

# GridLink Interconnector

## Ecology Report Volume 1 - Ecological Impact Assessment

GridLink Interconnector Limited

October 2020

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# 1. Introduction

## Project Background

- 1.1 AECOM has been commissioned by GridLink Interconnector Ltd (the Applicant) to prepare an outline planning application including an ecological impact assessment for the construction and operation of a converter station and associated underground electricity cables at Kingsnorth in Kent (hereafter referred to as the 'Proposed Development'). The Proposed Development comprises the converter station building(s), outdoor equipment, internal roads, car parking and associated landscaping, and underground HVDC cable from the converter station to Mean High-Water Springs (installed by Horizontal Directional Drilling). The submarine HVDC cable below Mean High-Water Springs is subject to a Marine Licence granted by the Marine Management Organisation (MMO), therefore it is not included in the Proposed Development. In addition, the underground HVAC cable that will link the converter station to the National Grid Kingsnorth substation is considered to be permitted development and, therefore, it does not form part of the Proposed Development.
- 1.2 The Site is located immediately north of the Medway Estuary in Kent (grid reference TQ 81711 72312), within the former Kingsnorth coal-fired power station site (now demolished). The landscape comprises industrial developments associated with the former power station, such as the National Grid substation, as well as Kingsnorth industrial estate, London Medway Commercial Park and Damhead Creek gas-fired power station. The wider landscape includes arable land, coastal grassland and intertidal mudflats. The Site lies immediately north of the Medway Estuary and Marshes Special Protection Area (SPA), Ramsar and Site of Special Scientific Interest (SSSI), which is designated for its internationally important bird populations.
- 1.3 The Site (as shown in Figure V1.1, Appendix A) covers approximately 6.2ha of brownfield land at the former Kingsnorth Power Station site, within which the new converter station (4.95ha) and access road (1.25ha) will be constructed. A temporary construction laydown area (1.6ha) will also be located next to the converter site during the construction phase.
- 1.4 The redline boundary for the Site includes the existing road within the former Kingsnorth Power Station site that extends from the Site to the main gate on Eschol Road. This has been included within the application boundary in order to identify the access route to be used during the construction and operation of the Proposed Development. This road comprises hardstanding of negligible ecological value and is not to be altered within the Proposed Development application. This is therefore not subject to further ecological consideration regarding habitats and species within this assessment.
- 1.5 Ecology surveys (Phase 1 habitat survey, wintering bird survey and breeding bird survey) were undertaken by AECOM in 2019-2020 and are detailed in Volume 2 to 4 of the Ecology Report. In addition, the Site and surrounding area have been subject to recent surveys relating to habitats and various protected and/or notable species undertaken by RPS (as reported in the RPS Preliminary Ecological Appraisal (RPS, 2019a) and Ecology Survey Report (RPS, 2019b)) and RSK (as reported in the RPS Winter Bird Survey Report (RSK, 2019)). These surveys have been drawn upon alongside the AECOM surveys to inform this ecological impact assessment.

## Scope of Assessment

- 1.6 This report details the findings of the desk study and ecology surveys undertaken by AECOM in 2019-2020, in addition to previous relevant data for the Site and adjacent land from ecology surveys undertaken by RPS and RSK. It then presents these within the context of an ecological impact assessment.
- 1.7 Ecology surveys undertaken by AECOM in 2019-2020 to inform this assessment comprise:
  - extended Phase 1 habitat survey in June 2019, recording the baseline habitats within the Site and the suitability of the Site for protected and/or notable species;
  - wintering bird survey comprising two survey visits per month (one at high tide, one at low tide) between October 2019 and March 2020 inclusive; and

- breeding bird survey comprising one survey visit per month between late March and early July 2020.
- 1.8 Further ecology survey data used to inform to this assessment were collected by RPS in 2018-2019. The RPS survey area (hereafter referred to as the Wider Kingsnorth Power Station Site) was significantly larger than the Site. The Wider Kingsnorth Power Station Site surveys undertaken by RPS included all terrestrial habitat within the Site, as well as land immediately north, west, south and east of the Site, including the full extent of the Onshore Cable Route (which will be delivered through permitted development rights and is therefore outside of the Proposed Development, but is assessed for cumulative impacts within this report). The Wider Kingsnorth Power Station Site does not include intertidal habitat within the Medway Estuary. The 2019 RPS ecology survey data used to inform this report, as detailed in the RPS Preliminary Ecological Appraisal (RPS, 2019a) and RPS Ecology Survey Report (RPS, 2019b), comprise:
- extended Phase 1 habitat survey in April 2019, recording the baseline habitats within the Wider Kingsnorth Power Station Site (including the Site) and their suitability for protected and/or notable species (including any non-native invasive species);
  - botanical survey of five areas identified as potentially supporting protected and/or notable plant species in May-June 2019;
  - invertebrate scoping survey in May 2019; this concluded that the Site had negligible interest for invertebrates such that it was not subject to further survey;
  - great crested newt (*Triturus cristatus*) survey in April 2019 comprising initial scoping of all waterbodies within the Wider Kingsnorth Power Station Site, followed by Habitat Suitability Index (HSI) assessment of six waterbodies within 250m of the Site and/or the Onshore Cable Route, environmental DNA (eDNA) survey of five waterbodies and population monitoring survey of one waterbody;
  - reptile refuge survey in April-May 2019;
  - breeding bird survey in April-June 2019;
  - badger (*Meles meles*) walkover survey in June 2019, plus incidental recording of badger field signs during other ecology surveys in April-July 2019;
  - bat roost suitability assessment of buildings and trees in June 2019;
  - bat activity survey in May-September 2019, accompanied by static monitoring in May-July 2019; and
  - water vole (*Arvicola amphibius*) survey of all suitable waterbodies in June and August 2019.
- 1.9 Regarding relevance of the RPS data described above to the Proposed Development, the Wider Kingsnorth Power Station Site (the area surveyed by RPS in 2018-2019) comprised seven Parcels (numbered Parcels 1-7; as defined in RPS, 2019b). Parcel 5 covered the entirety of the Site.
- 1.10 In addition, the following ecology data collected by RSK were used to inform this assessment:
- wintering bird survey of suitable habitat surrounding the Site between December 2018 and March 2019 inclusive (RSK, 2019).
- 1.11 Together, the ecology survey data described above are used to inform recommendations for good ecological practice as required. An assessment of impacts is made using good practice guidelines, following the mitigation hierarchy of avoidance, mitigation, compensation and enhancement.

## Scope Terminology

- 1.12 A summary of terminology used to define areas of significance within this assessment is provided below:
- **Site:** the area of land within the application site boundary, in which the new converter station is to be constructed;
  - **Proposed Development:** the development, which is proposed within the Site, comprising the construction of the new converter station and offshore cable route up to Mean High-Water Springs (MHWS);

- **Onshore Cable Route:** the route which the new cable connecting the Proposed Development and the sub-station is proposed to take. This will be delivered under permitted development rights and is not within the scope of the Proposed Development;
- **Offshore Cable Route:** the route which the new cable connecting the Proposed Development to a converter station in Dunkerque, France is proposed to take. This will be subject to a separate marine licence application and is not within the scope of the Proposed Development; and
- **Wider Kingsnorth Power Station Site:** the area within which the RPS surveys were conducted, which extends to the boundaries of the former Kingsnorth Power Station site and includes an area of coastal grassland to the west.

## 2. Relevant Wildlife Legislation, Policy and Guidance

2.1 This assessment has been undertaken taking into account relevant legislation and guidance set out in national, regional and local planning policy as summarised in the sections below.

### Wildlife Legislation

2.2 The key pieces of legislation relating specifically to the protection of wildlife and nature conservation are:

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Countryside and Rights of Way (CROW) Act 2000 (as amended);
- The Natural Environment and Rural Communities (NERC) Act 2006;
- The Invasive Alien Species (Enforcement and Permitting) Order 2019;
- The Protection of Badgers Act 1992; and
- The Wild Mammals (Protection) Act 1996.

2.3 It should be noted that the new Environment Bill released in January 2020, which is currently under review by Parliament, includes provisions to mandate net gain in biodiversity. The new Environment Bill will require a 10% increase in biodiversity units after development compared to the baseline level prior to development.

### The Conservation of Habitats and Species Regulations 2017 (as amended)

2.4 The Conservation of Habitats and Species Regulations 2017 (as amended) are the principal means by which the European Union Directive on the Natural Habitats and Wild Fauna and Flora (92/43/EEC) (EC Habitats Directive) is transposed in UK law.

2.5 The Conservation of Habitats and Species Regulations 2017 (as amended) provide the designation and protection of 'European sites' known as Special Areas of Conservation (SAC), the protection of 'European protected species' (including bat species), and the adaptation of planning and other controls for the protection of European Sites. As well as sites designated under European nature conservation legislation, UK Government policy states that internationally important wetlands designated under the Ramsar Convention 1971 (Ramsar sites) are afforded the same protection as Special Protection Areas (SPAs) (classified under Article 4 of the EC Birds Directive 1979) and SACs for the purpose of considering development proposals that may affect them.

2.6 In addition, the need for an assessment of impacts on Natura 2000 sites is set out within Article 6 of the EC Habitats Directive 1992 and interpreted into British law by the Conservation of Habitats and Species Regulations 2017 (as amended). The ultimate aim of the Directive is to "maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest" (Habitats Directive, Article 2(2)). This aim relates to habitats and species, not the European sites themselves, although the sites have a significant role in delivering favourable conservation status.

2.7 The Habitats Directive applies the precautionary principle to European sites. Article 6 (3) states that 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.'

2.8 Projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Projects with predicted adverse impacts on European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation will be necessary to ensure the overall integrity of the site network.

- 2.9 The Regulations also amended the Wildlife and Countryside Act 1981 (as amended), updating Schedules 5 and 8 to consider provisions made by the Habitat Regulations 1994 in relation to the protection of European Protected Species. They also offered further clarification to Part 4 of Section 9 considering “reckless” offences on wild animals, which was previously amended by the Countryside and Rights of Way Act 2000 (CroW).

## The Wildlife and Countryside Act 1981 (as amended)

- 2.10 All species of wild bird in the UK are protected under Part 1 Section 1(1) of the Wildlife and Countryside Act 1981 (as amended) (WCA). They are protected against intentional killing, injuring or taking as well as taking, damaging or destroying nests in use or being built, and taking or destroying eggs.
- 2.11 In addition to general protection for birds, certain species listed in Schedule 1 of the WCA are afforded special protection. These birds are either: rare, endangered, declining or vulnerable species. In addition to the protection afforded to all bird species, it is an offence to cause ‘reckless’ or ‘intentional’ disturbance to the specially protected Schedule 1 listed species when they are building nests.
- 2.12 The Secretary of State may also designate Areas of Special Protection (subject to exceptions to provide further protection to birds).
- 2.13 The WCA makes it an offence (subject to exceptions) to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places.
- 2.14 The WCA makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy any wild plant listed in Schedule 8.
- 2.15 The WCA contains measures at Schedule 9 for preventing the establishment of non-native species which may be detrimental to native wildlife.

## The Countryside and Rights of Way (CroW) Act 2000

- 2.16 Schedule 12 of the CroW Act amends the species provisions of the WCA, strengthening the legal protection for threatened species. The provisions make certain offences ‘arrestable’, create a new offence of reckless disturbance, provide greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

## The Natural Environment and Rural Communities (NERC) Act 2006

- 2.17 Section 41 of the NERC Act requires the listing of habitats and species that are considered to be of Principal Importance for the conservation of biodiversity in England, including habitats and species in England that have been identified as priorities within the UK Biodiversity Action Plan (UKBAP).
- 2.18 The NERC Act requires that the Section 41 list be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 2006 ‘to have regard’ to the conservation of biodiversity in England, when carrying out their normal functions.

## The Invasive Alien Species (Enforcement and Permitting) Order 2019

- 2.19 The Invasive Alien Species (IAS) (Enforcement and Permitting) Order 2019 prohibits (under Part 2.3(2)) the release into the wild of any animal which “is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state”.

## The Protection of Badgers Act 1992

- 2.20 Badgers and their setts (burrows) are protected under the Protection of Badgers Act 1992. This makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett.

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

## The Wild Mammals (Protection) Act 1996

- 2.22 The Wild Mammals (Protection) Act states it is an offence to intentionally cause all wild mammals unnecessary suffering by certain methods, including crushing and asphyxiation (suffocation). This includes common mammals such as red fox (*Vulpes vulpes*).

## National Planning Policy

- 2.23 The revised National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2019) was published in July 2018 and updated in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied. This NPPF supersedes the previous NPPF published in March 2012.

- 2.24 The revised NPPF maintains the presumption in favour of sustainable development which should be delivered in accordance with three main objective areas: economic, social and environmental (Paragraph 8). The revised NPPF aims to enable local people and their local authorities to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.

- 2.25 Policies and objectives within the NPPF which are of particular relevance to Ecology include:

- 1) Paragraph 170 of the revised NPPF states that "*Planning policies and decisions should contribute to and enhance the natural and local environment by... ..minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*".
- 2) In addition, paragraph 171 states "*Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries*".
- 3) The importance of ecological networks is stressed in paragraph 174, which states that "*To protect and enhance biodiversity and geodiversity, plans should:*
  - a) *Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
  - b) *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*"
- 4) In relation to the determination of planning applications, paragraph 175 states that local planning authorities "*should apply the following principles:*
  - a) *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
  - b) *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*

- c) *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
  - d) *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.”*
- 5) Paragraph 177 states that *“The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined”.*

## Local Planning Policy and Guidance

2.26 The Medway Local Plan 2003 (Medway Council, 2003) sets out Medway Council’s vision for future development in Medway. This includes the following policies of relevance to the Proposed Development regarding potential ecological issues (for full wording refer to the source document):

- Policy BNE6: Landscape Design
  - “Major developments should include a terrestrial landscaping scheme to enhance the character of the locality. Detailed landscaping schemes should be submitted before development commences and should have regard to the following factors:
    - v. Support wildlife by the creation or enhancement of semi-natural habitats and the use of indigenous plant material where appropriate.”
- Policy BNE35: International and National Nature Conservation Sites:
  - “International and National Nature Conservation Sites, as defined on the proposals map, will be given long-term protection:
    - i. Classified and potential Special Protection Areas (SPAs);
    - ii. Listed and proposed Ramsar sites;
    - iii. National Nature Reserves;
    - iv. Sites of Special Scientific Interest”
  - States the commitment of Medway Council to ensuring development does not directly or indirectly cause material harm to any such sites.
- Policy BNE36: Strategic and Local Nature Conservation Sites
  - “Strategic and Local Nature Conservation Sites, as defined on the proposals map, will be given long-term protection:
    - i. Sites of Nature Conservation Interest;
    - ii. Designated and proposed Local Nature Reserves.”
  - States the commitment of Medway Council to ensuring development does not directly or indirectly cause material harm to any such sites.
- Policy BNE37: Wildlife Habitats
  - “Development that would cause a loss, directly or indirectly, of important wildlife habitats or features not protected by policies BNE35 and BNE36 will not be permitted unless
    - i. There is an overriding need for the development that outweighs the importance of these wildlife resources;
    - ii. no reasonable alternative site is (or is likely to be) available if ancient woodland, inter-tidal habitats and calcareous (chalk) grassland would be lost;
    - iii. the development is designed to minimise the loss involved;
    - iv. appropriate compensatory measures are provided.”
- Policy BNE38: Wildlife Corridors and Stepping Stones
  - “Development should, where practical, make provision for wildlife habitats, as part of a network of wildlife corridors and stepping stones.”
- Policy BNE39: Protected Species
  - “Development will not be permitted if statutorily protected species and/or their habitat will be harmed”; and

- “Conditions will be attached, and/or obligations sought, to ensure that protected species and/or their habitats are safeguarded and maintained”.
  - Policy BNE43: Trees on Development Sites
    - “Development should seek to retain trees, woodlands, hedgerows and other landscape features that provide a valuable contribution to local character”.
  - Policy BNE46: Developed Coast
    - “Development will be permitted in and alongside the developed coast, as defined on the proposals map, when:
      - i. The appearance and environment of the coast is improved.”
- 2.27 Medway Council is currently preparing the new Medway Local Plan (2019 to 2037), which will supersede the 2003 Medway Local Plan.
- 2.28 The 1997 Kent Biodiversity Action Plan (Kent Biodiversity Action Plan Steering Group, 1997) aims to enable the conservation and enhancement of biodiversity in the county. It includes Habitat Action Plans for habitats including woodland and scrub, hedgerows, neutral and marshy grassland, grazing marsh, reedbeds, standing water and intertidal mud and sand. It also includes Species Action Plans for species including water vole (*Arvicola terrestris*), otter (*Lutra lutra*), hazel dormouse (*Muscardinus avellanarius*), serotine (*Eptesicus serotinus*), nightingale (*Luscinia megarhynchos*) and great crested newt (*Triturus cristatus*).
- 2.29 The Kent Red Data Book (Waite, 1999) provides information on Kent’s rarest and most threatened flora and fauna. It contains accounts for over 1,300 species, including species of potential relevance to the Proposed Development including numerous plant and invertebrate species, reptiles and amphibians, 62 bird species, all bat species and other mammal species such as water vole, otter and hazel dormouse.

## 3. Methodology and Impact Significance Criteria

### Standards and Guidance

- 3.1 The 'Guidelines for Ecological Impact Assessment in the UK and Ireland' issued by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019a) ('the CIEEM EclA guidelines') provide guidance on the process of identifying the value of ecological features, characterising impacts upon them and assessing whether these impacts are significant. The 'mitigation hierarchy' of avoidance, mitigation, compensation and enhancement underpin the CIEEM EclA guidelines.
- 3.2 As per the CIEEM EclA guidelines, the following definitions are used for the terms 'impact' and 'effect':
- Impact – '*Actions resulting in changes to an ecological feature*'; and
  - Effect – '*Outcome to an ecological feature from an impact*'.

### Assessment Methodology

#### Methodology for Determining Baseline Conditions and Sensitive Receptors

- 3.3 Methods for determining baseline conditions and sensitive receptors of relevance to the Proposed Development are described below.

#### Desk Study (AECOM)

- 3.4 A desk study was carried out by AECOM in 2020 to identify nature conservation designations and protected and notable habitats and species potentially relevant to the Proposed Development.
- 3.5 The desk study identified international nature conservation designations within 10km of the Site, other statutory nature conservation designations within 2km of the Site and local non-statutory nature conservation designations, and protected and notable habitats and species, within 2km of the Site.
- 3.6 The desk study was carried out using data from the Multi-Agency Geographic Information for the Countryside (MAGIC) website (Defra, 2020) and Kent and Medway Biodiversity Records Centre (KMBRC, 2020).

#### Phase 1 Habitat Survey (AECOM)

- 3.7 A Phase 1 habitat survey was undertaken by AECOM in accordance with the standard survey method (Joint Nature Conservation Committee (JNCC), 2010a). Phase 1 habitat survey involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The survey was "extended" to record target notes on protected, notable and invasive species.
- 3.8 The survey was undertaken on 13<sup>th</sup> June 2019 by two suitably qualified ecologists who recorded and mapped all habitat types present within the Site, along with any associated important ecological features observed.
- 3.9 The aim of the extended Phase 1 habitat survey was to identify the type, quality and extent of habitats present within and adjacent to the Site. The extent of habitats present was plotted by the surveyors on an appropriately scaled map. Where important ecological features were present, target notes (TN) were recorded and the position of these shown on the Phase 1 habitat map (Figure V1.2, Appendix A).
- 3.10 Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey. This was not intended to be a detailed inventory of the plant species present, as this is not required for the purposes of Phase 1 habitat survey. Botanical nomenclature used in this report follows Stace (2019).



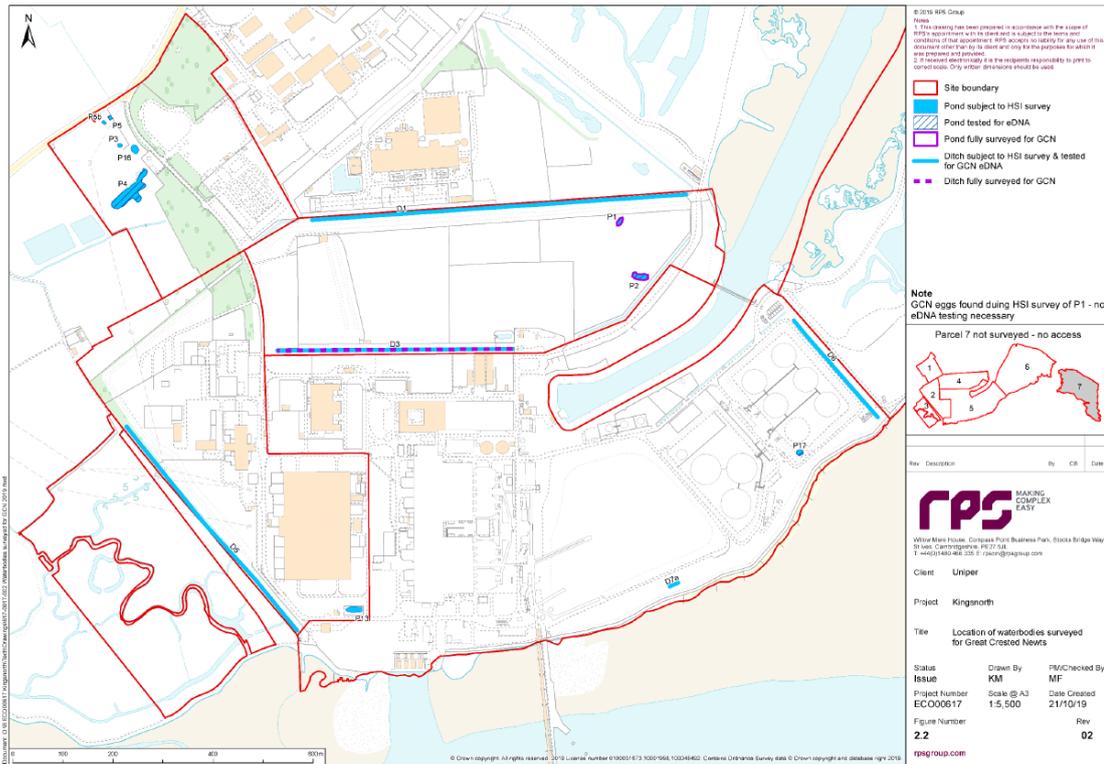


Plate 2. Locations of waterbodies surveys for great crested newts (RPS, 2019b)

3.15 The proximities of these waterbodies to the Site are summarised in Table 1 below.

Table 1. Waterbodies within 250m of the Site and/or Onshore Cable Route that were subject to great crested newt survey (RPS, 2019b)

Waterbody reference	Approximate distance from Site	Approximate distance from Onshore Cable Route
D5	1.0km west	100m west (40m south-west of the sub-station)
D6	<5m east	180m east
D7a	320m south-west	20m south
P2	250m north	270m north
P13	650m west	20m west
P17	Within Site	<10m east

**Habitat Suitability Index (HSI) Assessment**

3.16 The waterbodies ‘scoped in’ during the 2019 RPS great crested newt survey were subject to Habitat Suitability Index (HSI) assessment by RPS on 16<sup>th</sup> April 2019 in accordance with the method described by Oldham *et al.* (2000). The calculation of the HSI score of a waterbody requires that the following ten key variables are recorded and assigned a numerical value:

- Location within Britain;
- Pond area;
- Pond drying (based on both local knowledge and field evidence);
- Water quality;
- Percentage perimeter shaded;
- Presence or absence of waterfowl;

- Presence or absence of fish;
- Number of ponds situated within 1km;
- Suitability of terrestrial habitat; and
- Percentage of macrophyte cover.

3.17 The results of the HSI assessment were scored in accordance with the criteria specified in Table 2 below.

*Table 2. Habitat Suitability Index score and interpretation (based on the methodology of Narris, undated)*

HSI score	Waterbody suitability for great crested newt
>0.8	Excellent
0.7	Good
0.6	Average
0.5	Below average
<0.5	Poor

#### **eDNA Survey**

- 3.18 Environmental DNA (eDNA) refers to DNA that can be extracted from environmental samples such as water, soil or faeces without first isolating any target organism. All living organisms leave traces of their DNA within the environment, enabling the detection of great crested newt through collection and testing of water samples from waterbodies.
- 3.19 Based on the results of HSI assessment and a review of the potential for impacts on any great crested newt populations present, a subset of waterbodies was selected for eDNA survey to confirm presence/likely absence of great crested newt. This included five of the six waterbodies located within 250m of the Site and/or Onshore Cable Route: D5, D6, D7a, P2 and P17.
- 3.20 Collection of water samples for eDNA analysis was undertaken by RPS on 16th April 2019 in accordance with the methodology recommended in Technical Advice Note WC1067 prepared by Biggs *et al.* (2014). In line with this guidance, water samples were collected from several locations within each waterbody. From these combined water samples a subsample from each waterbody was preserved using ethanol for subsequent laboratory analysis.
- 3.21 For eDNA samples collected within the optimum survey window (15th April to 30th June), negative results from eDNA surveys are accepted as evidence of likely absence of great crested newt from the waterbody in question, and further survey is not then required. As all samples were collected within the optimum survey window, a negative result can be relied upon for confirming absence of great crested newt. Positive results indicate that great crested newt DNA is present within a waterbody, in which case further surveys are required to inform an estimation of population size.

#### **Population Monitoring Survey**

- 3.22 RPS undertook population monitoring surveys of waterbodies within the Wider Kingsnorth Power Station Site that returned positive eDNA results. The aim of population monitoring surveys was to establish the size of any great crested newt populations present. Regarding waterbodies of relevance to the Proposed Development (as detailed in Table 1 above), P2 was the only waterbody that returned a positive eDNA survey result.
- 3.23 Population monitoring survey of P2 was undertaken in accordance with best practice guidance (*Langton et al.* 2001), comprising a series of six survey visits, with the following three survey methods used during each visit:
- **Bottle trapping:** bottle traps were deployed in the evening at densities of one trap per two metres of shoreline (where feasible) and left overnight for inspection in the morning. Traps were partially submerged (leaving an air bubble in the bottle) and secured by a cane marked with a high visibility tape to aid relocation. A total of 15 bottle traps were deployed during each visit. Bottle trapping was undertaken in suitable weather conditions, avoiding excessively warm or cold weather;

- **Torching:** the waterbody was searched after dusk using high-powered torches to scan the margins and potential display areas for newts. This involved slowly walking the perimeter of the waterbody, spending approximately 15 minutes torching per 50m of shoreline, recording any newts observed; and
- **Egg searching:** any suitable vegetation (e.g. water mint *Mentha aquatica*) was examined for newt eggs, with folded leaves gently opened to check for eggs. In the event that a great crested newt egg is identified, no further leaves are opened (to minimise any further disturbance).

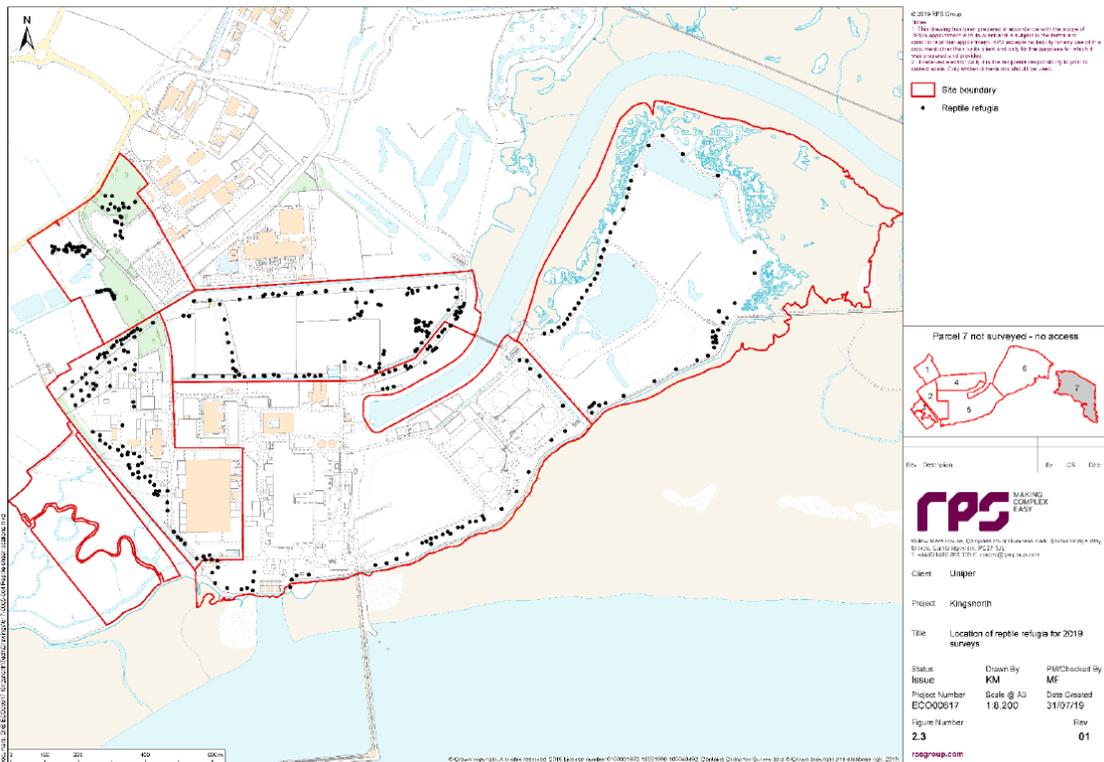
3.24 Population monitoring survey of P2 was undertaken in suitable weather conditions as detailed Table 3 below:

Table 3. 2019 great crested newt population monitoring survey conditions (RPS, 2019b)

Visit number	Date	Temperature (°C)	Rain	Wind
1	26/04/2019	12	None	Light breeze
2	29/04/2019	10	None	Light breeze
3	09/05/2019	15	None	Light breeze
4	14/05/2019	13	None	Light breeze
5	21/05/2019	14	None	Light breeze
6	10/06/2019	15	Light rain	Light breeze

### Reptile Survey (RPS)

3.25 RPS undertook an artificial refuge survey for reptiles in April-May 2019, during which 355 sheets of roofing felt (measuring approximately 0.5m by 0.5m) were installed within the Wider Kingsnorth Power Station Site. Whilst no artificial refugia were installed within the Site, approximately 140 refugia were installed in suitable reptile habitat (including habitat within the Onshore Cable Route) that was connected to suitable reptile habitat within the Site (see the RPS Ecology Survey Report (RPS, 2019b and Plate 3 below)).



*Plate 3. Location of reptile refugia for 2019 survey (RPS, 2019b)*

- 3.26 A total of seven survey visits were undertaken in April-May 2019, during which all artificial refugia were checked for reptiles in suitable weather conditions in accordance with Froglife (1999) and Gent & Gibson (1998). Survey dates and conditions are detailed in Table 4 below.

*Table 4. 2019 reptile survey conditions (RPS, 2019b)*

Survey visit	Date	Temperature (°C)	Weather conditions
1	25/04/19	16	Dry, intermittent sun, light breeze
2	29/04/19	13	Overcast, light breeze
3	01/05/19	10	Dry, intermittent sun, light breeze
4	08/05/19	11	Very light rain, overcast, moderate breeze
5	14/05/19	14	Sunny, light breeze
6	22/05/19	14	Dry, sunny, light breeze
7	30-31/05/19	15/18	Dry, intermittent sun, light breeze

- 3.27 Refugia were initially inspected from a suitable distance to identify any reptiles that may be basking on top without causing disturbance. Refugia were then approached carefully and lifted swiftly to examine the ground beneath for reptiles. In addition, suitable habitat such as basking areas and natural refugia was inspected visually for reptiles. The species, life stage and sex of any reptiles encountered were recorded.

## Wintering Bird Survey

### 2018-2019 (RSK Wintering Bird Survey)

- 3.28 In 2018-2019 RSK undertook a wintering bird survey covering habitat adjacent to the Site. This included habitat within Medway Estuary and Marshes SPA and Ramsar (north of the Site within Damhead Creek, and south of the Site within the Medway Estuary) and grassland west of the Site (referred to in the RSK report as Hoo Marsh). Details of the RSK survey area and methodology are provided in the RSK Winter Bird Survey Report (RSK, 2019).
- 3.29 In summary, seven survey visits were undertaken between 20<sup>th</sup> December 2018 and 22<sup>nd</sup> March 2019, with survey visits timed to enable recording of birds at various tidal cycles. All birds observed at each survey location were counted and recorded, in order to obtain peak counts for all species and locate any significant feeding and/or roosting assemblages.
- 3.30 Survey timings and conditions are shown in Table 5 below.

*Table 5. 2018-2019 wintering bird survey conditions (RSK, 2019)*

Survey date	Start time (high tide)	Weather conditions
20/12/2018	09:00 (10:18)	Wind 3 SW, Cloud 2, 9°C
17/01/2019	09:00 (08:38)	Wind 5 NW, Cloud 5, 2°C, Light rain at 08:00
22/01/2019	08:30 (14:17)	Wind 3 N, Cloud 3, Bright and sunny
12/02/2019	08:30 (17:22)	Wind 2 SE, Cloud 4, Clear
27/02/2019	08:00 (18:42)	Wind 1 S, Cloud 0, Sunny and clear
07/03/2019	09:00 (13:32)	Wind 5-6 NE, Cloud 2, Bright and dry
22/03/2019	08:30 (13:44)	Wind 3 SE, Cloud 8, 9°C

- 3.31 Peak counts were compared to international, national and local thresholds, WeBS data and SPA/Ramsar populations to ascertain whether the survey area supported significant numbers of wintering birds. Species and peak counts were made using British Trust for Ornithology (BTO) WeBS survey techniques and mapped using standard BTO symbols and codes.

### 2019-2020 (AECOM Wintering Bird Survey)

- 3.32 In 2019-2020 AECOM undertook a wintering bird survey comprising a series of 12 survey visits (one low tide and one high tide visit per month) between October 2019 and March 2020 inclusive. Survey visits covered a period of at least two hours, during which two suitably qualified ornithologists walked a transect route that allowed observation of all habitat within the Site and within 100m of the Site (including all habitat within the Onshore Cable Route), as well as other major areas of habitat near to the Site (referred to as the 'Survey Area; shown in Figure V3.1 of the AECOM Wintering Bird Survey Report). Visual counts of all bird species encountered were made, with birds that could not be located visually identified through calls or songs. The walked transect was interspersed with stops at vantage points from which the Site and adjacent habitat were scanned using high powered optical equipment. The species present and their behaviours were recorded on field maps using standard British Trust for Ornithology (BTO) species codes and behaviour notation (Marchant, 1983; Gilbert et al, 1998).
- 3.33 Surveys were undertaken in suitable weather conditions, avoiding heavy rain, fog or heavy snow (when bird behaviour may be atypical and/ or surveying may be impractical. Survey timings and conditions are shown in Table 6 and Table 7 below.

