



ENVIRONMENTAL STATEMENT: 6.3 APPENDIX 7-2: PRELIMINARY ECOLOGICAL APPRAISAL

DECARBONISATION

Cory Decarbonisation Project

PINS Reference: EN010128

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Revision A

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1. EXECUTIVE SUMMARY

- 1.1.1. WSP UK Ltd has been commissioned by Cory Environmental Holdings Limited (Cory) (hereafter referred to as 'the Applicant') to undertake a Preliminary Ecological Appraisal (PEA), for the Cory Decarbonisation Project to be located at Norman Road, Belvedere in the London Borough of Bexley (LBB; National Grid Reference/NGR 549572, 180512).
- 1.1.2. Desk study was undertaken using designated site and species data from Greenspace Information for Greater London (GiGL) as well as publicly available data regarding statutory designated sites and Habitats of Principal Importance (HPI). The desk study identified one National Network site (Epping Forest Special Area of Conservation (SAC)) within 15km of the Site and six Sites of Special Scientific Interest (SSSI) within 10km of the Site. Three Local Nature Reserves (LNR) are within 2km of the Site, one of which is located within the Site boundary (Crossness LNR). The desk study identified 23 Sites of Importance for Nature Conservation (SINC), three of which are within the Site (River Thames and Tidal Tributaries SINC, Belvedere Dykes SINC and Erith Marshes SINC).
- 1.1.3. Field survey was undertaken, consisting of a UKHab survey, protected/notable species assessment and a ground-level Preliminary Bat Roost Assessment (PBRA). The UKHab survey identified fourteen habitat types, comprising: river, coastal floodplain and grazing marsh, sealed surface, modified grassland, reedbeds, other developed land, other neutral grassland, artificial unvegetated unsealed surface, buildings, eutrophic standing water, lowland mixed deciduous woodland, mixed scrub and intertidal mudflats. Five onsite habitats are HPI, and there are a further four HPI within 250m radius from the Site. Further botanical surveys and surveys of ditches and ponds will be undertaken to support the Proposed Scheme.
- 1.1.4. As Epping Forest SAC is located approximately 11.8km from the Proposed Scheme, a Habitat Regulations Assessment is required.
- 1.1.5. Suitable habitat is present for protected and notable species. Surveys including those for bats, birds, water vole, terrestrial invertebrates and reptiles will be undertaken to support the Proposed Scheme.

2. INTRODUCTION

- 2.1.1. WSP UK Ltd has been commissioned by Cory Environmental Holdings Limited (Cory) (hereafter referred to as 'the Applicant') to undertake a Preliminary Ecological Appraisal (PEA), for the Cory Decarbonisation Project to be located at Norman Road, Belvedere in the London Borough of Bexley (LBB; National Grid Reference/NGR 549572, 180512).
- 2.1.2. The land upon which the Proposed Scheme is to be located is referred to as the 'Site' and the edge of this land referred to as the 'Site Boundary'. The Site Boundary is presented on **Figure 7-1: Terrestrial Biodiversity Study Areas (Volume 2)**.
- 2.1.3. Ecological surveys have been undertaken at the Site and in its surroundings over a number of years to inform various developments, including Riverside 2 which involved extensive ecological survey. More recently UKHab, reptile and water vole surveys were undertaken in 2022 within the central part of the Site along the Norman Road^{1,2,3}, to inform the Riverside Heat Network (RHN) project being undertaken by Vattenfall. Two individuals of common lizard *Zootoca vivipara* were recorded during the RHN surveys adjacent to the Norman Road, and evidence of water vole *Arvicola amphibius* was recorded in ditches along the Norman Road. In addition, a water vole displacement licence was recently enacted by Cory to allow maintenance of ditches along Norman Road.

2.2. PURPOSE OF REPORT

- 2.2.1. The Cory Group commissioned WSP UK Ltd to complete a Preliminary Ecological Appraisal (PEA) of the Site. The brief was:
- To provide baseline ecological information about the Site and a surrounding study area with particular reference to whether legally protected and/or notable sites, species or habitats are present or likely to be present.
- 2.2.2. Data from the PEA and other ecological surveys that will be undertaken will inform the Environmental Impact Assessment (EIA) and subsequent Environmental Statement (ES) for the Proposed Scheme.
- 2.2.3. The PEA was prepared in April 2023.

2.3. RELEVANT LEGISLATION AND POLICY

- 2.3.1. The appraisal has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England. The context and applicability of each item is explained as appropriate in the relevant sections of the report.
- Conservation of Habitats and Species Regulations 2017 (Habitats Regulations);
 - Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;

- Wildlife and Countryside Act 1981 (as amended) (WCA);
- Natural Environment and Rural Communities (NERC) Act 2006;
- UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012);
- UK Biodiversity Action Plan (UKBAP);
- National Planning Policy Framework (NPPF) 2012 (DCLG, 2012);
- Technical Advice Note 5; Nature Conservation and Planning 2009;
- London Plan 2021; and
- Bexley Core Strategy (adopted in 2012).

3. METHODS

3.1. OVERVIEW

3.1.1. This appraisal has been prepared with reference to current good practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM)^{4,5} and Joint Nature Conservation Committee⁶; and guidance contained in the British Standard – Code of Practice for Biodiversity and Development BS42020:2013 (British Standards Institute (2013)).

3.1.2. This PEA is based on the following data sources:

- ecological desk study;
- habitat survey;
- protected/notable species assessment;
- ground-level Preliminary Bat Roost Assessment (PBRA); and
- consideration of evidence from past ecological surveys.

3.2. DESK STUDY

3.2.1. The desk study was undertaken in February 2023 to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. For the purpose of the desk study exercise, records were collated within various radii around the Site. This approach is consistent with current good practice guidance published by the CIEEM⁵. To provide the baseline data for the ecological desk study, the following information was requested from Greenspace Information for Greater London (GiGL):

- records of legally protected and notable species within 2km of the Site;
- bat records within a 2km radius of the Site; and
- records of non-statutory sites designated for nature conservation value within 2km of the Site.

3.2.2. Freely downloadable datasets available from Natural England were consulted for information regarding the presence of statutory designated habitats within 2km of the Site. This search was extended to 15km for Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) of European importance and internationally designated Ramsar sites.

- 3.2.3. Freely downloadable datasets available from Natural England were consulted for information regarding Habitats of Principal Importance (HPI)^a within 250m and woodland listed on the Ancient Woodland Inventory which includes large aggregations of Ancient/Veteran trees.
- 3.2.4. In addition, open source 1:25,000 Ordnance Survey mapping was used to identify any mapped water bodies and watercourses within 250m of the Site.
- 3.2.5. The findings of the desk study have been incorporated within **Section 4** of this report and are shown on **Figure 7-3: Nationally Important Statutory Designated Sites (Volume 2)**, **Figure 7-4: Locally Important Non-statutory Designated Sites (Volume 2)** and **Figure 7-5: Habitats of Principal Importance (Volume 2)**.

3.3. FIELD SURVEYS

- 3.3.1. A UKHab survey of the Site was carried out on the 5th January and 3rd February 2023 in dry, warm weather conditions. The survey on the 5th January covered the central fields, whilst the survey on 3rd February covered the rest of the Site including boundary features. The UKHab survey was undertaken by an associate and a qualifying member of the CIEEM, who have completed numerous habitat surveys previously.
- 3.3.2. Habitats were described and mapped following the standard UKHab survey methodology⁷. UKHab is a standard technique for classifying and mapping British habitats. The dominant plant species are recorded, and habitats are classified according to their vegetation types. Where appropriate, consideration was given to whether habitats qualify, or could qualify, as a Habitat of Principal Importance following habitat descriptions published by the UK Habitat Classification⁸.
- 3.3.3. Habitat condition assessment was undertaken following Biodiversity metric 3.1 (BM3.1) guidelines⁹. Data collected as part of this UKHab survey is suitable for use in retrospective biodiversity unit calculations, if required.

