



Preliminary Ecological Appraisal

Proposed Rainham Landfill Extension of Life

Veolia ES Landfill UK Ltd

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Basis of Report

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Appendix A Relevant Legislation and Planning Policy



Acronyms and Abbreviations

CIEEM	Chartered Institute of Ecological and Environmental Management
EPS	European Protected Species
GiGL	Greenspace Information for Greater London
LNR	Local Nature Reserve
MAGIC	Multi-Agency Geographic Information for the Countryside
PEA	Preliminary Ecological Appraisal
RSPB	Royal Society for the Protection of Birds
SINC	Sites of Importance for Nature Conservation
SSSI	Site of Special Scientific Interest



1.0 Introduction

SLR Consulting Ltd (SLR) was commissioned in March 2023 by Veolia ES Landfill UK Ltd to carry out a Preliminary Ecological Appraisal (PEA) in association with the planning application for the proposed 5-year extension of the landfill site with subsequent 2-year restoration period following completion of waste disposal at the site located at Rainham Landfill, Coldharbour Lane, Rainham, RM13 9YB (hereafter referred to as the 'Site').

The application site extends to approximately 156 hectares (ha) and is centred on National Grid reference TQ 52335 79495. The Site and survey boundaries can be seen on Figure 1.

The Site is currently being used as a landfill in the southern areas of the Site, with most of the remaining areas having undergone restoration. The Site comprises an access road with weighbridge facilities and associated infrastructure, small, site compound with two temporary buildings, car parking and storage facilities, access roads and tracks, variety of vegetated habitats (mostly grassland types) and small waterbodies and wet ditches.

The Site is located adjacent to the northern bank of the River Thames and south of Rainham, Greater London, which comprises dense residential and commercial areas. The Site is accessed via an adjacent minor road on the northwest boundary (Coldharbour Road), with the busy A13 dual carriageway further to the north. Inner Thames Marshes Site of Special Scientific Interest (SSSI) is adjacent to the Site to the east and Rainham Marshes Local Nature Reserve (LNR) to the north of the Site, both are only separated from the Site by Coldharbour Road. The Site is also within 2 km of nine non-statutory and one proposed non-statutory designated sites: all Sites of Importance for Nature Conservation (SINC).

1.1 Details of the Proposed Development

The current site at Rainham has been used for landfill purposes since the original consent issued in 1998 and has undergone various planning applications since this time, with the most recent being issued in September 2016 (P1566.15, London Borough of Havering). The 2016 planning application consented to the continuation of waste inputs and operation of other waste management facilities (materials recycling facility, waste transfer station, open air composting site and associated soil plant, gas engines, leachate treatment plant, and incinerator bottom ash processing) until 2024 and re-profiling of final contours. A proposed planning application is seeking the consent for a 5-year extension of the landfill site with subsequent 2-year restoration period following completion of waste disposal.

1.2 Purpose of this Report

This report presents the findings of the PEA. The report seeks to:

- describe the baseline data collection and assessment methodologies used;
- establish baseline conditions and determine the importance of ecological features present (or those that could be present), as far as is possible without detailed species surveys;
- assess the bat roost potential of any buildings, structures and trees on site;
- to identify potential ecological constraints to the proposed development and make initial recommendations to avoid potential significant effects on important ecological features, where possible;
- to identify potential requirements for mitigation, where possible, including mitigation measures that will be required and those that may be required (depending on results of further surveys or final scheme design);
- to establish any requirements for more detailed surveys; and
- to identify opportunities for biodiversity enhancements as part of the project.



1.3 Evidence of Technical Competence and Experience

Darcey Haldar, who surveyed the northern area of the Site, is a Project Ecologist at SLR. She has an MSc in Conservation Ecology and has over two years' experience working in ecological consultancy. Darcey is a Qualifying member of CIEEM, has a CSCS card and experience in a range of surveys and reports including UKHab, protected species surveys and Biodiversity Net Gain.

Ruth Holland ACIEEM, who surveyed the Site and wrote this report, is an Associate Ecologist, with a BSc in Ecology and Conservation Management and a MSc in Biological Recording. She has over nine years of experience as a professional ecological consultant, during which time she has worked on many development projects.

This report has been subject to Quality Assurance review as per SLR's policies by Richard Arnold, Technical Director – Ecology at SLR Consulting. Richard has over 25 years' experience as a consultant ecologist and has undertaken numerous ecological assessments of this type. He is a Chartered Environmentalist and a full member of the Chartered Institute of Ecology and Environmental Management.

1.4 Relevant Legislation and Policy

The key wildlife legislation and national planning policy underpinning the conservation of habitat and species are included in Appendix 1. There are a number of policy documents at the local level with relevance to biodiversity, which are summarised below.

1.4.1 Local Planning Policy

The London Plan 2021

Policy G6 Biodiversity and access to nature

A Sites of Importance for Nature Conservation (SINCs) should be protected.

B Boroughs, in developing Development Plans, should:

- 1) use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks
- 2) identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them
- 3) support the protection and conservation of priority species and habitats that sit outside the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans
- 4) seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context
- 5) ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.

C Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:

- 1) avoid damaging the significant ecological features of the site
- 2) minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site
- 3) deliver off-site compensation of better biodiversity value.

D Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process.

E Proposals which reduce deficiencies in access to nature should be considered positively



Havering Local Plan 2016-2031 Adopted November 2021¹

Policy 30: Biodiversity and geodiversity

The Council will protect and enhance the borough's natural environment and seek to increase the quantity and quality of biodiversity in Havering by:

- i. Ensuring developers demonstrate that the impact of proposals on protected sites and species have been fully assessed when development has the potential to impact on such sites or species. Appropriate mitigation and compensation measures will also need to be identified where necessary. If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission will normally be refused;
- ii. Not permitting development which would adversely affect the integrity of Specific Scientific Interest, Local Nature Reserves and Sites of Importance for Nature Conservation except for reasons of overriding public interest, or where adequate compensatory measures are provided; If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission will normally be refused;
- iii. Supporting proposals where the primary objective is to conserve or enhance biodiversity; iv. Encouraging developments where there are opportunities to incorporate biodiversity in and around the development;
- iv. Supporting developments that promote the qualitative enhancement of sites of biodiversity value, (by supporting proposals that improve access, connectivity and the creation of new habitats. Measures include maintaining trees, native vegetation, and improving and restoring open spaces and green infrastructure for the benefit of wildlife;
- v. Working with partners and local conservation groups to improve conditions for biodiversity in the borough;
- vi. Working with partners and local conservation groups to improve conditions for biodiversity in the borough.

Policy 31: Rivers and river corridors:

Havering's rivers and river corridors fulfil important biodiversity, recreation, placemaking, amenity, freight transport and flood management functions which the Council will seek to optimise. The Council will seek to enhance the river environment by requiring major developments in close proximity to a river to investigate and, where feasible, secure opportunities to restore and enhance rivers and their corridors in line with the Thames River Basin Management Plan (RBMP). This should, wherever possible, include the integration of flood defences into new developments. Where enhancements or restoration are financially viable but not feasible a financial contribution will be sought. To protect and enhance the biodiversity and amenity value of river corridors while accommodating future adaptations to flood defences, the Council will require development to be set back by 8 metres from main rivers, ordinary watercourses, and other flood assets, and 16 metres from tidal rivers or defence structures, including tie rods and anchors. In the Thames Policy Area (as identified on the Policies Map) the Council will support development which:

- i. Establishes a link with the river, preserves and enhances views to and from the river and creates a high quality built and natural environment;
- ii. Contributes towards the enhancement and extension of a riverside path to enable local communities to enjoy the riverside providing the appropriate life-saving equipment such as grab chains, access ladders and life buoys are provided along the river edge;
- iii. Facilitates and acts on the recommendations of the Thames Estuary 2100 Plan;
- iv. Contributes to the safeguarding of Halfway Wharf and Phoenix Wharf from redevelopment for other purposes which would prejudice their use for river-based freight related purposes.

¹ Havering Local Plan 2016 - 2031 | The London Borough Of Havering



2.0 Methodology

To establish the current baseline ecological conditions within the Site, a desk and field survey have been undertaken. The methods for each are described below.

2.1 Baseline Data Collection

2.1.1 Desk Study

An ecological data search was requested in May 2023 from eCountability in partnership with Greenspace Information for Greater London (GiGL) to provide records of protected, priority and otherwise notable species and statutory and non-statutory sites around the Site. Only records of species made within 10 years prior to the site visit were considered for this report. The terms of use of data prevent the publication of the raw data and therefore a copy of the data search has not been included within this PEA.

