

Northfleet Green Hydrogen Site

Preliminary Ecological Appraisal

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Executive Summary

Report purpose	The aim of this report is to provide an ecological appraisal of the Site in order to establish any potential ecological constraints in regard to the proposals and highlight the need for mitigation, compensation and enhancement measures. A Biodiversity Net Gain Assessment is included within the report to assess the level of biodiversity likely to be lost due to the Proposed Development and to ascertain how a net gain in biodiversity will be achieved.
Client and commission date	HYRO Energy Ltd. April 2023.
Date and methods of survey	Preliminary Ecological Appraisal informed by a desk study, an extended Habitat survey was carried out in May and July 2022. Photographic updates were taken in February 2025 to ensure no changes had occurred.
Key findings	**Nature conservation designations:** • One European designations present within 5 km of the Site, a Ramsar, and ten National designations within 5 km, which includes one National Nature Reserve and nine Sites of Special Scientific Interest. **Habitats:** • The habitats on Site included tall herb communities, modified grassland and mixed scrub which are common and widespread. **Protected species:** • Due to limited habitats on Site and the busy nature of the Site, all protected species are likely absent from the Site.
Potential impacts (in the absence of mitigation)	**Nature conservation designations:** No likely significant effects to designated sites are anticipated. **Habitats:** • Loss of tall herb communities, modified grassland and some mixed scrub, no significant impacts are predicted. **Species:** • Following an inspection of the mixed scrub for nesting birds by a suitably qualified ecologist prior to removal, no impacts to species are anticipated within the Site.
Recommendations for further survey	No further surveys are recommended for the Site.
Preliminary measures to avoid and/or reduce significant impacts	As no habitats of significance or species were recorded on Site, no measures are recommended.
Opportunities for biodiversity enhancement	The Biodiversity Net Gain Assessment within the report highlights the opportunity for increased species rich grassland within the Study Area as well as opportunities such as bird and bat boxes to be incorporated within the wider areas.

1. Introduction

1.1 Overview

ITPEnergised was appointed by HYRO Energy Ltd to undertake a Preliminary Ecological Appraisal (PEA) and a Biodiversity Net Gain (BNG) assessment of the land at Northfleet (hereafter referred to as 'the Site'), located on Crete Hall Road, Northfleet (central Ordnance Survey Grid Reference: TQ 62759 74528) (Drawing 1).

The purpose of the PEA was to document the habitats present within the Site and a 100 m survey buffer and determine the likely/potential presence of protected or otherwise notable species on the Site.

The work is required to inform and support an application for planning permission to build a green hydrogen production facility at the Site.

This report describes the methods used to gather and record habitat baseline information for the Site, summarises the findings of the desk study and provides details of the field investigation. Where appropriate, further recommendations are outlined, including a requirement for further species-specific surveys, along with preliminary recommendations for mitigation, compensation and enhancement strategies.

1.2 Site Description

The proposed green hydrogen electrolyser site is located in Northfleet, approximately 900 m to the west of Gravesend. The majority of the Site is made up of modified grassland, mixed scrub, hard standing and buildings. It is bounded to the east by a lorry yard, to the west by commercial areas and located approximately 50 m to the north is the Thames River.

1.3 Development Proposal

The work is required to inform and support an application for planning permission for the building of a green hydrogen production facility, including the electrolyser and storage units.

2. Legislation, Policy and Guidelines

An overview of relevant legislation, policy and guidance is provided below.

2.1 Legislation

Full consideration has been given to all relevant nature conservation legislation when carrying out this assessment. This includes the following:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (the 'Habitats Directive'), transposed to the Conservation of Habitats and Species Regulations 2017 (as amended);
- Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive'), transposed to the Conservation of Habitats and Species Regulations 2017 (as amended);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Conservation of Habitats and Species (Amendments) (EU Exit) Regulations 2019;
- Species of principal importance under Section 41 of the NERC Act 2006 (S41);
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Natural Environment and Rural Communities Act 2006 (the 'NERC Act');

- The Countryside and Rights of Way Act 2000 (the 'CRoW Act'); and
- The Protection of Badgers Act 1992 (as amended).

Full details of species-specific legislation relevant to the Site are detailed within Appendix A.

2.2 Policy Framework

The applicable policy framework at the national level includes the following:

- National Planning Policy Framework 2021 (NPPF) (Ministry of Housing, Communities and Local Government, 2021).
    - The NPPF forms the basis for planning decisions with respect to conserving and enhancing the natural environment. In addition to other themes, it outlines at a high level how the planning system 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.
    - The NPPF provides a list of principles that local planning authorities should follow when determining planning applications. These include that where significant harm resulting from a proposed development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused. In addition, opportunities to incorporate biodiversity improvements in and around developments should be encouraged.
- Government Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System (The Office of the Deputy Prime Minister (ODPM), 2005).
    - Government Circular 06/2005 provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It also establishes that habitats or species listed as priorities in the UK Biodiversity Action Plan (BAP), and by Local Biodiversity Partnerships, can be considered a material consideration in the preparation of regional spatial strategies and local development documents as well as in making of planning decisions.

Local Development Plan

The Gravesham Local Plan Core Strategy (Gravesham Borough Council, 2014) sets out policies and proposals to guide and meet Gravesham's development needs over the next 15-20 years.

Polices relevant to ecology include:

- Policy CS12: Green Infrastructure;
- Policy CS13: Green Space, Sport and Recreation; and
- Policy CS18: Climate Change.

2.3 Best Practice Ecological Guidance

As part of the baseline report, cognisance has been taken of the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines and survey methods, notably the standard methods developed for Preliminary Ecological Appraisals (CIEEM, 2017) and Ecological Impact Assessment (CIEEM, 2018). Additionally, the extended UK Habitat Classification survey has been based on the UK Habitat (UKHab) Classification methodology (Butcher *et al*., 2020), which is widely being rolled out to replace the Joint Nature Conservation Committee (JCNN) Phase 1 habitat classification, in parts because UKHab is the basis for Biodiversity Net Gain (BNG) calculations using the Biodiversity Metric 4.0 (Natural England, 2023).

3. Biodiversity Priorities

3.1 Species and Habitats of Principal Importance in England

Section 40 of The NERC Act 2006 places a legal obligation on public bodies in England to have regard to particular living organisms and types of habitats which are of the greatest conservation importance whilst carrying out their functions, whilst also having a general regard for protecting all biodiversity. Section 41 of the Act requires the Secretary of State to maintain and publish statutory lists of these feature - a function carried out on his/her behalf by Defra and Natural England. The lists given here are sometimes known as the 'Section 41 lists', or 'priority habitats' and 'priority species' lists. They replace an earlier list which was required under Section 74 of the CRoW Act of 2000, and which was published by Defra two years later, though their contents were at that time identical to the UK BAP priority habitats and species lists (JNCC, 2022).

3.2 Local Biodiversity Reporting

The Kent Biodiversity Action Plan (BAP) (Medway Council, 2022) includes targets which are based on the range of local conditions and thereby reinforce local distinctiveness, promoting the conservation of species and habitats characteristic of the local area. Species include great-crested newt, serotine bat, water vole, heath fritillary and late spider-orchid.

3.3 Birds of Conservation Concern 5 (BoCC)

The leading government (JNCC) and non-government conservation organisations in the UK jointly reviewed the population status of the 246 bird species that are regularly found within the United Kingdom, using data from national monitoring schemes. This was most recently done in 2021 (Stanbury *et al*., 2021). On the basis of seven quantitative criteria, each species has been placed on one of three lists, these being:

- Red – red-listed species are those that are globally threatened, have had an historical population decline in the UK from 1800 -1995, a rapid (> or = 50%) decline in UK breeding population over the past 25 years, or a rapid (> or = 50%) contraction of UK breeding range over the past 25 years;
- Amber – amber-listed species have had a historical population decline from 1800-1995 but are recovering; population size has more than doubled over the past 25 years, a moderate (25-49%) decline in UK breeding population over the past 25 years, a moderate (25-49%) contraction of UK breeding range over the past 25 years, a moderate (25-49%) decline in UK non-breeding population over the past 25 years, or species with unfavourable conservation status in Europe also known as Species of European Conservation Concern (SPEC); and
- Green – green-listed species have no identified threat to their population status.

4. Methods

4.1 Desk Study

The ecological desk study was carried out using a range of publicly available information sources, as well as data provided by Kent and Medway Biological Record Centre (KMBRC), to provide an understanding of the ecological context of the Study Area.

In terms of statutory nature conservation designations, the desk study identified any international and national designations, such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) within 5 km of the Site boundary. Only ecological (biological) features were considered relevant to the present study. Any non-statutory designations, such as Local Wildlife Sites (LWSs), Kent Wildlife Trust sites (KWTs), Roadside

Nature Reserves (RNRs), or woodland areas included on the Ancient Woodland Inventory (AWI), were identified within a 2 km distance of the Site boundary.

Existing records for protected or otherwise notable species (e.g., SBL/LBAP priority species) were identified within a 2 km distance of the Site boundary. Only records from the last 10 years were considered relevant to the study.

Data sources included the following organisations and online databases:

- Kent and Medway Biological Record Centre (KMBRC, 2023); and
- Multi-Agency Geographic Information for the Countryside (MAGIC, 2023).

4.2 Extended Habitat Survey

An extended UK Habitat Classification survey was carried out on the Study Area (access permitting) on 28th April 2023 by experienced Senior Ecologist, Sarah Richardson ACIEEM, and used the standard UK Habitat (UKHab) Classification methodology to map each of the habitats present within the Study Area (Butcher *et al.*, 2020). The surveyor recorded all habitat features (areas, lines and/or points) within the study area with each feature assigned a Primary Habitat based on the UK Habitat Key and Secondary Code(s) as appropriate. The vegetation was described in a series of georeferenced target notes (TNs), with plant nomenclature following Stace (2010). Target notes were also produced to describe notable habitats too small to be mapped (i.e., <0.1 ha).