Table 6. 2019-2020 AECOM wintering bird survey conditions (low tide)

Survey date	Timing	Temperature (°C)	Weather conditions
24/10/2019	15:30-17:40	12	Dry (heavy rain prior to survey), intermittent sun, moderate breeze
20/11/2019	11:00-14:00	7	Dry, intermittent sun, windy
05/12/2019	11:00-13:30	3	Dry, intermittent sun, fairly light breeze
17/01/2020	09:45-12:30	9	Dry, intermittent sun, windy
18/02/2020	13:00-15:45	11	Largely dry (light rain from 15:00), overcast, windy
03/03/2020	10:00-13:00	10	Dry, sunny to overcast, moderate breeze

Table 7. 2019-2020 AECOM wintering bird survey conditions (high tide)

Survey date	Timing	Temperature (°C)	Weather conditions
28/10/2019	11:20-13:45	11	Dry, sunny, moderate breeze
12/11/2019	11:20-13:50	7	Dry, sunny (start) to overcast (end), windy
11/12/2019	10:50-13:15	7	Dry, sunny, moderate breeze
23/01/2020	10:15-12:45	7	Dry, overcast, calm
24/02/2020	12:00-14:15	10	Rain throughout, overcast, very windy
09/03/2020	11:15-13:45	10	Dry, sunny to overcast, windy

### Assessment Criteria

- 3.34 The Site lies partially within the Medway Estuary and Marshes Special Protection Area (SPA) and Ramsar, which is designated for its internationally important wintering bird populations. As such, particular attention was paid to species contributing to the designation of the Medway Estuary and Marshes SPA and Ramsar (as detailed within their citations; see Section 2 of the Volume 3 Ecology Report - Wintering Birds (AECOM, 2020)).
- 3.35 In addition, the conservation status of birds recorded during the wintering bird survey was categorised against the following criteria:

- EC Directive on the Conservation of Wild Birds 2009 (2009/147/EC) Annex 1;

- Wildlife and Countryside Act 1981 (as amended) Schedule 1; and
  - NERC Act 2006 Section 41.
- 3.36 Birds were also categorised according to their level of conservation concern as indicated by their population status and stability (Eaton *et al.* 2015). These are known as the Birds of Conservation Concern (BoCC) Red, Amber and Green lists. Where these species are present, their conservation status should be taken into account in determining the likely impacts of proposed projects and plans.
- 3.37 Red list species are:
- those that are 'Globally Threatened' according to IUCN (International Union for Conservation of Nature and Natural Resources) criteria;
  - those whose population or range has declined rapidly in recent years, and;
  - those that have declined historically and not shown a substantial recent recovery.
- 3.38 Amber list species are:
- those with an unfavourable conservation status in Europe;
  - those whose population or range has declined moderately in recent years;
  - those whose population has declined historically but made a substantial recent recovery;
  - those with limited populations and low breeding rates, and
  - those with internationally important or localised populations.
- 3.39 Green list species are not of conservation concern and include all other commonly occurring birds in the UK. Several introduced species (e.g. pheasant *Phasianus colchicus*) are not accorded Red, Amber or Green status. It should be noted that BoCC Red, Amber or Green status is independent of a species' inclusion on Annex 1 of the EC Birds Directive 2009 or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
- 3.40 The regional conservation status of birds recorded was also assessed using the Kent Red Data Book (Waite, 1999), which provides information on Kent's rarest and most threatened flora and fauna. Of the 62 bird species listed, six of these qualify through their wintering populations (avocet *Recurvirostra avosetta*, black-tailed godwit *Limosa limosa*, red-throated diver *Gavia stellata*, white-fronted goose *Anser albifrons*, pintail *Anas acuta* and knot *Calidris canutus*). For winter bird populations to qualify, Kent needs to hold >20% of the British population and >4% of the relevant international population (Western Europe or East Atlantic flyway).
- 3.41 Wintering waterbird populations recorded within the Survey Area were compared with the SPA and Ramsar citation populations for Medway Estuary and Marshes, national and international 1% population thresholds, and current Wetland Bird Survey (WeBS) data (for further details see the AECOM Wintering Bird Survey Report).

## Breeding Bird Survey

### 2019 (RPS Breeding Bird Survey)

- 3.42 RPS undertook a breeding bird survey in April-June 2019 based on a standard territory mapping methodology in accordance with Gilbert *et al.* (1998) and Bibby *et al.* (2000). This covered the entirety of the Wider Kingsnorth Power Station Site, encompassing all terrestrial habitat within the Site and including adjacent habitat to the north, west, south and east of the Site.
- 3.43 Survey visits were undertaken early in the morning (finishing before midday), during which two suitably experienced ornithologists walked a transect around the Wider Kingsnorth Power Station Site, recording and mapping all birds encountered (with the aid of optical equipment). The direction walked was alternated between visits to ensure that all areas were covered at various times of day.
- 3.44 The RPS breeding bird survey comprised five survey visits undertaken on the following dates:
- visit 1: 4<sup>th</sup>-5<sup>th</sup> April 2019;
  - visit 2: 17<sup>th</sup>-18<sup>th</sup> April 2019;
  - visit 3: 2<sup>nd</sup>-3<sup>rd</sup> May 2019;

- visit 4: 29<sup>th</sup>-30<sup>th</sup> May 2019; and
  - visit 5: 12<sup>th</sup> June 2019.
- 3.45 The field data were subsequently used to compile territory maps for each species, based on a cumulative assessment of records from all survey visits and informed by behaviour indicative of breeding territories (e.g. singing males, nest building, aggressive interactions). Based on these observations a 'cluster' was drawn around these registrations, with the centre point taken as the most likely location of the nest (unless the nest itself had been located). Once complete, all established territories were then plotted on to illustrate location and spread across the Wider Kingsnorth Power Station Site.
- 3.46 The breeding status of birds recorded is defined by the activity observed; those that are confirmed via the establishment of an identified territory, those that are possibly breeding or likely to be breeding nearby and those that are foraging, visiting or resting only. Birds flying over are also recorded.
- 3.47 Considering the likely scope of impacts associated with the Proposed Development, any territories recorded by RPS within 250m of the Site are discussed in Section 4 of this assessment.

### 2020 (AECOM Breeding Bird Survey)

- 3.48 AECOM undertook a breeding bird survey comprising a series of five survey visits (one per month) between March and July 2020 inclusive, covering the peak of the breeding season. The Common Bird Census (CBC) (Marchant, 1983)<sup>2</sup> method was utilised in order to identify breeding territories. Survey visits covered a period of approximately four hours, during which two suitably qualified ornithologists walked a transect route that allowed for observation of all habitat within the Site and within 100m of the Site (including all habitat surrounding the Onshore Cable Route), as well as other major areas of habitat near to the Site (referred to as the 'Survey Area'; indicated in Figure V4.1 of the Volume 4 Ecology Report - Breeding Birds) in which birds would be expected to breed.
- 3.49 All bird activity encountered was recorded following the standard CBC notation using standard British Trust for Ornithology (BTO) species codes<sup>3</sup>. Once all survey visits had been completed, the CBC field records were subsequently used to compile territory maps for each species. The number of breeding pairs or territories for each species recorded was determined from the mapped survey data to identify and isolate areas within which birds displayed consistent breeding behaviours (following Gilbert *et al.* 1998)<sup>4</sup>. The territory mapping method is based on the observation that many species are territorial during the breeding season. This is most marked in passerines where territories are often determined by conspicuous song, display and territorial disputes with neighbouring conspecifics. The expected outcome of this technique is that mapped registrations from repeat surveys of the same area will fall into clusters, approximately coinciding with territories. All estimated territory centres and known nest sites were plotted on a plan.
- 3.50 Surveys were undertaken in suitable weather conditions, avoiding heavy rain, fog or heavy snow (when bird behaviour may be atypical and/ or surveying may be impractical). Survey timings and conditions are shown in Table 8 below.

Table 8. 2020 AECOM breeding bird survey conditions

Survey date	Timing	Temperature (°C)	Weather conditions
30/03/20	07:30-11:30	4-7	Dry, overcast to sunny (50-100% cloud), fairly light breeze (BF2)
30/04/20	07:10-11:40	7-12	Largely dry (light rain from 09:00-09:30), intermittent sun (60-100% cloud), moderate breeze (BF2-4)
21/05/20	07:15-11:45	18-26	Dry, sunny (5-50% cloud), light to moderate breeze (BF1-3)
19/06/20	07:00-11:00	13-17	Largely dry with brief showers, intermittent sun (70-100% cloud), moderate breeze (BF3)
03/07/20	07:00-11:00	12-16	Dry, sunny (5-10% cloud), moderate breeze (BF2-4)

<sup>2</sup> Marchant, J.H. (1983). BTO Common Birds Census Instructions. British Trust for Ornithology, Tring.

<sup>3</sup> [http://www.bto.org/sites/default/files/u16/downloads/forms\\_instructions/bto\\_bird\\_species\\_codes.pdf](http://www.bto.org/sites/default/files/u16/downloads/forms_instructions/bto_bird_species_codes.pdf)

<sup>4</sup> Gilbert G, Gibbons D.W. and Evans J. (1998) Bird Monitoring Methods. RSPB Sandy.

### Assessment Criteria

- 3.51 The breeding bird surveys focused on species afforded special statutory protection and/or those included on lists of conservation interest (see Section 2 for details), including:
- species listed on Annex 1 of the EC Directive on the Conservation of Wild Birds 2009 (2009/147/EC);
  - species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
  - species listed as Species of Principal Importance on Section 41 of the NERC Act 2006;
  - species included in the Birds of Conservation Concern (BoCC) Red and Amber lists (Eaton *et al.* 2015); and
  - species occurring in numbers of national, regional or local importance such as those within the Kent Red Data Book.

### Badger Survey (RPS)

- 3.52 RPS undertook a walkover survey for signs of badger activity within the Wider Kingsnorth Power Station Site on 13<sup>th</sup> June 2019, during which all field signs were recorded, with particular focus on the identification and assessment (i.e. activity level, current status) of any setts. Any evidence of badger was also recorded during RPS surveys undertaken between April and July 2019.
- 3.53 Terminology used when describing the badger sett type and activity level are described in Appendix B.

### Bat Survey (RPS)

#### Roost Suitability Assessment

- 3.54 A detailed inspection of trees and buildings within the Site was undertaken on 16<sup>th</sup> June 2019 by an appropriately licenced RPS ecologist, in accordance with the best practice guidance detailed in Mitchell-Jones & McLeish (2004) and Collins (2016).
- 3.55 Close focusing binoculars (Bushnell Legend) and a high-powered torch (Cluson Clulite) were used to conduct an external assessment from the ground. All potential access/egress points and features with suitability to support roosting bats (e.g. cracks, crevices) were identified and recorded along with any evidence which may have indicated the location of roosts, such as:
- Stains around entrance holes (resulting from the deposition of oil secretions in bat fur);
  - Scratch marks around entrance holes (resulting from bat claw holds);
  - Bat droppings;
  - Feeding remains; and
  - Odours or noise characteristic of bats.
- 3.56 On the basis of the assessment the overall suitability of each feature to support roosting bats was classified using a scale of negligible, low, moderate, high or confirmed (as defined in Appendix C). This assessment was based on both the intrinsic suitability of the feature to support roosting bats and other evidence giving an indication of the likelihood of use by bats (e.g. presence of droppings, lack of cobwebs, or exposure to elements).

#### Activity Survey

- 3.57 RPS undertook walked bat activity surveys throughout the Wider Kingsnorth Power Station Site in 2019, in accordance with the methodology detailed in Collins (2016). Each activity survey involved suitably experienced surveyors walking a pre-defined transect route, recording all bats encountered using bat echolocation detectors (Petterson D240X and Echometer Touch). Recorded calls were subsequently analysed in Analook W and Batsound software to confirm identification to species level (where possible). Transect routes were designed to include potential flight paths or foraging areas within the RPS Survey Area, as well as potential roosts (e.g. trees, buildings). Transect routes are shown in the RPS Ecology Survey Report (RPS, 2019b) and Plate 4 below.

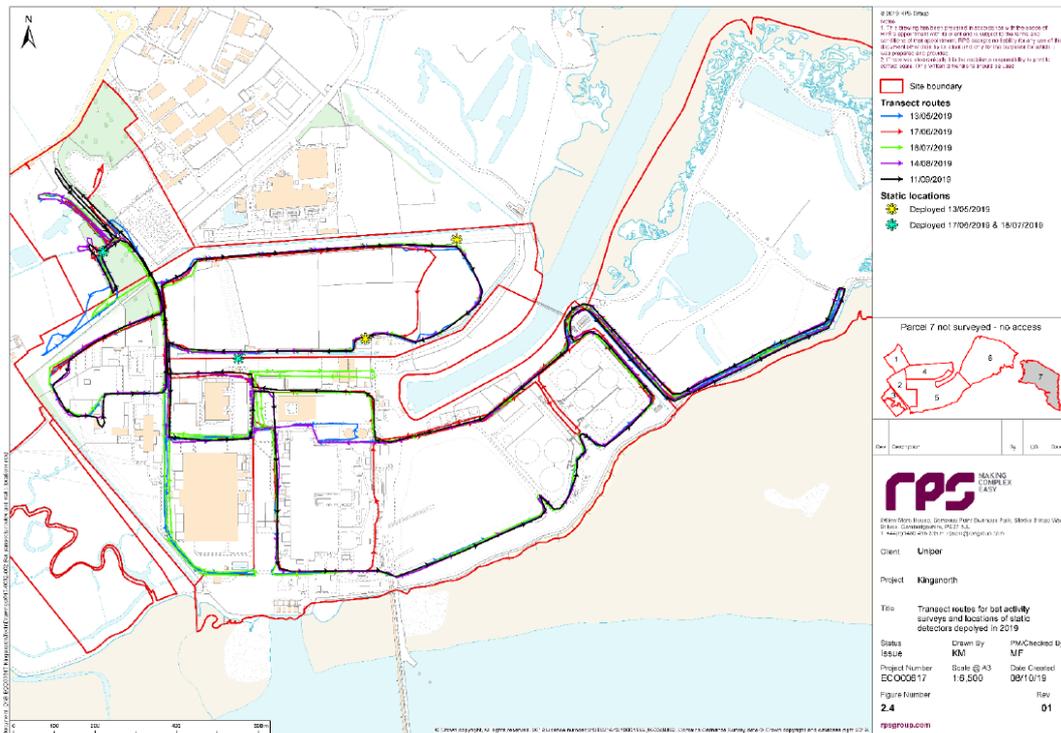


Plate 4. Transect routes for bat activity survey and locations of static detectors deployed in 2019 (RPS, 2019b)

3.58 Survey visits were scheduled to avoid nights with cold, wet or windy conditions. All surveys were undertaken during suitable weather conditions which are summarised in 9 below.

Table 9. 2019 bat activity survey conditions (RPS, 2019b)

Transect number	Date	Survey timing (sunset time)	Temperature (°C)	Weather conditions
1	13/05/19	20:39-23:39 (20:39)	10	Original data not available
2	17/06/19	21:20-23:30 (21:17)	16-14	Dry, cloudy, calm
3	18/07/19	21:05-00:07 (21:05)	21-17	Dry, cloudy, calm
4	24/08/19	20:13-22:43 (20:28)	26	Dry, cloudy, calm
5	11/09/19	Original data not available		

**Static Monitoring**

3.59 To supplement activity survey data as part of the 2019 RPS bat activity survey, two static automated bat echolocation detectors (Anabat Express) were placed at various locations within the RPS Survey Area; these were between approximately 400m and 1.1km from the Site (as shown in the RPS Ecology Survey Report (RPS, 2019b) and Plate 4 above).

3.60 In accordance with best practice guidelines (Collins, 2016) the static detectors were left on site for a minimum of five consecutive nights in suitable weather conditions. Detectors were programmed to record from 30 minutes before sunset until 30 minutes after sunrise. Data were subsequently analysed using Analook W and Kaleidoscope software to confirm species identification (where possible).

3.61 Static detectors were deployed on the following dates:

- Detector P1 (approximately 400m north of the Site): 14/05/19-18/05/19;
- Detector P2 (approximately 420m north-west of the Site): 14/05/19-18/05/19;

- Detector P3 (approximately 750m north-west of the Site/350m north of the Onshore Cable Route): 17/06/19-21/06/19 & 18/07/19-22/07/19; and
- Detector P4 (approximately 1.1km north-west of the Site/720m north-west of the Onshore Cable Route): 17/06/19-21/06/19 & 18/07/19-22/07/19.

### Water Vole Survey (RPS)

3.62 RPS undertook a water vole survey in May and August 2019 in accordance with the methodology described by Strachan *et al.* (2011). This covered all suitable habitat within the Wider Kingsnorth Power Station Site. During the survey all areas of suitable habitat (e.g. slow-moving streams, dykes, ditches and rivers) were searched for signs of water vole activity, paying particular attention to burrows, runs, feeding remains, latrines and sightings of water voles themselves. Information relating to habitat suitability was also recorded (e.g. habitat type, bank substrate/profile and vegetation cover).

3.63 The locations of waterbodies surveyed for water vole are shown in the RPS Ecology Survey Report (RPS, 2019b) and Plate 5 below. Those of relevance due to their proximity to the Site (see Table 1) comprise D5, D6, D7/D7a and P17.

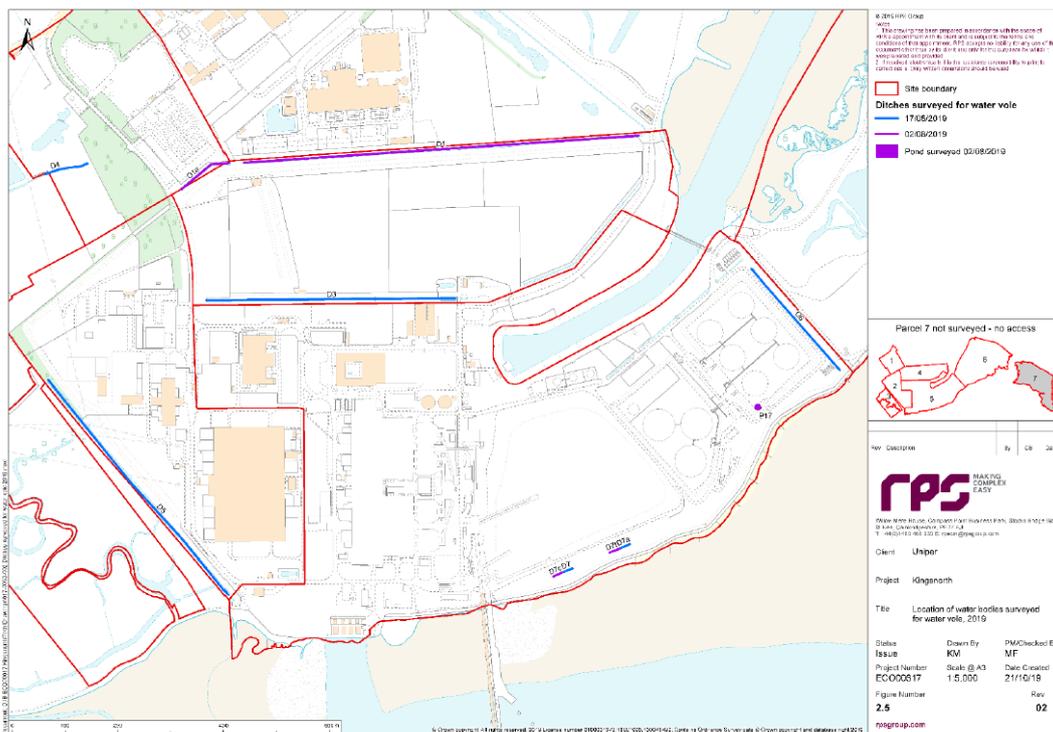


Plate 5. Location of waterbodies surveyed for water vole in 2019 (RPS, 2019b)

## Characterising Potential Ecological Impacts

3.64 The potential ecological effects of the Proposed Development have been identified and characterised. This took into consideration the following criteria:

- Positive or negative: whether the effect will result in net loss or degradation of an important ecological feature or whether it would improve or enhance it;
- Magnitude: the size and intensity of the effect measured in relevant terms (e.g. number of individuals lost or gained, area of habitat lost or created, the degree of change to existing conditions);
- Extent: the spatial scope of the effect;
- Reversibility: the extent to which the effect would be reversible, either spontaneously or through active mitigation;
- Duration: the length of time over which the effect would occur; and

- Timing and frequency: consideration of the timing of events in relation to ecological change; some effects might be of greater significance if they took place at certain times of year.
- 3.65 Potential impacts will be characterised initially by the absence of any mitigation, except where this is integral to the design of the Proposed Development. A sequential process will be applied to avoid, mitigate and compensate for any significant impacts. Any additional mitigation or compensation proposed will be subsequently identified and its likely effectiveness assessed.

## Significance Criteria

### Methodology for Determining Significance of Effects

- 3.66 The significance of the predicted impacts on important ecological features arising from the potential impacts associated with the Proposed Development, including designed-in and additional mitigation measures, will be assessed. The significance of the effects will be assessed as negative, positive or not significant.
- 3.67 The CIEEM 2019 EclA guidelines state that ‘A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring. A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects have been lawfully permitted following EIA procedures. In broad terms, significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).’
- 3.68 The valuation of sites made will use established value systems (e.g. SSSIs are all of national importance) and reflect the geographical context of the valuation. The categories shown in Table 10 will be applied to give geographic context.

*Table 10. Examples of criteria used to evaluate important ecological features in a defined geographical context*

Geographical level at which ecological feature is important	Example of criteria
International (Very high)	An internationally important site, e.g. Special Protection Area (SPA), Special Area of Conservation (SAC) or Ramsar; a regularly occurring population of an internationally important species (listed on Annex IV of the Habitats Directive).
National (High)	A nationally designated site, e.g. SSSI, or a site considered worthy of such designation; a large regularly occurring population of a nationally important species.
Regional (Medium)	An ecological feature identified in the local BAP. A smaller area of local BAP habitat which are essential to maintain the viability of a larger whole; non-statutory designated sites; a regularly occurring, locally significant number of a nationally important species. An ecological feature identified as of priority within Section 41 of the NERC Act 2006.
Borough (Low)	Ecological features that are scarce within the district or borough or which appreciably enrich the district or borough habitat resource.
Local (Very low)	A good example of a common or widespread ecological feature in the local area.
Negligible	No or very limited ecological value.

### Adverse Effects

- 3.69 For habitats and species, an effect is considered significant if the favourable conservation status of an important ecological feature would be compromised. Conservation status is defined by CIEEM (2019a) as:

- regarding habitats: 'conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area; and
  - regarding species: 'conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.'
- 3.70 The decision as to whether the favourable conservation status of an important ecological feature is likely to be compromised was made using professional judgement through consideration of multiple factors in relation to the predicted effects of the Proposed Development.
- 3.71 A similar procedure was adopted for designated sites that would be affected by the project, except that the focus in this case will be on the effects on the integrity of each site, defined by ODPM Circular 06/2005 and Defra Circular 01/2005 Biodiversity and geological conservation (Office of the Deputy Prime Minister, 2005) - statutory obligations and their impact within the planning system as 'the coherence of ecological structure and function, across a site's whole area, that enable it to sustain the habitat, complex of habitats and/or levels of populations of species for which it was classified.' This assessment will be made with reference to the features for which a site has been classified/notified and will involve combining assessments of the effects on the conservation statuses of each of these features.
- 3.72 For non-statutory sites, such features may not have been formally defined and would need to be agreed with the designating authority (e.g. local authority or county wildlife trust).

## Beneficial Effects

- 3.73 As per CIEEM 2019 EclA guidelines, a positive effect will be considered significant if it results in 'a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment'.
- 3.74 Beneficial effects could be permanent or temporary, direct or indirect, and could be cumulative. These factors will be brought together to assess the magnitude of the impact on particular important ecological features and, wherever possible, the magnitude of the impact will be quantified.

## Magnitude of Potential Impacts

- 3.75 Professional judgement will be used to assign the impacts on the important ecological features to one of four classes of magnitude (see Table 11). This approach deviates from that advocated by the CIEEM EclA guidelines in order to allow comparison between different impact topics.
- 3.76 Major or moderate effects are regarded as significant. Minor or negligible effects are considered not significant. Where significant effects occur, the scale of the effect is also considered on a geographical scale (i.e. international, national, regional, county, district or local). For example, effects on habitats within a SSSI (a feature of high/national importance) may not always be significant at a national level, but may be significant at regional, county or district level.

*Table 11. Definition of magnitude of impacts*

### Magnitude Definition

High	A permanent or long-term effect on the extent or integrity of a site, habitat, species assemblage or community, population or group. If adverse, this is likely to threaten its sustainability; if beneficial, this is likely to substantially enhance its conservation status.
Medium	A permanent or long-term effect on the extent or integrity of a site, habitat, species assemblage or community, population or group. If adverse, this is unlikely to threaten its sustainability; if beneficial, this is likely to be sustainable but unlikely to enhance its conservation status.
Low	A permanent or long-term reversible effect on a site, habitat, species assemblage or community, population or group whose magnitude is detectable but will not threaten its integrity.
Very low	A short-term but reversible effect on the extent or size or integrity of a site, habitat, species assemblage or community, population or group that is within the normal range.

## Significance of Potential Impacts

- 3.77 Impacts and effects could be permanent or temporary, direct or indirect, and could be cumulative.
- 3.78 For this assessment a matrix approach will be used where ecological value/importance and magnitude of impact are cross referenced to identify a level of significance. Table 12 presents the categorisation of the significance of impacts.

Table 12. Significance of impacts

Feature importance	Magnitude of impact			
	High	Medium	Low	Very low
International and National (High)	Major	Major	Moderate	Minor
Regional (Medium)	Major	Moderate	Minor	Negligible
Borough (Low)	Moderate	Minor	Negligible	Negligible
Less than Borough (Very low)	Negligible	Negligible	Negligible	Negligible

- 3.79 With reference to Table 10, in accordance with CIEEM (2019a) EclA guidelines, a clear distinction between evidence-based and value-based judgements is made so that decision-makers and other stakeholders are aware of the level of subjective evaluation that has been used.

## Terminology

- 3.80 The residual effects of the Proposed Development are translated to a significance level on a scale of negligible, minor, moderate and major as outlined in Table 13. In addition, Table 13 also converts these conclusions an equivalent conclusion based on the CIEEM 2019 EclA guidelines.

Table 13. Relating CIEEM Assessment terms for significance level

Effect significance terminology		Equivalent CIEEM assessment
Significant (Beneficial)	Major Beneficial	Beneficial effect on structure/function or conservation status at regional, national or international level
	Moderate Beneficial	Beneficial effect on structure/function or conservation status at regional level
Non-significant	Minor Beneficial	Beneficial effect on structure/function or conservation status at Site or local level
Non-significant	Negligible	No effect on structure/function or conservation status
Non-significant	Minor Adverse	Adverse effect on structure or conservation status at Site - local level
Significant (Adverse)	Moderate Adverse	Adverse effect on structure/function or conservation status at regional level
	Major Adverse	Adverse effect on structure/function or conservation status at regional, national or international level

## Limitations and Assumptions

### Desk Study

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

records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Proposed Development.

## Phase 1 Habitat Survey

- 3.82 Where habitat boundaries coincide with physical boundaries recorded on OS maps, the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held GPS. Where areas of habitat are given, they are approximate and should be verified by measurement on site where required for design or construction.
- 3.83 A Phase 1 habitat survey was undertaken in June 2019, which is the optimal period for undertaking vegetation surveys and recording non-native invasive plant species.

## Bat Survey

- 3.84 Bat survey limitations are summarised in the RPS Ecology Report (RPS, 2019b). Note that all activity surveys were undertaken at appropriate times of year and in suitable weather conditions.
- 3.85 Regarding assessment of bat roost suitability, trees were inspected from all aspects where possible. However, not all trees could be inspected for all aspects due to various factors (e.g. boundaries, obscuring structures/vegetation).
- 3.86 Identification of bat calls to species level is limited to a certain extent by similarities in call structure. As such, certain calls could not be reliably identified to species level; these were instead referred to as *Myotis* sp., *Nyctalus* sp. and *Pipistrellus* sp. as appropriate.

## Wintering Bird Survey

- 3.87 The majority of AECOM survey visits were undertaken in windy conditions, which contradicts best practice guidance regarding favourable survey conditions. However, these survey conditions are a consequence of the exposed nature of the Survey Area (rather than being atypically windy on the specific dates/times at which survey visits were conducted). As such, the survey results are considered to be indicative of the bird assemblage present within the Survey Area.
- 3.88 The start of the survey visit on 24<sup>th</sup> October 2019 was delayed. As a result, recording of birds within the Survey Area (e.g. on intertidal mudflats, within grassland in the west of the Survey Area) was constrained by fading light. As these habitats were subject to a further five survey visits at low tide this is not considered to be a significant constraint to the wintering bird survey.
- 3.89 The weather conditions during the survey visit undertaken on 24<sup>th</sup> February 2020 were unfavourable, with strong winds and rain throughout. This is generally considered to be a lower constraint when surveying waterbirds, although such conditions are likely to have temporarily reduced the level of activity and conspicuousness of many species (particularly passerines). This may account for the fact that whilst large numbers of waterbirds were recorded during this survey visit, songbird numbers were lower than those typically recorded within the Survey Area. As the other 11 survey visits were undertaken in suitable weather conditions this is not considered to have significantly affected the results of the survey or altered the conclusions and recommendations of this report.
- 3.90 When undertaking low tide counts of wading birds on mudflats, the distance between the tideline and the safest accessible vantage point was relatively large (often exceeding 200m). As such, even with the use of high-powered optical equipment, it is possible that some wading birds using mudflats within the southeast corner of the Survey Area may have gone undetected; particularly smaller species (e.g. dunlin *Calidris alpina*). This is taken into account when drawing conclusions regarding the potential value of the Survey Area to these species and potential impacts and mitigation in relation to the Proposed Development.

## Breeding Bird Survey

- 3.91 Due to logistical considerations associated with the 2020 Covid-19 pandemic, AECOM breeding bird survey visits finished after 11:00 hours, when activity by birds (including territorial behaviour) may be reduced. The Site and land in close proximity to the Site were always surveyed during the optimal period for recording bird activity, with the grassland in the west of the Survey Area (approximately 1km from the Site of the

Proposed Development) typically surveyed towards end of each survey visit. All surveys were completed by 12:00 hours and this is therefore not considered a significant limitation.

## Water Vole Survey

- 3.92 Full survey of D5 was constrained by the dense vegetation. However, evidence of water vole use was still recorded within this ditch. As such, the restricted visibility is not considered to have significantly affected the recommendations made within the report regarding use of the Site and adjacent habitat by water vole.

## Quality Assurance

- 3.93 All AECOM Ecologists involved with the surveys at the Site and producing this report are members, at the appropriate level, of CIEEM and follow their code of professional conduct when undertaking ecological work.

## 4. Baseline Conditions

### Desk Study

#### Designated Sites

##### Statutory Designations

- 4.1 Table 14 and Table 15 detail the statutory nature conservation designations identified by the desk study using the method described in Section 3 of this assessment. These are also presented in Figures V1.3 and V1.4 (Appendix A).
- 4.2 The desk study identified nine internationally designated sites located within 10km of the Site.
- 4.3 The desk study also identified one nationally designated site within 2km of the Site. This site is designated as a Site of Special Scientific Interest (SSSI), which are sites of nature conservation value that are of particular interest to science due to the rare species of fauna or flora they contain.
- 4.4 Detailed accounts of the wintering bird features contributing to the designation of the Medway Estuary and Marshes SPA and Ramsar are provided in the AECOM Wintering Bird Survey Report and full wintering bird results tables in Appendix F. Detailed accounts of the breeding/summer bird features contributing to these designations are provided in the AECOM Breeding Bird Survey Report.

*Table 14. Internationally designated sites for nature conservation located within 10km of the Site*

Designation	Reason(s) for designation	Closest point to Site
Medway Estuary and Marshes Ramsar	Nationally scarce plant species including sea barley, curved hard-grass and slender hare's-ear. Internationally important assemblage of wintering waterfowl and waders. Internationally important populations of migrating waders including grey plover and redshank. Internationally important populations over over-wintering waterfowl and waders including dark-bellied brent goose and shelduck.	Immediately south of Site + small part within Site crossed by submarine cable horizontal directional drilling (HDD) 90m north-east of Site
Medway Estuary and Marshes SPA	Internationally important breeding populations of waders and waterfowl including avocet and little tern. Internationally important over-wintering populations of waders and waterfowl including avocet, dark-bellied brent goose and pintail. Internationally important over-wintering assemblage of waterfowl and waders.	Immediately south of Site + small part within Site crossed by submarine cable horizontal directional drilling (HDD) 90m north-east of Site
Thames Estuary and Marshes Ramsar	Nationally scarce plant and invertebrate species. Internationally important over-wintering assemblage of waterfowl and waders. Internationally important populations of migrating waders including redshank and ringed plover. Internationally important populations of over-wintering populations of waterfowl and waders including dark-bellied brent goose and grey plover.	4km north-east of Site
Thames Estuary and Marshes SPA	Internationally important over-wintering populations of waders, waterfowl and raptors including marsh harrier, avocet and black-tailed godwit. Internationally important over-wintering assemblage of waterfowl and waders.	4km north-east of Site
Queendown Warren SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*Important orchid sites). The site hosts the priority habitat type "orchid rich sites". It contains an important assemblage of rare and scarce species including the early spider-orchid, burnt orchid and man orchid.	9.2 km south of Site

Designation	Reason(s) for designation	Closest point to Site
The Swale Ramsar	Nationally scarce plant and invertebrate species. Internationally important over-wintering assemblage of waterfowl and waders. Internationally important populations of migrating waders including redshank and ringed plover. Internationally important populations of over-wintering waterfowl and waders including dark-bellied brent goose and grey plover.	9.3km south-east of Site
The Swale SPA	Internationally important populations of over-wintering waterfowl and waders including dark-bellied brent goose and dunlin. Internationally important over-wintering assemblage of waterfowl and waders.	9.3km south-east of Site
Benfleet and Southend Marshes SPA	Internationally important populations of over-wintering waterfowl and waders including dark-bellied brent goose and knot. Internationally important over-wintering assemblage of waterfowl and waders.	10km north of Site
Benfleet and Southend Marshes Ramsar	Internationally important over-wintering assemblage of waterfowl and waders. Internationally important populations of migrating waterfowl and waders including dark-bellied brent goose and grey plover.	10km north of site

Table 15. Nationally designated sites for nature conservation located within 2km of the Site

Designation	Reason(s) for designation	Closest point to Site
Medway Estuary and Marshes SSSI	The Medway Estuary and Marshes SSSI form the largest area of intertidal habitats which have been identified as of value for nature conservation in Kent. The area holds internationally important populations of wintering and passage birds and is also of importance for its breeding birds. An outstanding assemblage of plant species also occurs on the site.	Immediately south of Site + small part within Site crossed by submarine cable horizontal directional drilling (HDD) 90m north-east of Site

## Non-statutory Designations

4.5 Table 16 and Figure V1.3 (Appendix A) details the non-statutory nature conservation designations identified by the desk study using the method described in Section 3 of this assessment. The desk study identified one RSPB (Royal Society for the Protection of Birds) Reserve within 2km of the Site. RSPB reserves are non-statutory designations covering areas of particular interest for birds and other wildlife.