An internet-based desk study was also undertaken, whereby the Multi-Agency Geographic Information for the Countryside (MAGIC) website (<http://magic.gov.uk>) for statutory designated sites, ancient woodland, priority habitats and European Protected Species (EPS) licences within 2 km radius (4 km radius for bats) of the Site.

2.1.2 Preliminary Ecological Appraisal

A UK Habitat Classification (UKHab) Survey was initially undertaken by Ruth Holland ACIEEM on 24th May 2023 to assess all areas within the Site. A further walkover survey was undertaken by Ruth Holland on 15th November 2023 to record and update any recent changes within the Site. This method was extended to include preliminary checks for protected, priority and otherwise notable species of both flora and fauna. Particular features of interest were recorded on a field map using Target Notes, as shown on Drawing 1.

The UKHab is a comprehensive classification system for the UK that has been developed to benefit from changes in habitat categorisation, recording analysis in recent decades. The system comprises a principal hierarchy (the Primary Habitats) which include broad habitats and priority habitats and non-hierarchical secondary codes. Habitat nomenclature and definitions have been designed to remain as close to existing systems as possible in order that data can be collected, analysed and translated without ambiguity.

This level of survey includes the documentation of habitats to a recognised standard, but also includes the recording of field evidence indicating the presence or potential presence of species that could constitute a material consideration in planning terms, such as protected or notable plant or faunal species. Notes of principle habitat types, supported by photographs, were recorded.

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

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

In addition, the presence of invasive non-native plant species was searched for during the survey, specifically those included within (i) Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA); (ii) Invasive Alien Species Order 2019² and (iii) those listed as being of concern under the London Invasive Species Initiative. . Plants included within Schedule 9 are pest species that are pernicious or injurious, such as Japanese knotweed *Fallopia japonica*, Himalayan balsam

² The Invasive Alien Species (Enforcement and Permitting) Order 2019 ([legislation.gov.uk](https://www.legislation.gov.uk))



Impatiens glandulifera and giant hogweed *Heracleum mantegazzianum*. It is an offence under the Act to plant or cause the spread of these species in the wild.

The survey area was assessed for habitats and features with potential to support protected or notable species, together with any field signs of such species including, but not limited to, badger *Meles meles*, bats *Chiroptera*, great crested newt (GCN) *Triturus cristatus* and breeding birds *Aves*.

Hedgerow condition and diversity were also assessed according to the Hedgerow Survey Handbook, which contains criteria outlined by the Steering Group for the UK Biodiversity Action Plan for Hedgerows³.

A ground-level assessment of potential bat roosting features (PRFs) in buildings was undertaken based on the Collins 2016⁴ Bat Roosting Potential Methodology, which provides criteria for assessing the suitability of structures and trees to support roosting bats (Table 2-1).

Table 2-1 Criteria of Suitability to Support Bat Roosts

Category (Bat Potential)	Description
Negligible potential	Building where surveyor has not identified any suitable potential roosting features, or where those that are present are of such poor quality or condition ⁵ , such that bats are highly unlikely to use them.
Low potential	Building 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.
Moderate potential	Building with one or more potential roost site that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but which are 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).
High potential	Building 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.

An assessment of the habitat within the Site was undertaken based on Collins 2016, which provides criteria for assessing the suitability of habitat to support bat commuting and foraging opportunities (Table 2-2).

Table 2-2 Criteria of Suitability to Support Bat Commuting and Foraging

Category (Bat Potential)	Description
Negligible potential	Negligible habitat features on site likely to be used by commuting and foraging bats.

³ Hedgerow Survey Handbook (publishing.service.gov.uk)

⁴ Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition - Guidance for professionals - Bat Conservation Trust 2016

⁵ For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.



Category (Bat Potential)	Description
Low potential	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated due to poor connectivity to other habitats. Suitable, but isolated habitats that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.
Moderate potential	Continuous habitat connected to wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High potential	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerow, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parklands. Site is close to and connected to known roosts.

2.1.3 Limitations

2.1.3.1 Desk Study

Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that important habitats or protected species not identified during the data search do in fact occur within the vicinity of the Site.

Interpretation of maps and aerial photography has been conducted in good faith, using recent imagery, but it has not been possible to verify the accuracy of any statements relating to land use and habitat context outside of the field study area.

2.1.3.2 Field Survey

Parts of the Site were not accessible during the survey, due to the health and safety issues associated with an active landfill site. These areas were assessed from a distance with the use of high-powered binoculars; however, this was not deemed a true limitation, as the proposed planning application does not include the alteration and/or modification of the habitat present.

The initial survey was undertaken in May, which is considered to be an optimal time for conducting vegetation surveys.

The survey did not seek to identify all plant species within the study area and as such, this report does not provide an exhaustive list of flora found within the study area. However, it is considered that the survey results are representative of the habitats and flora of the application site and include the dominant and characteristic species.

Whilst it is felt unlikely that significant factors have been overlooked, due to the nature of the subjects of ecological surveys it is feasible that species that use the Site may not have been recorded by virtue of their seasonality, cryptic behaviour, habit or random chance. It should be noted that lack of evidence of any one protected species during survey visits does not necessarily preclude its presence at the Site either at this current time or in the future. It is considered that the



survey was suitable for conducting protected species risk assessments based on habitat type, collected data and local knowledge.

An ecological study provides only a “snapshot” of the conditions prevailing at the time of survey. Lack of evidence of any one protected species does not necessarily preclude them from being present on site at a later date. For example, some species, such as bats, are highly mobile and can move between roosts in response to changes in environmental factors; the activity level of an identified roost may therefore fluctuate during the year.

2.2 Evaluation Approach

The ecological evaluation approach used in this report is based on Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (“CIEEM guidelines”) (CIEEM, 2018).

2.2.1 Important Ecological Features

Ecological features can be important for a variety of reasons and the rationale used to identify them is explained in the text. Importance may relate, for example, to the quality or extent of the Site or habitats therein; habitat and/or species rarity; the extent to which such habitats and/or species are threatened throughout their range, or to their rate of decline.

2.2.1.1 Determining Importance

The importance of an ecological feature should be considered within a defined geographical context. The following frame of reference has been used in this case, relying on known/published accounts of distribution and rarity where available, and professional experience:

- International;
- National (i.e. UK/England, etc.);
- Regional (i.e. South East England);
- County (i.e. Great London);
- Borough (i.e. Havering);
- Local (i.e. within circa 5 km); and
- Negligible.

The above frame of reference is applied to the ecological features identified during the desk study and surveys to inform this report.

The value of habitats has been measured against published selection criteria where available. Examples of relevant criteria include: descriptions of habitats listed on Annex 1 of the Habitats Directive; descriptions of habitats of principal importance for biodiversity under Section 41 of Natural Environment and Rural Communities (NERC) Act 2006 (priority habitats); guidelines for the selection of biological SSSIs; Local Wildlife Site Selection Criteria; and Habitat Action Plans (HAPs) contained within Local Biodiversity Action Plans.

In assigning a level of value to a species population, it is necessary to consider the species distribution and status, including a consideration of trends based on available historical records. Reference has therefore been made to published lists and criteria where available. Examples of relevant lists include: species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive or Annex 1 of the Birds Directive); species of principal importance for biodiversity under Section 41 of the NERC Act 2006 (priority species) and Birds of Conservation Concern¹.

For the purposes of this report, ecological features of Local importance or greater and/or subject to legal protection have been subject to detailed assessment. Effects on other ecological features are considered unlikely to be significant in legal or policy terms.



3.0 Results

The results of the desk and field surveys are reported below and describe the baseline conditions at the Site and within the surrounding area.

3.1 Designated Sites

3.1.1 Statutory Designated Sites

The local biological records from GiGL and MAGIC have confirmed that there are three statutory designated sites within 2 km of the Site (Drawing 2).

3.1.2 Non-statutory designated Sites

The GiGL data search shows that there are at least nine non-statutory designated sites and one proposed non-statutory sites within 2 km of the grid reference TQ 51878 86228.

Table 3-1 below gives the locations and descriptions of these 13 sites.