It should be noted that, because we are currently transitioning from the Joint Nature Conservation Committee (JNCC) habitat survey method (JNCC, 2010) to the UKHab method, this report provides both the UKHab and Phase 1 habitat classifications for completeness.

The survey also recorded incidental evidence of protected or otherwise notable species, as well as habitats or features with the potential to support such species within the Study Area. Birds and other animals were identified and recorded on an *ad hoc* basis.

Whilst not a full botanical or protected species survey, the field walkover survey enables experienced ecologists to obtain an understanding of the ecology of a site, such that it is possible to:

- Confirm the nature conservation significance of a site and assess whether the potential for impacts on habitats/species is likely to represent a material consideration in planning terms; or
- Establish the scope and extent of any additional specialist ecological surveys that may be required, before such a confirmation can be made.

4.3 Survey Limitations

The Site was fully accessible, however there were areas of the Study Area which were not within the same landownership, these areas were inaccessible and are marked out on The UK Habitat Classification Map (Drawing 3). However, as these are located outside the Site boundary and due to the relatively small scale of the proposal, this is not considered a significant limitation to the assessment.

The age of the original data is less than 24 months. It was recommended in the previous report that an update survey be undertaken at 18 months, however due to the highly managed state of the habitats on Site it was not considered necessary to do a full update. Photographs were taken by staff at the Site and submitted to the ecologist for comparison to the previous survey visit. As there were no significant changes, the data is deemed valid. Updated photographs can be seen in Appendix C.

5. Results

5.1 Desk Study

5.1.1 Nature Conservation Designations

Tables 1 and 2 detail the nature conservation designations in the local area. Designations are also shown on Drawing 2. In terms of statutory designations, there are one international designation within 5 km and 10 national designations within 5 km of the Site.

Table 1: Statutory Nature Conservation Designations

Name	Designation	Distance and Direction from Site	Description
Thames Estuary and Marshes	Ramsar	4.43 km E	The site comprises a complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat along the River Thames between Gravesend and Sheerness in Essex and Kent. The habitats support internationally important numbers of wintering waterfowl, and the saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates. The site performs important hydrological functions, including shoreline stabilization, sediment trapping, flood water storage and desynchronization of flood peaks, and maintenance of water quality by removal of nutrients. Human uses include yachting, angling, wildfowling (seasonal), jet skiing, water-skiing, and birdwatching; disturbance from some of these is a current issue but is being addressed through negotiation and awareness-raising.
Swanscombe Skull Site	NNR	2.86 km W	The site's chalk grassland is notable for the range of orchids it supports, 21 species having been recorded including lady orchid, fly orchid and the rare late and early spider orchid and man orchid. As well as grassland the reserve encompasses areas of scrub, woodland and over 3.5 kilometres of hedgerows; these habitats support around 50 breeding bird species including hawfinch, lesser spotted woodpecker and kestrel. Reptiles found here include adder, grass snake, slow worm and common lizard. The reserve is renowned for its views over the Romney Marsh and Weald, and out to the Channel coast. The site is also widely known for landscape features such as the Devil's Kneading Trough a dry, steep-sided valley formed by peri-glacial action near the end of the last ice age.

Name	Designation	Distance and Direction from Site	Description
	SSSI		Barnfield Pit, Swanscombe, the only site in the UK to yield unquestionable Lower Palaeolithic human remains, is probably the most famous and arguably the most important site in the British Pleistocene. In addition to its palaeoanthropological interest the site is of great importance for stratigraphy, palaeontology and Palaeolithic archaeology. For example, it is the only site in Britain which shows evidence of a Clactonian culture stratigraphically below an Acheulian culture and it therefore provides the basis for Lower Palaeolithic chronology in this country. The palaeontological record (molluscs, mammals and, somewhat controversially, pollen) provides evidence of climatic change, with at least one major interglacial represented. Within the sequence a major hiatus is recognised; the upper part of the beds below this level show the development of a fossil soil, which represents a further important aspect of the stratigraphic evidence at Swanscombe. The site contains one of the richest Pleistocene vertebrate localities in Britain, and by far the richest locality attributable to the Hoxnian Interglacial. The extreme rarity of faunas of equivalent (Holsteinian) age from Continental Europe makes Swanscombe a site of considerable importance, quite apart from the world-famous human skull. The faunas include 26 mammalian taxa (e.g. man, macaque, lion, straight-tusked elephant, 2 extinct rhinos, horse, several deer, aurochs and small mammals) and many birds. A horizon of fossil footprints, unique in the British Pleistocene, occurs immediately on top of the Lower Loam
Swanscombe Peninsula	SSSI	1.4 km E	Swanscombe Peninsula SSSI is of special interest for the following nationally important features: • Quaternary geology at Bakers Hole, a key Pleistocene site with a complex sequence of periglacial and temperate climate deposits and Middle Palaeolithic archaeology; • populations of the plants divided sedge *Carex divisa*, yellow vetchling *Lathyrus aphaca*, slender hare's-ear *Bupleurum tenuissimum*, Bithynian vetch *Vicia bithynica* and round-leaved wintergreen *Pyrola rotundifolia subsp. maritima*; • assemblages of invertebrates associated with bare sand and chalk, open short swards, open water on disturbed mineral sediments and saltmarsh and transitional brackish marsh; and

Name	Designation	Distance and Direction from Site	Description
			• two diverse assemblages of breeding birds, one associated with lowland open waters and their margins, lowland fen and lowland damp grassland, the other with lowland scrub.
Globe Pit	SSSI	3.66 km N	Globe Pit is an important site for the interrelationship of archaeology with geology since it is vital in the correlation of the Lower Palaeolithic chronology with the Pleistocene Thames Terrace sequence. The site exposes gravel, apparently belonging to the Lynch Hill Terrace, containing a prolific, uncontaminated Clactonian industry, implying an age much greater than its elevation suggests. This has led to considerable difficulties in interpretation, and the deposit has not been universally accepted as an in situ fluvial gravel. Later and younger "brickearth" is banked against this gravel remnant on it's southern side. Comparison with other sites locally suggests that normal ideas of terrace stratigraphy cannot be applied in this area. The exposures in Globe Pit will therefore be of considerable importance for future research
South Thames Estuary and Marshes	SSSI	4.2 km E	The South Thames Estuary and Marshes SSSI from Gravesend to the eastern end of the Isle of Grain forms a major component of the Greater Thames Estuary. The site consists of an extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of the north Kent marshes. Freshwater pools and some areas of woodland provide additional variety and complement the estuarine habitats. The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000. Many species regularly occur in nationally important numbers and some species regularly use the site in internationally important numbers. The breeding bird community is also of particular interest. The diverse habitats within the site support a number of nationally rare and scarce invertebrate species and an assemblage of nationally scarce plants.
West Thurrock Lagoon and Marshes	SSSI	4.22 km NW	West Thurrock Lagoon and Marshes is one of the most important sites for wintering waders and wildfowl on the Inner Thames Estuary. The combination of extensive intertidal mudflats together with a large and secure high tide roost, attracts waders in nationally important numbers, with significant populations of other bird species. The adjacent Stone Ness saltmarsh is noted for the size and character of its high marsh plant community. The lagoon is an important high tide roost for overwintering waders and wildfowl. Large reed beds with abundant common reed *Phragmites australis* and Sea Club-rush *Scirpus maritimus* border its south and eastern perimeter

Name	Designation	Distance and Direction from Site	Description
			where Reed Warblers, Sedge Warblers and the notable Bearded Tit breed. In addition locally important numbers of Teal, Snipe and Grey Heron roost on the shallow waters, grassy islands and lagoon margins. Recent changes in the management of the lagoon have improved the habitat as a high tide roost. The mudflats form the single largest intertidal feeding area, for wintering waders and wildfowl, on the inner Thames estuary. In addition to providing a vital feeding area for the birds which roost on the lagoon, it is also regularly used as a low tide roost by migrant Common, Black and Arctic Terns, attracted by the rich food source around the warm water outfall from the adjacent power station. Stone Ness saltings constitute the largest area of saltmarsh in the inner Thames estuary, and are characteristically high marshes of low salinity. The vegetation is dominated by Sea Club-rush *Scirpus maritimus*, Sea Aster *Aster tripolium* and Spear-leaved orache *Atriplex prostrata*. While the community is widespread in Essex it is more regularly found in small stands beside borrowdykes. Stone Ness is one of the few sites where it occurs outside the sea wall, and is unusually large in extent. Additional interest is provided by a wintering flock of several hundred mixed finches.
Grays Thurrock Chalk Pit	SSSI	4.42 km NW	The beetle fauna is found in the full range of habitats across the site. *Mordellistena humeralis* and *M. neuwaldeggiana* are two Red Data Book (RDB) species that are thought to develop in rotting wood whilst the RDB beetle *Cryptocephalus sexpunctatus* is associated with hazel, birch, aspen or crack willow. The other twenty notable species include *Apion semivittatum*, a small weevil associated with ruderal habitats; *Apion flavimanum*, another weevil but associated with calcareous grassland or field margins and a water beetle *Hydroporus marginatus*, a southern species which is usually found in chalk and limestone streams. The flea beetle *Podagrica fuscipes* share the same host plant as the micro moth larvae of *Digitivalva perlepidella*, *P. fuscipes* larvae developing at the roots of plants whilst the larvae of the moth *D. perlepidella* feed on the flowers and seeds of *Malva sylvestris*. Other moths include the RDB species *Dahlica triquetralla*, and currently 27 other notable species. The four RDB true flies include *Dicranoptycha fuscescens*, a cranefly discovered in this country in the 1970s and so far, only recorded from Kent and Essex. The life cycle of this cranefly is unknown but on the continent this species is associated with dry scrub and woodland. *Zodion notatum* larvae are probably