Table 16. Non-statutory designated sites for nature conservation located within 2km of the Site

Designation	Reason(s) for designation	Closest point to Site
Nor Marsh and Motney Hill RSPB	A saltmarsh island in the Medway Estuary supporting large numbers of wintering waterbirds including dark-bellied brent goose, shelduck, pintail, goldeneye, avocet and grey plover.	1.8km south-west of Site

## Protected Species

4.6 Review of MAGIC identified Natural England European Protected Species Mitigation Licences (EPSML) that had previously been granted within 2km of the Site as follows:

- Great crested newt licence (2015-2024) for damaging a breeding site and the damaging/destruction of a resting place approximately 600m north-west of the Site;
- Great crested newt licence (2013-2018) for damaging a resting place approximately 700m west of the Site (approximately 100m east of the Onshore Cable Route);
- Great crested newt licence (2011-2015) for the destruction of a resting place approximately 1km north of the Site; and

- Great crested newt licence (2015) for the damaging/destruction of a resting place approximately 1.4km northwest of the Site (approximately 900m north-west of the Onshore Cable Route).
- 4.7 Data obtained from Kent and Medway Biodiversity Records Centre identified records of numerous protected and/or notable species within 2km of the Site (as listed in Appendix D), including:
- Three plant species included on Section 41 of the NERC Act 2006 including Borrer's saltmarsh grass (*Puccinellia fasciculata*);
  - Four invertebrate species included on Section 41 of the NERC Act 2006 including garden tiger (*Arctia caja*);
  - Amphibians and reptiles comprising great crested newt, common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*) and grass snake (*Natrix helvetica*);
  - Numerous bird species including species listed on Annex 1 of the EC Birds Directive 2009, Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Section 41 of the NERC Act 2006, the BoCC Red and Amber lists and the Kent Red Data Book. These included species contributing to the designation of internationally designated sites identified during the desk study, and nightingale (for which a Species Action Plan was devised within the Kent Biodiversity Action Plan 1997);
  - At least eight bat species, all of which are fully protected under the Wildlife and Countryside Act 1981 (as amended), and including species listed on Section 41 of the NERC Act 2006. Records included the following roosts:
    - A brown long-eared bat (*Plecotus auritus*) hibernation roost at Darnet Fort approximately 1.8km south-west of the Site (1.2km south of the Onshore Cable Route); and
    - A maternity roost used by serotine (*Eptesicus serotinus*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bats, approximately 5km north-west of the Site.
  - Other mammals including badger and numerous records of water vole; and
  - Japanese knotweed (*Reynoutria japonica*), which is a non-native invasive species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

## Habitats

### Baseline Habitat Types

- 4.8 The habitats recorded and their distributions within the Site are summarised in Table 17 and shown in Figure V1.1, Appendix A and in the Volume 2 Ecology Report – Preliminary Ecological Appraisal. Photos of these habitats, along with habitats of ecological interest adjacent to the Site, are shown in Plates 6-15. Habitat areas are approximate and only comprise habitats present within the Site. Associated target notes are provided in Appendix E.
- 4.9 Note that the redline boundary for the Site also includes an existing access road extending westwards from the north-west corner of the Site. This comprises hardstanding and is not to be altered within the Proposed Development.

Table 17. Habitats present within the Site during the 2019 AECOM Phase 1 habitat survey

Habitat	Description	Area (ha)	% of the Site
Hardstanding	Six circular concrete bases formerly underlying oil storage tanks covered much of the Site. A tarmac road surrounded the Site perimeter (partially outside the Site boundary). A concrete sea wall was present in the south-west corner.	1.37	22.1
		1.25	20.2



**Standing water (G1)**

- 4.17 A small pond (referred to as P17 in RPS reports) was present within the south-west corner of the Site (Plate 11) (TN7). This was encroached onto/bordered by marginal vegetation predominantly comprising common reed (*Phragmites australis*).

**Marginal vegetation (F2.1)**

- 4.18 Marginal vegetation surrounded the pond in the south-west corner of the Site (Plate 11) (TN6), containing abundant common reed as well as various sedges (*Carex* sp.) and sea club-rush (*Bolboschoenus maritimus*), and was also present in smaller patches adjacent to hardstanding and bare ground.

**Flood defence sea wall (J2.5)**

- 4.19 A concrete sea wall was present in the south of the Site, between the Medway Estuary and the terrestrial habitats. Atop the concrete sea wall was a steel and wire mesh security perimeter fence.

**4.20 Intertidal shingles/cobbles (H1.2)**

- 4.21 A small area of shingles/cobbles was present south of the sea wall within the Medway Estuary and north of an area of intertidal mud/sand (Plate 15).

**Intertidal mud/sand (H1.1)**

- 4.22 The Site extends to the Mean High-Water Springs (MHWS) within the Medway Estuary. To the south of the intertidal shingles/cobbles is an area of intertidal mud/sand (Plate 15).

**Habitats adjacent to the Site**

- 4.23 Adjacent to the Site were wider areas of hardstanding and bare ground, as well as a ditch (referred to as D6 in RPS reports) east of the Site boundary (Plate 12) (TN8), beyond which was a larger expanse of grassland within an enclosed area formerly comprising power station ash lagoons (Plate 13) (TN9). Intertidal mudflats were present approximately 90m north of the Site (within Damhead Creek) (Plate 14) (TN10).



Plate 6. Hardstanding comprising circular concrete bases formerly underlying oil storage tanks.



Plate 7. Eastern portion of the perimeter road encompassing the Site (extending into the Site in places).



Plate 8. Bare ground with sparse vegetation towards the centre of the Site.



Plate 9. East-facing semi-improved grassland bank along the Site boundary (adjacent to the perimeter road).



Plate 10. Semi-improved grassland towards the south of the Site.



Plate 11. Marginal vegetation and standing water (P17) within the south-west corner of the Site.



Plate 12. Ditch (D6) immediately east of the Site boundary.



Plate 13. Large expanse of grassland approximately 40m east of the Site within an enclosed area formerly comprising power station ash lagoons.



Plate 14. Damhead Creek, located to the north of the Site, containing intertidal mudflats (photographed at high tide) (forming part of the Medway Estuary and Marshes SPA and Ramsar).



Plate 15. Intertidal mudflats within the Medway Estuary (forming part of the Medway Estuary and Marshes SPA and Ramsar) within the Offshore Cable Route, immediately south of the Site.

## Priority Habitats

- 4.24 The Site contains standing water (in the form of P17), which is a habitat of Principal Importance under Section 41 of the NERC Act 2006 and is subject to a Habitat Action Plan within the Kent BAP (Kent Biodiversity Action Plan Steering Group, 1997). This habitat covers approximately 0.01ha within the Site. Although this habitat is not a natural water feature, as the standing water is produced by rainwater collecting in a depression since the demolition of the former Kingsnorth Power Station and is potentially subject to drying out in periods of dry weather, it is still considered a priority habitat as it meets the criteria under the UK BAP Action Plan Priority Habitat Description for Ponds<sup>5</sup>; notably by being used by water vole (see Section 4.84).
- 4.25 The redline boundary of the Site also contains a small area of intertidal mudflats which is a habitat of Principal Importance under Section 41 of the NERC Act 2006 and is subject to a Habitat Action Plan within the Kent BAP (Kent Biodiversity Action Plan Steering Group, 1997). The habitat is present south of the sea wall within the Medway Estuary and covers approximately 0.07ha within the Site. This habitat is also part of the Medway Estuary and Marshes SPA, Ramsar and SSSI.
- 4.26 Brownfield habitats within the Site (specifically sparsely vegetated bare ground) were considered in reference to the criteria for identifying the habitat Open Mosaic Habitat on Previously Development Ground (OMH) (JNCC, 2010b); a habitat of Principal Importance under Section 41 of the NERC Act 2006. Whilst habitat within the Site had certain characteristics of OMH, it lacked sufficient heterogeneity (i.e. smaller scale structural variation) to be considered OMH.
- 4.27 Habitats of Principal Importance under the NERC Act 2006 and habitats subject to Habitat Action Plans within the Kent BAP are present adjacent to the Site: specifically OMH (to the west of the Site, as identified within Parcel 5 of the Wider Kingsnorth Power Station Site within RPS (2019b)); ponds and ditches (including D6, approximately 10m east of the Site); and intertidal mudflats (within Damhead Creek and the Medway Estuary, approximately 90m north of the Site and less than 5m south of the Site respectively).

## Protected and Priority Species

### Plants

#### The Site (AECOM & RPS survey data)

- 4.28 During the Phase 1 habitat survey undertaken by RPS a small section of semi-improved grassland at the south of the Site (opposite the sea wall) had the potential to support uncommon plant species. This was therefore considered during subsequent surveys. However, no uncommon plant species were recorded

<sup>5</sup> <http://data.jncc.gov.uk/data/dec49c52-a86c-4483-90f2-f43957e560bb/UKBAP-BAPHabitats-42-Ponds.pdf> [Accessed 13 May 2020].

within this area or elsewhere within the Site during the Phase 1 habitat survey undertaken by AECOM or the botanical survey undertaken by RPS.

### Relevant Wider Kingsnorth Power Station Site Data (RPS survey data)

- 4.29 RPS identified five Areas within the Wider Kingsnorth Power Station Site with potential to support uncommon plant species. Uncommon plant species recorded within these Areas during subsequent RPS botanical survey were as detailed in Table 18 below. Whilst part of the Onshore Cable Route was deemed to have potential to support uncommon plant species, no uncommon plant species were recorded within the Onshore Cable Route.

Table 18. Plants with rarity status recorded within the Wider Kingsnorth Power Station Site in 2019 (RPS, 2019b)

Scientific name	Common name	Abundance (using DAFOR criteria)	Proximity to Site	Status
<i>Filago vulgaris</i>	Common cudweed	O	At least 380m east of the Site	NT
<i>Hordeum marinum</i>	Sea barley	F	At least 150m east of Site	S41, NS, VU
<i>Inula crithmoides</i>	Golden samphire	F	At least 150m east of Site	NS
<i>Lepidium latifolium</i>	Dittander	R (only four individuals)	At least 150m east of Site	NS
<i>Spartica maritima</i>	Small cord-grass	D	At least 150m east of Site	S41, NS, EN

Regarding 'status' of rarity status plant species recorded:

**NT:** IUCN Red Data Book status Nationally Threatened

**EN:** IUCN Red Data Book status Endangered

**VU:** IUCN Red Data Book status vulnerable

**NS:** Nationally Scarce

**S41:** NERC Act 2006 Species of Principal Importance

- 4.30 Golden samphire (Frequent) and small cord-grass (Dominant) were both found along the lower reaches of the saltmarsh in Area 3. Whilst the RPS Ecology Survey Report does not map the precise extents of these species, it states that both species were recorded along the majority of the lower reaches of the saltmarsh within Area 3, which is approximately 150m east of the Site at its nearest point.
- 4.31 Common cudweed (Occasional) was recorded at a single small location on a short grassy sward near the shoreline towards the north-west of Area 3. Whilst the RPS Ecology Survey Report does not map the precise location, the north-west corner of Area 3 is approximately 380m east of the Site at its nearest point.
- 4.32 Dittander (Rare) was recorded in disturbed waste ground between the dirt track and the central grassland area. Whilst the RPS Ecology Survey Report does not map the precise location, the nearest record of this species was at least 150m east of the Site.
- 4.33 Sea Barley (Frequent) was recorded in Area 3 (which is approximately 150m east of the Site at its nearest point) and was considered likely to be present throughout Area 3.

### Invertebrates (RPS survey data)

#### The Site

- 4.34 The invertebrate scoping survey undertaken by RPS on 9<sup>th</sup> May 2019 found that habitats within the Site were of relatively low value for invertebrates. Habitats including bare rubble and grassland margins were deemed to potentially support only a narrow range of invertebrate species, as "a true mosaic of drought-stressed ephemeral vegetation has not yet had time to develop" (RPS, 2019b). No notable invertebrate species were recorded within the Site during ecology surveys undertaken by AECOM or RPS. RPS scoped out the Site for further detailed surveying due to its low potential for uncommon invertebrate species.

### Relevant Wider Kingsnorth Power Station Site Data

- 4.35 Habitats elsewhere within the Wider Kingsnorth Power Station Site, specifically within Parcel 1 (approximately 1km north-west of the Site) and Parcel 4 (approximately 200m north of the Site and separated from the Site by Damhead Creek), were identified as potentially supporting a more diverse

invertebrate assemblage, with suitable habitats including scrub and sparsely vegetated stony ground, embankments and tall ruderal vegetation (containing a single wall butterfly (*Lasiommata megera*); a Species of Principal Importance within Section 41 of the NERC Act 2006).

## Great Crested Newt (RPS survey data)

### The Site

- 4.36 A single pond was recorded within the Site (P17). HSI assessment identified that P17 had 'below average' suitability to support great crested newt (HSI score: 0.53). Subsequent eDNA survey of P17 in April 2019 returned a negative result, indicating likely absence of great crested newts.

### Relevant Wider Kingsnorth Power Station Site Data

- 4.37 Two additional waterbodies were recorded within 250m of the Site, with a further two waterbodies recorded within 250m of the Onshore Cable Route.

#### HSI Assessment

- 4.38 HSI assessment results for the four waterbodies within the Wider Kingsnorth Power Station Site of relevance to the Proposed Development are summarised in Table 19 below (refer to RPS (2019b)).

*Table 19. 2019 great crested newt HSI assessment results for waterbodies within 250m of the Site and/or the Onshore Cable Route (RPS, 2019b)*

Waterbody reference (as defined in RPS, 2019b (Figure 2.2))	HSI score	Habitat suitability	Approximate distance from Site	Approximate distance from Onshore Cable Route
D5	0.52	Below average	1.0km west	100m west (40m south-west of sub-station)
D6	0.70	Good	10m east	180m east
D7a	0.84	Excellent	320m south-west	Within Onshore Cable Route
P2	0.67	Average	250m north	270m north

#### eDNA Survey

- 4.39 eDNA survey of P2 returned a positive result. A single waterbody within 250m of the Site was therefore found to contain great crested newt (see Plate 16 below).
- 4.40 eDNA survey of D5, D6, D7a returned negative results, indicating likely absence of great crested newt from these waterbodies.

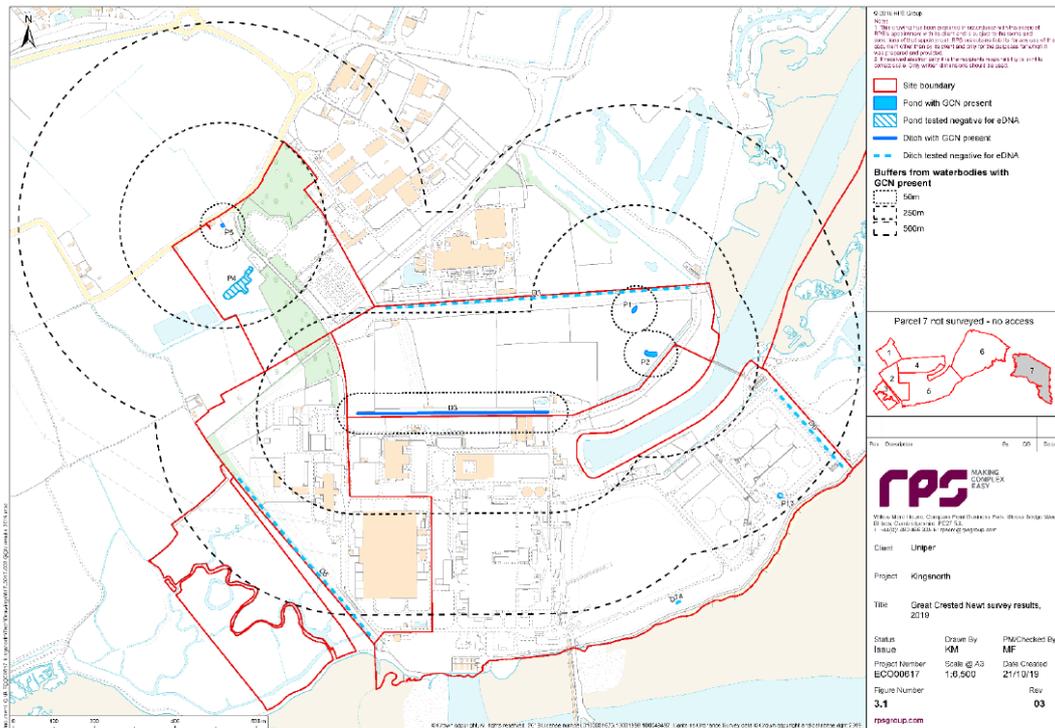


Plate 16. Great crested newt survey results 2019 (RPS, 2019b)

**Population Monitoring Survey**

- 4.41 During the population monitoring survey of P2 undertaken by RPS in 2019, a peak of five great crested newts were recorded during bottle trapping (during visit five on 21<sup>st</sup> May 2019). All other survey visits returned counts of two or less. A peak count of five suggests the presence of a ‘small’ population of great crested newt within 250m of the Site. No great crested newts were recorded during torching of P2. There is no mention of further techniques used within the RPS report.
- 4.42 It should be noted that whilst P2 is within 250m of the Site, Damhead Creek lies between the Site and P2 (Plate 9). This constitutes a fundamental barrier to the movement of newts, which avoid high salinity conditions. Taking account of terrestrial movement routes around the creek, the Site is therefore separated from P2 by an approximately 700m distance of terrestrial habitat; much of this terrestrial habitat between P2 and the Site is suboptimal for great crested newt.
- 4.43 As such, great crested newt is considered likely to be absent from the terrestrial and aquatic habitat within the Site and the Onshore Cable Route.

**Reptiles (RPS survey data)**

- 4.44 The results of the reptile survey undertaken by RPS in 2019 for the Wider Kingsnorth Power Station Site are summarised in Table 20 below. Parcel 3 was not surveyed due to the absence of suitable reptile habitat. The locations at which reptiles were recorded are shown in the RPS Ecology Survey Report and Plate 17 below, and full survey data are provided in Appendix C of the RPS Ecology Survey Report (RPS, 2019b).

Table 20. 2019 reptile survey results summary for the Wider Kingsnorth Power Station Site (RPS, 2019b)

Visit	Parcel 1 (~900m NW of the Site)			Parcel 2 (~750m W of the Site)			Parcel 4 (~220m NW of the Site)			Parcel 5 (including the Site)			Parcel 6 (~10m E of the Site)			All Parcels		
	SW	CL	GS	SW	CL	GS	SW	CL	GS	SW	CL	GS**	SW	CL	GS	SW	CL	GS
1	3	12	-	4	6	1	4	4	1	-	-	-	-	1	-	11	23	2
2	4	11	-	3	6	1	1	3	-	-	-	-	-	3	-	8	23	1

3	3	11	-	2	6	-	2	11	-	-	-	-	-	7	28	-
4	-	2	-	1	1	-	2	3	-	-	-	-	-	3	6	-
5	1	8	-	4	2	-	1	1	-	-	1	-	-	6	13	-
6	3	8	-	1	5	-	12	10	-	-	-	-	-	16	24	-
7	8	9	1	5	6	-	10	5	-	1	4	-	-	24	27	1

Counts are for all life stages (e.g. adults, subadults and juveniles)

Abbreviations: SW = slow worm, CL = common lizard, GS = grass snake

\*\* - three grass snakes were observed approximately 10m east of the Site boundary in the ditch adjacent to the site during a separate species survey.

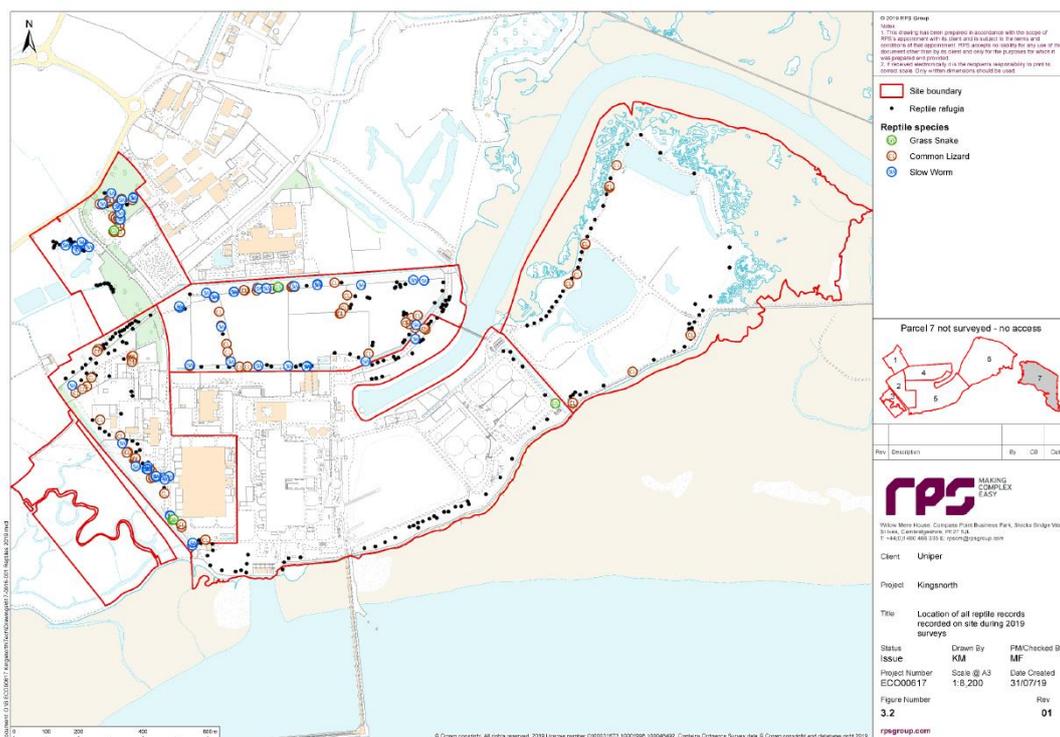


Plate 17. Location of all reptile records recoded during 2019 surveys (RPS, 2019b)

### The Site

4.45 No artificial refugia were installed within the Site itself during the 2019 reptile survey undertaken by RPS. However, approximately 140 refugia were installed in suitable reptile habitat (including habitat within the Onshore Cable Route) that was connected to potential reptile habitat within the Site (see Figure 2.3 of the RPS Ecology Survey Report (RPS, 2019b). These data from the Wider Kingsnorth Power Station Site are therefore used to assess likely use of the Site by reptiles on the basis that if reptiles were absent from the much more extensive areas of surrounding suitable habitat they are unlikely to be present within the Site.

4.46 The Site contains suitable habitat (e.g. grassland, scrub) for use by widespread reptile species: specifically, common lizard, slow worm and grass snake. The bank along the Site boundary contained patches of bare earth (potentially providing basking opportunities), cover (in the form of grassland/scrub) and numerous crevices and burrows, providing suitable hibernation habitat. Standing water within/in close proximity to the Site (e.g. D6, P17) is suitable for use by grass snake. Grassland within the Site with a denser, longer sward (e.g. towards the south of the Site) is particularly suitable for use by slow worm.

### Relevant Wider Kingsnorth Power Station Site Data

4.47 Three reptile species were recorded within the Wider Kingsnorth Power Station Site in 2019: slow worm, common lizard and grass snake.

- 4.48 Three grass snakes were recorded approximately 10m east of the Site adjacent to the ditch (D6) running parallel to the Site boundary during a separate species survey. Other records of grass snake were at least 1km from the Site. There are no significant barriers to the movement of grass snake between the location at which a grass snake was recorded and suitable habitat within the Site and the Onshore Cable Route.
- 4.49 Low numbers of common lizard were recorded in grassland to the east of the Site (within Parcel 6), the nearest of which was approximately 70m south-east of the Site. There are no significant barriers to the movement of common lizard between the locations at which they were recorded and suitable habitat within the Site and the Onshore Cable Route.
- 4.50 The nearest record of slow worm was at least 750m (when taking into account barriers to movement such as Damhead Creek) from the Site. There are no fundamental barriers to the movement of slow worm between the locations at which they were recorded and suitable habitat within the Site and the Onshore Cable Route, although given the distance and quality of connecting habitat between the nearest record and the Site, and the relatively poor dispersal ability of this species, the Site and Onshore Cable Route are considered to at best contain a low population of slow worm.
- 4.51 Due to the suitability of the site and the lack of barriers to movement, the Site is therefore considered likely to contain low populations of at least grass snake and common lizard, and potentially slow worm.

## Wintering Birds

### 2018-2019 (RSK survey data)

- 4.52 During the seven wintering bird survey visits undertaken by RSK between December 2018 and March 2019 inclusive, a total of 43 species were recorded in habitat adjacent to the Site (RSK, 2019). A summary of protected and/or notable species recorded, along with the peak counts for these species, is provided in Table 21 below. Full details are provided in the RSK Winter Bird Survey Report (RSK, 2019).
- 4.53 For the purposes of analysing use of the survey area by wintering birds, RSK divided the survey area into four areas (defined in the RSK Winter Bird Survey Report). These cover intertidal mudflats south of the Site and Onshore Cable Route and within the Offshore Cable Route ('Kingsnorth Near Shore' and 'Kingsnorth Hoo Flats'), Damhead Creek (north of the Site and Onshore Cable Route), and grassland to the west of the Site and Onshore Cable Route ('Kingsnorth Hoo Marsh'). These areas were also (with the exception of Damhead Creek) included within the Survey Area that was subject to bird surveys by AECOM in 2019-2020.

Table 21. Summary of protected and/or notable bird species recorded during the RSK 2018-2019 wintering bird survey (RSK, 2019)

Species	Peak count				Conservation status
	Kingsnorth Near Shore	Damhead Creek	Kingsnorth Hoo Marsh	Kingsnorth Hoo Flats	
Mute swan ( <i>Cygnus olor</i> )	-	-	4	-	Amber list
Dark-bellied brent goose ( <i>Branta bernicla bernicla</i> )	89	141	110	257	NERCS41 Amber list
Greylag goose ( <i>Anser anser</i> )	-	-	50	14	Amber list
Shelduck ( <i>Tadorna tadorna</i> )	200	225	132	132	Amber list
Mallard ( <i>Anas platyrhynchos</i> )	-	-	24	2	Amber list
Wigeon ( <i>Mareca penelope</i> )	7	324	50	-	Amber list
Gadwall ( <i>Mareca strepera</i> )	-	5	-	-	Amber list
Teal ( <i>Anas crecca</i> )	-	1,330	15	3	Amber list
Shoveler ( <i>Spatula clypeata</i> )	-	2	-	-	Amber list
Red-breasted merganser ( <i>Mergus serrator</i> )	-	2	-	-	Amber list

Species	Peak count				Conservation status
	Kingsnorth Near Shore	Damhead Creek	Kingsnorth Hoo Marsh	Kingsnorth Hoo Flats	
Oystercatcher ( <i>Haematopus ostralegus</i> )	1,320	60	10	44	Amber list
Avocet ( <i>Recurvirostra avosetta</i> )	3	80	-	c.100	BIRDS DIR. W&CA Amber list
Lapwing ( <i>Vanellus vanellus</i> )	-	690	40	-	NERCS41 Red list
Grey plover ( <i>Pluvialis squatarola</i> )	-	15	-	-	Amber list
Ringed plover ( <i>Charadrius hiaticula</i> )	-	1	-	-	Red list
Curlew ( <i>Numenius arquata</i> )	30	83	6	8	NERCS41 Red list
Black-tailed godwit ( <i>Limosa limosa</i> )	145	210	-	165	W&CA Red list
Turnstone ( <i>Arenaria interpres</i> )	1	2	-	-	Amber list
Dunlin ( <i>Calidris alpina</i> )	c.512	1,090	-	-	Amber list
Snipe ( <i>Gallinago gallinago</i> )	-	6	-	-	Amber list
Redshank ( <i>Tringa totanus</i> )	20	350	4	10	Amber list
Spotted redshank ( <i>Tringa erythropus</i> )	-	2	-	-	Amber list
Greenshank ( <i>Tringa nebularia</i> )	1	7	-	-	W&CA Amber list
Black-headed gull ( <i>Chroicocephalus ridibundus</i> )	c.50	42	26	c.300	Amber list
Common gull ( <i>Larus canus</i> )	1	2	-	2	Amber list
Herring gull ( <i>Larus argentatus</i> )	3	12	1	6	NERCS41 Red list
Lesser black-backed gull ( <i>Larus fuscus</i> )	3	1	2	-	Amber list
Great black-backed gull ( <i>Larus marinus</i> )	-	2	-	-	Amber list
Red-throated diver ( <i>Gavia stellata</i> )	1	-	-	-	BIRDS DIR. W&CA
Little egret ( <i>Egretta garzetta</i> )	1	2	1	-	BIRDS DIR.
Marsh harrier ( <i>Circus aeruginosus</i> )	1	2	1	-	BIRDS DIR. W&CA Amber list
Hen harrier ( <i>Circus cyaneus</i> )	-	1	-	-	BIRDS DIR. W&CA NERCS41

Species	Peak count				Conservation status
	Kingsnorth Near Shore	Damhead Creek	Kingsnorth Hoo Marsh	Kingsnorth Hoo Flats	
					<b>Red list</b>
Kingfisher ( <i>Alcedo atthis</i> )	-	2	-	-	<b>BIRDS DIR.</b> <b>W&amp;CA</b> <b>Amber list</b>
Kestrel ( <i>Falco tinnunculus</i> )	-	1	-	1	<b>Amber list</b>
Peregrine ( <i>Falco peregrinus</i> )	-	-	1	-	<b>BIRDS DIR.</b> <b>W&amp;CA</b>
Skylark ( <i>Alauda arvensis</i> )	-	160	-	-	<b>NERCS41</b> <b>Red list</b>

4.54 The remaining species recorded by RSK were common and widespread species included on the BOCC Green list, as well as non-native species.

4.55 Figure 3 of the RSK Wintering Bird Survey report identified that the Site was used as an occasional high tide roost by shelduck and oystercatcher.

4.56 In addition, the RSK Wintering Bird Survey identified the following areas outside the Site boundary of relevance to the Proposed Development as being of value to wintering protected and/or notable bird species:

- Intertidal mudflats within the south of the Survey Area (including the Offshore Cable Route) within the Medway Estuary and Marshes SPA and Ramsar: used by significant numbers of waterbirds including species contributing to the designation of the Medway Estuary and Marshes SPA and Ramsar (e.g. dark-bellied brent goose, shelduck, oystercatcher, avocet, dunlin).
- Grassland within the west of the Survey Area: used by significant numbers of waterbirds including species contributing to the designation of the Medway Estuary and Marshes SPA and Ramsar (e.g. dark-bellied brent goose, shelduck); and
- Intertidal mudflats within Damhead Creek (north of the Site): used by significant numbers of waterbirds including species contributing to the designation of the Medway Estuary and Marshes SPA and Ramsar (e.g. dark-bellied brent goose, shelduck, wigeon, teal, avocet, lapwing, dunlin, redshank).

### 2019-2020 (AECOM survey data)

4.57 During the 12 wintering bird survey visits undertaken by AECOM between October 2019 and March 2020 inclusive, a total of 60 species were recorded within the Survey Area (52 species at low tide, 53 species at high tide). A summary of protected and/or notable species recorded using the Survey Area, along with the peak counts for these species, is provided in Table 22 below. Survey maps are provided in Figures V3.2-V3.13 within Volume 3 Ecology Report – Wintering Birds. Full survey data are provided in Appendix F.