Table 3-1 Designated Sites within search radius

Site Name	Distance (m) and Direction from site	Site Description	Size (ha)
Statutory Sites			
Inner Thames Marshes SSSI	28 NE	The site forms the largest remaining expanse bordering the upper reaches of the Thames Estuary. The site is of particular note for its diverse ornithological interest and especially for the variety of breeding birds and number of wintering wildfowl, waders, finches and birds of prey, with wintering teal populations reaching levels of international importance. The Marshes also support a wide range of wetland plants and insects with a restricted distribution in London area, including some that are nationally rare* or scarce*.	479.3
Rainham Marshes LNR	296 N	Rainham Marshes, forms part of the Inner Thames Marshes SSSI, and was once ancient grazing marshes of the Thames Estuary. Its mix of wet grassland and ditches together with dry grasslands and scrub, are home to a wide variety of birds and scarce wetland plants and insects. There is also a good population of water voles. Its scrapes and pools provide ideal habitats for wader and duck species, while the pockets of woodland support warbler and woodpecker species. The reedbeds also support marsh harriers, bearded tit, and summer warbler species.	79.19
Crossness LNR	1950 W	Includes a network of ditches and open water, scrub and rough grassland. The reserve is a water vole stronghold, and over 130 different species of bird have been recorded on site. A number of rare aquatic and terrestrial invertebrates are present, as well as some important flora species.	25.5
Non-Statutory Sites			
M031 River Thames and tidal tributaries SINC	Majority adjacent to Site, S	The River Thames and the tidal sections of creeks and rivers which flow into it comprise a number of valuable habitats not found elsewhere in London. The mud-flats, shingle beach, inter-tidal vegetation, islands and river channel itself support many species from freshwater,	2312.73



Site Name	Distance (m) and Direction from site	Site Description	Size (ha)
		estuarine and marine communities, which are rare in London. The site is of particular importance for wildfowl and wading birds. The river walls, particularly in south and east London, also provide important feeding areas for the nationally rare and specially-protected black redstart. The Thames is extremely important for fish, with over 100 species now present.	
M039 Wennington, Aveley and Rainham Marshes SINC	28 NE	The largest remaining expanse of wetland bordering the upper reaches of the Thames Estuary. The grasslands support uncommon plants, including the nationally scarce divided sedge <i>Carex divisa</i> , a characteristic species of the Thames Estuary. The drainage ditches and seasonally wet areas support several regionally uncommon plants; marsh dock <i>Rumex palustris</i> , golden dock <i>R. maritimus</i> , soft hornwort <i>Ceratophyllum submersum</i> , brackish water-crowfoot <i>Ranunculus baudotii</i> , as well as the nationally scarce stiff saltmarsh-grass <i>Puccinellia rupestris</i> . Ditches and other habitats also support an important invertebrate assemblage which includes many nationally rare, scarce and local species, such as the scarce emerald damselfly <i>Lestes dryas</i> and several water beetles, molluscs, wetland moths and the salt-marsh spider <i>Baryphyma duffeyi</i> . The site supports important populations of breeding, passage and wintering birds, including several species of conservation concern. The marshes are also a nationally important site for the specially-protected water vole. The terrestrial invertebrate fauna includes a large population of the brown-banded carder-bee <i>Bombus humilis</i> , a UK and London Biodiversity Action Plan priority species.	413.98
M108 Ingrebourne Valley SINC	2000 N	The River Ingrebourne flows through one of the most natural riparian corridors in London. At its lower end is an extensive and nationally important suite of naturally-formed freshwater habitats, known as Ingrebourne Marshes. These include extensive reedbeds, lakes, wet grasslands and small areas of willow <i>Salix spp. carr</i> , and support an exceptional wetland invertebrate and bird fauna. The reedbeds are notable for abundant reed sweet-grass <i>Glyceria maxima</i> as well as common reed <i>Phragmites australis</i> , and many uncommon plants include small sweet-grass <i>Glyceria declinata</i> , nodding bur-marigold <i>Bidens cernua</i> , and water and golden docks <i>Rumex hydrolapathum</i> , <i>R. maritimus</i> . The upper reaches are largely wooded, with important ancient alder <i>Alnus glutinosa</i> woodlands. Large areas of herb-rich grassland are also included, as are ox-bow ponds and small areas of species-rich fen.	262.56
BxB102 Belvedere Dykes SINC	Several parcels, closest 960 SW	The drainage dykes are well vegetated, dominated by common reed, great reed mace <i>Typha latifolia</i> , reed sweet-grass; and surrounding wet woodland and rough land areas. The nationally scarce yellow vetchling <i>Lathyrus aphaca</i> is also present. A wetland area was created along the east ditch within the waste recovery facility. Some ditches hold populations of the nationally scarce marsh dock <i>Rumex palustris</i> . The ditches support the specially protected water vole, a priority species in the UK and London Biodiversity Action Plans. Breeding	10.02



Site Name	Distance (m) and Direction from site	Site Description	Size (ha)
		birds include reed warbler. Some also have important populations of fish and invertebrates	
HvBI18 Lower River Beam and Ford Works Ditches SINC	1950 NW	This site is dominated by the lower River Beam and 'Wildlife Valley' (a drain with extensive, well vegetated banks), with an intervening area of Thames side grassland and tree planting. This section of the Beam has a sluggish flow and very limited emergent vegetation but supports water voles. North of a footbridge the banks are managed for amenity, with planted trees and weedy, frequently mown grassland. The bankside vegetation south of the footbridge and that of Wildlife Valley are more diverse, comprising a mosaic of bramble <i>Rubus fruticosus</i> agg., tall herbs, common reed swamp, willow scrub and silver birch <i>Betula pendula</i> woodland, forming a sanctuary for birds and water voles. The area of Thames side grassland is dominated by coarse grasses with semi-mature planted trees, and includes interesting species such as deadly nightshade <i>Atropa belladonna</i> , grass-leaved orache <i>Atriplex littoralis</i> and sea couch <i>Elytrigia atherica</i> , all uncommon in London	14.03
BxBI120 St John the Baptist Churchyard, Erith SINC	960 SW	This small churchyard contains moderately species-rich grassland; importantly it also has a large colony of ivy broomrape <i>Orobancha hederaceae</i> , a nationally scarce species, growing on Atlantic ivy <i>Hedera helix</i> ssp <i>hibernica</i> ; 378 flower spikes were counted in 2009.	1.23
HvBI130 Brett Havering Aggregates West SINC	1462 NE	This site comprises a range of interesting habitats associated with an active gravel works. The majority of the site comprises a series of vegetated wetland areas with intervening gravel bunds. These areas include quite extensive stands of common reed and great reedmace, while drier areas are covered in creeping thistle <i>Cirsium arvense</i> , great willowherb <i>Epilobium hirsutum</i> and couch <i>Elytrigia repens</i> . There are large areas of shallow water, largely choked with filamentous algae, and mud attracting coot, little grebe and moorhen, and supporting a large population of the nationally scarce marsh dock. This area is reported to attract large numbers of snipe in the winter. Bunds to the west are thinly vegetated with ruderals including squirreltail fescue <i>Vulpia bromoides</i> , bristly ox-tongue <i>Picris echioides</i> , mugwort <i>Artemisia vulgaris</i> , Canadian fleabane <i>Conyza canadensis</i> , and scentless and scented mayweeds <i>Tripleurospermum inodorum</i> and <i>Matricaria recutita</i> . There is a small area of planted willow and alder woodland in the northern part of the site	6.84
HvBI139 Riverside Sewage Treatments Works SINC	1507 NW	An area of secondary woodland and scrub on the western margin of the sewage works is composed of grey poplar <i>Populus x canescens</i> , elder <i>Sambucus nigra</i> and other species. This surrounds an open pool with some common reed and other emergent vegetation. This is likely to be of value for amphibians, water voles and birds. The operational area of this large sewage treatment works is excluded from the site	9.86
HvBI142F Rainham Railside SINC	1316 NE	Havering's railsides form a network of valuable undisturbed habitats, acting as corridors to facilitate the movement of wildlife around the borough. The total area of railside land makes them a significant habitat in their	8.23