^a Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances, these are primarily based on aerial photograph analysis rather than field survey. The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600. The ancient woodland inventory in Scotland lists areas which are currently wooded and have been continuously wooded since at least 1750.

- 3.3.4. A list of plant species was compiled (**Annex A**), with relative plant species abundance estimated using the DAFOR scale^b. The Latin names for plant species follow those in the New Flora of the British Isles (Stace, 2010) and are also listed in **Annex A**.
- 3.3.5. Habitats were marked using a Geographical Information System (GIS). The smallest area to be mapped was 15m² which was selected as a suitable scale to sample the range of different habitats present.
- 3.3.6. Any invasive plant species listed on Schedule 9 of the WCA 1981 (as amended) which were evident during the UKHab survey were also target noted. Detailed mapping of such species; or a full survey of the Site for all invasive plant species is beyond the scope of this commission.
- 3.3.7. Any relevant photographs taken during the UKHab survey that highlight ecological features on the Site can be found in **Annex B**.

3.4. PROTECTED SPECIES ASSESSMENT

- 3.4.1. The potential for the Site to support legally protected and notable species was assessed using the desk study results and combined with field observations during the survey visits. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups: birds¹⁰, great crested newt^{11,12}; reptiles¹³; bats¹⁴; otter¹⁵; water vole¹⁶ and terrestrial invertebrates^{17,18}.

PRELIMINARY BAT ROOST ASSESSMENT (PBRA)

- 3.4.2. Ground-level PBRA was undertaken in July 2022 (of the buildings within the Site) and in February 2023 (of the trees within the Site) to determine if buildings and trees within the Site were suitable as bat roosting habitat.
- 3.4.3. The PBRA was undertaken following best practice guidance¹⁴ and involved a systematic visual inspection of the exterior of buildings, structures and trees. The visual inspection used binoculars to identify the presence of potential roost features, such as cracks, holes and crevices, suitable for bats and to determine the overall suitability of the structure for roosting bats. Where suitable features were noted, their location and a brief description of their character was recorded.
- 3.4.4. Following the PBRA, the suitability of structures to support roosting bats was categorised following the criteria outlined in **Table 3-1**.

^b The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover., The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.

Table 3-1: Bat Roost Suitability Classification, Based on Collins (2016)¹⁴

Category	Description
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity or hibernation).
Negligible	Negligible habitat features on Site likely to be used by roosting bats.

3.5. NOTES AND LIMITATIONS

3.5.1. Every effort has been made to provide a comprehensive description of the Site; however, the following notes and limitations apply to this assessment:

- Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.
- Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.

- The habitat surveys were not completed during the optimal survey season for botanical species identification, generally accepted to be from April-September (inclusive). Botanical surveys are seasonally limited, and throughout the year certain species will be more or less evident at different times (i.e. depending on the flowering season). However, it is considered that sufficient information was gathered for most of the areas to enable an assessment of the habitat types present, in line with standard UKHab categories and the potential for these to support protected or notable species.
- The southwestern part of the Crossness LNR, which falls within the red line boundary of the Site (**Figure 7-1: Terrestrial Biodiversity Study Areas (Volume 2)**) could only be assessed from a public footpath. Therefore, the condition of the pond and woodland habitats were not assessed and woodland type was assumed on a precautionary basis to be the same as suggested by the Natural England Priority Habitat Inventory (**Figure 7-5: Habitats of Principal Importance (Volume 2)**).
- Intertidal mudflat area adjacent to the River Thames at the northwestern side of the Site could not be accessed due to health and safety concerns (steep river wall, preventing access), hence the species composition and condition were assessed from the public footpath on the river wall. It is considered to be sufficient for the purposes of the habitat identification. Further assessment of the river and condition of its habitats will form part of the scope of surveys to inform the (ES.
- Habitat condition assessment of the river, ponds and ditches were not undertaken and will form part of the scope of surveys to inform the ES.
- The UKHab survey was carried out over the period of two days, as such only a selection of all species that occur within the Site will have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Site to support protected species or those of conservation concern was possible.
- The UKHab map (**Figure 7-6: Site UKHab Survey Map (Volume 2)**) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a PEA, the maps are not intended to provide exact locations of key habitats.
- The broadleaved woodland within the southern boundary of the Site could not be fully accessed to assess for potential bat roosting features, however this is not considered to be a significant limitation as this woodland is included within the Mitigation and Enhancement Area for the Proposed Scheme and will therefore be retained, resulting in no loss of potential roosting features within this woodland.

4. RESULTS

4.1. DESIGNATED SITES

STATUTORY SITES

- 4.1.1. The desk study identified one National Network site (SPA/SAC/Ramsar) within 15km of the Site. The Epping Forest SAC is located approximately 11.8km from the Site. Five SSSIs are found within 10km of the Site. The nearest of these is Inner Thames Marshes SSSI, which is within 1km of the Site. Three other statutory designated nature conservation sites (LNR) are within 2km of the Site and the Site falls within Crossness LNR. Descriptions of statutory designated sites are detailed in **Table 4-1** below, and their location is shown in **Figure 7-3: Nationally Important Statutory Designated Sites (Volume 2)**, **Figure 7-4: Locally Important Non-statutory Designated Sites (Volume 2)**.

Table 4-1: Statutory Designated Sites of National and Local Importance

Site Name	Size (ha)	Approximate Distance and Orientation from Site	Description
Epping Forest SAC	1630.74	11.8km northwest	Epping forest is London and Essex's largest green space and hosts over a million trees, many of which are veterans; including ancient stands of beech, oak and hornbeam. The long history of pollarding has led to significant amounts of dead wood, which has made the area rich in fungi, epiphytes – including the moss <i>Zygodon forsteri</i> , and rare insect species like the stag beetle (<i>Lucanus cervus</i>).
Inner Thames Marshes SSSI	479.3	1km east	The Inner Thames Marshes form the largest remaining expanse of wetland bordering the upper reaches of the Thames Estuary. The site comprises a major relic of low-lying grazing marsh with a variety of grassland communities dissected by a network of fresh to brackish water drains. The grasslands, particularly those on the

Site Name	Size (ha)	Approximate Distance and Orientation from Site	Description
			Wennington and Aveley Marshes, are also important for the large extent and abundance of divided sedge <i>Carex divisa</i> , saltmarsh rush <i>Juncus gerardii</i> and pink water-speedwell <i>Veronica catenata</i> .
Ingrebourne Marshes SSSI	74.8	2.3km northeast	The site is the largest area of freshwater marsh in Greater London. It is very diverse, with large areas of reed sweet-grass, common reed swamp, wet neutral grassland and tall fen. These habitats have a wide variety of invertebrates and breeding birds. Invertebrates include sixteen nationally scarce fly, beetle dragonfly and cricket species. There are two nationally rare Red Data Book species, the hoverfly <i>Anasimyia interpuncta</i> and the scarce emerald damselfly <i>Lestes dryas</i> . Sixty-one species of bird regularly breed on the site. Havering Council has raised the water level and reintroduced grazing to protect the wetland.
Oxleas Woodlands SSSI	72.7	5.9km southwest	Oxleas Wood is one of the few remaining areas of ancient deciduous forest in Eltham in the Royal Borough of Greenwich (with a small amount passing over the boundary into the London Borough of Bexley), in southeast London. Some parts date back over 8,000 years to the end of the last ice age. It is part of a larger continuous area of woodland and parkland on the south side of Shooter's Hill.