Table 22. Summary of protected and/or notable bird species recorded during the AECOM 2019-2020 wintering bird survey

Species	Peak count	Date of peak count <sup>6</sup>	Description	Conservation status
Avocet ( <i>Recurvirostra avosetta</i> )	4	05/12/19 (LT)	Infrequently recorded foraging on intertidal mudflats within the south-west of the Survey Area. Also recorded foraging	<b>BIRDS DIR.</b> <b>W&amp;CA</b> <b>Amber list</b>

<sup>6</sup> Low Tide = (LT), High Tide = (HT)

Species	Peak count	Date of peak count <sup>6</sup>	Description	Conservation status
			in Damhead Creek to the north of (outside) the Survey Area. Not recorded using the Site.	
Bar-tailed godwit ( <i>Limosa lapponica</i> )	3	12/11/19 (HT)	Three individuals recorded roosting with oystercatchers at the foot of the sea wall (as described above).	<b>BIRDS DIR.</b> Amber list
Black-headed gull ( <i>Chroicocephalus ridibundus</i> )	56	09/03/20 (HT)	Frequently recorded flying over the Survey Area (including the Site) and foraging/resting on intertidal mudflats in the south of the Survey Area. Not recorded using the Site.	Amber list
Cetti's warbler ( <i>Cettia cetti</i> )	2	23/01/20 (HT)	Frequently recorded singing from reeds immediately (within 10m) east of the Site, with a second individual occasionally recorded within the south-west corner of the Site.	<b>W&amp;CA</b>
Curlew ( <i>Numenius arquata</i> )	47	20/11/19 (LT)	Frequently recorded foraging on intertidal mudflats within the south (particularly the south-east, including the Offshore Cable Route) of the Survey Area. Not recorded using the Site.	<b>NERCS41</b> Red list
Dark-bellied brent goose ( <i>Branta bernicla bernicla</i> )	571	03/03/20 (LT)	Large flocks frequently recorded foraging in two areas: intertidal mudflats towards the south-east of the Survey Area (within the Offshore Cable Route); and grassland in the west of the Survey Area. Not recorded using the Site.	<b>NERCS41</b> Amber list
Dunlin ( <i>Calidris alpina</i> )	39	05/12/19 (LT)	Two groups recorded foraging on intertidal mudflats within the south-east of the Survey Area.	Amber list
Dunnock ( <i>Prunella modularis</i> )	6	09/03/20 (HT)	Frequently recorded calling from denser vegetation (e.g. bramble scrub) throughout the Site and wider Survey Area.	<b>NERCS41</b> Amber list
Gadwall ( <i>Mareca strepera</i> )	7	24/02/20 (HT)	Infrequently recorded foraging in grassland adjacent to ephemeral pools in the west of the Survey Area. Not recorded using the Site.	Amber list
Greylag goose ( <i>Anser anser</i> )	17	09/03/20 (HT)	Small flocks recorded foraging in grassland within the west of the Survey Area. Not recorded using the Site.	Amber list
Herring gull ( <i>Larus argentatus</i> )	45	12/11/19 (HT)	Frequently recorded flying over the Survey Area (including the Site) and foraging/resting on intertidal mudflats in the south of the Survey Area. Not recorded using the Site.	<b>NERCS41</b> Red list
Kestrel ( <i>Falco tinnunculus</i> )	2	28/10/19 (HT) 12/11/19 (HT)	At least two individuals (1.1) frequently recorded resting, foraging and (on one occasion) interacting with each other throughout the Survey Area. Infrequently observed foraging within the Site.	Amber list
Kingfisher ( <i>Alcedo atthis</i> )	1	24/02/20 (HT)	One individual recorded perching on vegetation overhanging a ditch in the west of the Survey Area.	<b>BIRDS DIR.</b> <b>W&amp;CA</b> Amber list
Lapwing ( <i>Vanellus vanellus</i> )	250	17/01/20 (LT)	Infrequently recorded foraging in grassland in the west of the Survey Area and on intertidal mudflats within the south-east of the Survey Area. Larger numbers (max. 250) recorded flying over grassland to the east of the Site. Not recorded using the Site.	<b>NERCS41</b> Red list
Lesser black-backed gull ( <i>Larus fuscus</i> )	1	Various	Solitary individuals infrequently recorded resting around and passing over the jetty within the south of the Survey Area.	Amber list
Linnet ( <i>Linaria cannabina</i> )	28	11/12/19 (HT)	Infrequently recorded singing/interacting within the Site, and frequently recorded flying over the Site and wider Survey Area.	<b>NERCS41</b> Red list

Species	Peak count	Date of peak count <sup>6</sup>	Description	Conservation status
Little egret ( <i>Egretta garzetta</i> )	10	12/11/19 (HT)	Solitary individuals were frequently recorded foraging throughout the Survey Area, including an individual foraging in the north-east corner of the Site. Small flocks (up to 10 individuals) were also recorded passing over the Survey Area, and a roost comprising at least 30 individuals was recorded approximately 500m north outside of the Survey Area.	<b>BIRDS DIR.</b>
Mallard ( <i>Anas platyrhynchos</i> )	16	23/01/20	Infrequently recorded flying over and foraging within the Survey Area. Not recorded using the Site.	<b>Amber list</b>
Marsh harrier ( <i>Circus aeruginosus</i> )	2	12/11/19 (HT) 11/12/19 (HT)	Frequently recorded hunting over grassland within the east and west of the Survey Area, and infrequently observed hunting over the Site and immediately adjacent habitat. A peak of two females were seen within the Survey area on a single occasion with a single male on another visit, therefore, at least three individuals were recorded within the Survey Area with an additional juvenile recorded commuting westward along Damhead Creek.	<b>BIRDS DIR.</b> <b>W&amp;CA</b> <b>Amber list</b>
Meadow pipit ( <i>Anthus pratensis</i> )	15	28/10/19 (HT)	Infrequently recorded within grassland and scrub in the west and east of the Survey Area, including low numbers using the Site.	<b>Amber list</b>
Oystercatcher ( <i>Haematopus ostralegus</i> )	200	12/11/19 (HT) 23/01/20 (HT)	Large numbers frequently recorded foraging on intertidal mudflats, particularly within the south-east of the Survey Area (within the Offshore Cable Route). Large numbers also frequently recorded roosting at the foot of the sea wall approximately 180m south-west of the Site (20m from the Onshore Cable Route). Not recorded using the Site.	<b>Amber list</b>
Redshank ( <i>Tringa totanus</i> )	61	05/12/19 (LT)	Frequently recorded foraging on intertidal mudflats, particularly within the south-east of the Survey Area (within the Offshore Cable Route). Not recorded using the Site, although infrequently recorded foraging in habitat immediately west of the Site.	<b>Amber list</b>
Reed bunting ( <i>Emberiza schoeniclus</i> )	4	09/03/20 (HT)	Infrequently recorded from the east of the Survey Area, including an individual calling from the south-west corner of the Site.	<b>Amber list</b>
Ringed plover ( <i>Charadrius hiaticula</i> )	1	05/12/19 (LT)	One individual recorded foraging on intertidal mudflats in the south-east of the Survey Area.	<b>Red list</b>
Shelduck ( <i>Tadorna tadorna</i> )	363	24/02/20 (HT)	Large numbers frequently recorded foraging on intertidal mudflats within the south-west/south-east of the Survey Area (within the Offshore Cable Route), and in grassland in the west of the Survey Area. Not recorded using the Site.	<b>Amber list</b>
Short-eared owl ( <i>Asio flammeus</i> )	1	12/11/19 (HT)	One individual recorded resting in grassland approximately 20m south of the Site (near the Offshore Cable Route).	<b>BIRDS DIR.</b> <b>Amber list</b>
Skylark ( <i>Alauda arvensis</i> )	24	28/10/19 (HT)	Frequently recorded singing from grassland within the east of the Survey Area, and occasionally singing/interacting within the Site.	<b>NERCS41</b> <b>Red list</b>
Snipe ( <i>Gallinago gallinago</i> )	1	09/03/20 (HT)	One individual recorded foraging/sheltering within the west of the Site.	<b>Amber list</b>
Song thrush ( <i>Turdus philomelos</i> )	2	20/11/19 (LT) 03/03/20 (LT)	Infrequently recorded in grassland in the east of the Survey Area. Not recorded using the Site.	<b>NERCS41</b> <b>Red list</b>

Species	Peak count	Date of peak count <sup>6</sup>	Description	Conservation status
Starling ( <i>Sturnus vulgaris</i> )	21	28/10/19 (HT)	Small flocks infrequently recorded foraging within the south of the Survey Area. Not recorded using the Site.	<b>NERCS41</b> <b>Red list</b>
Wigeon ( <i>Mareca penelope</i> )	27	09/03/20 (HT)	Infrequently recorded foraging in grassland adjacent to ephemeral pools in the west of the Survey Area. Not recorded using the Site. Larger numbers present on Damhead Creek to the north of (outside) the Survey Area.	<b>Amber list</b>

- 4.58 The remaining species recorded using the Site and wider Survey Area during the wintering bird survey were all common and widespread species included on the BoCC Green list, with the exception of Canada goose (*Branta canadensis*), red-legged partridge (*Alectoris rufa*), pheasant and feral pigeon (*Columba livia domestica*), which are non-native species and as such are not included on the BoCC Red, Amber or Green lists. Two other protected and/or notable species, teal (*Anas crecca*) and black-tailed godwit, were infrequently recorded flying over (*but not using*) the Survey Area.
- 4.59 Use of habitats within the Site by wintering birds was relatively low, with most species recorded comprising common and widespread species. Protected and/or notable species recorded within the Site included marsh harrier, skylark, Cetti's warbler, dunnock and meadow pipit.
- 4.60 The following areas of the Survey Area were identified as being of particular value to wintering protected and/or notable bird species:
- Intertidal mudflats within the south (particularly the south-east) of the Survey Area (including the Offshore Cable Route) within the Medway Estuary and Marshes SPA and Ramsar: frequently used by foraging waterbirds, particularly dark-bellied brent goose, shelduck, oystercatcher and curlew. The adjoining sea wall is used as a high tide roost by flocking oystercatcher;
  - Grassland within the west of the Survey Area: used by various waterbird species, notably flocks of foraging dark-bellied brent goose and shelduck, and frequently used by foraging marsh harrier; and
  - Grassland within the east of the Survey Area: frequently used by foraging marsh harrier, and containing populations of various protected and/or notable species (e.g. skylark, reed bunting). Also forms a commuting route between Damhead Creek and the Medway Estuary for protected and/or notable waterbird flocks.

## Breeding Birds

### 2019 (RPS survey data)

- 4.61 During the breeding bird survey undertaken by RPS in 2019 a total of 87 species were recorded within the Wider Kingsnorth Power Station Site; 56 of which were considered to be breeding (or probably breeding in the case of starling *Sturnus vulgaris*). A total of 556 territories were recorded within the Wider Kingsnorth Power Station Site; 89 of which (from 31 different species) were recorded within Parcel 5 (which includes the entirety of the Site). 114 territories from 28 different species were recorded within Parcel 2 (overlapping the western extent of the Onshore Cable Route). Full breeding bird survey data are provided in the RPS Ecology Survey Report (RPS, 2019b), which also includes territory maps (shown in Plates 18 to 22 below).

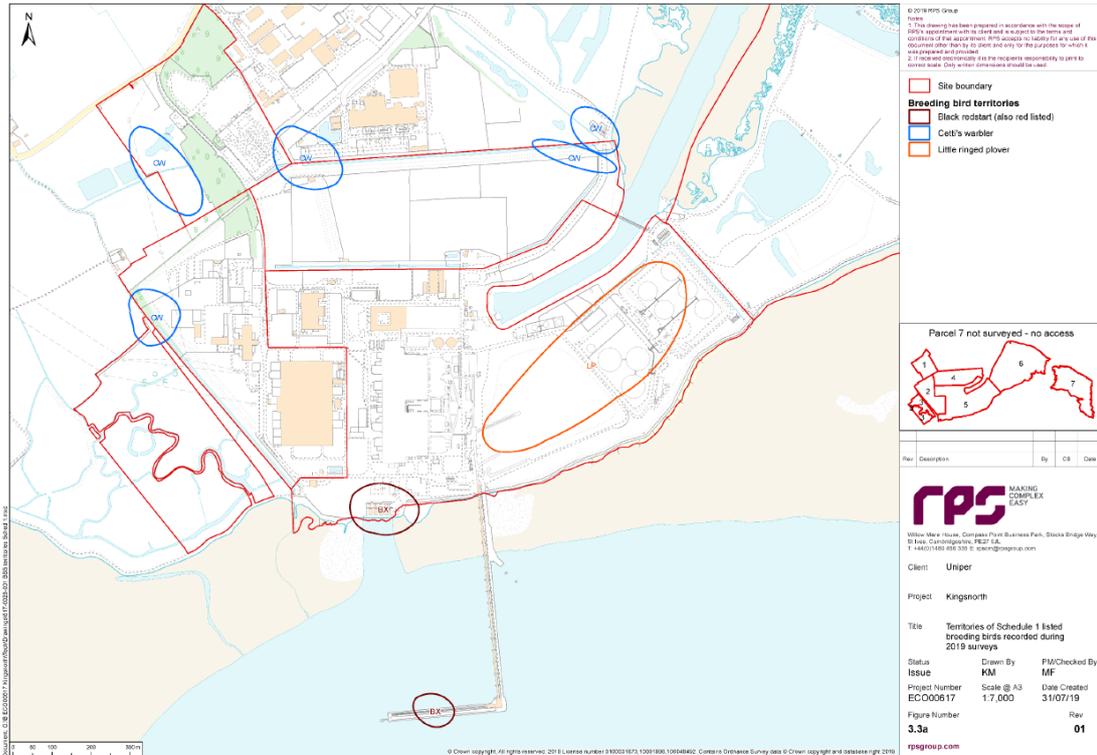


Plate 18. Territories of Schedule 1 listed breeding birds recorded during 2019 surveys (RPS, 2019b)

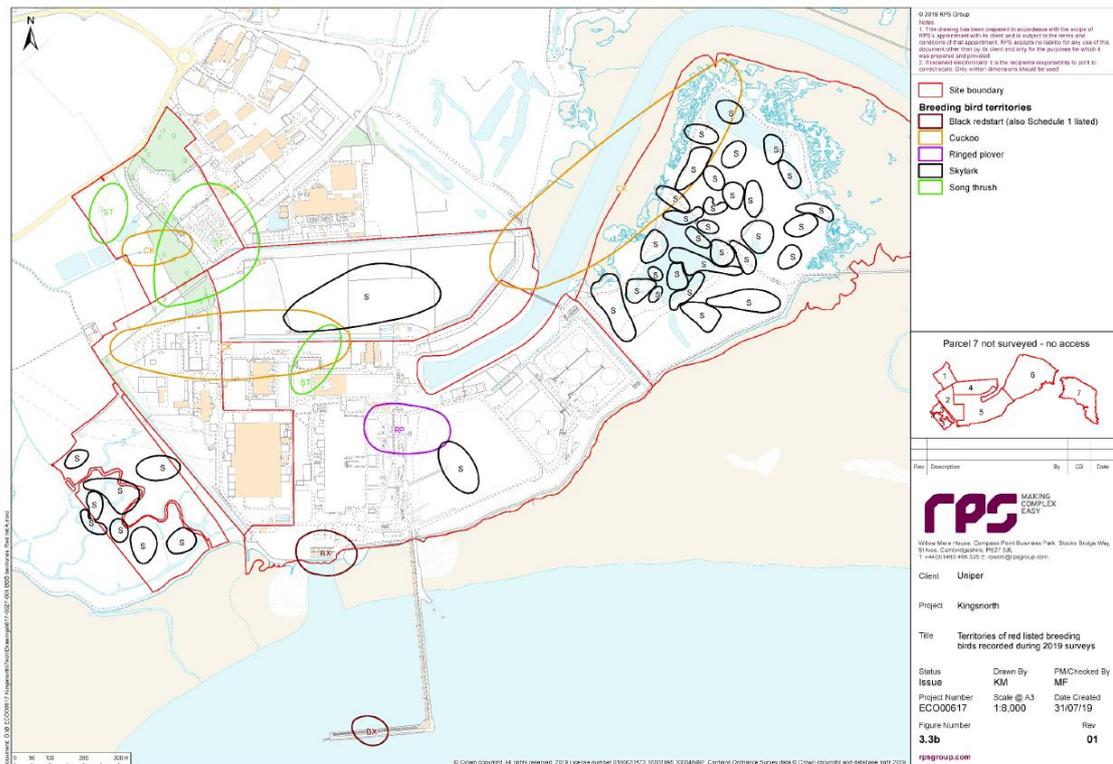


Plate 19. Territories of red listed breeding birds recorded during 2019 surveys (RPS, 2019b)

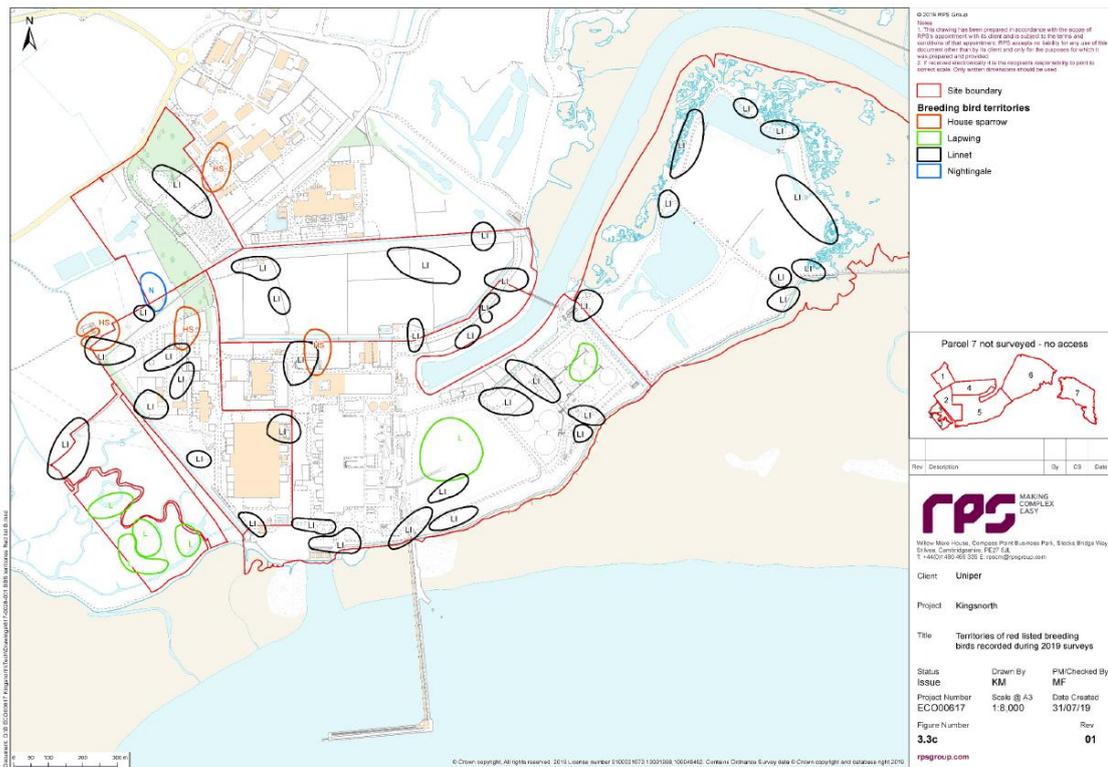


Plate 20. Territories of red listed breeding birds recorded during 2019 surveys (RPS, 2019b)

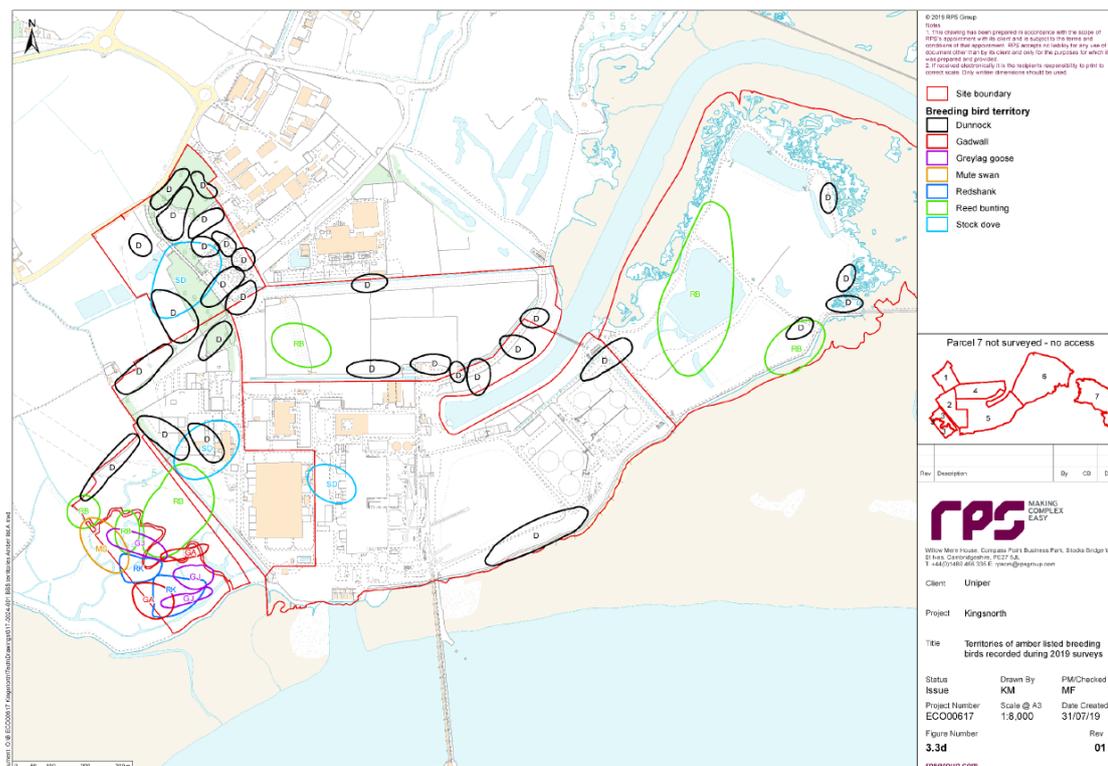


Plate 21. Territories of amber listed breeding birds recorded during 2019 survey (RPS, 2019b)

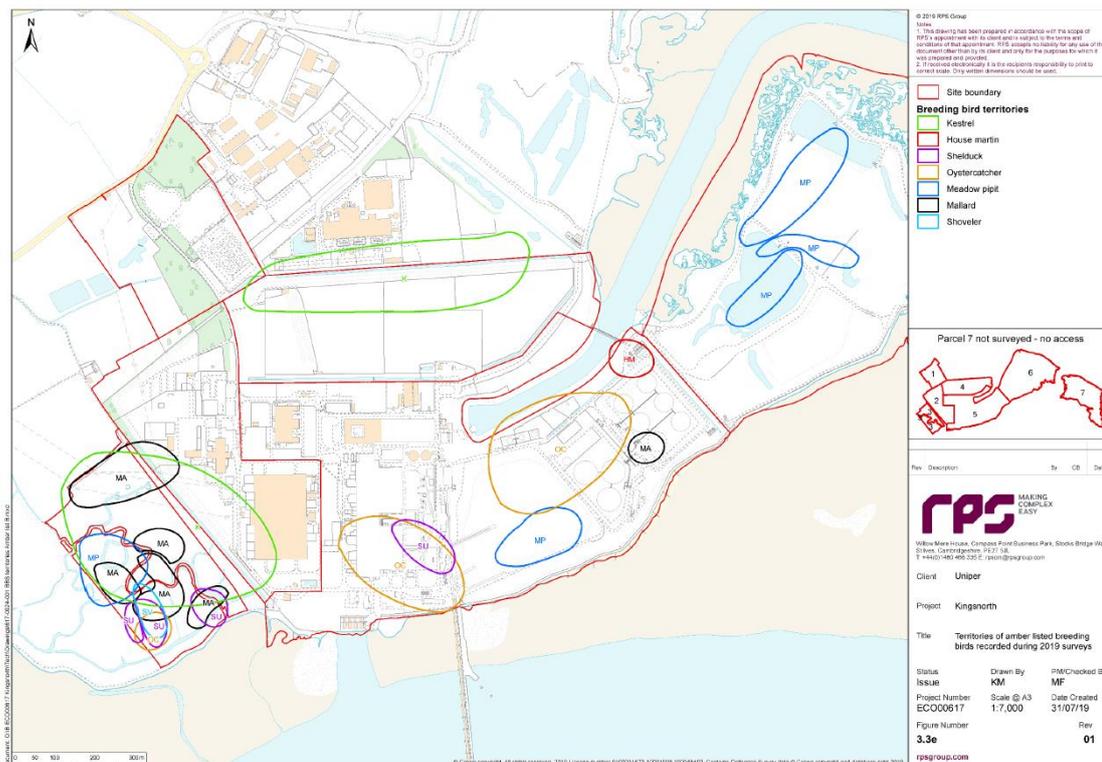


Plate 22. Territories of amber listed breeding birds recorded during 2019 surveys (RPS, 2019b)

**The Site**

4.62 Several protected and/or notable bird species were recorded as having territories either wholly within or overlapping with the Site, as summarised below (where a species is subject to multiple of these protection/conservation status categories, the species is described within the category affording the greatest level of protection/conservation significance under legislation and planning policy):

**Wildlife and Countryside Act 1981 (as amended) Schedule 1**

- **little ringed plover (*Charadrius dubius*):** one territory overlapping the majority of the Site.

**NERC Act 2006 Section 41**

- **lapwing:** one territory within the Site; and
- **linnet:** three territories overlapping the Site.

**BoCC Amber list**

- **mallard;** one territory within the Site;
- **oystercatcher:** one territory overlapping the Site; and
- **house martin (*Delichon urbicum*):** one territory overlapping the Site.

**Relevant Wider Kingsnorth Power Station Site Data**

4.63 Protected and/or notable bird species recorded breeding within 250m of the Site (within Parcels 5 and 6) and within 250m of the Onshore Cable Route (within Parcels 2, 3, 5 and 6) are summarised below (except those overlapping with the Site as detailed above):

**Wildlife and Countryside Act 1981 (as amended) Schedule 1**

- **black redstart (*Phoenicurus ochruros*):** one territory overlapping the Onshore Cable Route.

**NERC Act 2006 Section 41**

- **lapwing:** one territory approximately 100m north of the Onshore Cable Route, and one territory with Parcel 3 to the west of the sub-station approximately 180m from the western extent of the Onshore Cable Route;

- **cuckoo** (*Cuculus canorus*): one territory approximately 150m northeast of the Site;
- **skylark**: nine territories within Parcel 6 between 50m and 250m east of the Site. One territory approximately 50m north of the Onshore Cable Route, and two territories within Parcel 3 to the west of the sub-station, at approximately 220m west and 220m north-west of the Onshore Cable Route;
- **duncock**: one territory approximately 230m south-west of the Site which also overlaps with the Onshore Cable Route, and three territories on the boundary of Parcels 5 and 4 approximately 140m north of the Site (north of Damhead Creek); and
- **linnet**: two territories adjacent to the Site, one immediately adjacent and the second approximately 50m west of the Site. A further four territories overlapping the Onshore Cable Route and single territories approximately 40m south-west and 90m north of the Onshore Cable Route.

#### **BoCC Red list**

- **ringed plover**: one territory approximately 210m north of the Onshore Cable Route.

#### **BoCC Amber list**

- **greylag goose**: two territories approximately 230-250m west of the Onshore Cable Route;
- **shelduck**: one territory approximately 80m north of the Onshore Cable Route, and one territory approximately 160m west of the Onshore Cable Route;
- **gadwall**: one territory approximately 240m west of the Onshore Cable Route;
- **mallard**: one territory approximately 150m west of the Onshore Cable Route;
- **oystercatcher**: one territory overlapping the Onshore Cable Route;
- **stock dove** (*Columba oenas*): one territory approximately 150m north of the Onshore Cable Route;
- **kestrel**: one territory immediately west of the Onshore Cable Route;
- **meadow pipit**: one territory overlapping the Onshore Cable Route; and
- **reed bunting**: a single territory approximately 120m east of the Site and approximately 240m west of the Onshore Cable Route.

- 4.64 The remaining species recorded during the breeding bird survey are largely listed on the BoCC Green list, with the exception of red-legged partridge, pheasant and feral pigeon, which are non-native species and as such are not included on the BoCC Red, Amber or Green lists.

## **2020 (AECOM survey data)**

- 4.65 AECOM undertook a breeding bird survey between March and July 2020 inclusive, during which a total of 65 species were recorded within the Survey Area. Species recorded breeding or potentially breeding within the Site and wider Survey Area in 2020 are summarised below. Full survey data and accounts for all breeding species within the Site and wider Survey Area are provided in Appendix G.

### **The Site**

- 4.66 Several protected and/or notable bird species were recorded as having (or potentially having) territories either wholly within or overlapping with the Site, as summarised below (where a species is subject to multiple of these protection/conservation status categories, the species is described within the category affording the greatest level of protection/conservation significance under legislation and planning policy):

#### **Wildlife and Countryside Act 1981 (as amended) Schedule 1**

- **Cetti's warbler** (*Cettia cetti*): two territories overlapping with dense bramble scrub within the Site (one in the north-west corner of the Site, one on the eastern boundary of the Site). Given that dense bramble is a favoured nesting habitat for this species, and that within the territories identified the most extensive areas of bramble scrub were within the Site, it is likely that Cetti's warbler nests were present within (towards the edge of) the Site. Note that more than one female may breed within the territory of a single male (Bibby *et al.*, 1982); therefore, more than two Cetti's warbler nests could potentially have been present within/in close proximity to the Site.

#### **NERC Act 2006 Section 41**

- **cuckoo**: the Site was within the territory of a cuckoo (which also covered the east of the Survey Area), which was recorded singing on the eastern boundary of the Site during two survey visits. The Site contained nests of favoured host species (e.g. dunnock, reed warbler (*Acrocephalus scirpaceus*)) which provided potential egg-laying opportunities for cuckoo;
- **skylark**: one territory within the centre of Site;
- **dunnock**; one possible territory overlapping with dense scrub in the north of the Site; and
- **linnet**: one territory within the south-west corner of the Site, with a second territory overlapping with bramble scrub in the north-east corner of the Site, and a probable territory overlapping with the south-east corner of the Site.

#### **BoCC Amber list**

- **shelduck**: one possible territory in sparsely-vegetated stony ground overlapping with the Site.

4.67 Low numbers of other common and widespread species were recorded occupying territories within/overlapping with the Site. A range of non-breeding species were also been recorded resting and foraging within the Site, including priority species such as snipe and meadow pipit.

#### **Relevant Wider Survey Area Data**

4.68 Other protected and/or notable bird species were recorded as having (or potentially having) territories outside of the Site within the wider Survey Area, as summarised below:

#### **Wildlife and Countryside Act 1981 (as amended) Schedule 1**

- **black redstart**: one possible territory at the jetty ~600m west of the Site (approximately 25m south of the Onshore Cable Route), based on one male recorded singing on 30<sup>th</sup> March but not recorded during any subsequent visits; and
- **Cetti's warbler**: one territory recorded approximately 1km west of the Site (in marginal vegetation adjacent to grassland in the west of the Survey Area), approximately 200m west of the Onshore Cable Route.

#### **NERC Act 2006 Section 41**

- **lapwing** one possible territory in sparsely-vegetated stony ground ~160m west of the Site, and a second possible territory in grassland in the west of the Survey Area (approximately 1.3km west of the Site);
- **skylark**: at least eleven territories present in grassland and vegetated stony ground throughout the Survey Area (particularly within the former lagoons in the east of the Survey Area);
- **dunnock**: one possible territory in scrub approximately 170m south-west of the Site; and
- **linnet**: at least two territories in bramble scrub, with the nearest approximately 100m north-east of the Site.

#### **BoCC Red list**

- **ringed plover**: one probable territory in vegetated stony ground towards the north of the Survey Area (approximately 220m west of the Site), based on a pair flushed from suitable nesting habitat on 30<sup>th</sup> March 2020 but not recorded during any subsequent visits.

#### **BoCC Amber list**

- **greylag goose**: at least one territory present in grassland in the west of the Survey Area, approximately 1.2km west of the Site (approximately 450m west of the Onshore Cable Route);
- **shelduck**; one probable territory in vegetated stony ground with ephemeral pools approximately 200m west of the Site (approximately 170m north of the Onshore Cable Route);

- **mallard**; one territory in the vicinity of the ditch immediately east of grassland in the west of the Survey Area, approximately 1km west of the Site. Also a possible territory within grassland in the west of the Survey Area;
- **gadwall**: possibly breeding within grassland in the west of the Survey Area and a pond surrounded by dense vegetation immediately south of the main sub-station (at least 800m west of the Site);
- **oystercatcher**: one probable territory in bare and sparsely-vegetated stony ground at least 150m west of the Site;
- **black-headed gull**: possible territories in sparsely-vegetated stony ground in the west of the Survey Area, with low numbers (i.e. five or less) frequently recorded in these areas;
- **kestrel**: frequent foraging activity observed in grassland and stony ground within the Survey Area including Site (peak count: 4, including a juvenile), indicating that this was a regular hunting ground within at least one kestrel territory, although little suitable nesting habitat was present within the Survey Area;
- **house martin**: a small nesting colony comprising 3-4 nesting pairs towards the northern end of the western aspect of the bridge crossing Damhead Creek (approximately 100m north of the Site);
- **meadow pipit**: possibly breeding in grassland within the former lagoons in the east of the Survey Area in relatively low numbers (peak count: 9); and
- **reed bunting**: one possible territory in the ditch immediately east of grassland in the west of the Survey Area (approximately 1km west of the Site), and a second possible territory at the eastern end of the Survey Area.

4.69 Other notable species such as peregrine and stock dove were recorded during the breeding bird survey as potentially nesting in the wider area (outside of the Survey Area). Relatively low numbers of other common and widespread species have been recorded occupying territories within the Survey Area. A range of non-breeding species have also been recorded resting and foraging within the Site, including priority species such as dark-bellied brent goose, marsh harrier and great white egret (*Ardea alba*).

4.70 In total, the 2020 AECOM breeding bird survey recorded up to 35 species breeding or potentially breeding within the Survey Area, of which up to 14 were recorded breeding or potentially breeding within the Site. Specially protected and priority bird species recorded breeding or potentially breeding within the Site and wider Survey Area are summarised in Table 23 below. Territory maps for these species are provided in Figures V4.2-V4.8 within Volume 4 Ecology Report – Breeding Birds.

Table 23. Summary of specially protected and priority species recorded breeding or potentially breeding within the Site and wider Survey Area during the 2020 breeding bird survey

Species	Site			Survey Area (including those within the Site)		
	Confirmed	Probable	Possible	Confirmed	Probable	Possible
<b>Wildlife and Countryside Act 1981 (as amended) Schedule 1</b>						
Cetti's warbler	2	-	-	3	-	-
Black redstart	-	-	-	-	-	1
<b>NERC Act 2006 Section 41</b>						
Cuckoo	-	-	1	1	-	-
Lapwing	-	-	-	-	-	2
Skylark	1	-	-	12	-	4
Dunnock	-	-	1	-	-	2

Linnets	2	1	-	4	3	-
<b>BoCC Red list</b>						
Ringed plover	-	-	-	-	1	-
<b>BoCC Amber list</b>						
Greylag goose	-	-	-	At least 1	-	-
Shelduck	-	-	1	-	1	1
Mallard	-	-	-	1	-	1
Gadwall	-	-	-	-	-	1
Oystercatcher	-	-	-	-	1	-
Black-headed gull	-	-	-	-	-	1-3
Kestrel	-	-	-	-	1	-
House martin	-	-	-	3-4	-	-
Meadow pipit	-	-	-	-	-	1-3
Reed bunting	-	-	-	-	-	2
<b>Kent Red Data Book (KRDB3)</b>						
Reed warbler	-	-	1	2	-	1

Where species are subject to multiple protection/conservation status categories they are described in relation to the first category only. Cuckoo, lapwing, skylark, black redstart and linnets are also included on the BoCC Red list. Dunnock is also included on the BoCC Amber list. Gadwall, cuckoo, lapwing, black redstart, skylark, Cetti's warbler and linnets are also included within the Kent Red Data Book (KRDB).