Site Name	Distance (m) and Direction from site	Site Description	Size (ha)
		own right. There are good areas of habitat along all the borough's railways, with cuttings and embankments generally supporting the widest and best habitats. Scrub of elder and hawthorn <i>Crataegus monogyna</i> , or grey willow <i>Salix cinerea</i> and osier <i>S. viminalis</i> in wetter areas, occurs in patches south-east of Rainham station. Rough grassland and tall herbs are widespread, mainly dominated by false oat-grass <i>Arrhenatherum elatius</i> , nettle <i>Urtica dioica</i> , rosebay willowherb, cow parsley <i>Anthriscus sylvestris</i> and Chinese mugwort <i>Artemisia verlotiorum</i> , often intermingled with bramble. This rough land habitat can be found in places all along the line on both sides of Rainham station. Swamp of common reed, reed sweet-grass and great reedmace occurs in ditches on both sides of the line, especially near Aveley Marshes.	
pM031 River Thames and tidal tributaries SINC	Majority adjacent to Site, S	The River Thames and the tidal sections of creeks and rivers which flow into it comprise a number of valuable habitats not found elsewhere in London. The mud-flats, shingle beach, inter-tidal vegetation, islands and river channel itself support many species from freshwater, estuarine and marine communities which are rare in London. The site is of particular importance for wildfowl and wading birds. The river walls, particularly in south and east London, also provide important feeding areas for the nationally rare and specially-protected black redstart. The Thames is extremely important for fish, with over 100 species now present. Many of the tidal creeks are important fish nurseries, including for several nationally uncommon species such as smelt. Barking Creek supports extensive reed beds. Further downstream are small areas of saltmarsh, a very rare habitat in London, where there is a small population of the nationally scarce marsh sow-thistle (<i>Sonchus palustris</i>). Wetlands beside the river in Kew support the only London population of the nationally rare and specially-protected cut-grass <i>Leersia oryzoides</i> . The numerous small islands in the upper reaches support important invertebrate communities, including several nationally rare snails, as well as a number of heronries. Chiswick Eyot, one of the islands, is a Local Nature Reserve. The towpath in the upper reaches is included in the site, and in places supports a diverse flora with numerous London rarities, both native and exotic. Ninety per cent of the banks of the tidal Thames and its creeks are owned by the Port of London Authority, whereas the riparian owners are responsible for the non-tidal (upriver) banks. The water is not owned by anybody. The River Thames upriver of the Thames Barrier is followed by the Thames Path National Trail.	2314.47



3.1.3 Ancient Woodland and Priority Habitat

The MAGIC website indicated no ancient woodlands⁶ present within 2 km of the Site but there are several priority habitat areas, which are broadleaved deciduous woodland, traditional orchard, coastal and floodplain grazing marsh, mudflats and coastal saltmarsh within 2 km (Drawing 3).

Further information on these sites can be found in Table 3-2 below.

Table 3-2 Priority Habitat within search radius

Site Name	Size (ha)	Distance (m) & Direction from the Site
Priority Habitat⁷		
Deciduous Woodland	Multiple parcels, varying sizes	1181 closest SW
Traditional orchard	0.49	1680 N
Coastal and Floodplain Grazing Marsh	Multiple parcels, with largest approx. 40.79	48 closest N 28 closest NE 1062 closest SE
Reedbeds	7.62	33 NE
Mudflats	Multiple parcels, varying sizes	30 closest on riverbank, SW
Coastal Saltmarsh	Multiple parcels, varying sizes	30 closest on riverbank, SW

3.2 Habitats

The results of the UKHab Survey are illustrated in map form in Drawing 1 at the end of this report and are described below. It has been mapped using the fine scale minimum mapping unit MMU (25 m², 5 m length), in accordance with the UK Habitat Classification User Manual⁸.

In summary, the following habitats were recorded within the application area, listed approximately in order of dominance:

⁶ Ancient Woodland is not a formal designation as such, but is a term applied to sites in England and Wales whose documented history shows them to have been continuously wooded since approximately 1600, and which are by extension considered likely to have been continuously wooded since the last Ice Age. Ancient Woodland sites and their mature soils are considerably more complex and biodiverse ecosystems than secondarily wooded sites, and therefore represent environmental capital that should be considered to be a finite resource, as it is not renewable in a human timescale.

⁷ Areas of the same priority habitat type have been combined. The list is not exhaustive and is limited by data availability, priority habitat may exist within and surrounding the site such as hedgerows which are not recorded.

⁸ The UK Habitat Classification Working Group (September 2020) The UK Habitat Classification User Manual Version 1.1.



- g3c Other neutral grassland (16 tall forbs, 61 re-created habitat, 500 dry, 510 bare ground, 521 unmanaged);
- g3c Other neutral grassland (18 species-rich grassland, 61 re-created habitat, 500 dry, 510 bare ground, 517 recent management);
- g3c Other neutral grassland (61 re-created habitat, 500 dry, 510 bare ground, 517 recent management);
- g4 Modified grassland (521 unmanaged);
- u1c Artificial unvegetated, unsealed surface (831 landfill);
- u1c Artificial unvegetated, unsealed surface (510 bare ground, 839 tracks);
- r1a Other eutrophic standing water (41 Pond, non-priority);
- r1a Other eutrophic standing water (50 Ditch);
- h3a Blackthorn scrub;
- h2a Native hedgerow; and
- u1b Developed land, sealed surface (800 road, 804 car park, 815 commercial buildings).

There were several areas of g3c Other neutral grassland within the Site, which were similar but differentiated by the management regimes and/or presence of other identifiable features, such as tall forbs, species-richness, or bare ground. Therefore, the different areas of g3c Other neutral grassland have been differentiated through the use of secondary codes (in brackets) using the relevant other identifiable features. Most vegetated areas within the Site could be identified with the secondary code of 61 re-created habitat by the virtue of the Site being used as a landfill for several decades and undergoing several transformations during this time. Many areas of grassland have fencing present (612 fence); some fencing marked the boundaries; some fencing is within the habitat parcels.

3.2.1 g3c Other neutral grassland (16 tall forbs, 61 re-created habitat, 500 dry, 510 bare ground, 521 unmanaged)

The main areas of g3c Other neutral grassland within the Site, which are unmanaged (521) and contain tall forbs (16) and bare ground (510) are located in the northeast and southwest of the Site (Figure 3-1). The dominant species comprises perennial rye-grass *Lolium perenne*, meadow fescue *Schedonorus pratensis*, sweet vernal grass *Anthoxanthum odoratum*, white clover *Trifolium repens* (less dominant in the eastern areas), and ribwort plantain *Plantago lanceolata* (less dominant in the eastern areas), with less dominant species comprising spear thistle *Cirsium vulgare* (more dominant in the western area with large patches present), common vetch *Vicia sativa*, common bird's-foot-trefoil *Lotus corniculatus*, yarrow *Achillea millefolium*, rapeseed *Brassica napus subsp. napus*, scentless mayweed *Tripleurospermum inodorum*, common knapweed *Centaurea nigra*, hairy brome *Bromopsis ramosa*, hawkbits *Leontodon spp.*, common sorrel *Rumex acetosa*, and hogweed *Heracleum sphondylium*. The sward is unmanaged and allowed to grow to its full height. The western area of this grassland type is favoured by skylark *Alauda arvensis* and meadow pipit *Anthus pratensis* for breeding.



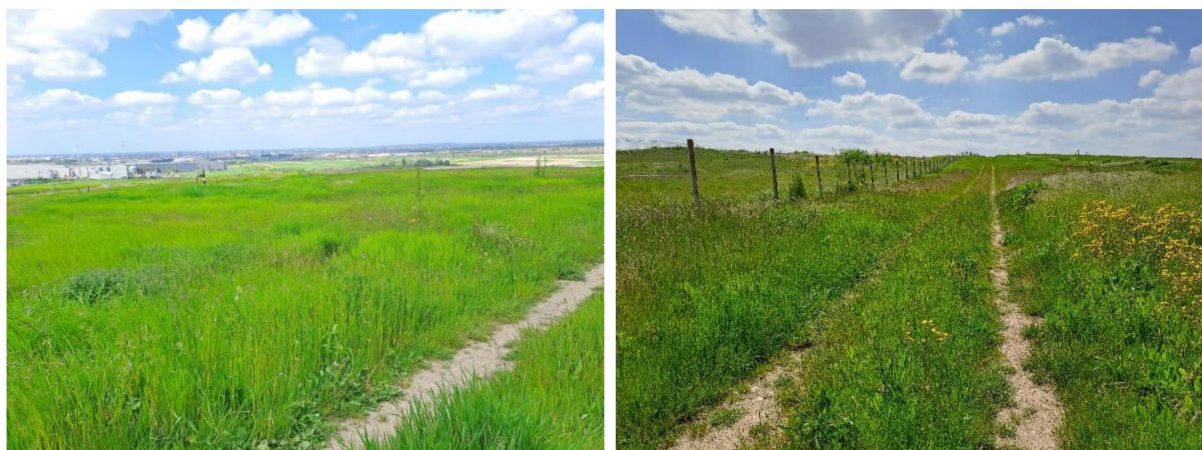


Figure 3-1 Other neutral grassland northern area (a) facing northwest and (b) facing southwest.