Name	Designation	Distance and Direction from Site	Description
			parasitoids of certain solitary bees, though again, the precise hosts are unknown. The two other RDB true flies are *Chrysotus veralli* and *Platypalpus niveiseta*. There are presently a further 11 notable true flies recorded recently from the site. The assemblage of invertebrate fauna mean this site has the best concentration and diversity of calcareous invertebrate fauna in Essex. Some species, such as the notable spider *Centromeros serratos* and locally important spider *Entelecora flavipes* are found nowhere else in Essex. The site is also noted for its flora which includes the largest populations of Round-leaved wintergreen *Pyrola rotundifolia* and Man Orchid *Aceras anthropophorum* in Essex.
Lion Pit	SSSI	4.44 km NW	Lion Pit exhibits a complex sequence of Pleistocene Thames deposits overlying and banked against Chalk, representing the northern edge of the river's floodplain at the time of deposition (probably equivalent to the Lynch Hill or Taplow Terrace of the Middle Thames). The deposits have yielded molluscs, ostracods and pollen, and a mid-Levallois working site has been reported on the chalk surface at the foot of the fossil cliff. Since this section has not been stratigraphically related to the established Thames Terrace sequence it requires considerable further work, for which there is great potential.
Hangman's Wood and Deneholes	SSSI	4.63 km N	Hangman's Wood deneholes, the remains of medieval chalk mines, provide the most important underground hibernation site for bats in Essex. Three species have been recorded; Brown long-eared bat *Plecotus auritus*, Natterer's bat *Myotis nattereri* and Daubenton's bat *Myotis daubentonii*. Numbers of bats recorded have increased steadily since human access to the site was limited in 1985, and a total of 62 was recorded early in 1991. Hangman's Wood itself is included within the SSSI, as an area of semi-natural habitat in which bats can feed. It is a relict fragment of ancient woodland, dominated by Pedunculate Oak *Quercus robur*, Ash *Fraxinus excelsior* and Sycamore *Acer pseudoplatanus* with occasional Wild Cherry *Prunus avium* and Elm *Ulmus sp*. The shrub layer has largely been removed, and the ground flora contains few indications of the wood's age, as a result of amenity management. Typically, the woodland floor is dominated by such widespread plants as Smooth and Rough Meadow-grass *Poa pratensis* and *P. trivialis*, Cock's-foot *Dactylis glomerata*, Cow Parsley *Anthriscus sylvestris*, Common Nettle *Urtica dioica* and Bramble *Rubus fruticosus agg*.

Name	Designation	Distance and Direction from Site	Description
Darenth Wood	SSSI	4.80 km SW	This site comprises some of the most valuable areas of ancient seminatural woodland in north-west Kent and includes several rare woodland types. The invertebrate fauna has been exceptionally well studied during the last two centuries and the wood has long been famous as a site supporting many rarities. There are recent records of 2 nationally rare** species and 32 nationally scarce species and historic records of a further 40 Red Data Book species and 200 nationally scarce species. The wood has been managed as coppice-with-standards for centuries and this traditional management has given rise to broadleaved woodland with areas of open heathland forming extensive glades. Changes in traditional practices over the last 40 years have resulted in much of the site lying unmanaged. The range of soils that occur throughout the site has given rise to several distinct woodland types. Acidic birch *Betula spp* -- sessile oak *Quercus petraea* woodland lies on the lighter soils of the plateau gravel covering the higher areas of ground. An unusual example, this woodland reflects the high chalk content of the soil and is more closely related to continental types than to those found elsewhere in Britain. Associated shrubs include field maple *Acer campestre*, dogwood *Cornus sanguinea*, wayfaring tree *Viburnum lantana* and midland hawthorn *Crataegus leavigata*. The ground flora is dominated by bracken *Pteridium aquilinum* and bramble *Rubus fruticosus* and includes much lily-of-the-valley *Convallaria majalis*. Substantial bracken glades occur throughout this woodland type and locally acidic conditions favour broom *Cytisus scoparius* and gorse *Ulex europaeus*. The shallow chalk soils at the base of the slopes support sessile oak hornbeam *Carpinus betulus* woodland. This particular type of woodland is very rare in Britain, being known only from North Kent, and Darenth Wood is the largest known example. Common shrub associates include field maple, ash *Fraxinus excelsior* and spindle *Euonymus europaeus* whilst the wild service tree *Sorbus torminalis* has also been recorded. The field layer is dominated by dog's mercury *Mercurialis perennis* withwood anemone *Anemone nemorosa* and bluebell *Hyacinthoides nonscripta* as frequent associates. White helleborine *Cephalanth damasonium* and bird's-nest orchid *Neottia nidus avis* are also found in this woodland type. The more acidic light to medium soils of the Blackheath sands found on the sloping ground support an acidic hazel *Corylus avellana*-sessile oak woodland. It has a rich tree and

Name	Designation	Distance and Direction from Site	Description
			shrub flora including downy birch *Betula pubescens*, wild cherry *Prunus avium*, holly *Ilex aquifolium* and elder *Sambucus nigra*. Bramble and ivy *Hedera helix* are found most frequently in the field layer although species such as bittersweet *Solanum dulcamara* and cow-wheat *Melampyrum pratense* also occur. Many of the invertebrate species that have been recorded here are associated with dead wood and include the nationally rare beetles *Agrilis pannonicus* and *Platypus cylindricus*, both species living in dead or dying oak timber. Numerous bugs, beetles and moths, including the cloaked carpet moth *Euphyia biangulata* and the ground bug *Trapezonotus dispar*, are associated with the more open conditions found along the edges of the glades. Immediately to the west of Darenth Wood is a small area of chalk grassland. The area supports a wide range of chalk-loving plants including the nationally rare and specially protected field eryngo or Watling Street thistle *Eryngium campestre* and the nationally scarce ground pine *Ajuga chamaepitys* and man orchid *Aceras anthropophorum*.

There are no areas of AWI-listed woodland within the 2 km search area.

5.1.2 Invasive Non-Native Species

The records from Kent and Medway Biological Record Centre (KMBRC, 2023) included the following 4 species of non-native invasive species within 2 km of the Site boundary:

- Japanese rose (*Rosa rugosa*);
- Tree-of-heaven (*Alianthus altissima*);
- Wall cotoneaster (*Cotoneaster horizontalis*); and
- Winter heliotrope (*Petasites fragrans*).

5.1.3 Terrestrial Animals

5.1.3.1 Desk Study Records

A range of protected or otherwise notable species have been recorded within 2 km of the Site in recent years. Table 2 lists those (non-avian species) that are likely to utilise habitat features present within the Site and adjacent habitats.

Table 2: Protected or Otherwise Notable Species

Species	Scientific Name	Legal/Conservation Status	Records
Reptiles			
Slow Worm	Anguis fragilis	Wildlife & Countryside Act (as Amended) 1981: Schedule 5	16 records of slow worm were identified within 2 km. The most recent was in 2017

Species	Scientific Name	Legal/Conservation Status	Records
		UK Biodiversity Action Plan (UKBAP) species Species of Principal Importance in England	and 1.7 km southeast of the Site.
Marine Mammals			
Minke Whale	*Balaenoptera acutorostrata*	Considered of Least Concern on the IUCN Red List of species Priority Species under the UK Post-2010 Biodiversity Framework.	One record of minke whale was identified in 2013, approximately 0.5 km north of the Site.
Terrestrial Mammals			
Daubenton's Bat	*Myotis daubentonii*	EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)	Two records of Daubenton's bat were identified within 2km. The most recent was in 2021 and 1.9 km southwest of the Site.
Leisler's Bat	*Nyctalus leisleri*	EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)	Four records of Leisler's bat were identified within 2 km. The most recent was in 2015, and 1.8 km west of the Site.
Natterer's Bat	*Myotis nattereri*	EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)	One record of Natterer's bat was identified in 2015, 1.9 km southwest of the Site.
Noctule Bat	*Nyctalus noctula*	EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)	Four records of noctule bat were identified within 2 km. The most recent was in 2021, and 1.5 km southwest of the Site.

Records of a total of 151 species of bird were identified in the desk study, due to the number of records the full list has not been included, however are available on request. Species that were considered a higher conservation priority (i.e., listed on Annex 1 of the Birds Directive, Schedule 1 of the WCA, as species of Principal Importance in England (SPIE) and/or are BoCC Red or Amber-listed) are included in Table 3.