Site Name	Size (ha)	Approximate Distance and Orientation from Site	Description
West Thurrock Lagoon & Marshes SSSI	66.08	8km southeast	The site is important for wintering waders and wildfowl which feed on the mudflats. Migratory warblers breed on reed beds in the lagoon, and waterfowl roost on the shallow waters and grassy islands. Stone Ness saltings is a large area of salt marsh dominated by sea club-rush <i>Bolboschoenus maritimus</i> .
Ruxley Gravel Pits SSSI	18.7	9.8km south	Over 500 species of vascular plants and 169 of birds have been recorded. Fifty-three of the bird species are breeding. Insects include 23 species of butterfly, 9 dragonfly and over 500 beetles. This variety reflects the diversity of habitat: wooded islands, fringes of mature trees, scrub, fen and open water. Vegetation on the banks include the rare club rush <i>Schoenoplectus tabernaemontani</i> . The open water areas have rafts of yellow and white water-lily <i>Nuphar</i> spp.
Crossness LNR	25.5	Within the Site	A network of ditches and open water, scrub and rough grassland. The reserve is a water vole <i>Arvicola amphibius</i> stronghold, and over 130 different species of bird have been recorded at Crossness LNR. A number of rare aquatic and terrestrial invertebrates are present, as well as some important flora species.
Rainham Marshes LNR	79.19	1km east	The grasslands, fringing reedbeds and network of ditches here support a number of rare plants, insects and birds and are also home to a large population of water voles. Plants

Site Name	Size (ha)	Approximate Distance and Orientation from Site	Description
			including golden dock, scarce emerald damselfly, water voles and birds including lapwing, sedge and reed warbler have been recorded.
Lesnes Abbey Woods LNR	73.13	1.5km southwest	Ancient woodland and coppice with one of the most important populations of wild daffodils in the south east. Other habitats include parks and open spaces, heathland, wetlands and hedgerows. Stag beetles, song thrush, bats and newts as well as a wide range of other woodland and parkland birds, animals and insects have been recorded. A recent comprehensive study of the site has found 906 species of invertebrate, 46 birds including red data book redwing and fieldfare, 59 species of fungi, 292 species of plants and 12 species of mammal.

NON-STATUTORY SITES

- 4.1.2. The desk study identified 23 non-statutory nature conservation sites within 2km of the Site. The Site is situated within Belvedere Dykes SINC, Erith Marshes SINC and River Thames and tidal tributaries SINC. A description of these sites is detailed in **Table 4-2** below.

Table 4-2: Non-Statutory Designated Sites

Site Name	Size (ha)	Distance and Orientation from Site	Description
River Thames and tidal tributaries SINC	2314.47	Within the Site	The River Thames and the tidal sections of creeks and rivers which flow into it comprise mudflats, shingle beach,

Site Name	Size (ha)	Distance and Orientation from Site	Description
			intertidal vegetation, islands and river channel
Erith Marshes SINC	90.7	Within the Site	One of the few remaining examples of the Thames-side grazing marshes, important for its breeding and wintering avifauna and rare plants. The ditches also support an important population of water vole, as well as the fish rudd <i>Scardinius erythrophthalmus</i> and tench <i>Tinca tinca</i> . A variety of Red Data Book and notable invertebrates are also found on site.
Belvedere Dykes SINC	10.02	Within the Site	The drainage dykes comprising reedbed, wet woodland and grassland habitats.
Dagenham Breach and the lower Beam River in Dagenham SINC	18.04	500m	Dagenham Breach is a lake created by storm flooding from the River Thames in the early 18th century, comprising wetland habitats.
Lower River Beam and Ford Works Ditches SINC	14.03	500m	This site is dominated by the lower River Beam and intervening area of Thames side grassland and tree planting.
Southmere Park & YarntonWay/Viridion Way SINC	39.35	700m southwest	Southmere is a large lake with artificial sides mainly used for recreation.
Crossness Sewage Treatment Works Pond SINC	2.74	900m west	This large pond, within the grounds of Crossness Sewage Works, contains good populations of common waterfowl.

Site Name	Size (ha)	Distance and Orientation from Site	Description
Franks Park Belvedere SINC	17.84	1km south	Site contains mature broadleaved woodland and acid grassland.
Wennington, Aveley and Rainham Marshes SINC	413.98	1km east	The largest remaining expanse of wetland bordering the upper reaches of the Thames Estuary.
Lesnes Abbey Woods and Bostall Woods SINC	159.41	1.2km southwest	A large complex of ancient and secondary woodland, with adjacent areas of heathland and acid grassland.
Thamesmead Golf Course SINC	14.94	1.2km west	The golf course is an area of mostly heavily mown semi-improved acid to neutral grassland, with areas of planted woodland and small ponds with reedbeds.
Riverside Sewage Treatment Works SINC	9.86	1.2km northeast	An area of secondary woodland and scrub on the western margin of the sewage works.
Mudlands SINC	5.91	1.5km north	This area comprises grassland, reedbed and scrub.
St John the Baptist Churchyard, Erith SINC	1.23	1.5km southeast	This small churchyard contains species rich grassland.
Crossway Park and Tump 52 SINC	16.18	1.5km west	Crossway Park comprises planted woodland and scrub, interspersed with rough grassland. A series of wetland habitats are linked by canals.
The Ridgeway SINC	5.3	1.5km west	The Ridgeway is a linear footpath on the bank of the Southern Outfall Sewer. It is vegetated with a mosaic of rough grassland, bramble, scrub and woodland.

Site Name	Size (ha)	Distance and Orientation from Site	Description
Crossways Lake Nature Reserve and Thameside Walk Scrub SINC	5.1	1.6km west	Crossways Lake is a small, reed-fringed lake with a wooded island, at the north end of the Thamesmead canal system.
Hollyhill Open Land SINC	4.95	1.8km south	Formerly heathland, this site is now mainly a mix of acid grassland, amenity grassland and scrubby parkland.
Rainham Railsides SINC	8.23	1.8km north	Haverling's rail sides form a network of valuable undisturbed habitats, acting as corridors to facilitate the movement of wildlife around the borough.
Goresbrook and the Ship & Shovel Sewer SINC	11.26	2km northwest from the Site	Lines of trees, brook, semi-improved neutral grassland and reedbeds.
Streamway, Chapman's Land and Erith Cemetery SINC	13.75	2km south from the Site	This site contains a small stream with margins of woodland, semi-improved neutral and acid grasslands.
Erith Quarry and Fraser Road SINC	23.01	2.4km southeast from the Site	Site contains mature broadleaved woodland and rough grassland.
Ingrebourne Valley SINC	262.56	2.5km northeast from the Site	Extensive and nationally important suite of naturally-formed reedbeds, lakes, wet grasslands and small areas of willow (<i>Salix</i> spp.) carr.

OTHER HABITATS OF CONSERVATION IMPORTANCE

- 4.1.3. Five habitats listed as HPI to Nature Conservation under the NERC Act were identified within 250m of the Site. These habitats comprise coastal and floodplain grazing marsh, coastal saltmarsh, deciduous woodland and intertidal mudflats. No ancient woodland is present within 250m of the Site. Details of the habitats are given in **Table 4-3** below and their location are shown in **Figure 7-5: Habitats of Principal Importance (Volume 2)**.