3.2.2 g3c Other neutral grassland (18 species-rich grassland, 61 re-created habitat, 500 dry, 510 bare ground, 517 recent management)

The main areas of g3c Other neutral grassland within the Site, which are recently managed (517) and species-rich (18) with some bare ground (510) are located mostly in the east of the Site (Figure 3-2), with smaller areas adjacent to the landfill in the south of the Site. The most dominant species comprises perennial rye-grass, sweet vernal grass, white clover, meadow foxtail *Alopecurus pratensis*, common vetch, ribwort plantain, hogweed (large patches central), nettle *Urtica dioica* (large patches central), false brome *Brachypodium sylvaticum*, hairy brome, hawkbits, common sorrel, and common knapweed, with less dominant species comprising spear thistle, cock's-foot *Dactylis glomerata*, white dead-nettle *Lamium album*, and false oat-grass *Arrhenatherum elatus*. The sward shows recent management down to approximately 30 cm across most areas of the grassland. The eastern area of this grassland type is favoured by skylark for breeding.



Figure 3-2 Other neutral grassland eastern area (a) facing northeast and (b) facing southeast.

3.2.3 g3c Other neutral grassland (61 re-created habitat, 500 dry, 510 bare ground, 517 recent management)

The g3c Other neutral grassland located in the northwest of the Site (Figure 3-3) shows recent management (517) and contains some areas of bare ground (510). The dominant species comprises perennial rye-grass, and white clover, with less dominant species comprising young spear thistle, common vetch, common bird's-foot-trefoil, and yarrow. This area recently underwent some recent



management and therefore, the vegetation present is of a short sward, approximately 15-20 cm, and less dense compared to the other areas of g3c.



Figure 3-3 Other neutral grassland western area (a) facing north and (b) facing south.

3.2.4 u1c Artificial unvegetated, unsealed surface (831 landfill)

The largest area of landfill (831) is located in the southern part of the Site (Figure 3-4), with a much smaller area to the southwest of the Site. The main area of landfill is active daily with a constant flow of large vehicles depositing new waste and heavy machinery managing the waste piles. There is very limited vegetation in this area, due to the constant disturbance of the materials present. This area is very attractive to several foraging bird species, such as herring gull *Larus argentatus*, black-headed gull *Chroicocephalus ridibundus*, rook *Corvus frugilegus*, carrion crow *Corvus corone* and starling *Sturnus vulgaris*.



Figure 3-4 Artificial unvegetated, unsealed surface, landfill (a) facing northwest and (b) facing southeast.

3.2.5 u1c Artificial unvegetated, unsealed surface (510 bare ground, 839 tracks)

There are various areas of u1c, unsealed surface, most of which form tracks for vehicular access to link various parts of the Site for inspections and deliveries (Figure 3-5). These areas are mostly created from compounded soil with occasional vegetation along the edges.





Figure 3-5 Artificial unvegetated, unsealed surface (a) bare ground eastern area, facing east and (b) track facing southwest.

3.2.6 r1a Other eutrophic standing water (41 Pond, non-priority)

Two ponds identified on site are located along the north-eastern boundary of the Site (Figure 3-6 a, most northern pond). The dominant emergent vegetation is common reed *Phragmites australis* found growing on most sides of the pond. There is evidence of breeding mute swan *Cygnus olor* within an adjacent waterbody just outside the northern boundary.



Figure 3-6 Other eutrophic standing water (a) small pond north-eastern boundary and (b) ditch northern boundary.

3.2.7 r1a Other eutrophic standing water (50 Ditch)

There is a small network of ditches in the northern corner of the Site, of which most were dry and vegetated at the time of surveying with similar vegetation to the surrounding areas (Figure 3-6 b).

3.2.8 h3a Blackthorn scrub

The blackthorn *Prunus spinosa* scrub is located in the north-western corner of the Site (Figure 3-7 a), adjacent to the public car park just outside the boundary. The majority of the scrub is 2-2.5 m high and 2-4 m wide.





Figure 3-7 Blackthorn scrub, northwest boundary (a) and native hedgerow, northeast boundary (b).

3.2.9 h2a Native hedgerow

There is only one hedgerow within the Site boundary, located along the north-eastern boundary (Figure 3-7 b). The hedgerow is dense and continuous for a length of 357 m, 3 m high and approximately 4 m wide. It is dominated by blackthorn with some hawthorn *Crataegus monogyna* and immature English oak *Quercus robur* throughout. The adjacent grassland forms part of the understorey with a very tussocky edge.

3.2.10 u1b Developed land, sealed surface (800 road, 804 car park, 815 commercial buildings)

There are small areas of u1b, sealed surfaces, within the Site, which are mixed in with some u1c unsealed surfaces. The main access point into the Site, located in the southeastern corner along the southeast boundary, comprises of three weighbridges and associated infrastructure (Figure 3-8 a), and a small, site compound, which comprises two temporary buildings, car parking, and storage area (Figure 3-8 b).



Figure 3-8 Developed land, sealed surface (a) main access point and (b) site compound and car park.

3.3 Species

3.3.1 Plants

GiGL returned at least nine records of notable plant species within 2 km of the Site. The closest and most recent record is for toothed medick *Medicago polymorpha*, at 333 m west of the Site boundary.

The records of invasive non-native plant species (INNS) within 2 km of the Site include giant hogweed and Japanese knotweed, both of which are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Giant hogweed, Japanese knotweed and butterfly bush are found on the Site, which are included within the London Invasive Species Initiative (LISI), category LISI 3.

No protected or priority plant species are recorded on the Site and the only plant species considered further shall be the INNS already mentioned.

3.3.2 Invertebrates

GiGL returned 292 records for notable invertebrate species within 2 km of the Site. The most recent records include very mobile species, such as common darter *Sympetrum striolatum* with 54 records, small heath *Coenonympha pamphilus* with 13 records, and shrill carder bee *Bombus sylvarum* with 49 records, all in 2022. The Site offers a variety of habitat types, which would suit a great number of the invertebrate species recorded within 1 km of the Site. Therefore, the Site is considered to have **high** potential for priority and other notable invertebrate species and communities.

3.3.3 Amphibians

GiGL returned 10 records for amphibians within 2 km of the Site. These comprise four records for common toad *Bufo bufo* (a priority species) and six records for common frog *Rana temporaria*. The waterbodies on site offer some suitability for amphibians; however, several species of waterfowl were observed breeding on site. Therefore, the Site is considered to have **low - moderate** potential for protected and priority amphibian species.

A search of MAGIC for EPS licensing for GCN has confirmed that no licences have been issued within 2 km of the Site.

3.3.4 Reptiles

GiGL returned 10 records for reptiles within 2 km of the Site. These comprise four records for grass snake *Natrix helvetica*, five records for common lizard *Zootoca vivipara*, and one record for adder *Viper berus*. The waterbodies on site offer suitability for grass snake and the mosaic of habitat types with a variety of sward height and abundance of invertebrates offer suitability for common lizard and adder. However, with a large assemblage of a variety of bird species present the potential for predation is greatly increased. Therefore, the Site is considered to have **moderate - high** potential for protected and priority reptile species.

A search of MAGIC for EPS licensing for smooth snake has confirmed that no licences have been issued within 2 km of the Site.

3.3.5 Birds

GiGL returned several thousand records for several bird species within 2 km of the Site including several species listed on the IUCN Red List, Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (priority species) and Schedule 1 species on the Wildlife and Countryside Act 1981 (as amended). This is mostly due to the Site's proximity to Rainham Marshes



SSSI, which is managed by the RSPB for its renowned assemblages of bird species. The full list of records will not be included in this report but is available on request.

Due to the Site's large size and variety of habitat present, there is a **high** potential for both foraging and breeding for a variety of bird species. During the survey walkover several species were observed using the Site for both foraging and/or breeding. Some of the notable species observed foraging within the Site were swift *Apus apus*, herring gull, skylark, and starling. The landfill area offers a continuous source of food throughout the year for large flocks of common species of gulls and occasional rarities. In addition, species observed breeding on the Site were skylark, mute swan and Eurasian coot.

All birds and their nests are protected fully by the Wildlife and Countryside Act 1981 (as amended) and so nesting birds should be considered throughout all works that may impact them.

3.3.6 Mammals

3.3.6.1 Bats

GiGL returned eight records of bat species within 2 km of the Site. These comprise soprano pipistrelle *Pipistrellus pygmaus*, Nathusius' pipistrelle *P. nathusii*, noctule *Nyctalus noctula*, *Myotis* sp., and *Pipistrellus* sp.