Table 3: Protected or Otherwise Notable Birds

Common name	Scientific name	Annex 1	Sch 1	SPIE	BoCC	LBAP
Black-headed Gull	*Larus ridibundus*				Amber	
Black Redstart	*Phoenicurus ochruros*		X		Amber	
Cuckoo	*Cuculus canorus*			X	Red	
Dunlin	*Calidris alpina*	X			Red	
Fieldfare	*Turdus pilaris*		X		Red	

Common name	Scientific name	Annex 1	Sch 1	SPIE	BoCC	LBAP
Gannet	*Morus bassanus*				Amber	
Greenfinch	*Carduelis chloris*				Red	
Greenshank	*Tringa nebularia*		X		Amber	
Greylag Goose	*Answer answer*				Amber	
Grey Wagtail	*Motacilla cinerea*				Amber	
Herring Gull	*Larus argentatus*			X	Red	
House Martin	*Delichon urbica*				Red	
House Sparrow	*Passer doemsticus*			X	Red	
Kestrel	*Falco tinnunculus*				Amber	
Lesser Black-backed Gull	*Larus fuscus*				Amber	
Linnet	*Carduelis cannabina*			X	Red	
Mediterranean Gull	*Larus melanocephalus*	X	X		Amber	
Mistle Thrush	*Turdus viscivorus*				Red	
Montagu's Harrier	*Circus pygargus*	X	X		Red	
Nightingale	*Luscinia megarhynchos*				Red	
Red-breasted Merganser	*Mergus serrator*				Amber	
Redwing	*Turdus iliacus*		X		Amber	
Scaup	*Aythya marila*		X	X	Red	
Sedge Warbler	*Acrocephalus schoenobaenus*				Amber	
Shelduck	*Tadorna tadorna*				Amber	
Skylark	*Alauda arvensis*			X	Red	
Song thrush	*Turdus philomelos*			X	Amber	
Sparrowhawk	*Accipiter nisus*				Amber	
Starling	*Sturnus vulgaris*			X	Red	
Swift	*Apus apus*				Red	
Turtle Dove	*Streptopelia turtur*			X	Red	
Wheatear	*Oenanthe oenanthe*				Amber	
Whitethroat	*Sylvia communis*				Amber	
Willow Warbler	*Phylloscopus trochilus*				Amber	
Woodpigeon	*Columa palumbus*				Amber	

Common name	Scientific name	Annex 1	Sch 1	SPIE	BoCC	LBAP
Wren	*Troglodytes troglodytes*				Amber	
Yellowhammer	*Emberiza citronella*			X	Red	

5.2 Field Survey

5.2.1 Extended UK Habitat Classification Survey

The habitats recorded within the Study Area are detailed below and shown in Drawing 3 and scientific names of plant species are provided in Appendix B. The 12 primary habitat and 11 secondary codes recorded during the survey, as well as their corresponding Phase 1 Habitat survey codes, are listed in Table 4 below. The habitats highlighted in grey were recorded within the Site.

Table 4: Habitats recorded within the Site and 100 m buffer

UK Habitat Classification		Corresponding Phase 1 Habitat
Primary Habitat	Secondary Codes	
Other neutral grassland (g3c)		Neutral Grassland (B2)
Modified grassland (g4)	Mown (64)	Amenity grassland (J1.2)
Other woodland, broadleaved (w1g7)	Semi-natural woodland (37)	Broadleaved woodland (A1.1)
Line of trees (w1g6)		Parkland and Scattered trees (A3)
Managed hedgerow (h2a)		Intact hedgerow (J2.1)
Mixed scrub (h3h)		Dense scrub (A2.1)
Rivers and streams (r2)	Tidal water (383)	Running water (G2)
Standing open water (r1)	Scattered rushes (14), man-made (39)	Standing water (G1)
Tall herb communities (H6430) (s1a9)	Tall herb (16), ruderal ephemeral (17) abandoned ruderal and derelict areas (350)	Tall ruderal (C3.1)
Sealed surface (u1b)	Road (111)	Other habitat (J3.5)
Buildings (u1b5)	Industrial building (96), Ruined building (112)	Buildings (J5)
Built linear features (u1e)		Other habitat (J3.5)

5.2.2 Other neutral grassland

Directly north of the Site, there were three small areas of neutral grassland. These areas supported varying sward heights from 30 to 100 cm in height and were largely unmanaged. Grass species recorded include wall barley, cocks foot, Yorkshire fog, fescue spp. and perennial rye grass. The sward also supported yarrow, greater plantain, ragwort, pyramidal orchid, rough hawkbit, nettle and bristly oxtongue.

5.2.3 Modified grassland

The land in the centre and south of the Site extending into the Study Area is comprised of modified grassland which is maintained through mowing at a sward height of approximately 10 cm. Grass species recorded in this habitat include wall barley, cocks foot, Yorkshire fog, fescue spp. and perennial rye grass. The sward also supported lesser celandine, meadow buttercup, daisy, yarrow, ribwort plantain, ragwort, vetch sp., doves-foot-cranesbill and germander speedwell.

5.2.4 Other woodland, broadleaved

There is a woodland located in the south-western aspect of the Study Area, approximately 15 m from the Site boundary. A narrow strip of woodland was located in the west of the Study area, approximately 5 m from the western Site boundary. A further two parcels of woodland were located to the north of the Site, within the Study Area. The two woodlands to the north of the Site supported mature crab apple, false acacia and hazel with an understory of hawthorn and bramble with a ground cover of neutral grassland and bare ground. The woodland parcels in west and south-west of the Study Area are comprised of similar species, they support mature sycamore trees with heavy ivy cover and an understory of hawthorn with a ground cover of ivy. These woodland parcels are created from planted trees which have been since left unmanaged, it is semi-natural woodland.

5.2.5 Line of trees

There is a small tree line located in the west of the Study Area. This included seven mature trees comprising of sycamore (*Platanus occidentalis*) and copper Norway maple (*Acer platanoides scwedleri*).

5.2.6 Managed hedgerow (h2a)

A small area of managed hedgerow is present to the south of the Site within the Study Area. This hedgerow is in good managed condition with species including privet *Ligustrum vulgare*, laurel sp *Laurus* sp**.**, blackthorn *Prunus spinosa*, bramble and holly.

5.2.7 Mixed scrub

An area of mixed scrub is located within the southern corner of the Site and along the eastern boundary of the Site, along with eight parcels within the Study Area. These areas of mixed scrub supported species including semi-mature sycamore trees, buddleia, stands of elder, bramble and dog rose.

5.2.8 Rivers and streams

The Site is located in parts, adjacent to the River Thames. From the north of the Site it is approximately 45 m from the banks of the river. The River Thames is well-used by humans including yachting, angling, wildfowling (seasonal), jet skiing, water-skiing, and birdwatching. It is also used for industrial purposes with boats regularly utilising the banks within the Study Area to load and unload various industrial goods.

5.2.9 Standing open water

There is a fairly large body of water located where three water tanks had previously been, along the northern boundary of the Site. The water is contaminated with substances from the industrial building adjacent to it, however, it does support some vegetation including scattered bull rush, iris and bamboo.

5.2.10 Tall herb communities (H6430)

Some areas of land within the Site are constructed of a sealed surface and had vegetation growing on top. These species were ruderal and tall herb species and consisted of ivy, poppy, wall barley, rosebay willow herb, rough hawkbit, some small sycamore saplings and a large amount of wild clematis present along the walls of the site and across the built surface.

5.2.11 Sealed Surface

The majority of the Site and the Study Area are constructed of tarmac and concrete surface which is heavily used as an industrial area, road or dock for the river.

5.2.12 Buildings

There are two buildings located within the Site boundary, one is a shipping container located adjacent to the ruins of an old security hut, the other is an industrial building located in the south of the Sie. There are several buildings located within the Study Area, these include three water tanks and numerous industrial buildings. Two of these are located in close proximity to the Site boundary. All buildings were in constant use for industrial purposes.

5.2.13 Invasive Non-Native Species

No invasive non-native species are recorded within the Site or Study Area.

5.2.14 Protected species

No protected species surveys were undertaken and no incidental records of signs or evidence of presence of protected species was recorded during the survey. Due to the highly urban nature of the Site and Study Area, there is little potential for protected species to be present within these. Each protected species is discussed further in section 6.3 below.

6. Discussion and Recommendations

The following section assesses the likelihood of ecological receptors to result in a constraint to the Proposed Development. It is considered that potential impacts can be predicted at this stage without the need for further survey, however mitigation measures have been recommended to reduce the likelihood of impacts on ecological receptors.

6.1 Nature Conservation Designations

6.1.1 European Designations

The Site is considered to be relatively isolated from the European designations within the local area, due to the presence of the town of Gravesend forming a barrier, in addition to the habitats on Site being primarily urban meaning that the Site is not likely to provide supporting habitat to any of the European sites. There is therefore negligible habitat connectivity between the Site and the European sites and so direct impacts are unlikely. It is therefore considered unlikely that a Habitat Regulations Assessment will be required for the Proposed Development.

6.1.2 Other Designations

All SSSIs and the NNR are located over 1.4 km from the Site. Based on the distance to the Site, and relatively small scale of proposals, it is considered unlikely that the Proposed Development will result in impacts to any other designated sites.

6.2 Habitats

The Site is comprised predominately of developed sealed surface in the form of buildings and tarmac areas with two small areas of tall herb communities present along the edges of the Site with three areas of modified grassland in the centre and south of the Site and two parcels of mixed scrub, one in the centre and on in the south of the Site. The Study Area includes neutral grassland, a treeline, hedgerow and woodland as well as the habitats within the Site. The areas of the tall herb communities, modified grassland and some of the mixed scrub within the Site are planned for removal in order to facilitate the Proposed Development. The construction will be undertaken on the developed land within the Site while an underground pipe will be run along from the north of the Site to the south. The pipe outlet is in the proximity of the missed scrub which will be removed in order to facilitate the Proposed Development.

6.3 Protected Species

6.3.1 Bats

The woodland on Site and within the wider Study Area all supported heavy ivy growth which is considered to be a potential bat roost feature of low suitability. However, due to the constant disturbance from loud noise and well-lit nature of the Site it is considered that roosting bats are likely absent from the woodland within the Site.

The Proposed Development plans to retain all the woodland and all construction will be located a minimum of 10 m from the woodland areas on Site and the woodland located to the west of the Site. This is considered to be an appropriate buffer even if bats were roosting now or in the future should site conditions change, impacts are unlikely. The Site has a low suitability for foraging and commuting bats due to the constant disturbance from loud noise and well-lit nature. Therefore, it is considered that the Proposed Development will not impact the suitability of the site for foraging or commuting bats. Commuting and foraging bats may be present within the Study Area, however suitable habitat is located over 30 m from the Proposed Development and is therefore not considered likely to be impacted by either the construction or operational phases.

