11	24	Good
CN	Common Tern	36700	Jun-16	2	Good
CN	Common Tern	36700	Sep-15	5	Good
CN	Common Tern	36700	May-15	6	Good
CN	Common Tern	36700	Sep-14	2	Good
CN	Common Tern	36700	May-14	2	Good
CN	Common Tern	36700	Aug-13	3	Good
CN	Common Tern	36700	Jul-13	1	Good
CN	Common Tern	36700	May-13	1	Good
CN	Common Tern	36700	Aug-12	1	Good
CN	Common Tern	36700	Jun-12	8	Good
CN	Common Tern	36700	Sep-11	22	Good
CN	Common Tern	36700	Aug-11	10	Good
AE	Arctic Tern	36900	Sep-14	1	Good
AE	Arctic Tern	36900	Sep-11	1	Good
KF	Kingfisher	38200	Sep-14	2	Good
KF	Kingfisher	38200	Aug-14	1	Good