## Badger (RPS survey data)

### The Site

4.71 A single badger survey was undertaken in June 2019 by RPS and signs were noted by surveyors undertaking protected species surveying between April and July 2019. The RPS Ecology Survey Report (RPS, 2019b) indicated the presence of badger prints within the Site (see Plate 23 below) along the southern edge of the Site. No other signs or sightings were recorded within the Site; however, considering the evidence of badger activity and the availability of foraging habitat it is considered likely that badgers forage within the Site. Note that the area of the foraging habitat within the Site is relatively small in comparison with the wider area.





Plate 25. Bat activity recorded during transect survey, visit 2 - 17/06/2019 (RPS, 2019b)

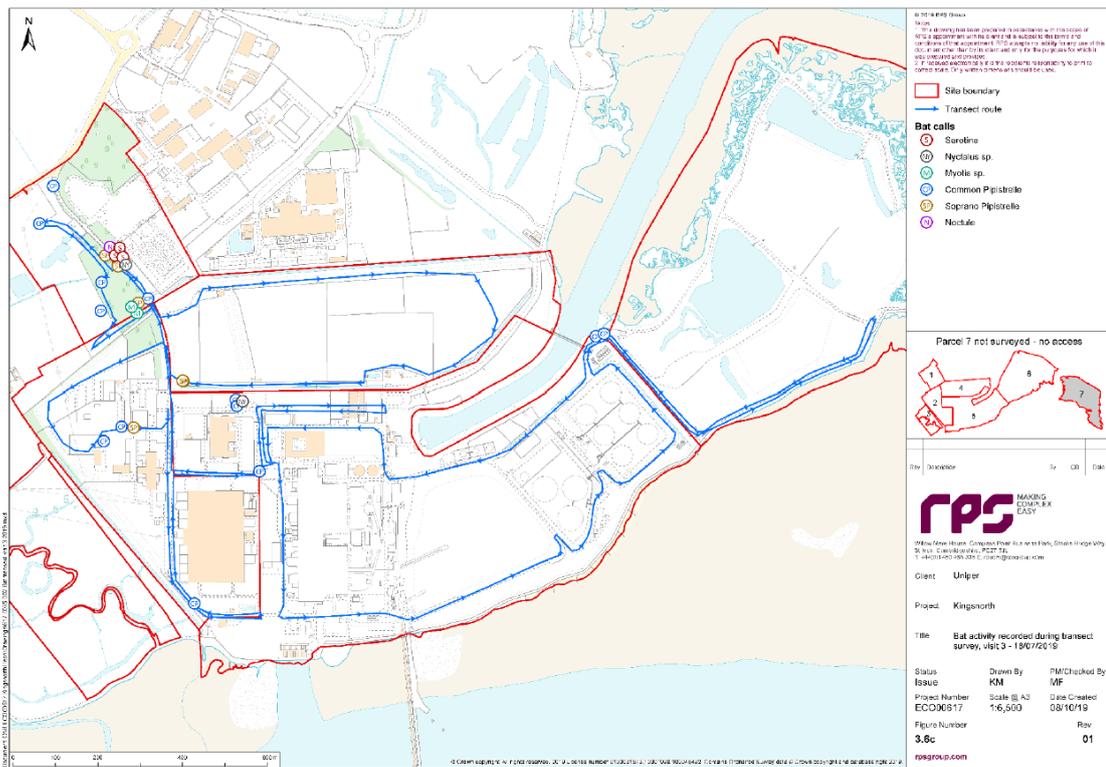


Plate 26. Bat activity recorded during transect survey, visit 3 - 18/07/2019 (RPS, 2019b)

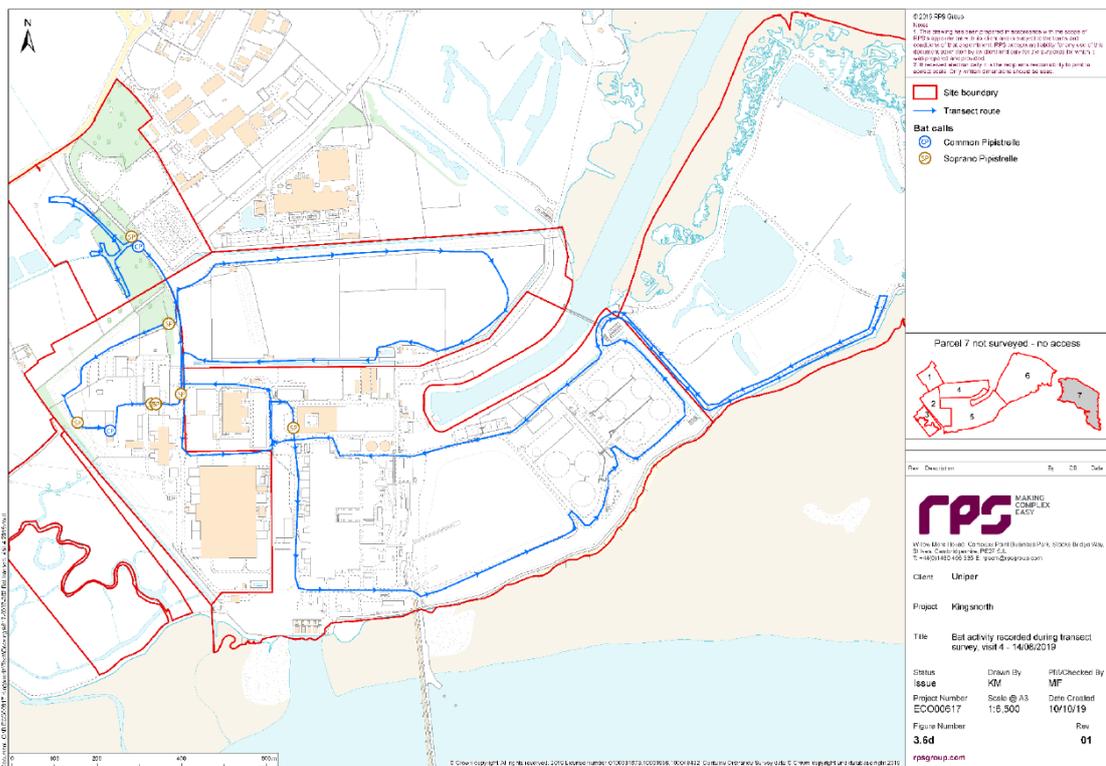


Plate 27. Bat activity recorded during transect survey, visit 4 - 14/08/2019 (RPS, 2019b)

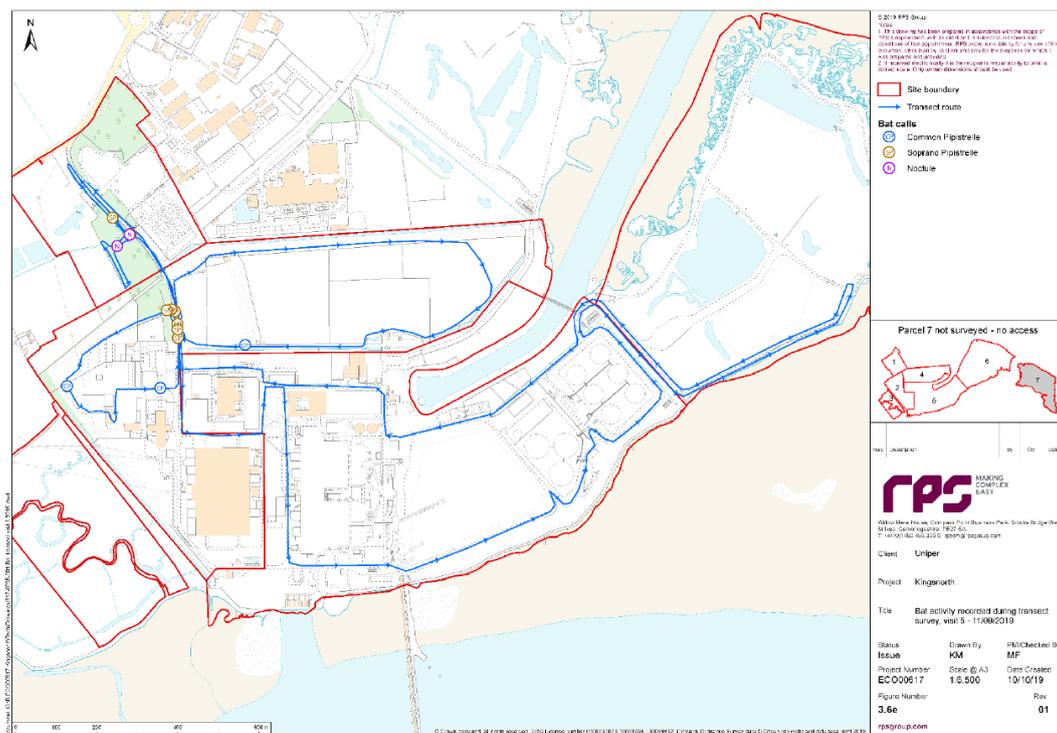


Plate 28. Bat activity recorded during transect survey, visit 5 - 11/09/2019 (RPS, 2019b)

**Static Monitoring**

4.77 No static detectors were deployed by RPS within the Site.

**Relevant Wider Kingsnorth Power Station Site Data**

**Roost Suitability Assessment**

4.78 The bat roost suitability assessment undertaken by RPS in 2019 identified three buildings of relevance outside of the Site boundary; B4 (the sub-station where the Onshore Cable will connect to the National Grid), B5 (approximately 20m south of the Onshore Cable Route) and B7 (approximately 20m south of the Onshore Cable Route). These were all assessed as having Negligible suitability to support roosting bats.

4.79 The bat roost suitability assessment identified no trees in sufficient proximity to the Site or the Onshore Cable Route to potentially be affected by the Proposed Development.

4.80 Descriptions and photos of buildings and trees assessed are provided in the RPS Ecology Survey Report (RPS, 2019b).

**Activity Survey**

4.81 At least eight bat species were recorded within the Wider Kingsnorth Power Station Site during the bat activity surveys undertaken by RPS in 2019, as summarised in Table 24 below. Bat activity maps are provided in the RPS Ecology Survey Report (RPS, 2019b) and above in Plates 24 to 28.

Table 24. 2019 bat activity survey results summary for the Wider Kingsnorth Power Station Site (RPS, 2019b)

Species	Total contacts per visit				
	13/05/19	17/06/19	18/07/19	24/08/19	11/09/19
Serotine ( <i>Eptesicus serotinus</i> )	-	-	3	-	-
Unidentified myotis ( <i>Myotis</i> sp.)	-	-	3	-	-

Leisler's bat ( <i>Nyctalus leisleri</i> )	1	-	-	-	-
Noctule ( <i>Nyctalus noctula</i> )	5	7	1	-	2
Leisler's bat or noctule ( <i>Nyctalus</i> sp.)	-	-	2	-	-
Nathusius's pipistrelle ( <i>Pipistrellus nathusii</i> )	2	1	-	-	-
Common pipistrelle ( <i>Pipistrellus pipistrellus</i> )	8	9	18	2	6
Soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> )	7	15	7	7	9
Brown long-eared bat ( <i>Plecotus auritus</i> )	1	-	-	-	-

4.82 The majority of this activity was recorded to the north of the Site, particularly in woodland in the north-west of the Wider Kingsnorth Power Station Site (approximately 1km north-west of the Site/650m north-west of the Onshore Cable Route). In contrast, far fewer bats were recorded within 250m of the Site, comprising:

- 13/05/19: two noctules recorded approximately 50m northeast of the Site, and one Nathusius's pipistrelle 70m south of the Onshore Cable Route;
- 18/07/2019: two common pipistrelles recorded approximately 60m north-east of the Site, and one common pipistrelle recorded approximately 90m south-west of the Onshore Cable Route; and
- no bats were recorded within 250m of the Site or in close proximity to the Onshore Cable Route on 17/06/19, 14/08/19 or 11/09/19.

### Static Monitoring

4.83 The static detectors deployed during the 2019 RPS static monitoring of the Wider Kingsnorth Power Station Site were between approximately 400m and 780m from the Site, and therefore provide information on the wider ecological context of the Site rather than use of specific areas of the Site. The detectors installed at four locations together recorded at least six species comprising unidentified myotis, noctule, Nathusius's pipistrelle, common pipistrelle, soprano pipistrelle and brown long-eared bats, as well as unidentified pipistrelle (*Pipistrellus* sp.) and possibly Leisler's bat. These data are summarised in Table 3.15 of the RPS Ecology Survey Report (RPS, 2019b).

## Water Vole (RPS survey data)

### The Site

4.84 A single waterbody (P17) is present within the Site (Plate 6). This was surveyed by RPS in 2019 for the presence of water vole. Five latrines and multiple feeding stations were observed, as well as a single water vole burrow within the vicinity of P17. This is shown on Plate 29 below.

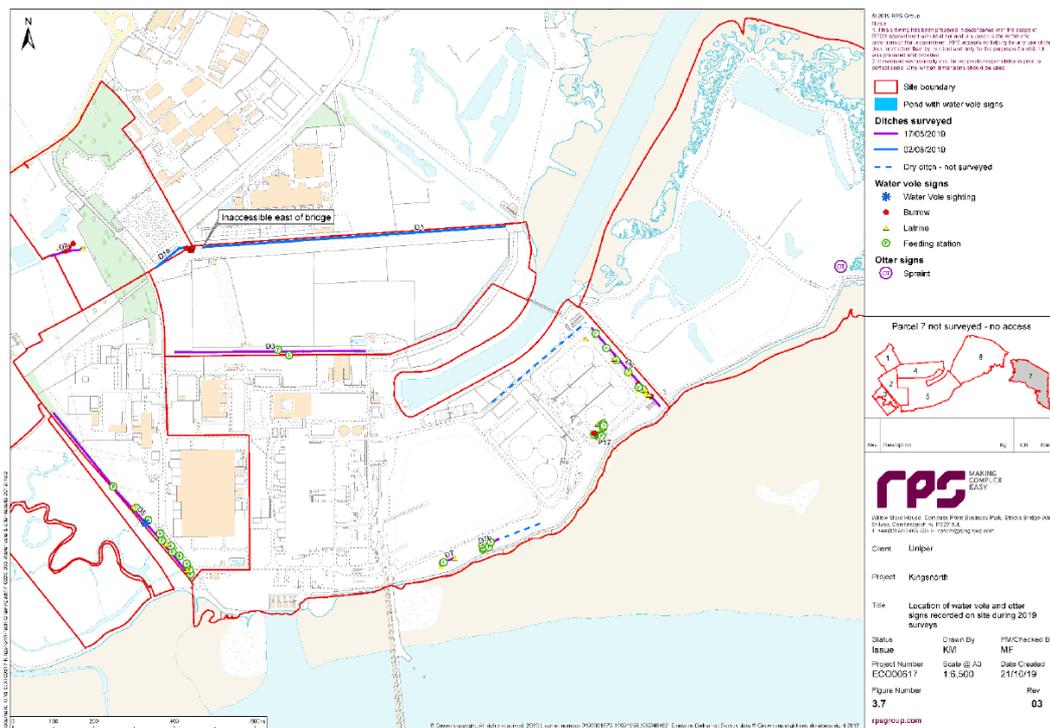


Plate 29. Location of water vole signs recorded during 2019 surveys (RPS, 2019b)

### Relevant Wider Kingsnorth Power Station Site Data

4.85 Evidence of water vole in the form of burrows, latrines, feeding stations and (regarding D5) a sighting of a water vole was recorded from three of the four suitable waterbodies of relevance adjacent to the Site; specifically D5 (approximately 100m west of the Onshore Cable Route/40m south-west of the sub-station), D7a and D7b (south of the Onshore Cable Route) and D6 (approximately 10m east of the Site). The results of the water vole survey undertaken by RPS in 2019 are summarised in Table 25 below.

Table 25. 2019 water vole survey results summary for waterbodies of relevance outside of the Site (RPS, 2019b)

Waterbody reference (as defined in RPS, 2019b (Figure 2.5))	Burrows	Latrines	Feeding stations	Sightings
D5	0	3	12	1
D6	2	7	6	0
D7a	0	0	2	0
D7b	0	0	Absent	0

### Non-native Invasive Species (AECOM & RPS survey data)

4.86 No non-native invasive plant species (e.g. species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)) were recorded during the ecology surveys undertaken of the Site and Wider Kingsnorth Power Station Site by AECOM or RPS. Surveys were undertaken during the optimum time of year for recording non-native invasive species.

4.87 A colony of wall lizard (*Podarcis muralis*) was recorded by RSK<sup>7</sup> on the sea wall approximately 120m south-west of the Onshore Cable Route (approximately 1km west of the Site). At least four individuals (including a juvenile) were recorded in the same location by AECOM during a breeding bird survey on 21<sup>st</sup> May 2020. This species is included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Considering

<sup>7</sup> Personal correspondence of M Fasham (RPS) with AECOM regarding RSK survey (2020).

the distance and quality of habitat between the Site and the location at which wall lizard was recorded it is considered unlikely that the Site supports wall lizard.

## 5. Evaluation

5.1 Making reference to Table 10, on the basis of the desk study and field surveys undertaken to date the important ecological features considered within this assessment are evaluated in Table 26 below:

Table 26. Evaluation of ecological features

Feature	Importance category	Further consideration required?	Rationale for inclusion/ non-inclusion in further assessment
Medway Estuary and Marshes Ramsar	International (Very High)	Yes	<p>Medway Estuary and Marshes Ramsar is immediately (less than 5m) south of the Site.</p> <p>The proximity of Medway Estuary and Marshes Ramsar increases the potential for impacts on this site as a consequence of the Proposed Development.</p>
Medway Estuary and Marshes SPA	International (Very High)	Yes	<p>Medway Estuary and Marshes SPA is immediately (less than 5m) south of the Site.</p> <p>The proximity of Medway Estuary and Marshes SPA increases the potential for impacts on this site as a consequence of the Proposed Development.</p>
All Internationally Designated Sites	Other International (Very High)	No	<p>All other internationally designated sites within 10km of the Site are at distances of at least 4km from the Site and no operational stack emissions will arise.</p> <p>The distance from the Proposed Development means impacts on these other internationally designated sites are unlikely.</p> <p>These other sites are:</p> <ul style="list-style-type: none"> <li>• Thames Estuary and Marshes SPA and Ramsar;</li> <li>• The Swale Estuary SPA and Ramsar;</li> <li>• Benfleet and Southend SPA and Ramsar; and</li> <li>• Queendown Warren SAC.</li> </ul>
Medway Estuary and Marshes SSSI	National (High)	Yes	<p>Medway Estuary and Marshes SSSI is immediately south of the Site.</p> <p>The proximity of Medway Estuary and Marshes SSSI increases the potential for impacts on this site as a consequence of the Proposed Development.</p>
Non-statutory sites	Regional (Medium)	No	<p>The only non-statutory designated site within 2km of the Site, Nor Marsh and Motney Hill RPSB reserve, is approximately 1.8km south-west of the Site.</p> <p>The distance from the Proposed Development means impacts on North Marsh and Motney Hill RSPB or any other non-statutory designated sites are highly unlikely.</p>
Habitats	Regional (Medium)	Yes	<p>The Proposed Development will potentially result in the loss of a small area (0.01ha) of standing water (a NERC S41 Habitat of Principal Importance and a Kent BAP habitat), and is in sufficiently close proximity to other NERC S41 and Kent BAP habitats (including standing water, Open Mosaic Habitat and intertidal mudflats) to raise potential for impacts on these</p>

priority habitats, both in isolation and in combination with adjacent development.

Species – plants	Regional (Medium)	No	<p>The RPS scoping survey deemed that the Site did not have potential to support rarity status plant species.</p> <p>The RPS botanical survey identified the presence of rarity status plant species (species listed as IUCN Endangered/Vulnerable, Nationally Scarce and/or NERC S41 Species of Principal Importance) within the Wider Kingsnorth Power Station Site, but these were all at least 150m from the Site.</p> <p>Considering the absence of rarity status plant species within the Site, and the distance between the Site and any rarity status plant species recorded, impacts on rarity status plant species as a consequence of the Proposed Development are unlikely.</p>
Species Invertebrates	– Negligible	No	<p>The RPS Scoping survey considered the habitats within the Site to potentially only support a narrow range of common and widespread invertebrate species, and consequently scoped the Site out of further investigative searches.</p> <p>Impacts on protected and/or notable invertebrate species as a consequence of the Proposed Development are therefore highly unlikely.</p>
Species – great crested newt	Local (Low)	(Very No)	<p>A single waterbody was recorded within the Site, which returned a negative eDNA result, indicating likely absence of great crested newt.</p> <p>Four waterbodies are located within 250m of the Site. However, the only waterbody to return a positive eDNA result (P2) is separated from the Site by a section of Damhead Creek and is therefore effectively isolated from the Site.</p> <p>As such, impacts from the Proposed Development on off-Site great crested newt populations utilising terrestrial habitats within the Site are highly unlikely.</p>
Species – reptiles	Local (Low)	(Very Yes)	<p>All common reptile species are of Principal Importance (NERC s41, 2006), and are therefore a material consideration within the planning process.</p> <p>Records from the Wider Kingsnorth Power Station Site indicate that low numbers of grass snake, common lizard and potentially slow worm may use terrestrial habitats within the Site and the Onshore Cable Route.</p> <p>There is therefore potential for the Proposed Development to result in impacts on these species, both in isolation and in combination with development within the Onshore Cable Route.</p>
Species – wintering birds	International (Very High)	Yes	<p>The Site itself is of relatively low value for wintering birds, with shelduck and oystercatcher recorded roosting within the Site at high tide in Winter 2018-2019 (but not recorded within the Site in Winter 2019-2020), and low numbers of protected</p>

and/or notable species recorded both in 2018-2019 and 2019-2020.

However, the Site is in close proximity to habitats (e.g. intertidal mudflats, grassland) used by populations of waterbird species totalling over 1% of the SPA/Ramsar citation populations, with numbers of certain species (e.g. dark-bellied brent goose, shelduck, oystercatcher, avocet) exceeding 5% of the SPA/Ramsar citation populations).

There is therefore potential for the Proposed Development to result in impacts on these species. As these populations were recorded in close proximity to the Offshore Cable Route and the Onshore Cable Route, there is also potential for impacts in combination with adjacent development.

Species – nesting birds	Regional (Medium) <sup>8</sup>	Yes	<p>In 2019 and 2020 the Site itself contained/overlapped with the territories of protected and/or priority bird species including species included on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (little ringed plover, Cetti's warbler), S41 of the NERC Act 2006 (lapwing, cuckoo, skylark, dunnoek, linnet) and species on the BoCC lists of conservation concern (e.g. mallard, oystercatcher, house martin). Protected and/or priority species (notably black redstart) were also recorded nesting within habitat adjacent to the Site, including within/in close proximity to the Onshore Cable Route. The Site and adjacent habitat were also used by a range of non-breeding protected and priority bird species.</p> <p>There is therefore potential for the Proposed Development to impact on a range of nesting protected and/or priority bird species, both in isolation and in combination with adjacent development.</p>
Species – badger	Local (Very Low)	Yes	<p>Badger prints were recorded within the Site, but no other signs or sightings were recorded within 250m of the Site.</p> <p>A main active sett was recorded approximately 950m north-west of the Site and signs and sightings have been recorded across the entirety of the Wider Kingsnorth Power Station Site, indicating that badgers forage widely from the main sett.</p> <p>There is therefore potential for impacts on foraging badgers within the Site.</p>
Species – roosting bats	Negligible	No	<p>No suitable structures or trees are present within the Site or within 250m of the Site.</p> <p>Roosting bats can therefore be screened out of the impact assessment.</p>
Species foraging/commuting bats	Local (Very Low)	Yes	<p>Two noctule bats and two common pipistrelle bats were observed 50-60m north-east of the Site on separate occasions.</p> <p>A single Nathusius's pipistrelle bat and a common pipistrelle bat were observed 60-70m south of the Onshore Cable Route on separate occasions.</p>

<sup>8</sup> Black redstart is arguably of higher importance but one pair was recorded well outside the Site (on the jetty) and it would distort the survey evaluation to elevate the importance of the whole bird assemblage

Nathusius's pipistrelle, common pipistrelle bat and noctule bats are all listed as Species of Principal Importance on S41 of the NERC Act 2006.

There is therefore some limited potential for impacts on foraging bats adjacent to the Site, from the Proposed Development alone and in combination with adjacent development.

Species – water vole	Regional (Medium)	Yes	<p>Water vole are a species of Principal Importance (NERC s41, 2006) and listed as a Kent BAP priority species.</p> <p>A single water vole burrow, five latrines and multiple feeding stations were recorded within the single waterbody on Site, as the survey was undertaken in August this indicates a Low<sup>9</sup> population of water voles within the Site.</p> <p>The ditch immediately adjacent to the Site recorded two burrows, seven latrines and six feeding stations and was undertaken in May which indicates a Medium population of water vole adjacent to the Site.</p> <p>There is therefore potential for impacts on water vole habitat and individual water voles as a result of the Proposed Development.</p>
Non-native species	N/A	No	<p>No non-native invasive species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded within the Site. The population of wall lizard is sufficiently distant from the Site that this species is considered unlikely to be present within the Site.</p>

<sup>9</sup> <https://assets.sussexwildlifetrust.org.uk/water-vole-mitigation-guidance-2016.pdf> [Accessed 20/02/2020]

## 6. Potential Effects and Mitigation Measures

### Construction and Site Clearance Effects

#### Permanent Loss of Habitat

- 6.1 The Proposed Development will require the clearance of all habitats within the Site Boundary. None of the habitats within the site are subject to national or international designations; however, the waterbody (P17) is classed as a Priority Habitat under the UK BAP as it supports a population of water vole which is a species of Principal Importance under NERC s41 and a priority species under the Kent BAP. There will also be loss of grassland, scrub and marginal habitats on the Site, which have been found to support or potentially support reptiles, nesting birds and wintering birds as well as constituting suitable habitat for foraging badgers and bats.
- 6.2 An outfall from the stormwater attenuation pond will be constructed into the ditch 10m to the east of the site (D6). This will include the permanent removal of a small section of a Priority Habitat that supports a medium population of water vole, to facilitate the headwalls of the outfall.
- 6.3 Therefore, the effects of permanent loss of habitat on ecological receptors require further consideration.

#### Medway Estuary and Marshes SSSI/SPA/Ramsar

- 6.4 The Proposed Development is immediately adjacent to the Medway Estuary and Marshes SSSI, SPA and Ramsar. Although the construction of the Offshore Cable is not part of this application, the connection of the Offshore Cable from Mean High-Water Springs to the converter station is part of the Site. The proposed method for the Offshore Cable connecting to the converter station within the Site is to be via horizontal directional drilling (HDD), which will therefore be beneath the surface of the SSSI/SPA/Ramsar from the line of Mean High-Water Springs and will require no open cut trenching.
- 6.5 This will ensure that there will be no direct habitat loss from the SSSI/SPA/Ramsar as a result of the Proposed Development, and therefore no adverse impact will occur on the SSSI/SPA/Ramsar from this pathway.

#### Priority Habitats

- 6.6 The Site contains 0.01ha of standing water, which is classed as a priority habitat due to the presence of a small water vole population. The Proposed Development will result in the permanent loss of this habitat through the clearance and remediation of the Site. A stormwater attenuation pond will be installed at the end of the construction period, prior to operation; the attenuation pond will be designed in order to mitigate this loss of priority habitat on Site.
- 6.7 In addition to the loss of Priority Habitat on Site, an outfall from the stormwater attenuation pond will feed into the ditch to the east of the Site (D6). This ditch supports a medium population of water vole and therefore habitat supporting this population is classed as Priority Habitat. The construction of the header walls for the outfall will involve the permanent removal of a section of this Priority Habitat.
- 6.8 The habitat itself is not botanically significant with the Priority status achieved by supporting a small/medium population of water vole. The habitat for water vole in the wider area, outside of the Site, is more extensive, with the small pool within the Site likely utilised by the population 10m east of the Site as an overspill during years of high population within that ditch. Although the entirety of the habitat within the Site will be lost, as will a small section of D6, the habitat is not regarded as of intrinsic botanical interest. It is considered that this is a medium magnitude impact on a medium value receptor, that will lead to an effect that is **Moderate Adverse (significant) in the absence of mitigation**.

## Reptiles

- 6.9 The Site has approximately 2.01ha of habitat suitable for common reptile species. This includes semi-improved grassland, scrub and standing water and marginal habitats. During the construction of the Proposed Development these habitats will be permanently cleared.
- 6.10 After completion of construction, an area of natural planting will be established at the southern part of the Site on the land not taken up by the buildings and hardstanding of the Proposed Development.
- 6.11 The removal of all suitable habitat within the Site constitutes approximately 1.9% of all suitable reptile habitat within the Wider Kingsnorth Power Station Site. Overall, it is therefore considered that the change in habitats for reptiles is a low magnitude impact on a very low value receptor, that will lead to an effect that is **Negligible (not significant)** and does not require mitigation.

## Wintering Birds

- 6.12 The Proposed Development will result in the permanent loss of areas of semi-improved grassland, scrub, and ephemeral pools of water which are utilised by low numbers of wintering birds including low numbers of some species for which the SPA/Ramsar is designated.
- 6.13 Although all of the habitats within the Site will be removed, the Site is very small in comparison to areas outside of the Site which are more suitable as high tide roosts and foraging areas for protected and/or notable species, including the former ash lagoons, grassland area to the east and the marshy grassland west of the Wider Kingsnorth Power Station Site. The habitats within the Site are common and widespread.
- 6.14 The permanent loss of all natural habitats within the Site constitutes 1.75% of natural habitats (not including buildings and hard standing, or saltmarsh/intertidal habitats outside of the site boundary) in the Wider Kingsnorth Power Station Site and a considerably smaller proportion of all suitable habitat for use by wintering birds, particularly within the intertidal areas of Damhead Creek and the Medway Estuary immediately north-west and south of the Site which are clearly the most significant areas for wintering birds in the locality. Therefore, although a permanent loss, it is considered that the change in available habitats for wintering birds is a very low magnitude impact on a high value receptor, that will lead to an effect that is **Minor Adverse (not significant)**.

## Breeding Birds

- 6.15 The Proposed Development will result in the permanent loss of areas of semi-improved grassland, scrub, marginal and ephemeral vegetation, within which have been recorded territories for protected and/or notable bird species over both years of survey data. This includes species on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (a single territory in 2019 (little ringed plover)) and two territories in 2020 (Cetti's warbler)) and species listed within s41 of the NERC Act 2006 (four territories in 2019 (lapwing and linnet) and potentially six territories in 2020 (cuckoo, skylark, dunnock and linnet)). Black redstart was also recorded nesting during surveys but was in an area (the jetty of the Wider Kingsnorth Power Station Site) that will not be affected by the Proposed Development.
- 6.16 There were a low number of protected and/or notable territories on Site across both years, and the habitats are generally common and of low quality (for example the Cetti's warbler was recorded in a patch of bramble scrub), particularly when compared with habitats surrounding the Site which are of higher quality and more extensive. These include ash lagoons and grassland to the east and marshy grassland to the west.
- 6.17 The permanent loss of all natural habitats within the Site would constitute 1.75% of the natural habitats (not including buildings and hard standing, or saltmarsh/intertidal habitats outside of the site boundary) in the Wider Kingsnorth Power Station Site and consists entirely of common and widespread habitats. It forms significantly less than 1% of all suitable breeding habitat in the area when one takes into account the superior breeding habitat for some species within Damhead Creek and the Medway Estuary. Moreover, the creation of the stormwater attenuation pond, although not being done to create habitat for nesting birds, will nonetheless provide such habitat in the long term when it is rendered suitable for water voles with associated marginal vegetation. Therefore, although a permanent loss, it is considered to be a low magnitude impact upon a medium value receptor, that will lead to an effect that is **Minor Adverse (not significant)**.

## Badger

- 6.18 The Proposed Development will result in the permanent loss of 2ha of suitable foraging habitat. Badger prints were observed within the Site boundary indicating some limited use. Badgers are a highly mobile species and the active main sett is located over 900m north west of the Proposed Development which highlights that they forage over a wide area, of which the Site is only a small part. In addition, areas north, west and east of the Site yielded more evidence of foraging activity and the habitats in these areas are of greater suitability for badgers.
- 6.19 The permanent loss of all the natural habitat within the Site would constitute 1.75% of the natural habitats (not including buildings and hard standing, or saltmarsh/intertidal habitats outside of the site boundary) in the Wider Kingsnorth Power Station Site. Therefore, despite being a permanent loss of suitable foraging habitat this is considered to be a low magnitude impact upon a very low value receptor, leading to an effect that is **Negligible (not significant)**.

## Bats (commuting and foraging)

- 6.20 The Proposed Development will result in the permanent loss of suitable areas of bat foraging habitat, although only very low numbers of bats were recorded foraging immediately adjacent to the Site. Bats are highly mobile species and those that were observed foraging in close proximity can travel between 5km<sup>10</sup> and 10km<sup>11</sup> from their roosts to forage; therefore, the habitats within the Site itself are likely to be only a very small part of large foraging ranges and are only used to a low extent. In addition, the habitats within the Site are of low value, and no linear features such as hedgerows or tree lines are to be removed; the wider area provides much more optimal foraging and commuting habitats.
- 6.21 Overall, the permanent loss of this area of low value bat foraging habitat, constituting a very small amount of the overall suitable resource in the area, is considered to be a very low magnitude impact upon a very low value receptor, leading to an effect that is **Negligible (not significant)**.