All UK bat species and bat roosting sites are fully protected as Schedule 2 species on the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Some additional protection is given via inclusion on Schedule 5 species on the Wildlife and Countryside Act 1981 (as amended). Pipistrelle sp., noctule and brown long-eared bats are among the bat species listed as species of principal importance for the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (priority species).

The Site has some suitable habitat for foraging and commuting bats, and therefore is considered to have **low** potential to support foraging and commuting bats. Within the Site there are no trees present and very few buildings, of which none had suitable PRFs present, and therefore the Site is considered to have **negligible** potential for roosting bat species.

A search of MAGIC for EPS licensing for bats has confirmed that three licences have been issued within 4 km of the Site. The details of these licences are list in Table 3-3 below.

Table 3-3 Bat EPS licences within search radius of 4 km

Reference Number	Date issued	Species impacted	Impacts	Distance (m) and direction from Site
2018-36383-EPS-MIT	2018	C-PIP	Destruction of resting place	3,534 SE
2019-40390-EPS-MIT	2019	C-PIP	Destruction of resting place	3,751 NW
EPSM2010-1711	2020	C-PIP, S-PIP	Destruction of resting place	3,920 S

3.3.6.2 Hazel dormouse

GiGL returned no records of hazel dormouse *Muscardinus avellanarius* within 2 km of the Site. The Site has some suitable habitat present but lacks any suitable connectivity to the wider environ for dormice. Therefore, due to the lack of any records and connectivity, the Site has **negligible** potential to support hazel dormouse and will not be considered further in this report.

A search of MAGIC for EPS licensing for hazel dormouse has confirmed that no licences have been issued within 2 km of the Site.



3.3.6.3 Badger

GiGL returned one record of badger from 2017 within 2 km of the Site. The Site has suitable habitat present for foraging badgers with connectivity to the wider environ; however, the Site is open with limited cover for sett creation. Therefore, the Site has **negligible** potential to support breeding badger but does offer **moderate** potential for foraging.

3.3.6.4 Riparian mammals

GiGL returned 25 records of water vole *Arvicola amphibius*, with the most recent in 2022, but no records of otter *Lutra lutra* within 2 km of the Site. The Site is adjacent to Rainham Marshes SSSI, where water vole is known to be present and with several waterbodies present on site in the form of ponds and wet ditches the Site is therefore, considered to offer **high** potential to support riparian mammals.

A search of MAGIC for EPS licensing for otter has confirmed that no licences have been issued within 2 km of the Site.

3.3.6.5 Other Notable Mammals

GiGL returned six records of other notable mammals within 2 km of the Site. These records comprise three records of hedgehog *Erinaceus europaeus*, two records of brown hare *Lepus europaeus*, and one record of harvest mouse *Micromys minutus*. There is limited suitable habitat for hedgehog but more suitable habitats for both brown hare and harvest mouse; however, the Site lacks any real connectivity to the wider environment for these species. Therefore, due to the sparsity of records and lack of suitable connectivity, the Site has **negligible** potential to support other notable mammal species and will not be considered further in this report.



4.0 Ecological Constraints and Opportunities

The assessment site and its surroundings have potential to support the following ecological receptors of note, which could therefore be impacted upon by any future development proposals.

4.1 Designated Sites

The Site is located within 2 km of three statutory designated sites, at least nine non-statutory designated sites and one proposed non-statutory designated site. The proposed extension of life to the current usage of the Site as a landfill should not produce any new impacts, directly or indirectly. The current (and therefore extended) site works have the potential to cause impacts in the form of pollutant spillage, light and noise disturbance and therefore the current site management plan should be continued and reviewed regularly to ensure that these impacts are avoided and/or reduced.

4.2 Priority Habitats

The Site is surrounded by numerous priority habitats with the closest parcels within 30 m of the Site. In the absence of mitigation, impacts from the continued use as a landfill are expected on these habitats through disturbance associated with current works, such as noise, vibration, light disturbance, dust deposition and potential pollutant spillage. Proposals should accordingly embed measures which address potential impacts upon the priority habitats, especially those adjacent to the access road to the Site. These measures are included in the current management plan for the Site and should be continued and reviewed regularly to ensure that these impacts are avoided and/or reduced. These measures include, but should not be limited to, enacting dust control measures, having spillage kits in place for pollutants and provision of a sensitive lighting scheme.

4.3 Protected and Priority Species

4.3.1 Invertebrates

There are several areas within the Site that offer high potential for a variety of different invertebrate species and a great number of species records returned by GiGL for a variety of important invertebrate species. Some areas would be considered as valuable brownfield-type habitat, which would benefit many invertebrates. The current proposals to extend the life of the Site would not impact the potential of these habitat types; however, future proposals could impact this species group. Due to the presence of such valuable habitat, it is recommended to undertake a full suite of invertebrate surveys at an appropriate time (April-September inclusive) to help inform any future proposals, and mitigation and compensation measures, as necessary.

4.3.2 Amphibians

There are two suitable waterbodies on site and suitable habitat present, which could support different amphibian species; however, common species, in low numbers only, were recorded locally. The current proposals to extend the life of the Site will not impact these species; however, future proposals could cause impacts if any of these species are present. Therefore, no further surveys are recommended at this time; however, further surveys are recommended, if any future proposals were to impact the waterbodies.

4.3.3 Reptiles

There are several suitable habitats on site, which could support different reptile species and common species, in low numbers only, were recorded locally. The current proposals to extend the life of the Site will not impact these species; however, future proposals could cause impacts if any of these species are present. Therefore, no further surveys are recommended at this time; however, further surveys are recommended, if any future proposals were to impact the suitable grassland habitats.



4.3.4 Birds

There are several areas present within the Site which have the potential to support nesting birds. The landfill area offers a continuous source of food throughout the year for large flocks of common species of gulls and occasional rarities. There was also evidence observed during the survey to confirm breeding and foraging of several different bird species within the Site. The current proposals to extend the life of the Site would not impact the potential of these habitat types to support breeding or foraging opportunities; however, future proposals could impact this species group. Due to the presence of such valuable habitat and observed breeding and foraging, it is recommended to undertake a full suite of breeding bird surveys at an appropriate time (March-early July inclusive) to help inform any future proposals, and mitigation and compensation measures, as necessary. For future proposals, it is also recommended to undertake wintering bird surveys to ensure all activities on site are documented for future mitigation requirements.

Any vegetation maintenance on site should take place outside of the nesting bird season, taken to run from March to September inclusive for the majority of bird species. If this is not possible, a pre-works inspection, at least 48 hours prior to commencement, should be undertaken by a suitably qualified person to confirm the absence of any nesting birds and/or active nests. Should any active nests be found, the appropriate mitigation (buffer zone of at least 5 m) must be put in place to enable successful fledging of the chicks before the area is cleared.

4.3.5 Bats

The vegetation within the Site and adjacent to the east of the Site provides low suitability for foraging and commuting habitat for multiple bat species. The current proposals to extend the life of the Site would not impact the potential of these habitat types; however, a change in lighting and/or their levels throughout the Site could reduce the value of these areas for foraging and commuting bats. Further landscape-scale bat surveys are unnecessary, provided those suitable habitats remain unimpacted.

A sensitive lighting strategy should be implemented following best practice industry guidance produced by the Bat Conservation Trust and Institute of Lighting Professionals⁹ to ensure that hedgerow and scrub are not impacted by light spill from the Site for foraging and commuting bats.

4.3.6 Badger

There are several suitable habitats on site, which could support foraging badgers. The current proposals to extend the life of the Site will not impact this species; however, future proposals could cause impacts if any of the species is present. Therefore, no further surveys are recommended at this time; however, further surveys are recommended, if any future proposals were to impact the suitable grassland habitats.

4.3.7 Riparian Mammals – Water vole

There are several suitable waterbodies and a network of interlinking ditches on site, which could support water vole, and within proximity to a known population of the species. The current proposals to extend the life of the Site would not impact the potential of these habitat types; however, future proposals could impact this species group. Due to the presence of suitable habitat, it is recommended to undertake a full suite of water vole surveys at an appropriate time (April-September inclusive) to help inform any future proposals, and mitigation and compensation measures, as necessary.

⁹ Institute of Lighting Professionals and Bat Conservation Trust (2023), *Guidance Note GN08/23 Bats and Artificial Lighting at Night*; ILP Publications.