6.3.2 Badger

The woodland located within the south-west of the Study Area was considered to be the most likely area for badgers due to its size and sloping topography. This parcel of woodland was surveyed for any badger field signs and none were recorded. The woodland surrounds an area of ruins from old industrial buildings with concrete and brick foundations. The substrate across the woodland was largely unsuitable for badgers due to large concrete areas and rubble within the ground. Due to the high level of disturbance in this area of the woodland and badger evidence being record, it is considered to be currently unused by badgers.

The woodland extends south-west towards a railway which may have more suitable substrate and sett building opportunities for badger. Due to the woodland with potentially suitable badger sett building habitat being located over 30 m from the construction Site and there being no suitable badger habitat within the Site, it is considered that no further surveys are required.

6.3.3 Herptiles

The habitats within the Site offer limited opportunities for shelter and foraging for both amphibians and reptiles. The waterbody within the Site is of concrete construction and supports very high walls with no access points in or out of the water. This and the contamination of the water make it unsuitable for any herptile use. Due to the lack of suitable habitat within the Site, it is considered that herptiles are likely absent from the Site and no further surveys are required.

6.3.4 Birds

Some habitats within the Site and Study Area provide opportunities for nesting birds, these habitats included mixed scrub and woodland. All breeding birds and their nests are protected by the WCA (with Annex 1/Schedule 1 species afforded additional protection).

The Proposed Development will likely result in the removal of some mixed scrub, a habitat suitable for nesting birds. Therefore, it is recommended that a nesting bird check be carried out prior to any clearance works undertaken on Site during the nesting bird season (March to September inclusive).

6.4 Further Recommendations

6.4.1 Good Practice Mitigation

The following broad mitigation should be applied:

- Artificial lighting can often impact the foraging and commuting behaviour of nocturnal mammals such as bats and badger. Consequently, it is recommended that lighting should be directed to where it is needed and light spillage (whether direct and/or in-direct) should be avoided as far as

practicable. Also, the times during which lighting is on should be limited to provide dark periods. See IPL Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals, 2020) and the Bat Conservation Trust/IPL Guidance Note 08/18 'Bats and Artificial Lighting in the UK (IPL/BCT, 2018).

- Covering of trenches or pits made during construction when unattended, or the installation of a shallow angled plank to allow entrapped animals to escape.
- The capping of ends of any pipes, when unattended, to prevent animal access.
- Should any protected or notable species be observed during works, construction activities should cease, and a suitably qualified ecologist contacted for advice.

7. Biodiversity Metric Assessment

7.1 Overview

7.1.1 Legislative Context

From January 2024 almost all developments are required to demonstrate a 10% increase in biodiversity of habitats for wildlife compared with the pre-development baseline. This is required by Local Authorities in line with the Environmental Act 2021.

7.1.2 Introduction

This section describes the approach taken to biodiversity enhancement within the Site. It is envisaged that a final version of the Biodiversity Enhancement Plan will be agreed post consent in consultation with Gravesham Borough Council.

7.1.3 Toolkit

Good Practice Principle 5 is the recommendation to make a measurable net gain contribution. The Good Practice Guidance (Annex 1) recommends the use of metrics to measure net gain by comparing baseline and post-development scenarios. This report assesses the biodiversity baseline of the Proposed Development based on the data provided through the field survey data and the following:

- Proposed Layout Plan showing the Site Boundary and Proposed Development area (Drawing 4).
- The Biodiversity Metric 4.0 (Natural England, 2024).

7.1.4 Biodiversity Metric 4.0

Biodiversity metric 4.0 has been used to calculate the biodiversity units for the Site. The metric was produced by Natural England to quantify habitats. The metric is compatible with the UK Habitat Classification Hierarchy (UK Habs) which was used to assess the habitats within the Site during the site visit in April and July 2023 and are detailed in section 5.2.1 above.

7.2 Metric Assessment for the Site

7.2.1 Baseline

All habitats on Site described in section 5.2.1 were incorporated in the baseline calculation. The baseline units for the Site is 0.68 habitat units. All habitats are considered to be of low distinctiveness and of poor condition. The baseline habitat units for the off-Site habitat is 7.8.

7.2.2 Impacts to baseline

The development will result in impacts to the habitats on Site, including loss of tall herb communities, modified grassland and mixed scrub. There will be construction of additional developed surface with the construction of the new building on Site. There will be a loss of 0.36 habitat units.

7.2.3 Habitat Interventions to achieve net gain

The Biodiversity Metric assessment demonstrates that net gain can be achieved through enhancing the habitats within the landownership (see Appendix C). The interventions are both detailed below and described within the metric.

7.2.3.1 Off-site grassland enhancement

An area of 0.26 ha of modified grassland within the Study Area, will be enhanced to create species rich semi-improved grassland within the land ownership, is located 35m east of the Study Area (shown in Drawing 3). This enhancement will alter off-site baseline from modified grassland of poor condition and low distinctiveness to other neutral grassland of moderate condition and medium distinctiveness. The habitat units for this off-Site post intervention are 0.95. The enhancement from modified grassland to species rich grassland should be implemented by following the below recommendations:

- The areas should be planted with wildflower meadow seeds to create more biodiverse areas that are particularly attractive to bees and butterflies.
- First remove weeds (docks and thistles) using repeated cultivation or herbicide.
- Prepare the ground for sowing in late summer by cutting very hard and create gaps either with harrows or by raking (aiming to create around 50% bare soil).
- Sow in the autumn using a locally native species grassland mix.
- Include additional yellow rattle (*Rhinanthus minor*) within the seed mix as it supresses more dominant grass growth.
- Tread in seed to produce a firm surface.

First year management: After sowing continue mowing as needed, to keep the grass short (30-50 mm). Continue mowing through winter and early spring as needed. Stop mowing in April and leave until July/August and then manage as described below.

Long-term management: Relaxation of current amenity mowing regime. Grassland should not be cut from spring through to late July/August to give sown species an opportunity to flower.

- After flowering in July or August take a 'hay cut': cut back to 50 mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from Site.
- Mow the re-growth through to late autumn/winter to 50 mm and again in spring if needed.

Numerous species of invertebrate provide a foraging resource for notable species of bats and birds. As such, wildflower meadows could be created to enhance any areas of existing bare substrate.

7.2.4 Offsite Scrub Enhancement and Creation

An area of 0.03 ha of mixed scrub within the Study Area, will be enhanced within the land ownership, is located to the south east of the Site, adjacent to Crete Hall Road (shown in Drawing 4). An area of 0.07 ha of mixed scrub within the Study Area will be created within modified grassland also located adjacent the northern strip of land to Crete hall Road, to the south east of the Site. This enhancement and creation will alter off-site baseline from modified grassland of poor condition and low distinctiveness and mixed scrub of poor condition and medium distinctiveness to mixed scrub of moderate condition and medium distinctiveness. The total habitat units for this off-Site change is 0.57 making the off-Site net change 1.52 habitat units with an off-site net gain of 19.51%. The enhancement from modified grassland and mixed scrub, to a larger area of mixed scrub should be implemented by following the below recommendations:

- Plant in late autumn, or anytime between October and March, provided the ground is not frozen.
- 40-60cm whips can be planted in a double staggered rows giving 4-6 plants per metre squared.

- New plants will need protection from grazing mammals and weeds, using transparent spiral plastic rabbit guards (600ml) and bamboo canes.
- A mulch of chopped bark should be placed around the bases of new plants to prevent weeds from growing up and to reduce moisture loss.
- Locally native species should be planted including broom, gorse, dwarf birch *Betula nana* and bramble.
- Planting should ideally be done in stages or with varied age saplings, alongside small pockets of open space no more than 1 m x 1 m, to create beneficial structure within the scrub.

First year management: the bases of the scrub should be weeded during the summer to prevent competition from grasses and other shrubs. If any of the plants die, these should be replaced with new shrubs in the following winter. In the following spring, the shrubs should be cut down to 45-60cm to encourage them to bush out and create a thicker growth form.

Three-year management: The scrub will be trimmed every three years and on a rotational basis between November and February, with one third of scrub cut in any one year. This will ensure thick growth and continual fruiting/flowering of plants across the Site.

Monitoring: Annually for three years in summer to record shrub vitality and species. Then monitor again in year 5, 7 and 10. Make recommendations as required.

7.2.4 Net gain achieved

A full grassland and scrub management plan will be produced in order to achieve these outcomes. This will include specifications for timings, capital works, management and monitoring to ensure the habitat is well established and maintained.

In total, the above interventions will result in a 171.06% net gain in habitat units.

7.2.5 Ecological Enhancement Opportunities

In line with NFPP's focus on improving biodiversity, there is potential to provide ecological enhancement as part of the Proposed Development.

7.2.5.1 Bats and Birds

The following enhancement measures for bats and birds could be considered:

- Bat boxes could be included within new buildings at the Site. The following provides an overview of suitable resources: https://www.bats.org.uk/our-work/buildings-planning-and-development/accommodating-bats-in-buildings; and
- The design has the potential to increase nesting provisions for birds by installing nest boxes throughout the Proposed Development. A variety of bird boxes could be installed on retained trees within the woodland to provide nesting resources. Furthermore, species-specific nest boxes, such as swift boxes, should also be considered in the appropriate aspects of the Proposed Development.

7.2.6 Repeat Surveys

The survey data in the present report are considered valid for up to 24 months. Should construction of the Proposed Development not commence before May 2025, it is recommended that an update survey is undertaken, as per the methods section of this report, to ensure there has been no significant change to the baseline outlined within this report.