## Water Vole

- 6.22 Water vole is an uncommon species, a species of Principal Importance under s41 of the NERC Act 2006 and a priority species under the Kent BAP, which means that the species is of material consideration during the planning process. It is also an offence to damage or destroy their places of shelter and protection without a licence. The Proposed Development will result in the permanent loss of a small amount of habitat for breeding water vole. A small population of water vole has been confirmed in the waterbody within the Site boundary and a medium population has been identified in the ditch to the east of the site (D6); therefore, without mitigation the removal of the small pond within the Site and the section of ditch that will be replaced by the outfall headwall will result in the loss of a small population of water vole on Site and a reduction in the amount of suitable habitat in the ditch to the east. The removal of this habitat is considered to be insufficient to materially affect the sustainability of the water vole population within the Wider Kingsnorth Power Station Site or beyond.
- 6.23 The nearest main habitat for water voles on the wider Kingsnorth site is approximately 10m east of the Site and will be retained, although head walls will be constructed into a section of the ditch to facilitate an outfall from the stormwater attenuation pond on Site. The pond on Site is likely to be overflow habitat utilised during years of high local vole population.
- 6.24 Although the habitat for water voles within the Site is small and there are larger areas of suitable habitat within the wider area outside of the Site, the entirety of the habitat within Site will be removed. In addition, the presence of the outfall from the stormwater attenuation pond will add a small additional loss to water vole habitat outside of the Site. The loss on and off Site would therefore reduce the total available habitat for water voles in the wider area and potentially lead to increased competition for territories and other resources within the wider area which if unmitigated would negatively affect the wider population. Therefore, the permanent loss of this habitat it is considered to be a medium magnitude impact upon a medium value receptor, leading to an effect that is **Moderate Adverse (significant) in the absence of mitigation**.

<sup>10</sup> Avery, M.I., 1991. Pipistrelle Pipistrellus pipistrellus. *The Handbook of British Mammals*, pp.124-128.

<sup>11</sup> [https://cdn.bats.org.uk/pdf/About%20Bats/noctule\\_11.02.13.pdf?mtime=20181101151302](https://cdn.bats.org.uk/pdf/About%20Bats/noctule_11.02.13.pdf?mtime=20181101151302) [Accessed

## Killing or Injury of Species

6.25 Construction activities may kill or injure protected species. Of particular concern at the Site are breeding birds, reptiles, badger and water vole. Potential effects of these receptors will require further consideration. Note that this section considers the ecological effect of the impact, based on the relative importance of the site for each species. Some species are also subject to legal protection that will require mitigation measures irrespective of the magnitude of ecological effect from an unmitigated impact. This is noted below where relevant.

6.26 Although it is an offence to intentionally or recklessly kill most species of bird (other than certain game and pest species), wintering birds are at low risk of this impact from the kind of activities to be undertaken during construction, as they are not tied to a nesting location with vulnerable chicks and eggs and are more likely to disperse through visual or noise disturbance impacts before this impact could cause an offence. Therefore, wintering birds will not be assessed further with regards to killing and injuring of species.

### Reptiles

6.27 During construction, all areas of natural habitat including scrub, grassland and marginal habitats across the entirety of the Site will be cleared. Since these habitats are theoretically suitable for reptiles, there is potential for the clearance of the Site to result in the killing or injuring of any reptiles that might be present. However, as the majority of the Site is hardstanding, the Site is only suitable to support very small reptile populations.

6.28 Overall the killing and injuring of reptiles through construction activities is considered to be a high magnitude impact upon a very low value receptor, leading to an effect that is **Negligible (not significant)**. Although not ecologically significant it is still an offence under the Wildlife and Countryside Act 1981 (as amended) (W&CA 1981) to recklessly kill or injure reptile species, and therefore mitigation will be required.

### Breeding Birds

6.29 Habitats to be cleared on Site are suitable for breeding birds, and therefore, there is potential for the killing or injuring of breeding birds, their eggs and young during site clearance. This would include species listed on Schedule 1 of the W&CA 1981. Birds may also set up nests on stored construction materials during the breeding season and the removal of these construction materials has the potential to cause killing or injury of birds, their eggs or young.

6.30 Overall the killing and injuring of birds, their eggs and young through construction activities is considered to be a high magnitude impact upon a medium value receptor, leading to an effect that is **Major Adverse (significant) in the absence of mitigation**.

### Badger

6.31 During construction it is anticipated that excavations will be undertaken for site remediation and cable laying, as well as the foundations of the buildings. As the Site is suitable for foraging badgers there is a potential threat to foraging badgers becoming trapped in open excavations. However, the Site is approximately 1km from the main active sett and the Wider Kingsnorth Power Station Site and has only evidence of a very low level of activity.

6.32 Overall the killing and injuring of badger through construction activities is considered to be a high magnitude impact upon a very low receptor, leading to an effect that is **Negligible (not significant)**. Although ecologically insignificant, due to the likely low level of foraging on site and thus low risk of badgers encountering excavations, it is an offence to kill or injure a badger under the Protection of Badgers Act 1992 and therefore mitigation will be required.

### Water Vole

6.33 During construction, a pond containing a small population of water vole will be cleared from the Site. In addition, 10m to the east of the Site, head walls and an outfall from the attenuation pond will be constructed into the side of the ditch which contains a medium population of water voles. Therefore, there is the potential for the clearance of the Site and construction activities to result in the killing or injuring of water voles in this pond and the ditch to the east of the Site.

- 6.34 Overall the killing and injuring of water voles through construction activities is considered to be a high magnitude impact upon a medium value receptor, leading to an effect that is **Major Adverse (significant), in the absence of mitigation.**

## Pollution

### Air Quality

- 6.35 Construction of the Proposed Development will result in a temporary increase in vehicle movements compared to the current baseline. It is anticipated that there will be between 22 and 114 average daily two-way journeys to and from the Site in total for construction personnel and heavy goods vehicles (HGVs).
- 6.36 Air quality modelling has been undertaken for the construction period of the scheme and estimated that the maximum annual mean NO<sub>x</sub> impacts at the kerbside would be less than 0.2 µg/m<sup>3</sup>. This is below 1% of the relevant NO<sub>x</sub> objective of 30 µg/m<sup>3</sup>. Since nitrogen doses from NO<sub>x</sub> are typically an order of magnitude smaller than the NO<sub>x</sub> concentration it can be concluded that N-deposition impacts at the kerbside are also less than 0.01 kgN/ha/yr.
- 6.37 Therefore, the contribution of the Proposed Development to NO<sub>x</sub>, even at the worst affected locations modelled (e.g. kerbside), is 0.6% of the critical level and well below the recognised threshold (1% of critical level) and therefore constitutes an imperceptible change as defined in Natural England guidance and the Design Manual for Roads and Bridges. The resulting nitrogen deposition will therefore also be an order of magnitude below the 1% of the critical load threshold for most habitats (typical critical load 10kgN/ha/yr) and even further below the critical load of intertidal and saltmarsh (the main habitat adjacent to the Site) which is 20kgN/ha/yr. Moreover, critical loads and levels are based on the assumption of long-term (decades) exposure<sup>12</sup>. As the construction period is temporary and the change in NO<sub>x</sub> and nitrogen deposition is imperceptible air quality impacts can be deemed **not significant**.

### Dust Emissions and Spillages

- 6.38 The delivery of the development may result in the increased emission of dust during construction, associated with processes such as top soiling and the movement of heavy-duty vehicles carrying building materials or rubble. Dust emission from construction has the potential for an adverse temporary localised effect on plant growth, by coating vegetation, blocking stomata and slowing down photosynthesis. The death of plants attributed to fugitive dust emissions might adversely affect the integrity of a European site (if these plants are qualifying features), or protected plant species directly. The integrity of a site or protected species might also be threatened indirectly through a changed community composition, e.g. less food sources, nest materials or shelter for protected species.
- 6.39 According to guidance from the Institute of Air Quality Management<sup>13</sup> *“an assessment will normally be required where there is...an ‘ecological receptor’ within: 50m of the boundary of the site; or 50m of the route(s) used by construction vehicles on the public highway...”*. This is based on the view that heavy dust soiling is a threat to vegetation, but only up to a distance of 50m from dust generating activities even in the absence of mitigation measures (e.g. wetting). A 50m distance would include habitats surrounding the Site and potentially the Medway Estuary & Marshes SPA/Ramsar site, although in practice the presence of the sea wall and regular tidal inundation with an existing high sediment loading would significantly limit any adverse effects.
- 6.40 With regards to spillages, it is illegal to pollute water courses (whether or not they are designated as European sites) under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and Environmental Permitting (England and Wales) Regulations 2016. This would include via suspended sediment such as dust or soil as well as spillages of chemicals or waste waters from the construction to either surface water or groundwater.
- 6.41 With the prevention of impact by dust and spillages through good practice construction methods, the potential impacts of dust emissions and spillages can be deemed **not significant**.

<sup>12</sup> *‘Typically, critical loads relate to the potential effects over periods of decades... critical loads provide the long-term deposition [emphasis added] below which we are sure that adverse ecosystem effects will not occur’*, source: page 220, World Health Organization. 2000. Air Quality Guidelines for Europe. WHO Regional Publications, European Series, No. 91. Second Edition.

<sup>13</sup> IAQM. (2016) *Guidance on the assessment of dust from demolition and construction*. The Institute of Air Quality Management. Version 1.1.

## Disturbance

### Noise

- 6.42 Construction of the Proposed Development will result in a temporary increase in noise compared to the current baseline. There will be up to 114 daily car, van and HGV movements to and from the Site and mobile plant will be used for the construction of the Proposed Development, potentially including a hydraulic hammer piling rig, diesel generators/compressors and tracked dozers, excavators or graders with typical LAeq (average noise level) of 90dB, 85dB and 80dB at 10m from source respectively.
- 6.43 Background noise was recorded as 55dB LAeq with 73dB Lamax at Damhead Creek to the north of the Site (LT2) and 44dB LAeq with 64dB Lamax at the sea wall next to the Medway Estuary to the south of the Site (LT3) during the day. Therefore, the existing noise environment is highly variable, with modest average noise levels but relatively loud peaks.
- 6.44 The civil works and foundations, including piling, are estimated to produce an LAeq of approximately 60-65dB at the boundary of the SSSI/SPA/Ramsar site in Damhead Creek and the Medway Estuary. This is an increase on the average baseline noise levels (Laeq) of approximately 5-10dB at the boundary with Damhead Creek and between 16-21dB at the boundary with the Medway Estuary. The assessment has also identified that the use of an impact piling rig may increase the maximum noise level to approximately 75dB Lamax at these locations, compared to existing values of 73dB Lamax at Damhead Creek and 64dB Lamax at the sea wall next to the Medway Estuary, resulting in an LAmix increase of 2dB and 11dB respectively.
- 6.45 The mechanical and electrical installation and structural and steel erection works are also estimated to produce an LAeq of 60-65dB at the boundary of the Medway Estuary and 55-60dB in Damhead Creek. This is an increase on the average baseline noise levels of approximately 0-5dB at the boundary with Damhead Creek and between 16-21dB at the boundary with the Medway Estuary. The length of time during construction for which the LAeq noise level is increased to this extent above the baseline LAeq is approximately 18 months.

### Wintering Birds

- 6.46 Wintering and passage waterfowl and waders appear particularly susceptible to disturbance due to their exposed state, being on the ground in the open. Research has been conducted on the responses of waders and waterfowl to construction noise stimuli in the Humber estuary<sup>14</sup>, which represents a similar location to the Site. This research highlighted that irregular piling noises above 70dB would create a Moderate to High behavioural response in waterfowl and waders and regular piling noises below 70dB would still create a Moderate behavioural response. Moderate to high responses are considered to be head-turning, scanning behaviour, reduced feeding (moderate) and preparing to fly away or flying away (High). All of these behaviours can affect the fitness and winter mortality of birds. The research in the Humber highlighted that regular construction noise levels should be restricted to below 70dB (at the receptor), as birds will habituate to regular noise below this level and irregular noises above 50dB should be avoided where possible as this causes maximum disturbance to birds. These are generalised guidelines and should be considered within the context of the existing noise exposure to which the birds are habituated. As the existing noise environment is highly variable it is reasonable to assume that birds using the foreshore in the vicinity of the Site are used to a relatively variable noise environment from the existing industrial activities of the immediate area and the previous operation and demolition of the former Kingsnorth Power Station.
- 6.47 Another way to assess noise impacts upon birds is to compare the baseline ambient noise level against the construction ambient noise level. There are no formal guidelines for a change threshold (compared to the measured baseline) that is disturbing to waterfowl and waders, but they are known to have hearing comparable to humans. For humans a change of 3dB is barely perceptible, while a change of 10dB at the receptor is a doubling in perceived loudness. It is therefore reasonable to assume that an increase of more than 10dB would run a high risk of causing adverse impacts to bird behaviour such as flushing, for the duration of exposure.
- 6.48 The predicted LAeq from the construction works does not exceed 70dB in the Medway Estuary and Marshes SSSI/SPA/Ramsar site in Damhead Creek or the Medway Estuary. However, an is area subject to an increase of 10 dB above measured background LAeq and extends approximately 700m from the shoreline

<sup>14</sup> <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010001/EN010001-005116-HPC-NNBPEA-XX-000-RET-000089%201.pdf> [Accessed 13 June 2020]

into the Medway Estuary to the south of the Site. This encompasses approximately 7ha of intertidal habitat, equating to 0.24% of total tidal flats habitat within the SPA/Ramsar site. The predicted LA<sub>max</sub> is marginally above the guidelines of 70dB (at 75dB) and an increase of 10dB (at 11dB) in the Medway Estuary. The affected area of this increase extends only a very short distance of approximately 50m into the Medway Estuary to the south of the Site. This means the area temporarily affected by construction noise is very limited given the total area of foreshore present within the SSSI/SPA/Ramsar site (2,879.1ha of tidal flats habitat<sup>15</sup>) and available to the species for which the site is designated. The adverse effects are also temporary, during only the civil works and foundations phase that includes percussive piling and would only last approximately 4 months. Moreover, piling would not be continuous during that period.

- 6.49 Although the area affected is small in comparison to the extent of habitats within the SPA/Ramsar, the area still amounts to several hectares of foreshore for the piling phase. In addition, other phases also create an increase in LA<sub>eq</sub> which occurs over a much greater period of 18 months and may include two wintering bird seasons, which encompasses approximately 2ha of intertidal habitat (<0.1% of tidal flats habitat within the SPA/Ramsar site). Therefore, it is considered that in combination these noise levels risk causing a moderate to high behavioural response from the birds within the affected area of the SSSI/SPA/Ramsar site, and potentially through two consecutive wintering bird seasons. There is no certainty that a change above 10dB would result in disturbance, the effect is reversible (in that once the disturbing activity ceases the birds can be expected to return) and it will not occur 24 hours a day meaning that extended period during the night will be undisturbed. Nonetheless, as a precaution, this is considered to be a medium magnitude impact upon a high value receptor, leading to an effect that is **Major Adverse (significant) in the absence of mitigation**.

## Visual Exposure to Human Activity

- 6.50 The Proposed Development will increase the presence of operatives on Site from the current level. The level of construction personnel will differ depending on the phase of the construction of the Proposed Development. The number of personnel on site during the construction of the Proposed development ranges between 30 and 185 personnel daily. As well as human visual disturbance, there will also be plant movements around the Site.
- 6.51 Most of the fauna that may use habitat around the Site (e.g. reptiles, badger, bats and water vole) are considered to be of low sensitivity to general human presence. Foraging bats, particularly those species recorded in proximity to the Site (noctule and common pipistrelle), are generally insensitive to human or vehicular activity. Moreover, as the Site will be cleared prior to works no animals will be present within the Site. Therefore, these species will not be considered further with regards to construction visual impacts.

## Breeding Birds

- 6.52 The Proposed Development will temporarily increase the visual presence of human and vehicular movements on Site from the baseline. The Site is currently unoccupied and at the peak of construction there is the potential to have up to 185 personnel on Site with accompanying construction noise. Birds are susceptible to being disturbed by the presence of humans and this may cause them to take flight and potentially abandon nests of eggs or young during the breeding season. The baseline recorded Schedule 1 bird species within the Site and also in close proximity to the site, including potentially within the ditch 10m east of the Site. Schedule 1 birds are legally protected under the W&CA 1981 from disturbance during the breeding season.
- 6.53 The construction will continue over 36 months including three successive breeding seasons. It can be assumed that, provided there is already construction activity on site prior to the breeding season commencing, any birds that would normally nest in adjacent habitat but which may be disturbed by the presence of construction personnel and vehicles and the associated noise, would choose to avoid building their nests within the areas of highest disturbance adjacent to the works and use the large areas of alternative suitable habitat on the Wider Kingsnorth Power Station Site. Moreover, this impact is temporary (although not short-term) and reversible. Provided the beginning of the construction period is within the winter and runs continuously once the construction site is established, disturbance and displacement of nesting birds is considered to be a low magnitude impact upon a medium value receptor, leading to an effect that is **Minor Adverse (not significant)**.

<sup>15</sup> <https://rsis.ramsar.org/RISapp/files/RISrep/GB645RIS.pdf> [Accessed 29 June 2020]

## Wintering Birds

- 6.54 Wintering birds are also susceptible to disturbance from the visual presence and movement of humans and vehicles. During winter causing a bird to take flight can cause a bigger impact than during the summer months (not including abandoning nests). This is due to the amount of energy the bird expends in response to the disturbing stimulus. In the winter birds must spend much of their time foraging in order to consume enough food to give them the energy to survive the winter. The more time and energy the bird expends responding to disturbing stimuli reduces the amount of food they can consume and alters their energy balance. This can alter the energy balance enough to increase the birds winter mortality rate. Increased mortality through response to human and vehicular stimuli has an effect not only on the individual bird, but at a local population level should the increased mortality rate result in the death of multiples of the species.
- 6.55 The most at risk birds, those with the greatest susceptibility to the flight response within and in the vicinity of the Site, are the waders and waterfowl present on the foreshore immediately south of the Site. However, the foreshore in this location is unpopulated and inaccessible to the public, the majority of the site is approximately 50m away from the sea wall, and the sea wall serves as an effective visual screen as it stands on an earth bund 5m above the Site ground level and a considerably higher elevation than the foreshore on the other side. With this physical barrier it is unlikely that the presence of human and vehicle movements would impact wintering birds on the foreshore.
- 6.56 The baseline data has shown that the Site and surrounding Wider Kingsnorth Power Station Site only supported very low numbers of wintering waders and waterfowl and low numbers of other notable species. Areas to the east and west of the Site, e.g. the former ash lagoons to the east and marshes to the west are more suitable for winter foraging and roosting and are less disturbed. As the visual presence of humans and vehicles increases from the beginning of the construction period it is likely that the birds will move to better foraging areas where there is less disturbance and avoid areas with high human and vehicular presence. It is considered to be a very low magnitude impact upon a high value receptor, leading to an effect that is **Minor Adverse (not significant)**.

## Lighting

- 6.57 The Proposed Development has the potential to increase the light pollution during construction to a higher level than current baseline, where lighting after the completion of the demolition of the Kingsnorth Power Station in 2018 is limited to minor, localised security lighting only. The planned construction hours are 07:00 to 19:00 and therefore during the winter this may include early darkness working.
- 6.58 Site construction lighting during dark hours will be required for:
- General site safety and security: Lighting is required for site safety and security arrangements at ground level through 'street lighting' – no flood lighting or high-level lighting is required.
  - Specialist night-working:
    - Delivery of specialist loads (if required out-of-hours by traffic management) – lighting for safety only;
    - 24-hour commissioning and testing runs (max. 90 days) – no external lighting required;
    - HDD Duct and cable pull-ins – may require lighting at transition joint bay (80m from shoreline) (maximum 14 days).

## Bats (foraging and commuting)

- 6.59 The construction phase of the Proposed Development creates the potential for impacts on any foraging and commuting bats that may pass the Site, through disturbance created by construction lighting. Lighting that is not shielded, cowled, or otherwise directed away from habitats adjacent to the Proposed Development could lead to an impact that is temporary on foraging and commuting bats during the construction.
- 6.60 This is considered to constitute a medium magnitude impact on a very low value receptor. Baseline surveys have indicated that bats were recorded within 60m of the Site on only two of the five surveys and, even then, only small numbers of bats were recorded. On one occasion two common pipistrelle bats were recorded, while on the second occasion two noctule bats were recorded. This is a low occurrence of relatively common and light tolerant bat species in the immediate vicinity of the Site. No bats were recorded foraging on, or commuting over, the Site and therefore it is not considered that the Site or the immediate

vicinity is an important area for foraging or commuting bats. This leads to an effect that is **Negligible (not significant)**.

### **Wintering Birds and Breeding Birds**

- 6.61 The construction phase of the Proposed Development creates the potential for impacts on wintering and breeding birds foraging and nesting in close proximity e.g. the ditch to the east of the Site and the foreshore to the south of the Site, through the increase in lighting from current baseline conditions. Lighting that is not shielded, cowled or otherwise directed away from the habitats adjacent to the Proposed Development could lead to a temporary impact on wintering and breeding birds during construction. The lighting of the Proposed Development at night during construction may alter the foraging and nesting behaviour of birds leading to the avoidance of these areas or increased predation.
- 6.62 The closest lighting to the foreshore will be north of the proposed perimeter road at the location of the transition joint bay for the HDD cable drilling and pull-through which is approximately 80m from the sea wall and the foreshore beyond. Any lighting associated with security lighting would be inside the Site perimeter directed back into the site (rather than out to the estuary) and would be at least 10m from the eastern ditch, which is also protected from incidental lighting by the fact it lies at a much lower elevation than the Site, thus lying below the horizontal illumination plane of the nearest luminaires. The construction lighting will also be designed, positioned and directed so as to avoid unnecessary spillage into adjacent areas.
- 6.63 Due to the distances from the ditch and the foreshore to illuminated areas, and the lighting being designed in a way to avoid spillage, it is very unlikely that a significant change in ambient lighting would occur at the sensitive areas. It is therefore considered to be a very low magnitude impact on a very high value receptor. This leads to an effect that is **Minor Adverse (not significant)**.

### **Water Vole**

- 6.64 The construction phase of the Proposed Development creates the potential for impacts on water voles in the ditch to the east of the Site, through the increase in lighting from current baseline conditions. Lighting that is not shielded, cowled or otherwise directed away from the habitats adjacent to the Proposed Development could lead to a temporary impact on water voles during construction.
- 6.65 Any lighting associated with security lighting would be inside the Site perimeter which would be at least 10m from the eastern ditch, which is also protected from incidental lighting by the fact it lies at a much lower elevation than the Site, thus lying below the horizontal illumination plane of the nearest luminaires. The construction lighting will also be designed, positioned and directed so as to avoid unnecessary spillage into adjacent areas and will be directed into the body of the Site rather than outwards to the surrounding area.
- 6.66 Due to the distances from the ditch to illuminated areas, and the lighting being designed in a way to avoid spillage, it is very unlikely that a significant change in ambient lighting would occur at the sensitive areas. It is therefore considered to be a very low magnitude impact on a low value receptor. This leads to an effect that is **Negligible (not significant)**.

### **Badger**

- 6.67 The construction phase of the Proposed Development creates the potential for impacts on badgers in close proximity to the Site, through the increase in lighting from current baseline conditions. Lighting that is not shielded, cowled, or otherwise directed away from the habitats adjacent to the Proposed Development could lead to a temporary impact on badgers during construction.
- 6.68 Any lighting associated with security lighting would be inside the Site perimeter, designed, positioned and directed so as to avoid unnecessary spillage into adjacent areas and will be directed into the body of the Site rather than outwards to the surrounding area.
- 6.69 Due to the sparsity of foraging signs within the Site and within 250m of the Site and the lighting being designed in a way to avoid spillage, it is very unlikely that a significant change in ambient lighting would cause impact on foraging badger. It is therefore considered to be a very low magnitude impact on a very low value receptor. This leads to an effect that is **Negligible (not significant)**.

## Displacement

### Water Vole

- 6.70 During the construction phase a stormwater attenuation pond will be constructed in the south of the converter station site. This attenuation pond will require an outfall into the ditch 10m east of the Site. This ditch contains a medium population of water voles.
- 6.71 To facilitate the outfall into the ditch an area of bank will need to be cleared of vegetation and the bank dug out to build header walls to support the outfall. The header walls are nominal 1 m width, 1 m depth (into the bank) and 0.6 m in height. Vegetation will need to be cleared wider than the size of the headwall (approximately 10m) to ensure no killing or injuring of water voles during the construction of the header walls. There is also the potential for burrows to be either directly in the path of the outfall and header walls or in close proximity of the construction area. Therefore, the construction of the outfall and header walls have the potential to cause an impact through displacement of water voles from these burrows during construction. This is considered a medium magnitude impact upon a medium value receptor, leading to an effect that is **Moderate Adverse (significant) in the absence of mitigation**

## Summary of Potential Construction Effects

- 6.72 A summary of the potential construction effects is provided in Table 27 below:

*Table 27. Summary of potential effects from construction and site clearance*

Feature	Potential Effect	Comment
<b>Permanent loss of habitat</b>		
Medway Estuary and Marshes SSSI/SPA/Ramsar	No effect	
Priority Habitats	Moderate Adverse (significant) without mitigation	Loss of 100m <sup>2</sup> waterbody with small water vole population.  Permanent loss of approximately 2-3m wide marginal bankside habitat from waterbody with medium water vole population and 10m of temporary clearance of marginal bankside habitat to facilitate construction of outfall into ditch east of site (D6).
Reptiles	Negligible (not significant)	
Wintering birds	Minor Adverse (not significant)	
Breeding birds	Minor Adverse (not significant)	
Badger	Negligible (not significant)	
Bats	Negligible (not significant)	
Water vole	Moderate Adverse (significant) without mitigation	Loss of 100m <sup>2</sup> waterbody with small water vole population.  Permanent loss of approximately 2-3m wide marginal bankside habitat from waterbody with medium water vole population and 10m of temporary clearance of marginal

bankside habitat to facilitate construction of outfall into ditch east of site (D6).

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**Killing or injury of species**

Reptiles	Negligible (not significant)	Mitigation required through legislation.
Breeding birds	Major Adverse (significant) without mitigation	General site clearance.
Badger	Negligible (not significant)	Mitigation required through legislation.
Water vole	Major Adverse (significant) without mitigation	Clearance of 100m <sup>2</sup> waterbody with small water vole population.  Temporary clearance of approximately 10m of marginal bankside habitat and approximately 2-3m width of bank, soil removal to facilitate construction of outfall and header walls into ditch east of site (D6).

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**Pollution**

<b>Air quality</b>	Not significant	CEMP required to avoid impacts.
<b>Dust emissions and spillages</b>	Not significant	CEMP required to avoid impacts.

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**Disturbance**

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**Noise**

Wintering birds	Major Adverse (significant) without mitigation	Increased noise levels affecting up to approximately 7 ha of Medway Estuary and Marshes SSSI, SPA and Ramsar site intertidal habitats for 4 months while piling and approximately 2ha for up to approximately 18 months.
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**Visual exposure to human activity**

Breeding birds	Minor Adverse (not significant)
Wintering birds	Minor Adverse (not significant)

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**Lighting**

Breeding birds	Minor Adverse (not significant)
Wintering birds	Minor Adverse (not significant)
Badger	Negligible (not significant)
Bats	Negligible (not significant)
Water vole	Negligible (not significant)

**Displacement**

Water vole	Moderate adverse (significant) without mitigation	Temporary clearance of approximately 10m of marginal bankside habitat and approximately 2-3m width of bank, soil removal to facilitate construction of outfall and header walls into ditch east of site (D6). Potential displacement of water voles from burrows in construction area.
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## Operational Effects

### Air Quality

- 6.73 Operation of the Proposed Development will result in an increased movement of vehicles compared to the current baseline. However, due to the nature of the Proposed Development the level of vehicle attendance at Site would be limited to very few operatives in a small office attached to the development. Operational access roads to the Site do not fall within 200m of the Medway Estuary and Marshes SPA and Ramsar site. At their closest they are over 300m from the closest SPA/Ramsar habitat.
- 6.74 The built structure of the site is approximately 50m from the closest SPA/Ramsar habitat which is mudflat. However, the operational development will not involve emissions from combustion sources, and thus will not be associated with any release of pollution.
- 6.75 The low level of vehicle movement predicted and the lack of emissions from the built structure during the operational phase of the development means that there will be a negligible effect and is not considered further within this assessment.

### Disturbance

#### Noise

- 6.76 Due to the nature of the Proposed Development, the main sources of noise during the operational phase at the Site will consist of electrical equipment noise within the buildings. The development is of similar usage to several existing industrial activities in the vicinity, including the National Grid 400 kV sub-station building approximately 800m west of the Site. In addition, Damhead Power Station is approximately 700m north of the site. Therefore, any sensitive receptors, e.g. qualifying species of the SPA, can be expected to already be habituated to the existing background levels of noise.
- 6.77 A background noise assessment and an operational noise assessment was undertaken at two locations adjacent to sensitive ecological receptors, representing the foreshore south of the site adjacent to the Medway estuary (51°25'04.0"N 0°36'39.0"E) and the foreshore north of the site adjacent to Damhead Creek (51°25'20.1"N 0°36'41.1"E). Background noise at the Medway estuary location was recorded as Laeq of 44dB with a Lamax of 64dB (during the day). Background noise at the Damhead Creek location was recorded as Laeq of 55dB with a Lamax of 73dB (during the day).
- 6.78 Therefore, the existing noise environment is highly variable, with a modest average noise levels but relatively loud peaks. It is therefore reasonable to assume that birds using the foreshore are used to a relatively variable noise environment. The operational noise from the proposed Development was assessed to be between 30-35dB on at the foreshore directly south of the Site and 50 and 55dB at Damhead Creek.
- 6.79 The low level of noise predicted during the operational phase of the development would not be audible above the current background noise levels and will therefore be of negligible effect and is not considered further within this assessment.

#### Visual

- 6.80 The Proposed Development will increase the presence of operatives on site from the current level. The Proposed Development will include up to 12 daily site operatives during the day shift with two personnel during the evening and night shift, required to ensure the correct functioning and maintenance of the equipment on Site, site security and grounds maintenance. Visual presence of humans is known to impact coastal birds; however, only a small number of operatives will be present on site and the operatives would be expected to normally work at least 60m from the nearest point of the SPA and intertidal zone, at ground

height. The intertidal zone is separated from the site by a sea defence wall on an earth bund approximately 5 m in height. The sea defence wall will therefore hide staff movements on site from the intertidal zone.

- 6.81 The distance between the Proposed Development and the intertidal zone, combined with the low level of human presence on site during the operational phase and screening by the existing sea defence wall, will therefore result in a negligible visual effect and as a result is not considered further within this assessment.

## Lighting

- 6.82 The design basis for external lighting at the Site is:

- Operation of the Proposed Development does not require any lighting of large external areas – the main equipment is contained within buildings, and any external equipment does not require operational lighting.
- Lighting is only required for site safety and security arrangements at ground level through ‘street lighting’ – no flood lighting or high-level lighting is required.
- Buildings do not require external wall illumination or lighting.
- LED (light emitting diode) lights will be installed for security lighting on conventional lighting columns, which will be directed into the Site. The levels will take into consideration the minimum requirement of CCTV (closed-circuit television) and facial recognition.
- Lighting can be directional and shielded to avoid light scatter onto areas outside the target for the illumination.

### Bats (foraging and commuting)

- 6.83 The operational phase of the Proposed Development creates the potential for impacts on any foraging and commuting bats that may pass the Site, through disturbance created by lighting in particular. Lighting that is not shielded, cowled, or otherwise directed away from habitats adjacent to the Proposed Development could lead to an impact that is permanent on foraging and commuting bats.
- 6.84 This is considered to constitute a medium magnitude impact on a very low value receptor. Baseline surveys have indicated that bats were recorded within 60m of the Site on only two of the five surveys and only small numbers of bats were recorded. On one occasion two common pipistrelle and on the second occasion two noctule bats. This is a low occurrence of relatively common bat species in the immediate vicinity of the Site. No bats were recorded foraging on, or commuting over, the Site and therefore it is not considered that the Site or the immediate vicinity is an important area for foraging or commuting bats. With the lighting design, this leads to an effect that is **Negligible (not significant)**.

### Wintering Birds and Breeding Birds

- 6.85 The operational phase of the Proposed Development creates the potential for impacts on wintering and breeding birds foraging and nesting in close proximity e.g. the ditch to the east of the Site and the foreshore to the south of the Site, through the increase in lighting from current baseline conditions. Lighting that is not shielded, cowled or otherwise directed away from the habitats adjacent to the Proposed Development could lead to an impact that is permanent on wintering and breeding birds. The lighting of the Proposed Development at night may alter the foraging and nesting behaviour of birds leading to the avoidance of these areas or increased predation.
- 6.86 The closest lighting to the foreshore will be north of the proposed perimeter road at the location of the DC hall, which is approximately 60m from the foreshore. Similarly, any lighting associated with the cooling fans and maintenance building on the eastern boundary, would be at least 30m from the eastern ditch, which is also protected from incidental lighting by the fact it lies at a much lower elevation than the Site, thus lying below the horizontal illumination plane of the nearest luminaires.
- 6.87 Due to the distances from the ditch and the foreshore to illuminated areas, and the use of conventional, directed and cowled LED lighting, it is very unlikely that a significant change in ambient lighting would occur at the sensitive areas. It is therefore considered to be a very low magnitude impact on a very high value receptor. This leads to an effect that is **Minor Adverse (not significant)**.

## Water Vole

- 6.88 The operational phase of the Proposed Development creates the potential for impacts on water voles in the ditch to the east of the Site, through the increase in lighting from current baseline conditions, depending on the location of lighting columns. Lighting that is not shielded, cowled or otherwise directed away from the habitats adjacent to the Proposed Development could lead to an impact that is permanent on water voles.
- 6.89 Any lighting of the cooling fan and maintenance building on the eastern boundary would be at least 30m from the eastern ditch, which is also protected from incidental lighting by the fact it lies at a much lower elevation than the Site, thus lying below the horizontal illumination plane of the nearest luminaires.
- 6.90 Due to the distances from the ditch to illuminated areas, and the use of conventional, directed and cowled LED lighting, it is very unlikely that a significant change in ambient lighting would occur at the sensitive areas. It is therefore considered to be a very low magnitude impact on a low value receptor. This leads to an effect that is **Negligible (not significant)**.

## Badger

- 6.91 The operational phase of the Proposed Development creates the potential for impacts on badgers in close proximity to the Site, through the increase in lighting from current baseline conditions, depending on the location of lighting columns. Lighting that is not shielded, cowled, or otherwise directed away from the habitats adjacent to the Proposed Development could lead to an impact that is permanent on badgers. All external lighting will be directed into the Site itself and limited light spill will occur outside of the Site boundary.
- 6.92 Due to the sparsity of foraging signs within the Site and within 250m of the Site and the use of conventional, directed and cowled LED lighting, it is very unlikely that the change in ambient lighting would cause impact on foraging badger. It is therefore considered to be a very low magnitude impact on a very low value receptor. This leads to an effect that is **Negligible (not significant)**.