Table 4-3: Habitats of Principal Importance within 250m of the Site

Habitat Type	Area (ha)
Coastal and floodplain grazing marsh	36.45
Coastal saltmarsh	0.56
Deciduous woodland	2.84
Intertidal mudflats	5.32
Good quality semi-improved grassland	2.66

4.2. HABITAT SURVEY

OVERVIEW

- 4.2.1. The following account summarises the findings of the UKHab habitat survey. Fifteen UKHab habitat types were identified in the Site. They are mapped on **Figure 7-6: Site UKHab Survey Map (Volume 2)** and are listed in **Table 4-4** along with areas in hectares (or length for linear features). A description of the dominant and notable species, the composition and management of each habitat is provided below, and an indicative species list is provided in **Annex A**. The photographs are provided in **Annex B**. Alpha-numeric codes used in this section cross-refer to the UKHab survey classification⁷.

Table 4-4: UKHab Habitat Areas

UKHab Habitat	Area (ha)	Length (m)	% of Site Area
g3c – other neutral grassland	2.79	N/A	4.6
g3c(19) – coastal floodplain and grazing marsh	6.52	N/A	10.7
g4 – modified grassland	3.83	N/A	6.3
w1f – lowland mixed deciduous woodland	1.00	N/A	1.6
h3d – bramble scrub	2.22	N/A	3.7

UKHab Habitat	Area (ha)	Length (m)	% of Site Area
f2e – reedbeds	1.43	N/A	2.4
u1a – open mosaic habitat on previously developed land	0.98	N/A	1.6
u1b – developed land; sealed surface	7.8	N/A	12.8
u1b5 – buildings	2.59	N/A	4.3
u1c – artificial unvegetated unsealed surface	0.12	N/A	0.2
u1d – suburban mosaic of developed/natural surface	0.01	N/A	<0.1
r1a – eutrophic standing water (ditches)	N/A	2777	N/A
r1a – eutrophic standing water (ponds)	0.46	N/A	0.8
r – river; River Thames	25.01	N/A	41.2
t2d – intertidal mudflats	6.00	N/A	9.9
TOTAL	60.76	2777	90.2 (excludes eutrophic standing water (ditches))

G3C – OTHER NEUTRAL GRASSLAND

- 4.2.2. Other neutral grassland is present within the central part of the Site. It is regularly mown and was not inundated during both survey visits. It is dominated by perennial rye-grass, common bent, false oat grass *Arrhenaterum elatius* and creeping bent *Agrostis stolonifera*, with dominant forb species comprising goat’s-rue *Galega officinalis*, crane’s-bill *Geranium* sp. and nipplewort *Lapsana communis*.

G3(19) – COASTAL FLOODPLAIN AND GRAZING MARSH

- 4.2.3. Coastal floodplain and grazing marsh HPI is present in the central and southern parts of the Site. This habitat was inundated and grazed by horses during both habitat survey visits. Ditches surrounding the areas of coastal floodplain and grazing marsh regulate water levels.
- 4.2.4. Coastal floodplain and grazing marsh was dominated by the typical neutral grassland species, such as common bent *Agrostis capillaris*, perennial rye-grass *Lolium*

perenne and cock's-foot *Dactylis glomerata*, with an average of less than nine species present per square metre during the time of the survey on 3rd February 2023.

- 4.2.5. It should be noted that areas shown in online data sources as good quality semi-improved grassland HPI were identified as coastal and floodplain grazing marsh HPI during field survey.

G4 – MODIFIED GRASSLAND

- 4.2.6. Modified grassland is present on the northern part of the Site, which is more industrialised and has higher levels of human activity than the southern part. It is present along the roads, footpaths and car parks. Modified grassland was dominated by common bent, cock's-foot and white clover *Trifolium repens*.

W1F – LOWLAND MIXED DECIDUOUS WOODLAND

- 4.2.7. Woodland situated on the southern boundary was assumed to be lowland mixed deciduous woodland HPI, as it could not be fully accessed during field surveys and is mapped as such in the Natural England priority habitat inventory (**Figure 7-5: Habitats of Principal Importance (Volume 2)**).

H3D - BRAMBLE SCRUB

- 4.2.8. Scrub is present in patches along the river wall and in the central part of the Site. It was dominated by bramble *Rubus fruticosus* agg., with teasel and spear thistle *Cirsium vulgare* and also patches of butterfly bush *Buddleia davidii*.

F2E - REEDBEDS

- 4.2.9. Reedbeds are present along most of the ditches on Site. Reedbeds were dominated by common reed *Phragmites australis*, with some occurrences of teasel *Dipsacus pilosus* and bullrush *Typha latifolia*.

U1A - OPEN MOSAIC HABITAT ON PREVIOUSLY DEVELOPED LAND

- 4.2.10. The Gannon land parcel to the south of the Site and adjacent to Norman Road was identified as open mosaic habitat on previously developed land during the survey on the 5th January 2023, but has since been developed into parking and laydown for the Riverside 2 project. During the survey on 3rd February 2023, these areas comprised gravel and were actively used by heavy machinery.
- 4.2.11. Prior to clearance, the habitat consisted of 70% grass species, 20% moss species and 10% bare ground, with waste rubble present. Within the outer edges of the parcel, it appeared that bramble and common reed was once present and has now been cut to ground level. The majority was grassland, including species such as cock's foot (A), Yorkshire fog (F), perennial rye grass (F) and herbaceous plant species such as cow parsley (F), bristly ox-tounge (F), mouse ear hawkweed (F), cleavers (F), dandelion (F), bush vetch (O), common ragwort (R) and teasle (R).

Within the centre of the parcel was bare ground and moss species with tufts of red fescue *Festuca rubra* (O) and creeping bent grass *Agrostis stolonifera* (F). The parcel also contained patches of sandy soil with cut stands of butterfly bush (R).

- 4.2.12. It is understood that open mosaic habitat in this land parcel would be restored by the Riverside 2 project post-construction.

U1B - DEVELOPED LAND; SEALED SURFACE

- 4.2.13. Hardstanding is present in the form of the roads, storage area, pavements and car parks. This habitat type does not have any intrinsic ecological value.

U1B5 - BUILDINGS

- 4.2.14. Buildings on Site are industrial and are mostly made of concrete, metal and plastic. Middleton Jetty and Belvedere Power Station Jetty (disused) are present in the River Thames, one of which is actively used and another is derelict.

U1C - ARTIFICIAL UNVEGETATED UNSEALED SURFACE

- 4.2.15. This habitat comprises areas of bare ground, mainly in the southern part of the Site, comprising verges and access tracks that are actively disturbed by workers and vehicles. This habitat has no intrinsic ecological value.

U1D - SUBURBAN MOSAIC OF DEVELOPED/NATURAL SURFACE

- 4.2.16. Comprising a mixture of concrete surface with scattered ornamental planting alongside the Belvedere Dykes water course at the Eastern Way/Norman Road intersection. This habitat has no intrinsic ecological value.

R1A - EUTROPHIC STANDING WATER (DITCHES AND CORY POND 6

- 4.2.17. This habitat type comprises ditches that are situated along the margins of fields across the Site, and along roadside. One large pond, Cory Pond 6, is located at the southwestern side of the Site. Although there is evidence other ponds may have been present, they were dry and vegetated at the time of survey. Litter was recorded in some ditches, especially those along Norman Road and adjacent to operational facilities and roads.
- 4.2.18. Ditches are not HPI, however the ponds might be, and further aquatic surveys are required to determine its status.