8. References

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Drawings

Drawing 1: Site Location

562350 562400 562450 562500 562550 562600 562650 562700 562750 562800 562850 562900 562950

174750 174700 174650 174600 174550 174500 174450 174400 174350 174300 174250

N

Maxar, Microsoft

KEY

Site Boundary

100m buffer



Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions>

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Kilometres

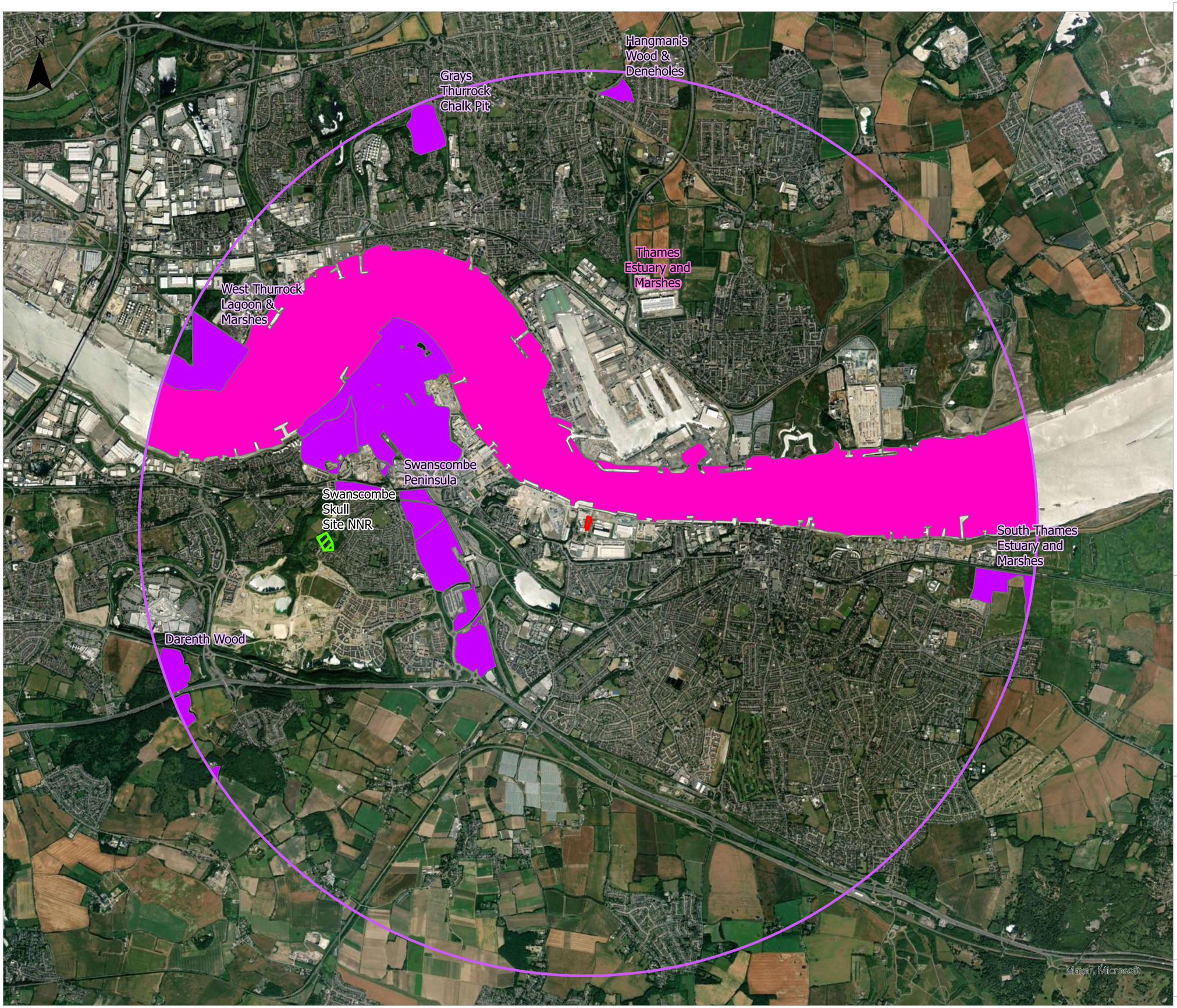
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PART OF SLR

Northfleet / 5956
Preliminary Ecological Appraisal
Drawing 1
Site Location

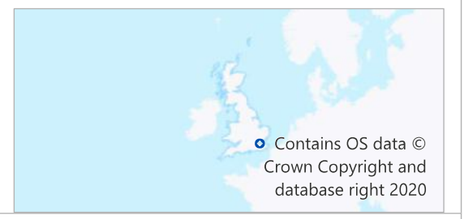
Date:	Lead:	Review:	Version:
05/03/2025	SG	SR	1.0

Drawing 2: Nature Conservation Designations



KEY

- Site boundary
- 5km Buffer
- NNR
- SSSI
- IBA



Contains OS data © Crown Copyright and database right 2020

Coordinate System: British National Grid
Projection: Transverse Mercator

Contains data from Natural England, RSPB Esri and Ordnance survey. Crown copyright and database right 2025.

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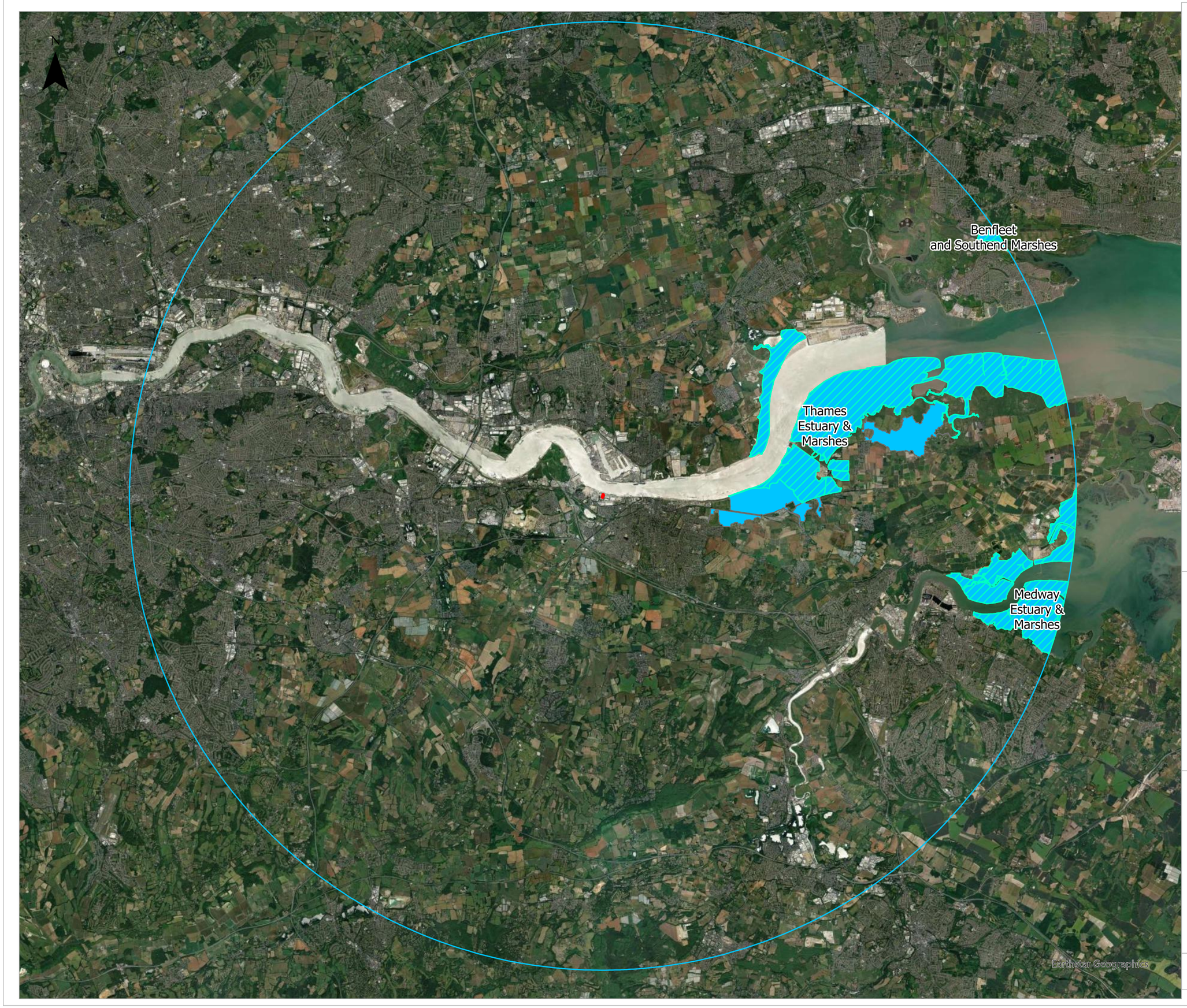
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PART OF SLR

Northfleet / 5956
Preliminary Ecological Appraisal

Drawing 2a

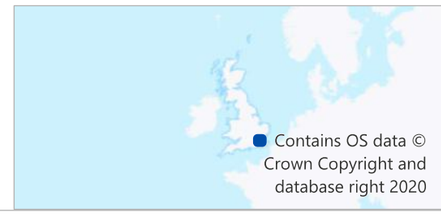
Nature Conservation Designations within 5 km

Date:	Lead:	Review:	Version:
27/03/2025	OA	SR	1.0



KEY

- Site Boundary
- SPA
- Ramsar
- 20km buffer



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Coordinate System: British National Grid
Projection: Transverse Mercator

Contains data from Natural England, RSPB Esri and Ordnance survey. Crown copyright and database right 2025.