## Summary of Potential Operational Effects

- 6.93 A summary of the potential operational effects is provided in Table 28 below:

*Table 28. Summary of potential effects from operations*

Feature	Potential Effect
<b>Pollution - Air quality</b>	No impact
<b>Disturbance - Noise</b>	No impact
<b>Disturbance - Visual</b>	No Impact
<b>Disturbance - Lighting</b>	
Breeding birds	Minor Adverse (not significant)
Wintering birds	Minor Adverse (not significant)
Badger	Negligible (not significant)
Bats	Negligible (not significant)
Water vole	Negligible (not significant)

## Mitigation and Monitoring

### Water Vole and Priority Habitats

- 6.94 Retention of the population of water vole and the priority habitat within which they reside within the Site is not possible for this project. The waterbody containing the population of water vole is within the converter station site. The Site will be cleared of all habitats during the site remediation/site preparation phase, prior to the beginning of the construction, including the removal of the Priority Habitat waterbody which supports a small population of water vole.
- 6.95 In addition, as part of the design of the converter station, a stormwater attenuation pond will be constructed with an outfall into the ditch 10m to the east of the Site (D6). To facilitate the outfall, head walls will need to be created which will result in the permanent loss of approximately 1 m width of suitable water vole marginal bankside habitat as well as the temporary removal of up several metres of suitable bankside vegetation around the head walls to facilitate construction and ensure that water voles are not present to be harmed within the works area. This could also result in the loss of some water vole burrows dependent on where the outfall connects with the ditch and the location of burrows within the ditch at the time works take place. This would cause displacement of water voles from any burrows within the construction area.
- 6.96 As avoidance cannot be achieved, the removal of the habitat and the small population of water vole from Site will be compensated for by the provision of a new receptor site under a Natural England licence, along with capture measures to ensure that the water voles are relocated unharmed. As the stormwater attenuation pond associated with the Proposed Development cannot be constructed until the end of the construction period, whereas the existing waterbody will be cleared prior to construction, it cannot be suitable as a receptor site for the immediate relocation of water vole populations. Therefore, the water voles present within the waterbody on the Site will be taken into a captive breeding program, such as that run by the Kent-based Wildwood organisation, until a suitable waterbody has been created within the Site.
- 6.97 The new habitat feature will be at least of the same area and quality to the existing waterbody, and if possible, provide a net gain of at least 50%. The existing waterbody has an area of 100 m<sup>2</sup> (0.01 ha) with a perimeter of approximately 90m in length, therefore it will be replaced with a waterbody with at least the same dimensions and, if practicable, greater. The stormwater attenuation pond within the Site requires a volume capacity of 1827m<sup>3</sup>, therefore it will be much larger than the current water body on site that will be lost. The stormwater attenuation pond will be designed to be suitable for surface water drainage and as a compensatory habitat for the loss of the waterbody within the Site, as well as the temporary and permanent removal of habitat within the ditch east of the Site.
- 6.98 The detailed design of the new habitat/receptor site for water voles will take account of the follow aspects detailed in the Water Vole Mitigation Guidance, 2016<sup>16</sup>:
- *“Ensuring the watercourse/wetland area contains water throughout the year;*
  - *Creating banks using substrate which is suitable for burrowing and not liable to collapse;*
  - *Providing a suitable bank profile, which allows water voles to access the water easily and create a network of burrows above High-Water level – this will require steep banks (such as a gradient 1 in 1, where bank stability allows) which extend above flood levels (1 in 100 year flood)<sup>17</sup>. At least one bank of a water course should be designed with a steep bank; the opposite bank can be designed with a shallower profile, which will encourage the development of marginal vegetation;*
  - *Establishing suitable bankside and marginal vegetation using a range of native herbaceous species to provide both food and cover throughout the year. There is a range of methods possible for the establishment of vegetation, which have varying establishment times;*
  - *The establishment of herbaceous vegetation of the face of the bank and up to 2m back from the bank top. And the establishment of marginal or in-channel vegetation (ideally, covering*

<sup>16</sup> <https://assets.sussexwildlifetrust.org.uk/water-vole-mitigation-guidance-2016.pdf> [Accessed 03 June 2020]

<sup>17</sup> *Steep banks are important for water voles particularly for flowing water courses (to allow an inter-connected burrow system to be constructed with entrances close to water level, which can adapt to changing water levels)*

*at least 20% of the surface area of the wetted channel, or as wide a marginal fringe as possible for standing waterbodies)."*

- 6.99 With regards to ensuring the waterbody is permanently wet throughout the year, the outfall level of the stormwater attenuation pond will be set to maintain a nominal target water level of 250-300mm above the base of the pond.
- 6.100 The lead time for the creation and establishment of the new pond is likely to be at least 9-15 months dependent on the time of the year in which planting occurs and the method used to establish habitats. In addition, the new habitats provided at the receptor site will need to be managed to ensure that it remains suitable in the long term. For this reason, it will be necessary to trap the water vole and bring them into captivity until the receptor site is established.
- 6.101 Trapping water voles will be subject to a licence from Natural England and will be carried out by a suitably licenced and experienced person. Trapping of water voles will take place between March 1<sup>st</sup> and April 15<sup>th</sup> inclusive and/or 15<sup>th</sup> September and 30<sup>th</sup> November inclusive (as this will be a requirement of any licence), and they will remain in captivity until the receptor site is ready to be occupied.
- 6.102 With regards to the displacement of water voles within the ditch to install the headwall, this will also be subject to a licence from Natural England who only allows displacement of water vole between the 15<sup>th</sup> February and 15<sup>th</sup> April inclusive. A water vole presence/absence survey will be conducted on the ditch prior to the displacement to ascertain the locations of the burrows.

### **Breeding Birds**

- 6.103 Prior to additional mitigation it has been considered that the construction could lead to an adverse effect on breeding birds through the destruction of, or damage to, active bird's nests, through the killing or injuring of birds, their eggs or young and additionally disturbance to actively nesting Schedule 1 birds.
- 6.104 In order to mitigate this effect, clearance of all suitable vegetation within the Site will avoid the core breeding bird season of March to July inclusive. Any clearance during August and September will include a pre-check for nesting birds by an ecologist to ensure no active nests remain in use.

### **Wintering Birds**

- 6.105 Prior to additional mitigation is has been considered that the construction could lead to an adverse effect on wintering birds through noise disturbance to species which utilise the SPA/Ramsar and for species which are part of the SPA/Ramsar designation.
- 6.106 In order to reduce the construction noise levels, the following mitigation measures will be implemented. These are known to be able to reduce noise levels by between 5 and 10dB (both L<sub>Amax</sub> and L<sub>Aeq</sub>):
- Construction vehicles and other mechanical equipment shall be designed to minimise noise emissions, including selection of 'sound reduced' or inherently low noise models and the fitting of exhaust silencers, air intake silencers and mufflers;
  - Construction vehicles and equipment shall be maintained in good working condition to minimise extraneous noise from mechanical vibration, braking, gear changes, hydraulic lifting, engine, exhaust system and/or other sources;
  - High noise-generating plant and equipment, including generators, shall be positioned as far as practicable away from the site boundaries near to the Medway Estuary and Marshes SSSI, SPA and Ramsar site;
  - Construction vehicles and machinery shall be switched off when not in use; engine idling shall not be permitted;
  - Temporary sound absorbing barriers, covers and acoustic enclosures around static or stationary construction equipment shall be used, where appropriate;
  - Acoustic boarding shall be positioned between the main locations of civil works (including piling operations) and the closest boundaries of Medway Estuary and Marshes SSSI/SPA/Ramsar site;

- Noise compliance monitoring of construction works shall be carried out; a portable noise meter shall be available at worksites to monitor noise whenever required.

6.107 Piling for foundations is the most likely source of noise disturbance. Therefore, the piling methodology and equipment will be selected to minimise noise generation, including consideration of low noise techniques, e.g. vibro-piling instead of percussive piling, and the timing and duration of piling operations, where technically feasible.

6.108 To provide surveillance of whether the noise levels are causing disturbance of wintering birds, monitoring of bird responses to noise during the civil works phase (including piling operations) will be carried out. The results of the bird monitoring will be used to verify the (non-significant) impacts on birds and/or identify additional mitigation measures to be implemented to reduce any impacts.

### **Reptiles**

6.109 Reptiles are protected under the W&CA 1981 from killing and injury so, although the overall impact of the Proposed Development is negligible, it is still a legal requirement to prevent an offence under the legislation.

6.110 Therefore, the clearance of suitable reptile habitat within the Site will utilise a method that avoids or minimises the risk of killing and injuring reptiles. If any reptiles are discovered, appropriate procedures will be implemented to protect or relocate the individuals.

6.111 For any site clearance activities during the period when reptiles will be hibernating, and therefore more vulnerable to killing or injury, the removal of root systems of any shrubs and dismantling of any potential refugia will be by hand prior to site clearance. In the unlikely event any reptiles are discovered, artificial hibernacula will be constructed from rubble and soil in an area of existing retained suitable reptile habitat off-site.

### **Badger**

6.112 Badgers are protected under the Protection of Badgers Act 1992 from killing or injury so, although the overall impact of the Proposed Development is negligible, it is still a legal requirement to prevent an offence under the legislation

6.113 Construction activities such as trenching and excavating can potentially trap, injure and kill badgers if they fall into, or cannot escape from, such excavations. Therefore, the following mitigation measures will be implemented:

- Security fencing of the Site to prevent badgers from entering working areas containing excavations;
- Supervision of the Site to identify if foraging badgers enter the Site and/or excavations;
- Covering of small excavations, where practicable;
- Provision of escape ramps from excavations if steep batter slopes are present, where practicable;
- Emergency procedure to safely release any badgers that are found on-site or fall into excavations.

## **Cumulative Effects**

6.114 There are two permitted developments in the immediate vicinity, which are associated with GridLink but not included within the Proposed Development (since they do not require planning consent):

1. The temporary construction laydown area for the Proposed Development is immediately adjacent to the western boundary of the Site.
2. The Onshore Cable route starts at the south western corner of the Site and travels along the southern extent of the former Kingsnorth Power Station site to the National Grid Kingsnorth sub-station. The Onshore Cable is approximately 1.5 km in length

- 6.115 In addition, the Offshore Cable works continue beyond the Mean High-Water Springs (up to which is included within the Proposed Development) under a Marine Licence granted by the Marine Management Organisation (MMO). The horizontal direction drilling (HDD) for the cable installation continues from the Proposed Development under the Medway Estuary and Marshes SSSI/SPA/Ramsar site to connect to the subsea cable installed in the Medway Estuary.
- 6.116 Although these works are not part of the Proposed Development, there is potential for the Proposed Development to have a greater effect upon ecological receptors in-combination with developments occurring in the same zones of impact.
- 6.117 The RPS surveys in 2019 (RPS, 2019) have confirmed the absence protected plant species. In addition, great crested newts and reptiles were recorded as absent from the Onshore Cable route and therefore will not be impacted. Protected and/or notable breeding bird territories have been identified within the temporary construction laydown area and the Onshore Cable route. Water vole are present within D7 and D7b within 20 m of the Onshore Cable route and a badger latrine was also recorded adjacent to the ditches on the Onshore Cable route.

## Permanent Loss of Habitat

### Priority Habitats

- 6.118 The temporary laydown area is 1.6 ha in size and will be fully cleared of vegetation and levelled prior to its use as a laydown area for the construction of the Proposed Development. This area consists mainly of bare ground comprising loose gravel-based material, potentially with areas of ephemeral self-planted species and areas of hard standing. There are, however, strips of semi-improved grassland in the east, west and north of the laydown area and two lines of conifer trees in the north. These habitats are of low local value.
- 6.119 The Onshore Cable route consists of semi-improved grassland and hardstanding for the majority of its length. There are two sections of ditches (D7/D7b) and a single pond (P13) approximately 20m from the Onshore Cable route respectively. D7/D7b have had water vole recorded within them during the RPS Surveys (RPS, 2019) and therefore these ditches would be regarded as priority habitats (medium regional value). The other waterbody and habitats are of low local value.
- 6.120 The Onshore Cable route is approximately 20m north of the ditches and would therefore not affect this Priority Habitat. The impact on the loss of other low value habitats in-combination with the those within the Proposed Development would not increase the impact of the Proposed Development on habitats.
- 6.121 In addition, habitats within the Offshore Cable route are part of the Medway Estuary and Marshes SSSI/SPA/Ramsar site and are of international value. However, the cable will be installed by horizontal directional drilling underneath the habitats and, therefore, there will be no loss of habitat within the SSSI/SPA/Ramsar. Therefore, this does not change the potential effects of the Proposed Development.

### Breeding Birds

- 6.122 Loss of habitat within the temporary laydown area and Onshore Cable route could lead to the loss of breeding and nesting habitat for a number of protected and/or notable bird species. The temporary laydown area overlaps with territories of a Schedule 1 species little ringed plover (territory also present within the Site), two red listed territories for linnet which are also species of Principal Importance (NERC, 2006), and an amber listed territory for oystercatcher.
- 6.123 In addition to the territories present within the laydown area, the Onshore Cable route has a further six linnet territories within the vicinity of the works, a dunnoek territory (amber listed and species of Principal Importance), and overlaps with a second oystercatcher territory and is close to black redstart territory; however, these breed on structures (e.g. the jetty crane structure) and would therefore be unaffected from the loss of habitats as no structure will be removed for the installation of the Onshore Cable.
- 6.124 The territories that would be affected by the Onshore Cable route would involve only a temporary loss of habitat which would be replaced once the cable trench excavations have been filled and reinstated.
- 6.125 The temporary loss of the habitats within the laydown area would contribute to the increase in number of territories affected in-combination with the Proposed Development. However, the Schedule 1 territory within the laydown area also overlaps with the Proposed Development site and the relative numbers of territories will still be low. In addition, the temporary removal of habitats within the laydown area in combination with

the Proposed Development is still a small area in comparison to the areas of more optimal habitat to the east and west for these species. Therefore, the additional habitat removal for the temporary construction laydown area and the Onshore Cable route will not increase the potential effects.

### **Badger**

- 6.126 A single badger latrine was recorded within the vicinity of the Onshore Cable route, to the south of the ditches (D7/D7b) present along the sea wall. The habitats along this cable corridor are suitable for badger foraging and the latrine indicates badger presence in this area. The temporary removal of this habitat could have an impact on foraging resources for badgers; however, badgers are highly mobile species and the main sett and majority of foraging signs are approximately 700-900m north of the Onshore Cable route. The area of habitat to be removed in order to facilitate trenching for the cable corridor is also very minor in comparison to the extent of suitable habitat remaining in the area and the habitat will be restored once the construction work for laying the cable has been completed. Therefore, the removal of habitat along the Onshore Cable route will not increase the potential effects.

### **Water Vole**

- 6.127 Water vole have been identified in the ditches (D7/D7b) to the south of the Onshore Cable route. Feeding stations and latrines have been identified in both sections of the ditch. However, the cable route is approximately 20m north of the ditches, and therefore these habitats would not be affected by the Onshore Cable route. Therefore, the assessment of impact for habitat removal for water vole would not increase the potential effects.

## **Temporary Habitat Fragmentation**

### **Water Vole**

- 6.128 The trench for the cable installation within the Onshore Cable route will be excavated in sections, such that the water voles within ditches D7/D7b will not be cut off from other populations of water vole within the area. In addition, sections of trench excavation will be short duration comprising 1-2 weeks and backfilled upon completion of each section.
- 6.129 Therefore, the assessment of impacts on water vole would not increase the potential effects.

## **Noise**

### **Wintering Birds**

- 6.130 The trench for the cable installation within the Onshore Cable route will be excavated in sections, each comprising a short duration of 1-2 weeks. Therefore, the additional noise disturbance caused by the cable trenching will be very minor and not increase the potential effects.
- 6.131 For the Offshore Cable, the horizontal directional drilling (HDD) comprises an entry and exit point, with a drilling rig located either onshore or on a jack-up barge located in the Medway Estuary. For the purposes of the noise assessment of the Proposed Development, as a worse case it has been assumed that the drilling rig and all ancillary equipment is within the Proposed Development. Therefore, the jack-up barge will have no significant noise sources and it will not increase the potential effects.

## 7. Residual Effects

### Construction Effects

#### Permanent Loss of Habitat

##### Priority Habitats

- 7.1 Without mitigation, the loss of Priority Habitat – small waterbody containing a small population of water vole - would constitute a moderate adverse effect.
- 7.2 With the planned mitigation to provide replacement habitat of the same or greater quality than previously present on the Site, the residual impact of the loss of this Priority Habitat will be **Minor adverse (not significant)**; the minor adverse outcome is due to the length of time to full establishment.

##### Water Vole

- 7.3 Without mitigation, the loss of Priority Habitat for a small water vole population would constitute a moderate adverse effect.
- 7.4 With the planned mitigation to provide replacement habitat of greater extent and quality than previously present on the Site, the residual impact of the loss of this habitat will be **Minor positive (not significant)**; a higher positive outcome is not awarded due to the length of time to full establishment.

#### Killing and Injury

##### Breeding Birds

- 7.5 Without mitigation, killing or injuring birds would constitute as a major adverse effect.
- 7.6 With the planned mitigation to clear the Site of all suitable breeding bird habitat prior to the breeding bird season, this will avoid an impact on-site and, therefore, the residual impact of killing and injuring of birds will be **Negligible (not significant)**.

##### Water Vole

- 7.7 Without mitigation, killing or injuring water vole would constitute as a major adverse effect.
- 7.8 With the planned mitigation to trap out the original habitat and relocate individuals to a suitable receptor site (the stormwater attenuation pond on Site), via a captive breeding program whilst the replacement receptor site is being established, the residual impact of killing and injuring water vole will be **Negligible (not significant)**.

#### Disturbance

##### Noise

##### Wintering Birds

- 7.9 Without mitigation, noise disturbance on wintering birds would constitute a major adverse effect.
- 7.10 With the planned mitigation to reduce noise emissions by the choice of construction methods, e.g. piling, selection and operation of mobile equipment, acoustic enclosures and/or boundary fences as appropriate, and monitoring of noise emission to ensure further mitigation measures are implemented as necessary, the residual impact of noise on wintering birds will be **Minor adverse (not significant)**.

#### Displacement

##### Water Vole

- 7.11 Without mitigation, displacement of water voles from burrows and suitable habitat in an area of the ditch 10m east of the Site would constitute a moderate adverse effect.

- 7.12 With the planned mitigation to clear the habitat and construct the header walls and outfall from the stormwater attenuation pond within the ditch under a Natural England licence, where the clearance and construction methods are agreed as part of the licence, the residual impact of displacement of water voles will be **Negligible (not significant)**.

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# Appendix A Figures

# Appendix B Standard Badger Survey Terminology

Sett category	Description
<b>Main</b>	Have several entrance holes with high levels of activity, including large spoil mounds, freshly excavated earth, "well marked" paths and usually a fresh latrine present. There is often evidence of discarded bedding, which may indicate breeding.
<b>Annex</b>	Close to a main sett and usually clearly linked to a nearby main sett by well-worn paths. Normally active with several holes, although with some holes displaying less obvious signs of badger activity. The size of the annex sett can vary depending on the size of the local badger population.
<b>Subsidiary</b>	Generally fewer than five entrance holes and some distance from a main sett and without obvious linking paths. The holes can be very variable in signs of usage and are often much less consistently in use than those of main or annex, although this very much depends on the size and density of the local badger population. Subsidiary setts can also be used for breeding, often by a sub-dominant female, which is linked to the size of the local population and hierarchy.
<b>Outlier</b>	Usually consists of a single or double hole with varying levels of activity. Outlier setts can sometimes be used for breeding, often by a sub-dominant female, which is linked to the size of the local population and hierarchy.

Level of usage	Description
<b>Well used</b>	Badger holes generally clear of all vegetation, litter or debris, except where bedding has been left in the entrance. They are likely to show signs of wear at the entrance, including scratch marks along the site on entrance holes, which can also be smooth and worn, thus devoid of vegetation such as moss.
<b>Partly used</b>	Leaves or twigs in badger entrance hole which have not been cleared by regular use, although may be brought into regular use with relatively little clearance or new digging. Caution is to be given during autumn, as falling leaves can give an impression of only partial usage, although closer inspections can reflect a well-used entrance hole.
<b>Disused</b>	Badger holes show no signs of recent usage, often partly or wholly blocked and may require considerable digging to re-open.

# Appendix C Standard Bat Roost Suitability Criteria

Bat suitability	roost	Roost type		
		Summer or transitional roost used by non-breeding bats	Maternity roost	Hibernation roost
<b>Confirmed</b>	Presence of bats or evidence of bats. Confirmation of roost status may require further roost clarification survey.			
<b>High</b>	Feature with multiple roosting opportunities for one or more species of bat. With good connectivity to high quality foraging habitat.	Feature with multiple roosting opportunities for breeding bats (size, temperature). With proximity and connectivity to high quality foraging habitat.	Large site that offers cool stable conditions with multiple roosting opportunities. With proximity and connectivity to high quality foraging habitat.	
<b>Moderate</b>	Feature with some roosting opportunities. With connectivity to moderate or high quality foraging habitat.	Feature providing some roosting opportunities. With some connectivity and proximity to moderate or high quality foraging habitat.	Medium sized feature with some roosting opportunities. With some connectivity and proximity to moderate or high quality foraging habitat.	
<b>Low</b>	Feature with a limited number of roosting opportunities. With poor connectivity to foraging habitat.	Feature with a limited number of roosting opportunities for breeding bats. With low proximity and connectivity to low or moderate quality foraging habitat.	Small sized feature or feature which may be subject to disturbance or environmental variations, with a limited number of roosting opportunities. With poor connectivity to foraging habitat.	
<b>Negligible</b>	Feature with no or very limited roosting opportunities for bats or where the feature is isolated from foraging habitat.			

# Appendix D Desk Study Data

Protected and/or notable bird species recorded within 2km of the Site during the last ten years, obtained from Kent and Medway Biological Record Centre (KMBRC, 2020). Definitions regarding conservation designation designations are provided in Section 2 of this assessment.

Common name	Scientific name	Conservation designation	Most recent record
<b>Plants</b>			
Borrer's saltmarsh-grass	<i>Puccinellia fasciculata</i>	NERCS41, UKBAP	2018
Sea barley	<i>Hordeum marinum</i>	NERCS41, UKBAP	2012
Slender sea-hare	<i>Bupleurum tenuissimum</i>	NERCS41, UKBAP	2012
<b>Invertebrates</b>			
Garden tiger	<i>Arctica caja</i>	NERCS41, UKBAP	2012
Cinnabar	<i>Tyria jacobaea</i>	NERCS41, UKBAP	2012
Brown-banded carder-bee	<i>Bombus humilis</i>	NERCS41, UKBAP	2012
Moss carder-bee	<i>Bombus muscorum</i>	NERCS41, UKBAP	2012
<b>Amphibians and reptiles</b>			
Great crested newt	<i>Triturus cristatus</i>	WCA5, NERCS41, UKBAP	2014
Common lizard	<i>Zootoca vivipara</i>	WCA5 (p), NERCS41, UKBAP	2013
Slow worm	<i>Anguis fragilis</i>	WCA5 (p), NERCS41, UKBAP	2013
Grass snake	<i>Natrix helvetica</i>	WCA5 (p), NERCS41, UKBAP	2012
<b>Birds</b>			
Brent goose	<i>Branta bernicla</i>	BAP; BoCC4:Amber; S41	2016
Greylag goose	<i>Anser anser</i>	BoCC4:Amber	2016
Mute swan	<i>Cygnus olor</i>	BoCC4:Amber	2016
Shelduck	<i>Tadorna tadorna</i>	BoCC4:Amber	2016
Wigeon	<i>Mareca penelope</i>	BoCC4:Amber	2017
Gadwall	<i>Mareca strepera</i>	BoCC4:Amber; KRDB3	2013
Teal	<i>Anas crecca</i>	BoCC4:Amber; KRDB1	2016
Mallard	<i>Anas platyrhynchos</i>	BoCC4:Amber	2016
Pintail	<i>Anas acuta</i>	BoCC4:Amber; KRDB3	2016
Shoveler	<i>Spatula clypeata</i>	BoCC4:Amber	2012
Pochard	<i>Aythya ferina</i>	BoCC4:Red; KRDB3	2015
Long-tailed duck	<i>Clangula hyemalis</i>	BoCC4:Red; WCA1	2012
Common scoter	<i>Melanitta nigra</i>	BAP; BoCC4:Red; S41; WCA1	2010
Velvet scoter	<i>Melanitta fusca</i>	BoCC4:Red; WCA1	2010
Goldeneye	<i>Bucephala clangula</i>	BoCC4:Amber	2016
Great northern diver	<i>Gavia immer</i>	BoCC4:Amber; BirdsDir:A1; WCA1	2012
Slavonian grebe	<i>Podiceps auritus</i>	BoCC4:Red; BirdsDir:A1; WCA1	2011
Cormorant	<i>Phalacrocorax carbo</i>	KRDB3	2016
Little egret	<i>Egretta garzetta</i>	BirdsDir:A1; KRDB3	2016
Grey heron	<i>Ardea cinerea</i>	KRDB3	2016

Common name	Scientific name	Conservation designation	Most recent record
Spoonbill	<i>Platalea leucorodia</i>	BoCC4:Amber; BirdsDir:A1; WCA1	2011
Honey buzzard	<i>Pernis apivorus</i>	BoCC4:Amber; BirdsDir:A1; KRDB1; WCA1	2016
Red kite	<i>Milvus milvus</i>	BirdsDir:A1; WCA1	2016
Marsh harrier	<i>Circus aeruginosus</i>	BoCC4:Amber; BirdsDir:A1; KRDB3; WCA1	2016
Hen harrier	<i>Circus cyaneus</i>	BoCC4:Red; BirdsDir:A1; S41 ; WCA1	2012
Osprey	<i>Pandion haliaetus</i>	BoCC4:Amber; BirdsDir:A1; WCA1	2012
Kestrel	<i>Falco tinnunculus</i>	BoCC4:Amber	2016
Merlin	<i>Falco columbarius</i>	BoCC4:Red; BirdsDir:A1; WCA1	2012
Peregrine	<i>Falco peregrinus</i>	BirdsDir:A1; KRDB1; WCA1	2016
Grey partridge	<i>Perdix perdix</i>	BAP; BoCC4:Red; S41; KRDB2	2010
Water rail	<i>Rallus aquaticus</i>	KRDB3	2012
Oystercatcher	<i>Haematopus ostralegus</i>	BoCC4:Amber	2016
Avocet	<i>Recurvirostra avosetta</i>	BoCC4:Amber; ; BirdsDir:A1; KRDB3; WCA1	2015
Ringed plover	<i>Charadrius hiaticula</i>	BoCC4:Red	2017
Golden plover	<i>Pluvialis apricaria</i>	BirdsDir:A1	2010
Grey plover	<i>Pluvialis squatarola</i>	BoCC4:Amber; KRDB3	2016
Lapwing	<i>Vanellus vanellus</i>	BAP; BoCC4:Red; S41	2016
Knot	<i>Calidris canutus</i>	BoCC4:Amber; KRDB3	2012
Sanderling	<i>Calidris alba</i>	BoCC4:Amber	2010
Dunlin	<i>Calidris alpina</i>	BoCC4:Amber; BirdsDir:A1; KRDB2	2016
Snipe	<i>Gallinago gallinago</i>	BoCC4:Amber; KRDB1	2015
Woodcock	<i>Scolopax rusticola</i>	BoCC4:Red	2010
Black-tailed godwit	<i>Limosa limosa</i>	BAP; BoCC4:Red; S41; KRDB1; WCA1	2014
Bar-tailed godwit	<i>Limosa lapponica</i>	BoCC4:Amber; BirdsDir:A1	2012
Whimbrel	<i>Numenius phaeopus</i>	BoCC4:Red	2012
Curlew	<i>Numenius arquata</i>	BAP; BoCC4:Red; S41	2016
Redshank	<i>Tringa totanus</i>	BoCC4:Amber	2016
Greenshank	<i>Tringa nebularia</i>	BoCC4:Amber; WCA1	2016
Common sandpiper	<i>Actitis hypoleucos</i>	BoCC4:Amber	2012
Turnstone	<i>Arenaria interpres</i>	BoCC4:Amber	2016
Mediterranean gull	<i>Ichthyaeus melanocephalus</i>	BoCC4:Amber; BirdsDir:A1; WCA1	2013
Black-headed gull	<i>Chroicocephalus ridibundus</i>	BoCC4:Amber	2016
Common gull	<i>Larus canus</i>	BoCC4:Amber; KRDB1	2016
Lesser black-backed gull	<i>Larus fuscus</i>	BoCC4:Amber	2016
Herring gull	<i>Larus argentatus</i>	BAP; BoCC4:Red; S41; KRDB2	2016
Great black-backed gull	<i>Larus marinus</i>	BoCC4:Amber	2016
Common tern	<i>Sterna hirundo</i>	BoCC4:Amber; BirdsDir:A1	2011
Stock dove	<i>Columba oenas</i>	BoCC4:Amber;	2014
Barn owl	<i>Tyto alba</i>	WCA1	2017

Common name	Scientific name	Conservation designation	Most recent record
Tawny owl	<i>Strix aluco</i>	BoCC4:Amber	2012
Short-eared owl	<i>Asio flammeus</i>	BoCC4:Amber; BirdsDir:A1	2013
Kingfisher	<i>Alcedo atthis</i>	BoCC4:Amber; BirdsDir:A1; WCA1	2016
Skylark	<i>Alauda arvensis</i>	BAP; BoCC4:Red; S41; KRDB2	2016
House martin	<i>Delichon urbica</i>	BoCC4:Amber	2013
Meadow pipit	<i>Anthus pratensis</i>	BoCC4:Amber	2016
Yellow wagtail	<i>Motacilla flava</i>	BAP; BoCC4:Red; S41; KRDB2	2011
Grey wagtail	<i>Motacilla cinerea</i>	BoCC4:Red	2016
Nightingale	<i>Luscinia megarhynchos</i>	WCA1; BoCC4:Red; KRDB3	2014
Dunnock	<i>Prunella modularis</i>	BAP; BoCC4:Amber; S41	2016
Black redstart	<i>Phoenicurus ochruros</i>	BoCC4:Red; KRDB1; WCA1	2016
Stonechat	<i>Saxicola rubicola</i>	KRDB1	2017
Wheatear	<i>Oenanthe oenanthe</i>	KRDB1	2016
Fieldfare	<i>Turdus pilaris</i>	BoCC4:Red; WCA	2011
Song thrush	<i>Turdus philomelos</i>	BAP; BoCC4:Red; S41; KRDB2	2016
Redwing	<i>Turdus iliacus</i>	BoCC4:Red ; WCA	2016
Mistle thrush	<i>Turdus viscivorus</i>	BoCC4:Red	2012
Cetti's warbler	<i>Cettia cetti</i>	KRDB3; WCA1	2017
Reed warbler	<i>Acrocephalus scirpaceus</i>	KRDB3	2012
Starling	<i>Sturnus vulgaris</i>	BAP; BoCC4:Red; ; S41; KRDB2	2016
House sparrow	<i>Passer domesticus</i>	BAP; BoCC4:Red; S41; KRDB2	2013
Linnet	<i>Linaria cannabina</i>	BAP; BoCC4:Red; S41; KRDB2	2016
Yellowhammer	<i>Emberiza citrinella</i>	BAP; BoCC4:Red; S41; KRDB2	2011
Reed bunting	<i>Emberiza schoeniclus</i>	BAP; BoCC4:Amber; S41	2016
<b>Mammals</b>			
Badger	<i>Meles meles</i>	WCA	2013
Common seal	<i>Phoca vitulina</i>	UKBAP, NERCS41	2013
Water vole	<i>Arvicola amphibius</i>	WCA5	2013
Serotine	<i>Eptesicus serotinus</i>	WCA5; KRDB3	2017
Daubenton's bat	<i>Myotis daubentonii</i>	WCA5	2016
Unidentified myotis	<i>Myotis</i> sp.	WCA5	2018
Leisler's bat	<i>Nyctalus leisleri</i>	WCA5; KRDB1	2017
Noctule	<i>Nyctalus noctula</i>	WCA5; NERCS41; KRDB2	2018
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	WCA5	2017
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	WCA5	2018
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	WCA5; NERCS41	2018
Unidentified pipistrelle	<i>Pipistrellus</i> sp.	WCA5	2012
Brown long-eared bat	<i>Plecotus auritus</i>	WCA5; NERCS41; KRDB2	2018
Unidentified long-eared bat	<i>Plecotus</i> sp.	WCA5	2017
<b>Invasive non-native species</b>			

<b>Common name</b>	<b>Scientific name</b>	<b>Conservation designation</b>	<b>Most recent record</b>
Japanese knotweed	<i>Reynoutria japonica</i>	WCA9ii	2014

# Appendix E Target Notes

Target notes from the Phase 1 habitat survey undertaken by AECOM in June 2019 are provided below. The locations of these target notes are indicated in Figure V2.1 of Volume 2 Ecology Report – Preliminary Ecological Appraisal.

## TN1 Oil storage tank bases

A group of six circular concrete bases formerly underlying oil storage tanks, interspersed with bare ground, small patches of marginal vegetation and (towards the west of the site) semi-improved grassland.

## TN2 Perimeter road

Tarmac road surrounding (largely outside of) the Site boundary, bordered by semi-improved grassland.

## TN3 Bare ground

Stony ground between the concrete bases, covered by sparse low-lying vegetation (e.g. bristly oxtongue *Helminthotheca echioides*) and encroached onto by marginal vegetation in places.

## TN4 Semi-improved grassland bank

Semi-improved grassland covered much of the bank encompassing the Site (enclosed by the perimeter road), with a sward height of approximately 40cm. Grass species included abundant false oat-grass (*Arrhenatherum elatius*), along with Yorkshire fog (*Holcus lanatus*), cock's-foot (*Dactylis glomerata*), perennial rye-grass (*Lolium perenne*) and annual meadow-grass (*Poa annua*). Herbaceous species included frequent Alexanders (*Smyrniolum olusatrum*) and cow parsley (*Anthriscus sylvestris*), occasional bramble (*Rubus fruticosus* agg.), teasel (*Dipsacus fullonum*), broadleaf plantain (*Plantago major*), red clover (*Trifolium repens*), dock (*Rumex* sp.), creeping cinquefoil (*Potentilla reptans*), goat's-rue (*Galega officinalis*) and common hogweed (*Heracleum sphondylium*), and rare cutleaved cranesbill (*Geranium dissectum*), dovesfoot cranesbill (*Geranium molle*), hemlock (*Conium maculatum*), meadow buttercup (*Ranunculus acris*), creeping thistle (*Cirsium arvense*), bristly oxtongue, oxeye daisy (*Leucanthemum vulgare*), common ragwort (*Senecio jacobaea*) and yellow-wort (*Blackstonia perfoliata*). Damper areas (e.g. in the south of the Site) contained greater coverage of marginal species (e.g. soft rush *Juncus effusus*), whilst the bank became overgrown with scrub in places (particularly along the west and east of the Site). Along the east of the Site the bank was exposed in places and had numerous rabbit burrows, potentially providing basking and hibernation habitat for reptiles.