R – RIVER THAMES

- 4.2.19. The Site is situated on the southern bank of the River Thames. Riverside 1 uses river-based infrastructure to receive waste and send out ash. This section of the River Thames is approximately 620m wide and is heavily industrialised, with concrete reinforcements present on both banks, forming steep river walls. A Public Footpath (FP3) is situated along the southern river wall. Litter was recorded.

T2D - INTERTIDAL MUDFLATS

- 4.2.20. A small patch of intertidal mudflats HPI is present on the northwestern side of the Site, adjacent to the river wall. Intertidal mudflat comprised common reed. Other species could not be seen from the river wall.

4.3. PROTECTED AND NOTABLE SPECIES ASSESSMENT

- 4.3.1. The potential for the Site to support legally protected and notable species has been assessed using the results of the desk study and observations made during the site survey. Desk study records have only been considered below if they are recent (from the last 10 years) and/or if they relate to species that may be supported by habitats at the Site. Further consideration is given below to the likelihood for these species to be present within the Site:

- bats;
- water vole;
- otter;
- birds;
- reptiles;
- amphibians;
- terrestrial invertebrates; and
- invasive non-native species.

- 4.3.2. The Site does not provide suitable habitat for other protected or notable species and other species, beyond those listed above, will not be considered further in this PEA.

BATS

- 4.3.3. Records of eight bat species within 2km of the Site were returned by the desk study, comprising common pipistrelle *Pipistrellus pipistrellus*; soprano pipistrelle *Pipistrellus pygmaeus*; Nathusius's pipistrelle *Pipistrellus nathusii*; brown long-eared bat *Plecotus auritus*; Natterer's bat *Myotis nattereri*; noctule *Nyctalus noctula*; Daubenton's bat *Myotis daubentonii*; and serotine *Eptesicus serotinus*. The closest record was of noctule within 250m from the Site in May 2014. The most recent record was of Daubenton's bat in October 2018 1,557m from the Site.
- 4.3.4. PBRA of all buildings, including multiple temporary cabin structures concluded that all buildings on Site have negligible bat roost potential due to the absence of roosting features. Neither of the jetties had roost suitability, being metal and concrete structures open to the weather and splashed by the water below, with the active Middleton Jetty being heavily disturbed. Gulls were also a constant presence around both jetties which would pose a threat to bats and strongly dissuade them from roosting in these structures.

- 4.3.5. Field survey visits in 2023 identified no semi-mature or mature trees on Site. However, further assessment of the woodland on the southern boundary of the Site (shown on **Figure 7-6: Site UKHab Survey Map (Volume 2)**) would be needed to determine this woodland's suitability for roosting bats.
- 4.3.6. Bat foraging habitat includes broadleaved woodland, coastal and floodplain grazing marsh and grassland, as well as linear features, such as river and ditches, which provide connectivity to the wider green area. The Site is considered to be of "High" suitability for foraging and commuting¹⁴.
- 4.3.7. Recommendations for avoidance of impacts and further survey that will be undertaken to inform the ES are specified in **Sections 5.5**.

WATER VOLE

- 4.3.8. 278 records of water vole were returned by the desk study. Ecological surveys undertaken to support the Riverside 2 development also show water voles are present in the ditches within the Site, and water voles are a designated feature of Crossness LNR. In addition, recent surveys undertaken within the central part of the Site in 2022, as part of the RHN project, recorded multiple evidences of water vole in the ditches throughout the Site. Cory has also held a water vole displacement licence to permit ditch maintenance works along Norman Road in 2022.
- 4.3.9. Recommendations for avoidance of impacts and further survey that will be undertaken to inform the ES are specified in **Sections 5.5**.

OTTER

- 4.3.10. No recent records of otter were returned by the desk study. The majority of the Site does not provide suitable habitat for otter holts, despite the close proximity of the River Thames which has been known to support otter. The small area of woodland and scrub in the south of the Site may be suitable for supporting otter but to date access has not been possible. Given the history of recent developments within and surrounding the Site (including Riverside 2), ecological surveys (i.e., Riverside 2) and the lack of evidence of the presence of this species, it is reasonable to conclude otter are absent from the Site.

BIRDS

- 4.3.11. 33,436 records were returned covering 59 species of bird; 19 species were WCA Schedule 1 species and 30 were Birds of Conservation Concern (BoCC) Red Listed. The most recent record was of lesser redpoll *Acanthis cabaret*, which was recorded in November 2021. Crossness Water Treatment Works and Crossness LNR are known for their importance to wintering and breeding birds. Also wintering and breeding bird communities have been studied as part of impact assessment work associated with the Riverside 2 development.

- 4.3.12. The River Thames, coastal floodplain and grazing marsh, reedbeds, lowland mixed deciduous woodland, mixed scrub and intertidal mudflats provide suitable habitat for foraging, wintering and breeding birds.
- 4.3.13. Recommendations for avoidance of impacts and further survey that will be undertaken to inform the ES are specified in **Sections 5.5**.

REPTILES

- 4.3.14. Three records of reptiles were returned by the desk study within 2km of the Site, comprising slow worm *Anguis fragilis*, grass snake *Natrix helvetica* and common lizard from 2017 and 2018.
- 4.3.15. Lowland mixed deciduous woodland, coastal floodplain and grazing marsh, semi-improved grassland and mixed scrub habitats have the potential to support common species of reptiles.
- 4.3.16. Reptiles were identified by surveys undertaken as part of the Riverside 2 EIA and were also undertaken within the central part of the Site in 2022 as part of surveys supporting the RHN project, recording two individual common lizards.
- 4.3.17. Recommendations for avoidance of impacts and further survey that will be undertaken to inform the ES are specified in **Sections 5.5**.

AMPHIBIANS

- 4.3.18. Two recent records of common frog *Rana temporaria*, and no other amphibian records, including those for great crested newt *Triturus cristatus*, were returned by the desk study within 2km of the Site. The ponds on the southern side of the Site (shown on Error! Reference source not found.), ditches and the adjacent grassland and woodland habitats would be suitable to support great crested newt. However, the warden of Crossness LNR has confirmed that this species is not present in the Crossness LNR, both in 2018 as part of Riverside 2 (great crested newt were scoped out of the Riverside 2 EIA) and in 2023 to inform this PEA. It is therefore reasonable to conclude great crested newt are therefore absent from the Site.

TERRESTRIAL INVERTEBRATES

- 4.3.19. 23 notable terrestrial invertebrate species records were returned within 2km of the Site by the desk study, including 17 species listed as Species of Principal Importance (SPI) under Section 41 of the NERC Act 2006, 17 London priority species, and two species listed under Annex II of the Habitats Regulations (the Jersey Tiger *Euplagia quadripunctaria* and Stag beetle *Lucanus cervus*). These designations indicate the importance of these species. 22 of these notable species were recorded in close proximity to the Site (within 250m of the Site), including ten species within 20m of the Site, five of which were SPI- wall brown *Lasiommata megera*, brown-banded carder bee *Bombus humilis*, cinnabar *Tyria jacobaeae*, shrill carder bee *Bombus sylvarum* and small heath *Coenonympha pamphilus*.
- 4.3.20. The Site falls within the Thames Estuary Important Invertebrate Area (IIA) and The Greater Thames Marshes Nature Improvement Area¹⁹, and the local wildlife group, Bexley Wildlife, undertake regular invertebrate surveys within Crossness LNR²⁰.
- 4.3.21. Coastal floodplain and grazing marsh, lowland mixed deciduous woodland, reedbeds and pond habitats within the Site may provide suitable habitat for a range of notable invertebrate species.
- 4.3.22. Recommendations for avoidance of impacts and further survey that will be undertaken to inform the ES are specified in **Sections 5.5**.