0 0.75 1.5 3 4.5 6 7.5 Kilometres

1:150,000

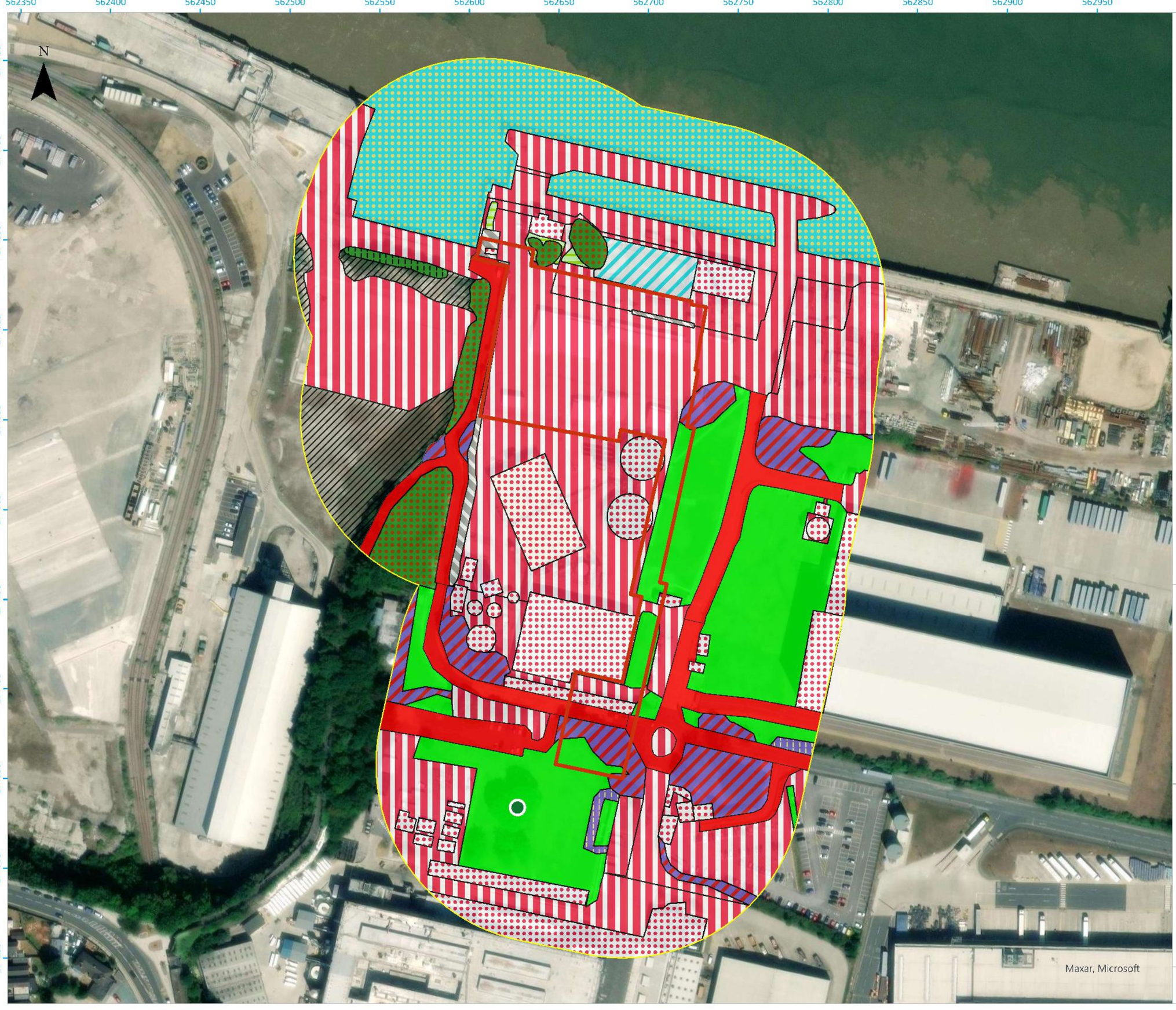
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Northfleet / 5956
Preliminary Ecological Appraisal

Drawing 2b
Nature Conservation Designations within 20 km

Date:	Lead:	Review:	Version:
27/03/2025	OA	SR	1.0

Drawing 3: UK Habitat Classification



KEY

- Site Boundary
- 100m buffer
- Tree

UKHab Habitats

- g3c
- g4
- h2
- h3
- not surveyed
- r1
- r2
- s1a9
- u1b
- u1b5
- u1e
- w1g
- w1g6



Coordinate System: British National Grid
Projection: Transverse Mercator

Attributions: <attributions>

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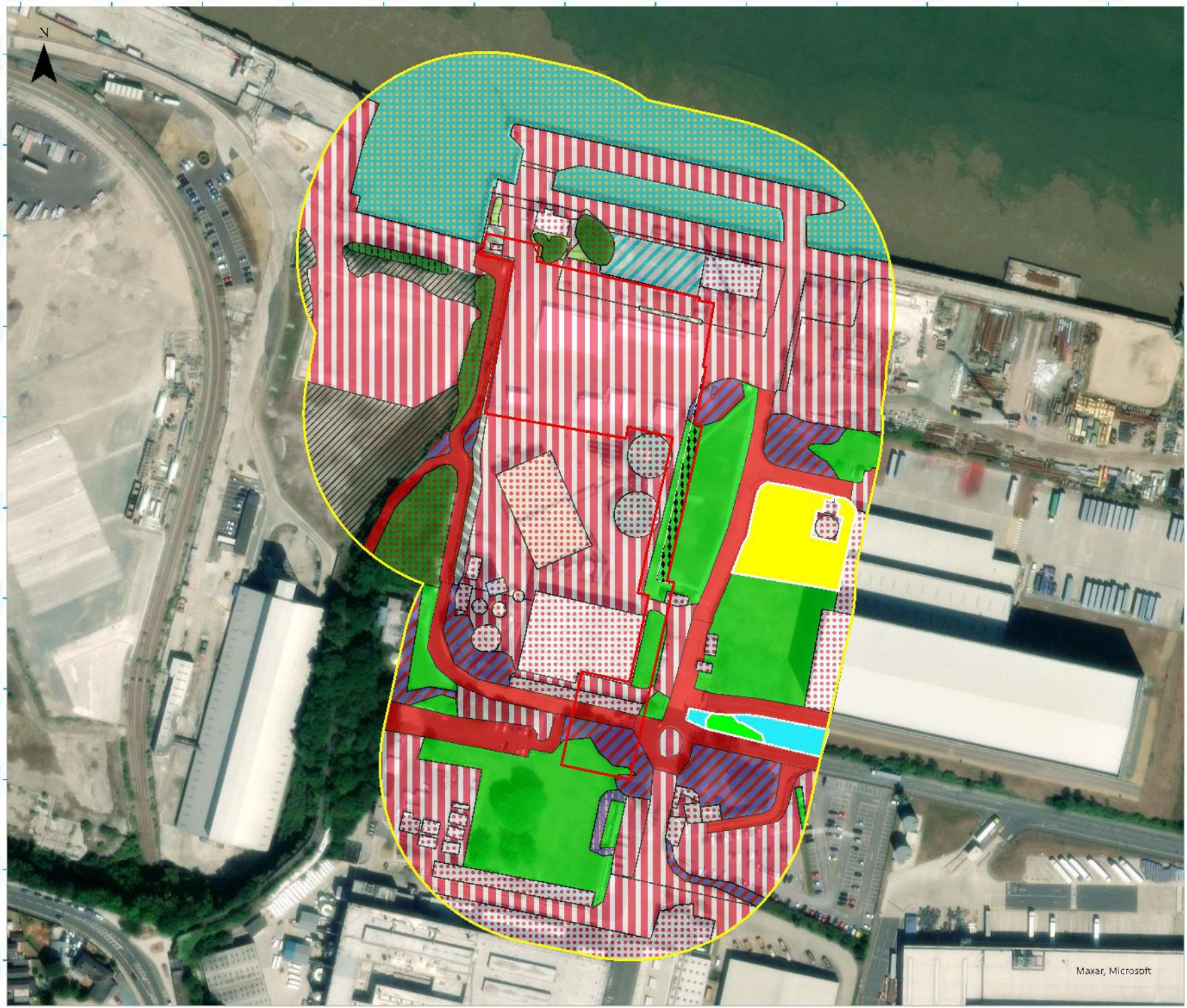
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Northfleet / 5956
Preliminary Ecological Appraisal
Drawing 3
UK Habitat Classification

Date:	Lead:	Review:	Version:
10/03/2025	SG	SR	1.0

Drawing 4: Biodiversity Net Gain Assessment Post-Development Enhancements Plan



KEY

- Site Boundary
- 100m Buffer

BNG Areas

- Create - h3e
- Enhance - g3c
- Enhance - h3e
- Overlapping Boundary Area

UK Habitat classification

- g3c
- g4
- h2
- h3
- r1
- r2
- s1a9
- u1b
- u1b5
- u1c
- w1g
- w1g6



Coordinate System: British National Grid
Projection: Transverse Mercator

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0 0.01 0.02 0.04 0.06 0.08 0.1 Kilometres

1:1,981

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Northfleet Hydrogen Facility / 5956
Preliminary Ecological Appraisal

Drawing 4
Biodiversity Net Gain Assessment
Post-Development Enhancements Plan

Date:	Lead:	Review:	Version:
03/04/2025	DA	SR	1.0

Drawing 5: Proposed Layout Plan showing the Site Boundary and Proposed Development area

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KEY:

- PROPOSED DEVELOPMENT BOUNDARY (1.39 HECTARES) (OUTSIDE EDGE OF LINE DENOTES BOUNDARY)
- HYDROGEN ELECTROLYSERS
- HYDROGEN STORAGE TANK
- HIGH VOLTAGE ROOM
- LOW VOLTAGE ROOM
- COMPRESSOR, AIR/N2 TANK AND PRODUCTION
- DNO SUBSTATION BUILDING
- VENT
- VENT THERMAL EXCLUSION FENCE (UP TO Ø18m ZONE)
- VENT SOUND EXCLUSION AREA (Ø25m)
- CONTROL ROOM
- MAINTENANCE STORAGE
- WASTE WATER BUFFER TANK WITH PUMP
- FEED WATER BUFFER TANK AND PUMPS
- TRANSFORMER
- VEHICLE BARRIER
- BOLLARD

KEY CONTINUED...