## TN5 Scrub within the semi-improved grassland bank

Patches of scrub encroached on grassland along the bank around the edge of the Site, characterised by abundant bramble, along with cow parsley, goat's-rue, teasel, dog-rose (*Rosa canina*), nettle (*Urtica dioica*) and common mallow (*Malva neglecta*).

## TN6 Marginal vegetation

Marginal vegetation surrounded the pond in the south-west corner of the Site and was present in small patches around hardstanding and bare ground. This was characterised by abundant common reed (*Phragmites australis*), frequent sedges (*Carex* sp.) and occasional soft rush, sea club-rush (*Bolboschoenus maritimus*) and bulrush (*Typha latifolia*).

## TN7 Pond

A pond (referred to in RPS Ecology Reports as Pond 17) was present in the south-west corner of the Site. This was encroached onto marginal vegetation including common reed, and the water depth was relatively shallow. Identified as potentially suitable for great crested newt (*Triturus cristatus*) and water vole (*Arvicola terrestris*).

## TN8 Ditch

A ditch (referred to in RPS Ecology Reports as D6) outside (running parallel to) the eastern boundary of the Site, containing dense vegetation. Identified as potentially suitable for great crested newt and water vole.

## TN9 Grassland within the former lagoons

A larger expanse of damp grassland to the east of the Site (beyond D6) on the site of former lagoons.

## TN10 Damhead Creek

Intertidal mudflats within Damhead Creek to the north of the Site, within the Medway Estuary and Marshes SPA and Ramsar.

### **TN11 Medway Estuary**

Intertidal mudflats within the Medway Estuary immediately south of the Site, within the Medway Estuary and Marshes SPA and Ramsar.

### **TN12 Peregrine**

A peregrine (*Falco peregrinus*) was recorded flying over the Onshore Cable Route and subsequently resting on hardstanding approximately 300m west of the Site on 13<sup>th</sup> June 2019. Peregrine is included on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

# Appendix F AECOM 2019-2020 Wintering Bird Survey Results

## Low Tide Results AECOM 2019-2020

Full results from the six low tide wintering bird survey visits undertaken monthly between October 2019 and March 2020 inclusive are provided below. Survey maps are provided in Figures V3.1- V3.13 within Volume 3 Ecology Report - Wintering Birds.

Species (BTO code)	Scientific name	Number of individuals						Conservation status
		24/10/19	20/11/19	05/12/19	17/01/20	18/02/20	03/03/20	
Avocet (AV)	<i>Recurvirostra avosetta</i>	-	3	4	-	-	1	<b>BIRDS DIR. W&amp;CA</b> Amber listed
Blackbird (B.)	<i>Turdus merula</i>	2	3	5	1	2	1	Green listed
Black-headed gull (BH)	<i>Chroicocephalus ridibundus</i>	12	10	11	4	25	17	Amber listed
Black-tailed godwit (BW)	<i>Limosa limosa</i>	-	2	-	-	-	-	<b>W&amp;CA NERCS41</b> Red listed
Blue tit (BT)	<i>Cyanistes caeruleus</i>	-	-	3	-	1	3	Green listed
Buzzard (BZ)	<i>Buteo buteo</i>	2	-	-	-	-	2	Green listed
Canada goose (CG)	<i>Branta canadensis</i>	15	-	-	20	8	20	None
Carrion crow (C.)	<i>Corvus corone</i>	26	9	19	13	10	12	Green listed
Cetti's warbler (CW)	<i>Cettia cetti</i>	1	1	-	1	-	1	<b>W&amp;CA</b> Green listed
Chaffinch (CH)	<i>Fringilla coelebs</i>	1	3	4	3	-	-	Green listed
Chiffchaff (CC)	<i>Phylloscopus collybita</i>	-	-	-	-	-	2	Green listed
Coot (CO)	<i>Fulica atra</i>	-	-	-	-	10	15	Green listed
Cormorant (CA)	<i>Phalacrocorax carbo</i>	-	-	2	-	3	7	Green listed
Curlew (CU)	<i>Numenius arquata</i>	15	47	9	14	18	13	<b>NERCS41</b> Red listed
Dark-bellied brent goose (BG)	<i>Branta bernicla bernicla</i>	28	219	132	355	265	571	<b>NERC S41</b> Amber listed
Dunlin (DN)	<i>Calidris alpina</i>	-	-	39	-	-	-	Amber listed
Dunnock (D.)	<i>Prunella modularis</i>	2	3	2	1	-	2	<b>NERCS41</b> Amber listed
Feral pigeon (FP)	<i>Columba livia</i>	-	14	12	6	22	13	None
Goldfinch (GO)	<i>Carduelis carduelis</i>	1	-	-	3	-	2	Green listed

Species (BTO code)	Scientific name	Number of individuals						Conservation status
		24/10/19	20/11/19	05/12/19	17/01/20	18/02/20	03/03/20	
Great crested grebe (GG)	<i>Podiceps cristatus</i>	-	-	-	-	-	2	Green listed
Great tit (GT)	<i>Parus major</i>	1	-	1	-	-	1	Green listed
Greenfinch (GR)	<i>Chloris chloris</i>	-	3	-	-	-	-	Green listed
Grey heron (H.)	<i>Ardea cinerea</i>	1	-	-	1	-	-	Green listed
Greylag goose (GJ)	<i>Anser anser</i>	-	12	-	-	8	5	Amber listed
Herring gull (HG)	<i>Larus argentatus</i>	32	33	31	7	12	22	NERCS41 Red listed
Jackdaw (JD)	<i>Corvus monedula</i>	5	-	1	-	-	-	Green listed
Kestrel (K.)	<i>Falco tinnunculus</i>	1	1	1	-	-	1	Amber listed
Lapwing (L.)	<i>Vanellus vanellus</i>	-	13	3	250	-	33	NERCS41 Red listed
Lesser black-backed gull (LB)	<i>Larus fuscus</i>	-	1	1	-	1	-	Amber listed
Linnet (LI)	<i>Linaria cannabina</i>	11	3	-	-	-	1	NERCS41 Red listed
Little egret (ET)	<i>Egretta garzetta</i>	-	1	-	-	-	-	BIRDS DIR. Green listed
Magpie (MG)	<i>Pica pica</i>	5	12	7	12	7	1	Green listed
Mallard (MA)	<i>Anas platyrhynchos</i>	-	-	-	2	2	10	Amber listed
Marsh harrier (MR)	<i>Circus aeruginosus</i>	1	1	-	-	-	1	BIRDS DIR. W&CA Amber listed
Meadow pipit (MP)	<i>Anthus pratensis</i>	3	5	1	-	1	7	Amber listed
Moorhen (MH)	<i>Gallinula chloropus</i>	-	-	-	-	1	1	Green listed
Oystercatcher (OC)	<i>Haematopus ostralegus</i>	3	108	78	49	89	98	Amber listed
Pheasant (PH)	<i>Phasianus colchicus</i>	-	-	-	-	3	-	None
Pied wagtail (PW)	<i>Motacilla alba</i>	-	3	1	-	-	2	Green listed
Red-legged partridge (RL)	<i>Alectoris rufa</i>	-	3	-	-	-	-	None
Redshank (RK)	<i>Tringa totanus</i>	3	42	61	7	6	23	Amber listed
Reed bunting (RB)	<i>Emberiza schoeniclus</i>	-	-	-	-	-	2	Amber listed
Ringed plover (RP)	<i>Charadrius hiaticula</i>	-	-	1	-	-	-	Red listed
Robin (R.)	<i>Erithacus rubecula</i>	5	8	7	4	-	-	Green listed
Shelduck (SU)	<i>Tadorna tadorna</i>	3	188	198	209	152	137	Amber listed

Species (BTO code)	Scientific name	Number of individuals						Conservation status
		24/10/19	20/11/19	05/12/19	17/01/20	18/02/20	03/03/20	
Skylark (S.)	<i>Alauda arvensis</i>	-	2	1	7	6	6	<b>NERCS41 Red listed</b>
Song thrush (ST)	<i>Turdus philomelos</i>	-	2	-	-	-	2	<b>NERCS41 Red listed</b>
Starling (SG)	<i>Sturnus vulgaris</i>	-	15	-	-	-	20	<b>NERCS41 Red listed</b>
Stonechat (SC)	<i>Saxicola rubicola</i>	1	2	-	2	5	3	<b>Green listed</b>
Wigeon (WN)	<i>Mareca penelope</i>	-	-	-	-	-	5	<b>Amber listed</b>
Woodpigeon (WP)	<i>Columba palumbus</i>	8	10	-	25	57	53	<b>Green listed</b>
Wren (WR)	<i>Troglodytes troglodytes</i>	5	2	1	1	2	3	<b>Green listed</b>

## High Tide Results AECOM 2019-2020

Full results from the six high tide wintering bird survey visits undertaken monthly between October 2019 and March 2020 inclusive are provided below. Survey maps are provided in Figures V3.1- V3.13 within the Volume 3 Ecology Report - Wintering Birds.

Species (BTO code)	Scientific name	Number of registrations						Conservation status
		28/10/19	12/11/19	11/12/19	23/01/20	24/02/20	09/03/20	
Bar-tailed godwit (BA)	<i>Limosa lapponica</i>	-	3	-	-	-	-	<b>BIRDS DIR.</b> Amber listed
Blackbird (B.)	<i>Turdus merula</i>	2	3	8	6	1	3	Green listed
Black-headed gull (BH)	<i>Chroicocephalus ridibundus</i>	4	1	2	-	1	56	Amber listed
Black-tailed godwit (BW)	<i>Limosa limosa</i>	150	-	70	-	-	-	<b>NERCS41</b> Red listed
Blue tit (BT)	<i>Cyanistes caeruleus</i>	1	-	1	1	-	2	Green listed
Buzzard (BZ)	<i>Buteo buteo</i>	-	-	-	2	1	1	Green listed
Canada goose (CG)	<i>Branta canadensis</i>	-	-	-	-	12	37	None
Carrion crow (C.)	<i>Corvus corone</i>	42	7	6	1	9	9	Green listed
Cetti's warbler (CW)	<i>Cettia cetti</i>	-	-	-	2	-	1	<b>W&amp;CA</b> Green listed
Chaffinch (CH)	<i>Fringilla coelebs</i>	3	1	17	1	1	2	Green listed
Coot (CO)	<i>Fulica atra</i>	-	-	-	-	3	20	Green listed
Cormorant (CA)	<i>Phalacrocorax carbo</i>	2	3	1	-	1	7	Green listed
Curlew (CU)	<i>Numenius arquata</i>	-	1	-	1	-	9	<b>NERCS41</b> Red listed
Dark-bellied brent goose (BG)	<i>Branta bernicla bernicla</i>	1	2	-	22	8	12	<b>NERCS41</b> Amber listed
Dunnock (D.)	<i>Prunella modularis</i>	3	2	4	2	1	6	<b>NERCS41</b> Amber listed
Feral pigeon (FP)	<i>Columba livia</i>	1	6	-	25	-	19	None
Gadwall (GA)	<i>Mareca strepera</i>	-	-	-	-	7	5	Amber listed
Goldfinch (GO)	<i>Carduelis carduelis</i>	-	3	-	-	-	7	Green listed
Great crested grebe (GG)	<i>Podiceps cristatus</i>	-	-	-	1	-	-	Green listed
Great spotted woodpecker (GS)	<i>Dendrocopos major</i>	-	1	-	-	-	-	Green listed
Great tit (GT)	<i>Parus major</i>	-	1	1	-	-	-	Green listed
Grey heron (H.)	<i>Ardea cinerea</i>	-	1	-	-	-	1	Green listed

Species code)	(BTO	Scientific name	Number of registrations						Conservation status
			28/10/19	12/11/19	11/12/19	23/01/20	24/02/20	09/03/20	
Greylag (GJ)	goose	<i>Anser anser</i>	-	-	15	-	-	17	Amber listed
Herring (HG)	gull	<i>Larus argentatus</i>	3	45	4	7	6	9	NERCS41 Red listed
Jackdaw (JD)		<i>Corvus monedula</i>	6	-	-	10	-	4	Green listed
Kestrel (K.)		<i>Falco tinnunculus</i>	2	2	1	1	1	-	Amber listed
Kingfisher (KF)		<i>Alcedo atthis</i>	-	-	-	-	1	-	BIRDS DIR. W&CA Amber listed
Lapwing (L.)		<i>Vanellus vanellus</i>	-	-	-	68	57	10	NERCS41 Red listed
Lesser backed gull (LB)	black-	<i>Larus fuscus</i>	-	1	-	-	-	1	Amber listed
Linnet (LI)		<i>Linaria cannabina</i>	5	4	28	18	6	1	NERCS41 Red listed
Little egret (ET)		<i>Egretta garzetta</i>	1	10	1	1	-	-	BIRDS DIR. Green listed
Magpie (MG)		<i>Pica pica</i>	5	10	3	5	-	2	Green listed
Mallard (MA)		<i>Anas platyrhynchos</i>	-	-	-	17	5	7	Amber listed
Marsh (MR)	harrier	<i>Circus aeruginosus</i>	1	2	2	1	-	-	BIRDS DIR. W&CA Amber listed
Meadow (MP)	pipit	<i>Anthus pratensis</i>	15	5	10	1	-	14	Amber listed
Moorhen (MH)		<i>Gallinula chloropus</i>	-	-	1	6	1	1	Green listed
Oystercatcher (OC)		<i>Haematopus ostralegus</i>	-	200	70	200	12	10	Amber listed
Pied (PW)	wagtail	<i>Motacilla alba</i>	-	-	3	-	-	7	Green listed
Red-legged partridge (RL)		<i>Alectoris rufa</i>	-	3	-	-	1	-	None
Redshank (RK)		<i>Tringa totanus</i>	-	-	-	5	-	3	Amber listed
Reed (RB)	bunting	<i>Emberiza schoeniclus</i>	-	-	-	-	-	4	Amber listed
Robin (R.)		<i>Erithacus rubecula</i>	6	5	6	4	1	-	Green listed
Rook (RO)		<i>Corvus frugilegus</i>	7	-	-	40	-	-	Green listed
Shelduck (SU)		<i>Tadorna tadorna</i>	-	-	-	51	363	181	Amber listed
Short-eared owl (SE)		<i>Asio flammeus</i>	-	1	-	-	-	-	BIRDS DIR. Amber listed
Skylark (S.)		<i>Alauda arvensis</i>	24	-	3	1	5	4	NERCS41 Red listed

Species (BTO code)	Scientific name	Number of registrations						Conservation status
		28/10/19	12/11/19	11/12/19	23/01/20	24/02/20	09/03/20	
Snipe (SN)	<i>Gallinago gallinago</i>	-	-	-	-	-	1	Amber listed
Starling (SG)	<i>Sturnus vulgaris</i>	21	-	-	-	-	-	NERCS41 Red listed
Stonechat (SC)	<i>Saxicola rubicola</i>	6	3	2	-	4	2	Green listed
Teal (T.)	<i>Anas crecca</i>	-	-	-	10	-	-	Amber listed
Wigeon (WN)	<i>Mareca penelope</i>	-	-	-	-	-	27	Amber listed
Woodpigeon (WP)	<i>Columba palumbus</i>	5	9	7	29	95	21	Green listed
Wren (WR)	<i>Troglodytes troglodytes</i>	3	1	6	5	-	1	Green listed

# Appendix G AECOM 2020 Breeding Bird Survey Results

## Full Survey Data

Full results from the five breeding bird survey visits undertaken monthly between March 2020 and July 2020 inclusive are provided below. Survey maps are provided in Figures V4.2 to V4.8 within Volume 4 Ecology Report – Breeding Birds.

Species (BTO code)	Scientific name	Number of individuals					Conservation status
		30/05/20	30/04/20	21/05/20	19/06/20	03/07/20	
Red-legged partridge (RL)	<i>Alectoris rufa</i>	1	-	1	-	1	None
Pheasant (PH)	<i>Phasianus colchicus</i>	2	1	-	-	1	None
Dark-bellied brent goose (BG)	<i>Branta bernicla bernicla</i>	263	114	4	-	-	NERC S41 BoCC Amber
Canada goose (CG)	<i>Branta canadensis</i>	22	11	27	-	-	None
Greylag goose (GJ)	<i>Anser anser</i>	25	21	16	-	-	BoCC Amber
Mute swan (MS)	<i>Cygnus olor</i>	-	1	-	-	-	BoCC Amber
Shelduck (SU)	<i>Tadorna tadorna</i>	49	17	2	22	7	BoCC Amber
Gadwall (GD)	<i>Mareca strepera</i>	-	8	1	-	-	BoCC Amber
Wigeon (WN)	<i>Mareca penelope</i>	10	1	-	-	-	BoCC Amber
Mallard (MA)	<i>Anas platyrhynchos</i>	8	-	-	3	6	BoCC Amber
Swift (SI)	<i>Apus apus</i>	-	-	-	5	-	BoCC Amber
Cuckoo (CK)	<i>Cuculus canorus</i>	-	1	1	-	-	NERCS41 BoCC Red KRDB2
Feral pigeon (FP)	<i>Columba livia</i>	6	24	9	16	5	None
Stock dove (SD)	<i>Columba oenas</i>	-	-	1	-	-	BoCC Amber
Woodpigeon (WP)	<i>Columba palumbus</i>	47	28	54	44	22	BoCC Green
Moorhen (MH)	<i>Gallinula chloropus</i>	3	-	1	2	-	BoCC Green
Coot (CO)	<i>Fulica atra</i>	4	1	-	-	-	BoCC Green
Great crested grebe (GG)	<i>Podiceps cristatus</i>	-	4	2	-	-	BoCC Green
Oystercatcher (OC)	<i>Haematopus ostralegus</i>	8	34	103	12	13	BoCC Amber
Lapwing (L.)	<i>Vanellus vanellus</i>	3	12	4	-	-	NERCS41 BoCC Red KRDB2
Ringed plover (RP)	<i>Charadrius hiaticula</i>	2	-	-	-	-	BoCC Red
Curlew (CU)	<i>Numenius arquata</i>	12	5	-	4	1	NERCS41 BoCC Red
Snipe (SN)	<i>Gallinago gallinago</i>	4	-	-	-	-	BoCC Amber

Species (BTO code)	Scientific name	Number of individuals					Conservation status
		30/05/20	30/04/20	21/05/20	19/06/20	03/07/20	
							<b>KRDB1</b>
Redshank (RK)	<i>Tringa totanus</i>	11	2	-	-	-	BoCC Amber
Black-headed gull (BH)	<i>Chroicocephalus ridibundus</i>	159	190	134	181	55	BoCC Amber
Herring gull (HG)	<i>Larus argentatus</i>	72	53	6	19	29	NERCS41 BoCC Red KRDB2
Lesser black-backed gull (LB)	<i>Larus fuscus</i>	3	1	-	2	2	BoCC Amber
Cormorant (CA)	<i>Phalacrocorax carbo</i>	4	4	-	6	1	BoCC Green KRDB3
Grey heron (H.)	<i>Ardea cinerea</i>	2	-	-	1	1	BoCC Green KRDB3
Great egret (HW)	<i>Ardea alba</i>	-	-	1	-	-	BIRDS DIR.
Little egret (ET)	<i>Egretta garzetta</i>	-	1	1	2	-	BIRDS DIR. BoCC Green KRDB3
Marsh harrier (MR)	<i>Circus aeruginosus</i>	1	--	-	-	1	BIRDS DIR. W&CA BoCC Amber KRDB3
Buzzard (BZ)	<i>Buteo buteo</i>	3	-	-	-	-	BoCC Green
Green woodpecker (G.)	<i>Picus viridis</i>	-	-	-	1	-	BoCC Green
Kestrel (K.)	<i>Falco tinnunculus</i>	4	3	1	4	2	BoCC Amber
Peregrine (PE)	<i>Falco peregrinus</i>	1	-	1	-	1	BIRDS DIR. W&CA BoCC Green KRDB1
Magpie (MG)	<i>Pica pica</i>	10	1	2	1	4	BoCC Green
Jackdaw (JD)	<i>Corvus monedula</i>	49	15	22	3	3	BoCC Green
Rook (RO)	<i>Corvus frugilegus</i>	2	7	15	1	-	BoCC Green
Carrion crow (C.)	<i>Corvus corone</i>	8	12	6	7	4	BoCC Green
Blue tit (BT)	<i>Cyanistes caeruleus</i>	4	-	1	2	-	BoCC Green
Great tit (GT)	<i>Parus major</i>	3	-	1	3	3	BoCC Green
Skylark (S.)	<i>Alauda arvensis</i>	16	11	10	28	13	NERCS41 BoCC Red KRDB2
Swallow (SL)	<i>Hirundo rustica</i>	-	-	-	-	12	BoCC Green
House martin (HM)	<i>Delichon urbicum</i>	-	1	7	11	13	BoCC Amber
Cetti's warbler (CW)	<i>Cettia cetti</i>	6	2	3	3	-	W&CA

Species (BTO code)	Scientific name	Number of individuals					Conservation status
		30/05/20	30/04/20	21/05/20	19/06/20	03/07/20	
							BoCC Green KRDB3
Sedge warbler (SW)	<i>Acrocephalus schoenobaenus</i>	-	1	-	1	1	BoCC Green KRDB3
Reed warbler (RW)	<i>Acrocephalus scirpaceus</i>	-	-	3	4	2	BoCC Green KRDB3
Lesser whitethroat (LW)	<i>Sylvia curruca</i>	-	2	-	-	-	BoCC Green
Whitethroat (WH)	<i>Sylvia communis</i>	-	12	19	16	8	BoCC Green
Wren (WR)	<i>Troglodytes troglodytes</i>	10	3	6	4	2	BoCC Green
Starling (SG)	<i>Sturnus vulgaris</i>	-	-	30	-	300	NERCS41 BoCC Red KRDB2
Blackbird (B.)	<i>Turdus merula</i>	5	3	9	6	4	BoCC Green
Song thrush (ST)	<i>Turdus philomelos</i>	6	-	-	-	-	NERCS41 BoCC Red KRDB2
Robin (R.)	<i>Erithacus rubecula</i>	5	1	-	-	-	BoCC Green
Black redstart (BX)	<i>Phoenicurus ochruros</i>	1	-	-	-	-	W&CA BoCC Red KRDB1
Stonechat (SC)	<i>Saxicola rubicola</i>	-	2	-	-	-	BoCC Green KRDB1
House sparrow (HS)	<i>Passer domesticus</i>	2	-	-	-	-	NERCS41 BoCC Red KRDB2
Dunnock (D.)	<i>Prunella modularis</i>	6	1	-	-	1	NERCS41 BoCC Amber
Pied wagtail (PW)	<i>Motacilla alba</i>	7	5	7	1	4	BoCC Green
Meadow pipit (MP)	<i>Anthus pratensis</i>	9	1	1	-	-	BoCC Amber
Chaffinch (CH)	<i>Fringilla coelebs</i>	3	1	1	1	-	BoCC Green
Linnet (LI)	<i>Linaria cannabina</i>	45	32	38	52	36	NERCS41 BoCC Red KRDB2
Goldfinch (GO)	<i>Carduelis carduelis</i>	8	5	16	-	8	BoCC Green
Reed bunting (RB)	<i>Emberiza schoeniclus</i>	-	-	3	-	-	BoCC Amber

Breeding Summary Species	Breeding status (number of territories)		Description	Conservation status
	Site	Survey Area (including those within the Site)		
Red-legged partridge ( <i>Alectoris rufa</i> )	-	Confirmed (1-2)	One confirmed territory in vegetated stony ground ~70m west of the Site, and a possible territory in grassland within the former lagoons (at least 40m east of the Site).	<b>None</b>
Pheasant ( <i>Phasianus colchicus</i> )	Possible (1)	Possible (1)	One possible territory overlapping with the Site and extending into grassland within the former lagoons to the east of the Site.	<b>None</b>
Canada goose ( <i>Branta canadensis</i> )	-	Possible (?)	Possibly breeding within Hoo Marshes (~1.3km west of the Site).	<b>None</b>
Greylag goose ( <i>Anser anser</i> )	-	Confirmed (at least 1)	At least one territory in Hoo Marshes (~1.2km west of the Site). Regularly recorded foraging within Hoo Marshes (peak count: 25).	<b>BoCC Amber</b>
Shelduck ( <i>Tadorna tadorna</i> )	Possible (1)	Probable (1-2)	One possible territory in sparsely-vegetated stony ground overlapping with the Site. Also, one probable territory in vegetated stony ground ~200m west of the Site. Frequently recorded foraging in Hoo Marshes and intertidal habitat in the west and south of the Survey Area (peak count: 49).	<b>BoCC Amber</b>
Gadwall ( <i>Mareca strepera</i> )	-	Possible (1)	Possibly breeding within Hoo Marshes and a pond surrounded by dense vegetation immediately south of the main sub-station (at least 800m west of the Site). Recorded foraging and resting in Hoo Marshes (peak count:8).	<b>BoCC Amber</b> <b>KRDB3</b>
Mallard ( <i>Anas platyrhynchos</i> )	-	Confirmed (1-2)	One confirmed territory in the vicinity of the ditch immediately east of Hoo Marshes (~1km west of the Site). A possible second territory in Hoo Marshes (~1.2km west of the Site).	<b>BoCC Amber</b>
Cuckoo ( <i>Cuculus canorus</i> )	Possible (1)	Confirmed (1)	One confirmed territory including the Site and extending at least 1km east of the Site, with the male recorded singing on the eastern boundary of the Site. The Site and adjacent habitat contained territories of suitable host species (e.g. reed warbler).	<b>NERCS41</b> <b>BoCC Red</b> <b>KRDB2</b>
Woodpigeon ( <i>Columba palumbus</i> )	-	Probable (?)	Probably breeding in trees adjacent to the eastern boundary of the Site and wider grassland within the former lagoons in the east of the Survey Area. Present in relatively low numbers throughout the Survey Area (peak count: 54)	<b>BoCC Green</b>
Moorhen ( <i>Gallinula chloropus</i> )	-	Confirmed (1)	One confirmed territory in the ditch immediately east of Hoo Marshes (~1km west of the Site).	<b>BoCC Green</b>
Coot ( <i>Fulica atra</i> )	-	Possible (?)	Possible territories in Hoo Marshes (~1.3km west of the Site).	<b>BoCC Green</b>
Great crested grebe ( <i>Podiceps cristatus</i> )	-	Possible (1)	One possible territory in Hoo Marshes (~1.3km west of the Site).	<b>BoCC Green</b>

Breeding Summary Species	Breeding status (number of territories)		Description	Conservation status
	Site	Survey Area (including those within the Site)		
Oystercatcher ( <i>Haematopus ostralegus</i> )	-	Probable (1)	One probable territory in bare and sparsely-vegetated stony ground at least 150m west of the Site.  Also recorded foraging on intertidal mudflats and roosting around the jetty in the south of the Survey Area (peak count: 103).	BoCC Amber
Lapwing ( <i>Vanellus vanellus</i> )	-	Possible (2)	One possible territory in sparsely-vegetated stony ground ~160m west of the Site, and a second possible territory in Hoo Marshes (~1.3km west of the Site).  Recorded resting and foraging towards the centre of the Survey Area and within Hoo Marshes (peak count: 12).	NERCS41 BoCC Red KRDB2
Ringed plover ( <i>Charadrius hiaticula</i> )	-	Probable (1)	One probable territory in vegetated stony ground towards the north of the Survey Area (~220m west of the Site), based on a pair flushed from suitable nesting habitat on 30 <sup>th</sup> March 2020 but not recorded during any subsequent visits.	BoCC Red
Black-headed gull ( <i>Chroicocephalus ridibundus</i> )	-	Possible (?)	Possible territories in sparsely-vegetated stony ground west of the Survey Area, with low numbers (i.e. five or less) frequently recorded in these areas.  Frequently recorded flying over the Survey Area and resting and foraging within intertidal mudflats in the south of the Survey Area (peak count: 190).	BoCC Amber
Kestrel ( <i>Falco tinnunculus</i> )	-	Probable (1)	Lots of foraging activity observed within grassland and stony ground within the Survey Area including such habitat within the Site (peak count: 4, including a juvenile), indicating that this was a principal hunting ground within at least one kestrel territory, although little suitable nesting habitat was present within the Survey Area.	BoCC Amber
Magpie ( <i>Pica pica</i> )	-	Possible (?)	Possibly breeding within the former lagoons in the east of the Survey Area.	BoCC Green
Great tit ( <i>Parus major</i> )	-	Confirmed (1)	One confirmed territory in bramble scrub near Damhead Creek (~10m north-east of the Site).	BoCC Green
Skylark ( <i>Alauda arvensis</i> )	Confirmed (1)	Confirmed (12-16)	One confirmed territory within the Site, and various confirmed territories in grassland and vegetated stony ground throughout the Survey Area (particularly within the former lagoons in the east of the Survey Area).	NERCS41 BoCC Red KRDB2
House martin ( <i>Delichon urbicum</i> )	-	Confirmed (3-4)	Small nesting colony towards the northern end of the western aspect of the bridge crossing Damhead Creek (~100m north of the Site).  Frequently recorded foraging over the Site and Survey Area (peak count: 13).	BoCC Amber
Cetti's warbler ( <i>Cettia cetti</i> )	Confirmed (2)	Confirmed (3)	Two confirmed territories in bramble scrub and marginal vegetation overlapping with the Site; one in the north-west corner, one on the eastern boundary. Potentially nesting in bramble scrub within the Site.	W&CA BoCC Green KRDB3

Breeding Summary Species	Breeding status (number of territories)		Description	Conservation status
	Site	Survey Area (including those within the Site)		
			A third confirmed territory in the ditch immediately east of Hoo Marshes (~1km west of the Site).	
Sedge warbler ( <i>Acrocephalus arundinaceus</i> )	Probable (1)	Probable (1-2)	One probable territory overlapping with marginal vegetation within the Site, and a possible territory in bramble scrub and marginal vegetation ~300m south-west of the Site	BoCC Green
Reed warbler ( <i>Acrocephalus scirpaceus</i> )	Possible (1)	Confirmed (2-3)	One possible territory overlapping with marginal vegetation within the Site. One confirmed territory in the ditch immediately east of (within 5m of) the Site, and a second confirmed territory in the ditch immediately east of Hoo Marshes (~1km west of the Site).	BoCC Green KRDB3
Lesser whitethroat ( <i>Sylvia curruca</i> )	Possible (1)	Possible (2)	One possible territory in bramble scrub overlapping with the eastern boundary of the Site, with a second possible territory in bramble scrub ~300m south-west of the Site.	BoCC Green
Whitethroat ( <i>Sylvia communis</i> )	Confirmed (3-4)	Confirmed (12-17)	Three confirmed territories within or overlapping with dense bramble scrub in the Site, with an additional possible territory in the north of the Site. Various other confirmed territories in dense vegetation throughout the Survey Area.	BoCC Green
Wren ( <i>Troglodytes troglodytes</i> )	Possible (1)	Confirmed (6-9)	One possible territory in dense bramble scrub overlapping with the south of the Site, with various confirmed and possible territories in dense vegetation throughout the Survey Area.	BoCC Green
Blackbird ( <i>Turdus merula</i> )	Probable (1)	Confirmed (1-3)	One confirmed territory in conifers (~100m west of the Site). One probable territory in bramble scrub overlapping with the eastern boundary of the Site, and another probable territory in bramble scrub (~120m south-west of the Site).	BoCC Green
Robin ( <i>Erithacus rubecula</i> )	Possible (1)	Possible (2)	One possible territory in bramble scrub overlapping with the south-east corner of the Site, and a second possible territory in bramble scrub in the east of the Survey Area.	BoCC Green
Black redstart ( <i>Phoenicurus ochruros</i> )	-	Possible (1)	One possible territory at the jetty ~600m west of the Site (~25m south of the Onshore Cable Route), based on one male recorded singing on 30 <sup>th</sup> March but not recorded during any subsequent visits.	W&CA BoCC Red KRDB1
Dunnock ( <i>Prunella modularis</i> )	Possible (1)	Possible (2)	One possible territory overlapping with the north of the Site, and a second possible territory ~170m south-west of the Site.  Low levels of foraging and sheltering activity within the Site and wider Survey Area (peak count: 6).	NERCS41 BoCC Amber
Meadow pipit ( <i>Anthus pratensis</i> )	-	Possible (?)	Possibly breeding in grassland within the former lagoons in the east of the Survey Area in relatively low numbers (peak count: 9).	BoCC Amber
Chaffinch ( <i>Fringilla coelebs</i> )	-	Confirmed (1)	One confirmed territory in conifers approximately 120m west of the Site.	BoCC Green

Breeding Summary Species	Breeding status (number of territories)		Description	Conservation status
	Site	Survey Area (including those within the Site)		
Linnet ( <i>Linaria cannabina</i> )	Confirmed (2-3)	Confirmed (4-7)	<p>One confirmed territory in bramble scrub in the south-west corner of the Site, with a second confirmed territory overlapping bramble scrub in the north-east corner of the Site, and a probable territory overlapping with the south-east corner of the Site. Additional confirmed and probable territories in bramble scrub west and east of the Site boundary.</p> <p>Lots of foraging activity around the Site and wider Survey Area (peak count: 52).</p>	<p><b>NERCS41</b> <b>BoCC Red</b> <b>KRDB2</b></p>
Goldfinch ( <i>Carduelis carduelis</i> )	-	Possible (1)	One possible territory in bramble scrub ~10m north-east of the Site.	<b>BoCC Green</b>
Reed bunting ( <i>Emberiza schoeniclus</i> )	-	Possible (2)	One possible territory in the ditch immediately east of Hoo Marshes (~1km west of the Site), and a second possible territory at the eastern end of the Survey Area.	<b>BoCC Amber</b>