NON-NATIVE INVASIVE PLANT SPECIES

- 4.3.23. Desk study returned one non-native invasive fauna and 20 flora species within 2km of the Site, listed on Schedule 9 of the Wildlife and Countryside Act or the London Invasive Species List (LISI), and comprising ring-necked parakeet *Psittacula krameri*, water fern *Azolla filiculoides*, tree of heaven *Ailanthus altissima*, butterfly bush, New Zealand pigmyweed *Crassula helmsii*, Japanese knotweed *Fallopia japonica*, goat's-rue, giant hogweed *Heracleum mantegazzianum*, floating pennywort *Hydrocotyle ranunculoides*, Himalayan balsam *Impatiens glandulifera*, least duckweed *Lemna minuta*, foxglove tree *Paulownia tomentosa*, Turkey oak *Quercus cerris*, evergreen oak *Quercus ilex* and false acacia *Robinia pseudoacacia*.
- 4.3.24. Two of the above species were observed during the survey visits: goat's-rue in other neutral grassland and butterfly bush in the mixed scrub habitat (LISI species). Goat's-rue is Category 4 LISI species and butterfly bush is Category 3 LISI species. These species could represent a constraint to the Proposed Scheme and are further discussed in **Section 5.5** of this appendix.

5. DISCUSSION AND RECOMMENDATIONS

5.1. STATUTORY DESIGNATED SITES

- 5.1.1. The local council aims to meet both the national and local planning policy which affords protection for statutory designated sites. The London Borough of Bexley Local Plan (2023) Policy SP9 'Protecting and enhancing biodiversity and geological assets' states that *"The Council will protect and enhance its borough's biodiversity and geological assets, in line with national and regional policy by:*
- *ensuring development in Bexley does not adversely affect the integrity of any European site of nature conservation importance; and*
 - *protecting, conserving, restoring, and enhancing ecological networks, ..., Local Nature Reserves, Strategic Green Wildlife Corridors and local wildlife corridors, thus securing measurable net gains for biodiversity, recognising and promoting those sites where ecological value has increased to a higher grade of nature conservation importance."*
- 5.1.2. Policy DP20 'Biodiversity and geodiversity in developments' also states that *"Development proposals that would have a direct or indirect impact on a site designated for its nature conservation or geological interest should protect and enhance the designated site's value, and will not be permitted unless all of the following criteria are met:*
- *there are no reasonable, less damaging, alternative solutions, locations or sites;*
 - *ecological buffer zones have been incorporated into the scheme, where appropriate, to protect and enhance the designated site's intrinsic value;*
 - *the continuity of wildlife habitat within wildlife corridors is maintained; and,*
 - *access to the designated site is not compromised and where possible, access and/or interpretation is improved"*.
- 5.1.3. The Habitats Regulations provide strict protection to sites of European and/or international importance. This includes requiring projects or plans to be screened for likely significant effects upon SPA, SAC and candidate SAC (cSAC). Guidance also requires potential SPAs (pSPAs) and Ramsars are subject to the same assessment. As Epping Forest SAC is located approximately 11.8km a Habitat Regulations Assessment is required.
- 5.1.4. SSSI are subject to strict protection under the Wildlife and Countryside Act 1981 (as amended). This requires landowners to maintain these sites in favourable condition and works within these sites are managed by the appropriate national statutory body via the consent process. Certain operations within SSSIs require consent; these are specific to each SSSI.

- 5.1.5. The Proposed Scheme is situated within 1km from Inner Thames Marshes SSSI identified in the desk study. Due to these SSSIs being over 1km away from the Proposed Scheme, there will be no direct impacts through the loss of habitat and killing or injury of protected species. Due to numerous physical barriers in the intervening landscape, e.g. the River Thames, busy roads, areas of industrial development, indirect impacts, such as noise, vibration, changes in air quality (during the construction phase) or lighting would be intercepted by the intervening environment. The ES will consider depositional impacts from aerial emissions to these sites arising during the operational phase as a result of the introduction of the Carbon Capture Facility to the Riverside Campus.
- 5.1.6. LNR are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949 by principal local authorities. The level and type of protection afforded an LNR is decided locally, usually via the Local Plan.
- 5.1.7. A section of Crossness LNR is situated within the Site Boundary – the majority for the purposes of enhancement, but some within the Carbon Capture Facility. In the absence of mitigation there would be a risk of adverse effects on Crossness LNR from habitat loss, earthworks, pollution (e.g. sediment and chemical run-off), dust, noise, and lighting. Where direct loss cannot be avoided, the Proposed Scheme should be designed in the way that any impacts to Crossness LNR are avoided or minimised. If avoidance is not possible, a mitigation strategy would be required to address how the loss of habitats will be compensated for.
- 5.1.8. Rainham Marshes LNR and Lesnes Abbey Woods LNR are located >1km away from the Site, therefore there will be no direct impacts from the Proposed Scheme. Numerous physical barriers in the intervening landscape are present, e.g. the River Thames, busy roads, areas of industrial development, hence indirect impacts would be intercepted by the intervening environment. The ES has considered depositional impacts from aerial emissions to these sites arising during the operational phase as a result of the introduction of the Carbon Capture Facility to the Riverside Campus.

5.2. NON-STATUTORY DESIGNATED SITES

- 5.2.1. The local council aims to meet both the national and local planning policy which affords protection for non-statutory designated sites. The London Borough of Bexley Local Plan (2023) Policy SP9 states that “*The Council will protect its boroughs biodiversity and geological assets, in line with national and regional policy by... protecting, conserving, restoring and enhancing... Sites of Importance for Nature Conservation (SINC).*”
- 5.2.2. Belvedere Dykes SINC and Erith Marshes SINC overlap most of the Site - the majority for the purposes of enhancement, but some within the Carbon Capture Facility or Proposed Jetty (in the case of the Thames). In the absence of mitigation there would be a risk of adverse effects on Belvedere Dykes SINC and Erith Marshes SINC from habitat clearance, earthworks, pollution (e.g., sediment and chemical run-

off), dust, noise, and lighting. Where direct loss cannot be avoided, the Proposed Scheme should be designed in the way that effects on the SINC are avoided or minimised. If avoidance is not possible, a mitigation strategy would be required to address how the loss of habitats will be compensated for.

- 5.2.3. River Thames and tidal tributaries SINC could also be affected by the construction of the Proposed Scheme.

5.3. HABITATS

- 5.3.1. The local council aims to meet both the national and local planning policy which affords protection for habitats. The London Borough of Bexley Local Plan (2023) Policy SP9 states that *“The Council will protect and enhance its borough’s biodiversity and geological assets, in line with national and regional policy by... resisting development that will have a significant adverse impact on the population or conservation status of protected or priority species as identified by legislation or in biodiversity action plans prepared at national, regional or local level; ... protecting and enhancing the natural environment, seeking biodiversity enhancements, net gains for biodiversity and improved access to nature, particularly in areas of deficiency...”*
- 5.3.2. The ecological importance of habitats present has been assessed with consideration to designations such as listing as HPis, and their potential to support protected or notable species. In particular, the NERC Act requires public bodies (including planning authorities) to *“in exercising its functions, have regard so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”* - to conserve and enhance biodiversity. However, detailed botanical surveys as well as surveys of ditch and pond habitats will be undertaken to support the ES.
- 5.3.3. Design proposals should seek to avoid or minimise effects on coastal and floodplain grazing marsh, reedbed, intertidal mudflats and lowland mixed deciduous woodland which are classified as HPis due to their intrinsic importance. Where this is not possible mitigation and compensation measures should be put in place to offset potential losses. Open mosaic habitat is recognised as an HPI, but has been removed by Riverside 2, with proposals to restore it following construction.
- 5.3.4. It is recommended to undertake a Biodiversity Net Gain assessment prior to applying for consent. This would enable assessment of the value of habitats on Site and determine recommendations for compensation and enhancement. Assessment should be undertaken as early as possible as the assessment informs design. Assessment should be led by an ecologist of “capable” or higher level in ‘Environmental Assessment’ as per the CIEEM competency framework (CIEEM, 2019b). It should be noted that within the context of Biodiversity Net Gain, HPI loss is considered significant and would require bespoke compensation for the Proposed Scheme to achieve a net gain for biodiversity.