4.4 Invasive Non-Native Species

Giant hogweed, Japanese knotweed and butterfly bush were identified within the Site. The first two species are listed under Schedule 9 of the Wildlife and Countryside Act, and it is recommended that these are removed and disposed of appropriately during the remaining life of the Site, and care should be taken to prevent their spread. Removal of the latter species is also recommended.



5.0 Recommendations

5.1 Further Surveys

Further surveys have been recommended for invertebrates, amphibians, reptiles, breeding/foraging birds, badger and water voles, prior to future proposals which might impact the relevant habitats for each species group, at appropriate times of the year.

Since the commissioning of the PEA survey, a suite of breeding birds surveys and water vole surveys was commissioned and will be completed in 2023. The results of these surveys will be documented in standalone reports for each species group.

5.2 Potential Opportunities for Biodiversity Enhancements

Recommendations are listed below for ecological and biodiversity enhancements that would assist any future proposals to meet local and national planning policy requirements, and to adhere to best practice. The list below is not exhaustive and may change depending on the detailed design of any future proposals and any protected or notable species confirmed to be present.

Opportunities for biodiversity enhancement include:

- Ditch water levels management to benefit species, such as amphibians and water vole;
- Maintain the ponds as suitable amphibian habitats;
- Wildlife friendly planting – new landscaping should provide a diverse mix of species of demonstratable value for wildlife known to be at site/have the potential to be encouraged to the Site;
- Maintain and/or diversify open grasslands for invertebrates, reptiles and ground nesting birds;
- Invertebrate habitat features – invertebrate habitat features should be incorporated within landscaped areas to provide features of interest as well as ecological function. Solitary beehives and habitat panels should be placed in sunny areas; and
- Bird and bat boxes, suitable for use on buildings and trees, could be incorporate into the construction of the new buildings or attached to outside walls and located on the eastern or western aspects at a height of at least 3 m.



6.0 Conclusions

The Site is located adjacent to the River Thames and statutory designated sites supporting protected species, and comprises large areas of other neutral grassland, waterbodies, scrub, hedgerow and a variety of urban habitats both sealed and unsealed.

Data received from the desktop study and field survey have confirmed that the habitats on site are suitable to support:

- Invertebrates;
- amphibians;
- reptiles;
- nesting birds;
- foraging/commuting bats;
- badger; and
- water voles.

It was also identified that the Site is <50 m of two statutory designated sites and <2 km of at least nine non-statutory designated sites and one proposed non-statutory designated site, as well as priority habitat (broadleaved deciduous woodland, traditional orchard, coastal and floodplain grazing marsh, mudflats and coastal saltmarsh). These have the potential to be impacted by unmitigated future developments within the Site.

Additionally, key mitigation, compensation and enhancement actions are described to enable legislative and policy compliance. The current site management plan should be continued and reviewed regularly to ensure that these impacts are avoided and/or reduced.

Recommendations for biodiversity enhancements include:

- Ditch water levels management.
- Maintain ponds.
- Wildlife-friendly planting.
- Maintain and/or diversify open grasslands.
- Invertebrate habitat features.
- Bird boxes.
- Bat boxes.