KEY CONTINUED:

- COMPRESSED AIR / N2 STORAGE
- PCV 3 - 30 barg TO TRANSPORT PRESSURE / METERING & ANALYSER
- HYDROGEN SUPPLY PIPE (OVERGROUND)
- HYDROGEN SUPPLY PIPE (BURIED)
- FENCE
- ACCESS ROAD
- PIPE AND CABLE RACK
- SURFACE WATER DRAIN (BURIED)
- FOUL WATER DRAIN (BURIED)
- FOUL WATER CONNECTION POINT
- DNO SUBSTATION IN A GRP ENCLOSURE
- VEHICLE GATE
- PEDESTRIAN GATE

0 25 50 100 150 200m

SCALE 1:2,500

ISSUE	DRAWN	CHKD	APPD	DATE	REVISION NOTES
7	BM	BS	CA	2025-01-31	UPDATED BOUNDARY
6	BM	DC	IB	2025-01-23	UPDATED LAYOUT AS PER FEED MODEL
5	BM	DC	IB	2024-08-02	UPDATED DEVELOPMENT BOUNDARY
4	BM	CA	BS	2023-09-01	ADDED SCALE BAR AND DELETE SHEETS 2-5

PURPOSE: PLANNING	COORDINATES: OSGB 1936
SCALE: 1:2,500 @A3	DATUM: N/A
LAYOUT DRAWING: N/A	T-LAYOUT NO: N/A

PROJECT TITLE
NORTHFLEET GREEN HYDROGEN FACILITY

DRAWING TITLE
INFRASTRUCTURE LAYOUT

RES DRAWING NUMBER	REV
05135-RES-PRO-DR-PT-001	7

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Appendices

Appendix A: Species Specific Legislation

Bats

Bats are protected as European Protected Species under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). For any wild bat species, it is an offence to deliberately or recklessly:

- Capture, injure or kill a bat;
- Harass a bat or group of bats;
- Disturb a bat in a roost (any structure or place it uses for shelter or protection);
- Disturb a bat while it is rearing or otherwise caring for its young;
- Obstruct access to a bat roost or otherwise deny an animal use of a roost;
- Disturb a bat in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- Disturb a bat in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; and
- Disturb a bat while it is migrating or hibernating.

It is also an offence to:

- Damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly); and
- Keep, transport, sell or exchange, or offer for sale or exchange any wild bat (or any part or derivative of one) obtained after 10 June 1994.

It is a strict liability offence to damage or destroy a bat roost. A bat roost is protected at all times irrespective as to whether any bats are using the roost at a given time. If the work proposed is to affect bats or their roosts, an EPS licence, issued by the licensing authority Natural England under Regulation 44 of the Habitats Regulations will be required in order to permit an otherwise illegal activity.

Badger

Badgers and their setts are protected under the Protection of Badgers Act 1992. Under this legislation it is an offence to intentionally or recklessly:

- Kill, injure, take, possess or cruelly ill-treat a badger or attempt to do so;
- Interfere with a sett by damaging or destroying it;
- Obstruct access to a badger sett;
- Disturb a badger whilst it is occupying a sett;
- Cause or allow a dog to enter a sett;
- Sell a live badger, or offer one for sale, or possess a live badger; and
- Be in the possession, or control of, a dead badger or anything derived from a dead badger.

Under the Protection of Badgers Act 1992, a badger sett is defined as ‘any structure or place which displays signs indicating current use by a badger’.

Birds

All wild bird species in the UK are protected under the Wildlife and Countryside Act 1981 (as amended), with species listed on Schedules A1, 1 and 1A afforded additional protection.

For any wild bird species, it is an offence to intentionally or recklessly:

- Kill, injure or take a bird;
- Take, damage, destroy or interfere with a nest of any bird while it is in use or being built;
- Obstruct or prevent any bird from using its nest;
- Take or destroy an egg of any bird;
- Possess or control a living or dead wild bird; and
- Possess or control an egg of a wild bird (or any such derivatives).

For any wild bird species listed on Schedule 1, it's an offence to disturb:

- Any bird while it is building a nest;
- Any bird while it is in, on, or near a nest containing eggs or young;
- Any bird while lekking; and
- The dependent young of any bird.

For any wild bird species listed on Schedule 1A, it's an offence to intentionally or recklessly harass any bird.

For any wild bird species listed on Schedule A1, it's an offence to intentionally or recklessly take, damage, destroy or interfere at any time with a nest habitually used by any bird.

Licenses cannot be issued for the purpose of development in relation to any of the above offences.

Conservation of Habitats and Species (Amendments) (EU Exit) Regulations 2019

European Protected Species (EPS) and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species (Amendments) (EU Exit) Regulations 2019 which makes it illegal to:

- Deliberately capture, injure, or kill any such animal or to deliberately take or destroy their eggs;
- Deliberately disturb such an animal; and
- Damage or destroy a breeding site or resting place of such an animal.

Examples of EPS include bats, otter, and great crested newt.

EPS licenses can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the Habitats Directive) are passed, namely:

- The development is for reasons of overriding public interest;
- There is no satisfactory alternative; and
- The favourable conservation status of the species concerned will be maintained and/or enhanced.

Under Regulation 9(5) of the Conservation Regulations, Planning Authorities have a duty to 'have regard to the requirements of the Habitats Directive' i.e., LPAs must consider the above 3 'tests' when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations.

Wildlife and Countryside Act 1981

Animal species listed under Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended) receive full protection which makes it illegal (subject to certain exceptions) to:

- Intentionally kill, injure, or take any such animal;
- Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any such animal; and
- Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.

Some species receive partial protection under The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which provide protection against intentional killing or injury of any such animal.

All wild birds (as defined by the act) are protected under the Wildlife and Countryside Act 1981 (and as amended), which makes it illegal (subject to exceptions) to:

- Intentionally kill, injure, or take any wild bird;
- Take, damage, or destroy the nest (whilst being built or in use) or eggs of any wild bird.

Additional protection is provided to birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (and as amended). In addition to the offences detailed above relating to all wild birds, it is illegal to:

- Intentionally or recklessly disturb any bird listed on Schedule 1, or their dependent young while nesting.

Plant species listed under Schedule 8 of the Wildlife and Countryside Act 1981 (and as amended) are protected from unauthorised intentional picking, uprooting and destruction.

Appendix B: Plant species list with common and scientific names

Common Name	Scientific Name
Wall barley	*Hordeum murinum*
Cocks foot	*Dactylis glomerata*
Yorkshire fog	*Holcus lanatus*
Fescue spp.	*Festuca*
Perennial rye grass	*Lolium perenne*
Yarrow	*Achillea millefolium*
Nettle	*Urtica dioica*
Greater plantain	*Plantago major*
Ragwort	*Jacobaea vulgaris*
Pyramidal orchid	*Anacamptis pyramidalis*
Lesser celandine	*Ficaria verna*
Meadow buttercup	*Ranunculus acris*
Daisy	*Bellis perennis*
Ribwort plantain	*Plantago lanceolata*
Common poppy	*Papaver rhoeas*
Rosebay willowherb	*Chamaenerion angustifolium*
Bull rush	*Scirpoides holoschoenus*
Iris	*Iris*
Bamboo sp.	*Bambusa*
Rough hawkbit	*Leontodon hispidus*
Bristly oxtongue	*Helminthotheca echioides*
Vetch sp.	*Vicia*
Wild clematis	*Clematis vitalba*
Doves-foot-cranesbill	*Geranium molle*

Germander speed well	*Veronica chamaedrys*
Bramble	*Rubus fruticosus* agg.
Common ivy	*Hedera helix*
Crab apple	*Malus sylvestris*
False acacia	*Robinia pseudoacacia*
Hazel	*Corylus avellana*
Hawthorn	*Crataegus monogyna*
Sycamore	*Acer pseudoplatanus*
Elder	*Sambucus nigra*
Dog rose	*Rosa canina*
Laurel	*Laurus* sp
Privet	*Ligustrum vulgare*
Blackthorn	*Prunus spinosa*
Holly	*Ilex aquifolium*
Buddleia	*Buddleia davidii*

Appendix C: Photographs

	Photographs and location descriptions
1	 View of the Site with the tall herb communities located on the north of the Site. Camera facing west.
2	 Woodland and other neutral grassland located to the north of the Site within the Study Area.

3	 Standing water located to the north of the Site within the Study Area.
4	 The western boundary of the Site supporting tall herb communities along the boundary wall. Camera facing south.
5	 Woodland located to the south-west of the Site within the Study Area.

	Update Photographs and location descriptions
1	 View of the Site with the tall herb communities located on the north of the Site. Camera facing west
2	 Woodland and other neutral grassland located to the north of the Site within the Study Area.
3	

	 Standing water located to the north of the Site within the Study Area.
4	 The western boundary of the Site supporting tall herb communities along the boundary wall. Camera facing south.

5	 Woodland located to the south-west of the Site within the Study Area.
6	 Areas of modified grassland and mixed scrub outside the Site to be used for Biodiversity Net Gain and transitioned to neutral grassland with areas of scrub created within.

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