5.4. PROTECTED AND NOTABLE SPECIES

- 5.4.1. The results of the protected and notable species assessment highlighted the potential presence of several protected species or species of conservation concern within the Site. These include bats, birds, water vole and reptiles. The legal protection afforded to these species is outlined below and, where appropriate, the requirement for further survey and/or mitigation measures is identified.
- 5.4.2. The assessment has determined that great crested newt and otter are absent from the Site despite suitable habitat being present. In addition, Site habitats are not suitable for badgers due to the high water table (preventing sett building) and its fragmented, industrialised nature, a conclusion supported by the fact badgers were not included within the scope of the Riverside 2 EIA²¹.

BATS

General

- 5.4.3. All species of bats recorded within the UK are protected from killing, injury and disturbance^c and their roosts protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 5.4.4. Certain species of bats, including the Bechstein's bat, greater and lesser horseshoe bats, noctule bat, brown long eared bat and soprano pipistrelle bat are also listed as Species of Principal Importance (SPI) for the conservation of biodiversity in England in accordance with Section 41 of the NERC 2006. Section 40 obliges public bodies (including local planning authorities) to have regard for the conservation of biodiversity (including SPI) when discharging their duties (including determining planning applications).

^c Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

Roosting Bats

- 5.4.5. The buildings within the Site had negligible suitability for roosting bats. Field surveys identified no semi-mature or mature trees. However, the woodland at the southern boundary of the Site could not be accessed (shown on **Figure 7-6: Site UKHab Survey Map (Volume 2)**) and could contain suitable roosting trees. Further PBRA surveys in the woodland will be undertaken as part of surveys to inform the ES. Should the PBRA of woodland identify trees suitable to support roosting bats, tree climbing, or emergence/re-entry surveys may be required between May and September if they need to be removed.

Foraging / Commuting Bats

- 5.4.6. Woodland, coastal and floodplain grazing marsh, ditches, scrub and grassland within the Site and in the wider area provide suitable commuting and foraging opportunities for bats. Clearance of these habitats could have an adverse effect on foraging/commuting bats, and thus bat activity surveys will be undertaken as part of surveys to inform the ES.
- 5.4.7. However, avoidance of effects on commuting and/or foraging bats could be achieved through the implementation of a Precautionary Method of Works (PMoW), which should include limiting nocturnal construction and operational phase lighting during the bat active season (typically April-October, but weather dependent).

Bats and Riverside 2 EIA

- 5.4.8. It is noted that bats were scoped out of the Riverside 2 EIA²⁶ as an important ecological feature and the above should not be seen as contradictory to this position; survey guidance has changed in the time between work associated with Riverside 2 and Proposed Scheme, and both present potentially different effects on bats.

WATER VOLE

- 5.4.9. The water vole is protected from killing and injury and its place of rest or shelter (burrow) is protected from damage, destruction or obstruction under the Wildlife and Countryside Act 1981 (as amended). Additional protection from disturbance is extended to individuals occupying places of rest or shelter. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 5.4.10. The water vole is also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.

- 5.4.11. Water voles are present on the central part of the Site, as determined by existing survey data (including those undertaken to support Riverside 2 and the RHN project) and licensed mitigation works. Further surveys to ascertain the population of water voles will be undertaken covering ditches within the Site as part of work to inform the ES.
- 5.4.12. Removal of ditches and their vegetation would lead to permanent effects on the water vole population requiring habitat creation either on the Site, or nearby, as mitigation. Temporary vegetation clearance along the ditches should be avoided but can be undertaken whilst maintaining the population intact. Alternate sides of the banks should be cleared between October and February under a PMoW and ecological supervision, with such works subject to Natural England licence, in such a case.

BIRDS

- 5.4.13. The Habitat Regulations 2017 Part 1 Regulation 10(2) & (3) state that competent authorities “*must take such steps in the exercise of their functions as they consider appropriate to contribute to...the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat...*”. The legislation continues to state that economic and recreation requirements must be taken into consideration in considering which measures are appropriate.
- 5.4.14. Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.
- 5.4.15. Wintering and breeding bird surveys will be undertaken by WSP as part of surveys to inform the ES.
- 5.4.16. Vegetation clearance works should be avoided during the bird breeding season (March-August); where this is not possible, a PMoW should be produced before commencing vegetation clearance works and read and understood by Contractor(s) in advance of the works. Supervision will also be required by an ecologist. Should nests be found then an exclusion zone will need to be erected and clearance will not be able to recommence until the young have fledged.

REPTILES

- 5.4.17. Native widespread reptile species (common lizard, adder, grass snake and slow worm) are partially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This includes protection from killing and injury.
- 5.4.18. All reptile species are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.

- 5.4.19. Proposed Scheme could result in adverse effects on reptiles, mainly through the loss of terrestrial habitat suitable for reptiles. Due to the scale of the Proposed Scheme, and the size of suitable habitat on Site (>12ha of coastal and floodplain grazing marsh, grassland and scrub), reptile population survey within the Site will be undertaken determine the population size and distribution to inform the ES.
- 5.4.20. Vegetation clearance and destruction of habitats has the potential to affect reptile species through the killing/injury, disturbance, damage, or destruction of foraging and basking habitat or refugia. Destruction should be avoided during reptile hibernation period (November-March) to mitigate the risks of injuring or killing reptiles. Vegetation clearance works should be undertaken under a PMoW such that appropriate action can be taken in the event that reptiles are encountered during works. PMoW should be produced before commencing vegetation clearance works and read and understood by Contractor(s) in advance of the works.

TERRESTRIAL INVERTEBRATES

- 5.4.21. Habitats within the Site may provide suitable habitat for several SPI recorded during the desk study. Under Section 40 of the NERC Act public bodies have an obligation to have regard for these species when carrying out their functions. Other important invertebrate species may also be present, as indicated by desk study data.
- 5.4.22. Vegetation clearance within the Site could result in a permanent loss of potential foraging and breeding habitat for invertebrate SPI. A terrestrial invertebrate survey is being undertaken by WSP as part of surveys to inform the ES.

INVASIVE NON-NATIVE SPECIES

- 5.4.23. Goat's-rue is included in LISI as Category 4 species, which is described as "*Species which are widespread for which eradication is not feasible but where avoiding spread to other sites may be required*" (LISI, 2014).
- 5.4.24. Butterfly bush is included in LISI as Category 3 species, which is described as "*Species of high impact or concern which are widespread in London and require concerted, coordinated and extensive action to control/eradicate*" (LISI, 2014).
- 5.4.25. Adequate biosecurity measures (as detailed in **Section 5.5** of this appendix) onsite should be applied in order to comply with the above LISI recommendations to avoid spread of goat's-rue and eradicate butterfly bush.