Drawing 1: UKHab Survey Map

Preliminary Ecological Appraisal

Proposed Rainham Landfill Extension of Life

Veolia ES Landfill UK Ltd

SLR Project No.: 425.064709.00001

12 December 2023



Drawing 2: Ecological Restraint Map

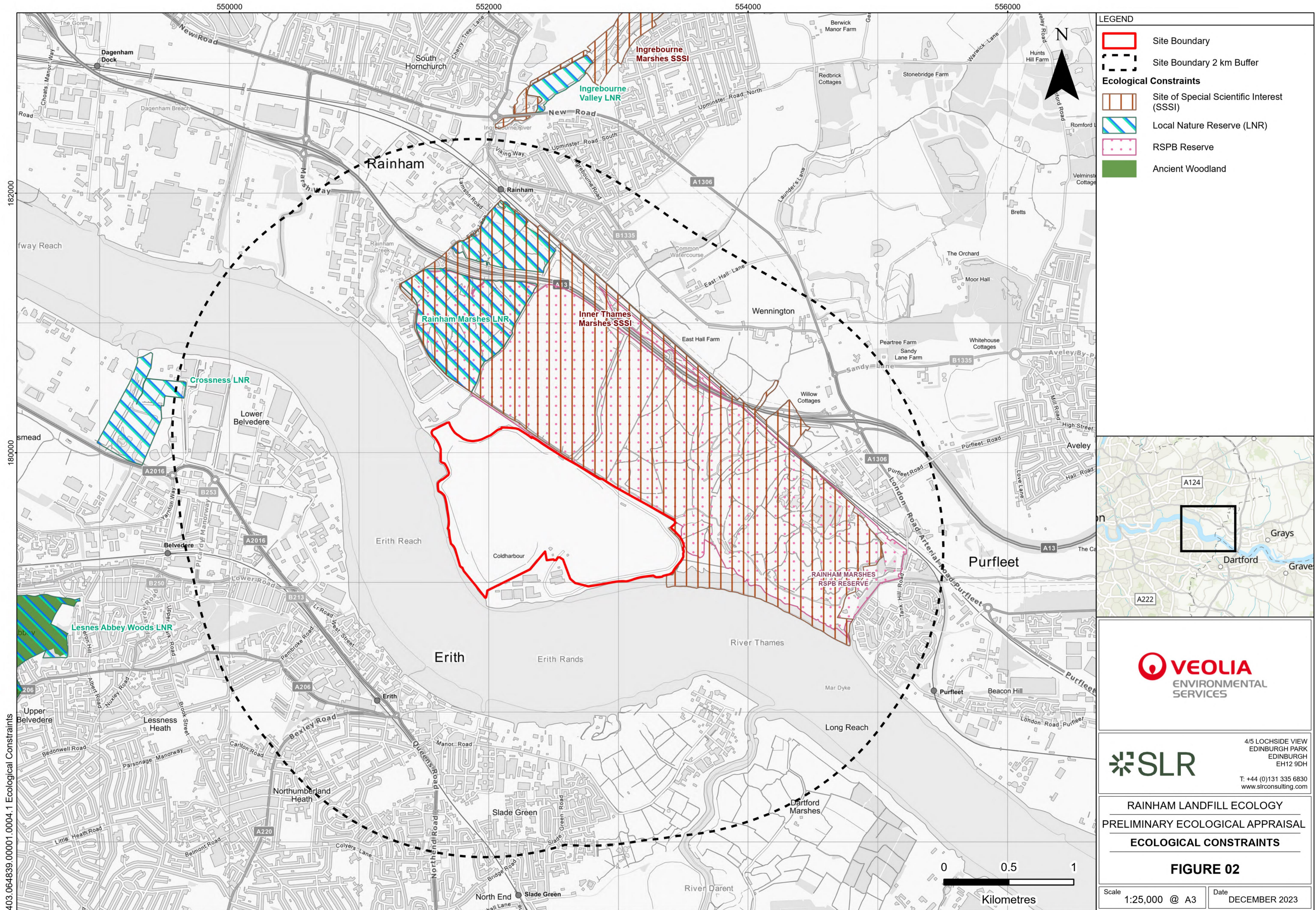
Preliminary Ecological Appraisal

Proposed Rainham Landfill Extension of Life

Veolia ES Landfill UK Ltd

SLR Project No.: 425.064709.00001

12 December 2023



403.06.4839.00001.0004.1 Ecological Constraints



Drawing 3: Priority Habitats Map

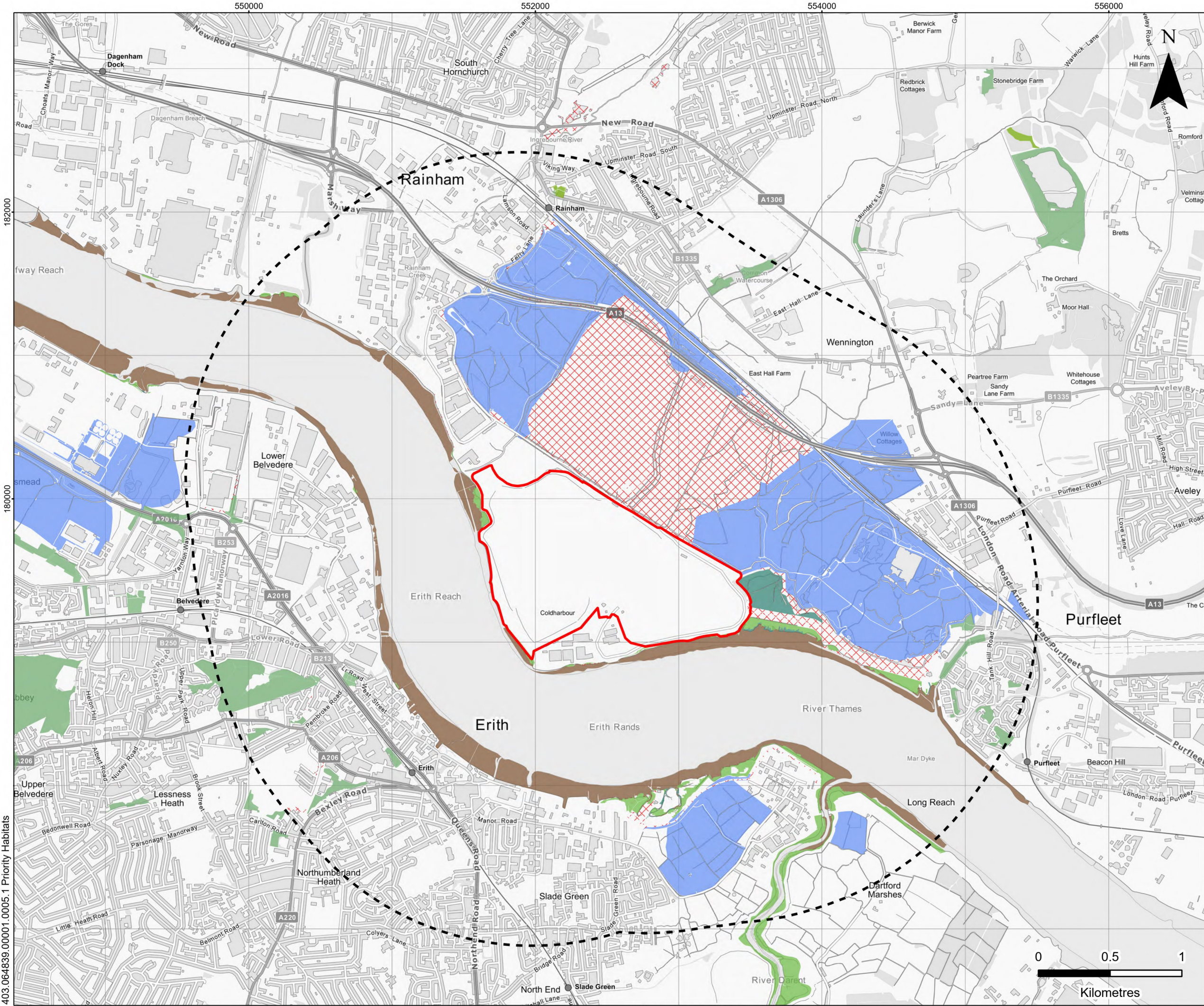
Preliminary Ecological Appraisal

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LEGEND

Site Boundary

Site Boundary 2 km Buffer

Priority Habitat

Coastal and floodplain grazing marsh

Coastal saltmarsh

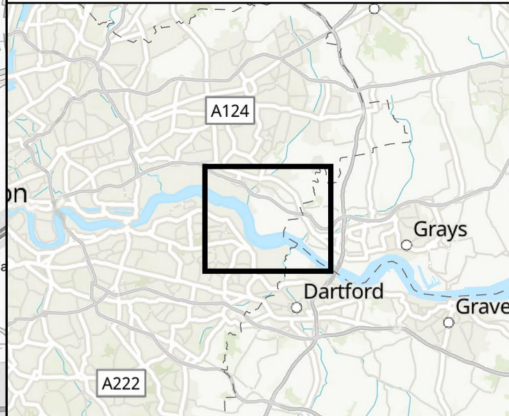
Deciduous woodland

Mudflats

Reedbeds

Traditional orchard

No main habitat but additional habitats present



4/5 LOCHSIDE VIEW
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RAINHAM LANDFILL ECOLOGY

PRELIMINARY ECOLOGICAL APPRAISAL

PRIORITY HABITATS

FIGURE 03

Scale 1:25,000 @ A3

Date DECEMBER 2023

403.064839.00001.0005.1 Priority Habitats



Appendix A Relevant Legislation and Planning Policy

Preliminary Ecological Appraisal

Proposed Rainham Landfill Extension of Life

Veolia ES Landfill UK Ltd

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12 December 2023

Relevant Legislation and Planning Policy

Legislation

A summary of legislation relevant to (onshore) biodiversity in England and Wales is provided below. Note that the summary provided here is intended for general guidance only and the original legislation should be consulted for definitive information.

Environment Act (2021)

The Environment Act has wide ranging provisions including those around:

- Environmental governance;
- Environmental regulation;
- Waste and resource efficiency;
- Air quality and environmental recall;
- Water;
- Nature and biodiversity;
- Conservation covenants.

Of particular relevance is Part 6 of the Act which introduces “biodiversity gain in planning” and will apply in England to planning applications under the Town & Countryside Act and the Planning Act. Schedule 14 now requires that biodiversity gain be a condition of planning permission in England. These changes will be enacted through subsequent secondary legislation or regulations. This part of the Act also changes the responsibilities that Government or public bodies have by strengthening the existing NERC Act biodiversity duty. Public authorities are now required to seek to conserve and enhance biodiversity in the exercise of their functions.

Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. Under the Habitats Regulations it is an offence to deliberately capture, kill or disturb¹ wild animals listed under Schedule 2 of the Regulations as well as damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time). European Sites, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), are also protected under the Habitat Regulations, and any proposal that could affect them will require an Habitats Regulations Assessment (HRA).

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

Part 3 of the regulations provide for the protection of areas of habitats or species where maintenance of the status of water is an important factor. Under the regulations additional consideration may need to be given to sites in the form of a Water Framework Directive (WFD) assessment where a project

¹ Disturbance, as defined by the Conservation of Habitats and Species Regulations 2010, includes in particular any action which impairs the ability of animals to survive, breed, rear their young, hibernate or migrate (where relevant); or which affects significantly the local distribution or abundance of the species.



lies in proximity to a water body or to linked water bodies which could be affected. This includes consideration of whether water bodies are WFD receptors in particular those of high status or have high status morphology.

Natural Environment & Rural Communities (NERC) Act 2006

Section 40 of the NERC Act 2006 places a duty on public authorities to have regard to the purpose of conserving biodiversity in the exercise of their functions. Public authorities include government departments, local authorities and statutory undertakers.

Section 41 of the Act (Section 42 in Wales) requires the publication of a list of habitats and species publish which are of principal importance for the purpose of conserving biodiversity. The Section 41 list is used to guide authorities in implementing their duty to have regard to the conservation of biodiversity.

Note that Sections 40 and 42 were superseded in Wales by the Environment (Wales) Act 2016 (see below).

Protection of Badgers Act 1992

The Protection of Badgers Act 1992 makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.

Wildlife & Countryside Act 1981

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way (CRoW) Act 2000 and the Natural Environment and Rural Communities (NERC) Act 2006, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act;
- intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act;
- intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act; or
- Plant or cause to grow in the wild any plant species listed under Schedule 9 of the Act.

Planning Policy

A summary of national planning policy relevant to (onshore) biodiversity in England and Wales is provided below. Note that the summary provided here is intended for general guidance only and the original policy documents should be consulted for definitive information. For local planning policy relevant to biodiversity the relevant local plans should be consulted.



1.1.1 National Planning Policy (England)

The National Planning Policy Framework (NPPF)² sets out guidance for local planning authorities and decision-makers in how to apply planning policies when drawing up plans and making decisions about planning applications. Along with Government Circular 06/05², the broad policy objectives in relation to the protection of biodiversity and geological conservation in England through the planning system are set out. Specific policies relating to habitats and biodiversity are set out in paragraphs 174 and 179-182 of the NPPF.

Paragraph 174 states that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

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

Paragraph 179 states that:

“To protect and enhance biodiversity and geodiversity, plans should:

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

Paragraph 180 states that:

“When determining planning applications, local planning authorities should apply the following principles:

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

² Ministry of Housing, Communities & Local Government (2021). [National Planning Policy Framework](#).



d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.”

Paragraphs 181-182 relate to European sites (referred to as habitats sites) and state:

“The following should be given the same protection as habitats sites:

a) potential Special Protection Areas and possible Special Areas of Conservation;

b) listed or proposed Ramsar sites; and

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

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





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