5.5. FURTHER SURVEY REQUIREMENTS

- 5.5.1. Potential ecological constraints for which further surveys are required to ensure legal and planning policy compliance are listed in **Table 5-1**:

Table 5-1: Key Ecological Constraints and Further Survey Requirements

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
River and intertidal mudflats	Habitat loss	Habitat condition assessment of the river and intertidal mudflats being undertaken to inform the ES and BNG assessment.	N/A
Ponds and ditches	Habitat loss	Pond and ditch condition assessment being undertaken to inform the ES and BNG assessment.	N/A
Lowland mixed deciduous woodland	Habitat loss	Habitat condition assessment, as part of detailed botanical survey work, being undertaken to inform the ES and BNG assessment.	Botanical surveys are planned for between May-July.
HPIs/other habitats	Habitat loss	Detailed botanical survey to investigate importance and condition of other on-Site habitats, including areas of 'Good Quality Semi-improved Grassland' and 'Coastal and Floodplain Grazing Marsh', being undertaken to the ES.	Botanical surveys are planned for between May-July.
Bats	Clearance of foraging/commuting habitat; felling of trees within woodland	Bat activity surveys within potential foraging/commuting habitat being undertaken to inform the ES. This will extend to further assessment of trees within woodland to identify trees suitable to support roosts. If suitable trees are identified, further work to determine presence, potential presence or likely	External inspections can be undertaken at any time of year but are most conclusive in the autumn and winter months where no leaf cover exists. Dusk emergence/daw

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
		<p>absence of roosting bats would be required. Features with potential to support roosting bats would be subject to an aerial inspection by a licensed bat ecologist. If the climbing surveys cannot confirm likely absence of roosting bats, dusk emergence and dawn re-entry surveys will be required.</p>	<p>n re-entry/bat activity surveys must be undertaken between May and September and are optimal between May and August.</p>
Water vole	<p>Clearance of ditches, changes to water level, pollution</p>	<p>Water vole surveys to determine population and distribution of water voles being undertaken to inform the ES.</p> <p>Vegetation clearance of the ditches should be avoided. If not possible, alternate banks of the ditches should be cleared October-February under a PMoW and ecological supervision, covered by a Natural England licence.</p>	<p>Two water vole survey visits should be undertaken with one survey carried out mid-April – June and the second survey to be conducted within July – September, to assess population size of water voles within the ditches on the western side of the Site (Dean et al. 2016).</p>
Birds	<p>Clearance of scrub, coastal and floodplain grazing marsh, intertidal mudflats and reedbeds.</p>	<p>Wintering and breeding bird surveys are being undertaken to inform the ES.</p> <p>Vegetation clearance works should be avoided during the bird breeding season</p>	<p>Wintering bird surveys must be undertaken between December and March.</p> <p>Breeding bird</p>

Ecological Receptor	Potential Constraints	Further Survey Requirements	Seasonal Constraints
		(March-August); where this is not possible, works should proceed under a PMoW and ecological supervision.	surveys must be undertaken between late February and early August.
Reptiles	Clearance of coastal and floodplain grazing marsh, other neutral grassland, mixed scrub and woodland.	Reptile surveys to determine population and distribution or reptiles being undertaken to inform the ES.	At least seven checks should be made in suitable weather conditions of artificial refugia spread over the site at a density of more than 10 per hectare, between March and October and ideally in April, May or September.
Terrestrial invertebrates	Clearance of coastal and floodplain grazing marsh, other neutral grassland, mixed scrub, reedbeds, wetlands and woodland	Terrestrial invertebrate surveys to determine species present being undertaken to inform the ES.	One survey to understand the potential for the site to support rare or notable invertebrates or an invertebrate assemblage of significance / importance. This should be undertaken between late April and September.

6. CONCLUSIONS

- 6.1.1. The desk study identified one National Network site (Epping Forest SAC) within 15km of the Site and six SSSI within 10km of the Site. Three LNR are within 2km of the Site, one of which is located within the Site boundary (Crossness LNR). The desk study identified 23 SINC, three of which are within the Site (River Thames and tidal tributaries SINC, Belvedere Dykes SINC and Erith Marshes SINC).
- 6.1.2. UKHab survey identified fifteen habitat types, comprising the River Thames, coastal floodplain and grazing marsh, open mosaic habitat, developed land sealed surface, modified grassland, reedbeds, suburban mosaic of developed land/natural surface, other neutral grassland, artificial unvegetated unsealed surface, buildings, eutrophic standing water (ponds and ditches), lowland mixed deciduous woodland, bramble scrub and intertidal mudflats.
- 6.1.3. Suitable habitat is present for protected and notable species. Surveys for bats, birds, water vole and reptiles have been recommended. Vegetation clearance and construction works are recommended to proceed under a PMoW to offset risks and constraints associated with birds, bats, reptiles and water vole.
- 6.1.4. Further surveys will be undertaken to inform the ES for the Proposed Scheme for bats, water vole, reptiles, terrestrial invertebrates and birds. Botanical survey work and survey work covering ponds, ditches and other aquatic habitats is also being undertaken. As Epping Forest SAC is located approximately 11.8km from the Proposed Scheme, a Habitat Regulations Assessment is required.

Annex A

PLANT SPECIES LIST

G3; 25 - COASTAL FLOODPLAIN AND GRAZING MARSH

Creeping bent *Agrostis stolonifera* (D), cock's-foot *Dactylis glomerata* (A), nipplewort *Lapsana communis* (R), dock *Rumex* sp. (R), spear thistle *Cirsium vulgare* (R), perennial rye grass *Lolium perenne* (LD), common bent *Agrostis capillaris* (D), daisy *Bellis perennis* (R), cranesbill *Geranium* sp. (R), common nettle *Urtica dioica* (R), creeping cinquefoil *Potentilla reptans* (O), red fescue *Festuca rubra* (A).

G4 - MODIFIED GRASSLAND

Creeping bent (D), cock's-foot (A), nipplewort (R), sea beet *Beta vulgaris* (R), spear thistle (R), perennial rye grass (LD), common bent (D), daisy (R), cranesbill (R), creeping cinquefoil (O), red fescue (A), red dead nettle *Lamium purpureum* (R), clover *Trifolium repens* (A), ribwort plantain *Plantago lanceolata* (F), bramble *Rubus fruticosus* agg. (R), yarrow *Achillea millefolium* (A), bristly ox-tongue *Helminthotheca echioides* (R), mayweed *Matricaria* sp. (R), toadflax *Linaria vulgaris* (O).

H3 - MIXED SCRUB

Teasel *Dipsacus pilosus* (F), silver birch *Betula pendula* (R), wild carrot *Daucus carota* (O), bramble (A), spear thistle (F), toadflax (O), cock's-foot (O), yarrow (F), spurge *Euphorbium* sp. (R), speedwell *Veronica chamaedrys* (F), perennial rye grass (A), common nipplewort (O), red fescue (O), knapweed *Centaurea nigra* (O), mullein *Verbascum thapsus* (R), ribwort plantain (F), caper spurge *Euphorbia lathyris* (LD).

Annex B

PHOTOGRAPHS



Reedbeds at the northern side of the Site.



Mixed scrub at the northern side of the Site.



Modified grassland at the northern side of the Site.



River Thames and Belvedere power station jetty (disused).



Construction zone within the Riverside 1.



Coastal floodplain and grazing marsh.



Pond at the southern part of the Site.



Pond and reedbeds at the southern part of the Site.



Woodland which could not be accessed.

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DECARBONISATION

10 Dominion Street
Floor 5
Moorgate, London
EC2M 2EF
Contact Tel: 020 7417 5200
Email: enquiries@corygroup.co.uk
corygroup.co.uk