



Rainham Landfill

Environmental Statement – Volume 2 Ecology

Prepared for



Veolia Environmental Services

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7.0 ECOLOGY

7.1 Introduction

7.1.1 This chapter describes and evaluates the current ecological interest of the Site and the surrounding area. It provides the Ecological Impact Assessment (EclA) and assesses the potential effects of the proposed time extension to landfilling operations at Rainham Landfill Site (the 'Proposed Development') on important habitats and species. Where necessary, it also describes proposed mitigation, compensation and enhancement measures.

7.1.2 This chapter is supported by information and data contained within the other chapters within this Environmental Statement (ES).

7.1.3 This chapter is supported by information and data contained within historic documents, which are not included within this ES but can be viewed on request and are identified below:

- i) Rainham Landfill 2012 Application Environmental Statement.
- ii) Preliminary Ecological Appraisal (2017, Wood).

7.1.4 This chapter is also supported by field surveys undertaken by SLR Consulting Ltd (SLR) in 2023 and found in the following technical appendices:

- i) Appendix 7.1: Preliminary Ecological Appraisal (PEA) Report.
- ii) Appendix 7.2: Breeding Bird Survey Report.
- iii) Appendix 7.3: Water Vole Survey Report.

7.1.5 This chapter is also supported by a number of updated figures (2024), which are referenced throughout the text and which can be found at the end of this chapter:

- i) Figure 7.1 Statutory Designations.
- ii) Figure 7.2 Non-statutory Designations.
- iii) Figure 7.3 Priority Habitats.

7.2 Scope of Assessment

7.2.1 This Ecology chapter has been prepared in accordance with the Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for Ecological



Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine (2024)¹. It presents information on the baseline conditions and the nature conservation value of the application site. It then describes the potential impacts arising from the proposed development and provides an assessment of their significance. Finally, the chapter details the measures that are deemed to be required to avoid, reduce and/or off-set / compensate for impacts.

7.2.2 The potential effects arising from the proposed continuation of operation and restoration by 2031 versus cessation and restoration by 2026 have identified as:

- i) Spread of invasive non-native species.
- ii) Accidental pollution.
- iii) Disturbance via noise, light and human presence upon protected or otherwise notable species or upon their resting or breeding sites, in particular birds, water vole, reptiles and invertebrates.

7.2.3 These potential effects have been identified through surveys, both historical and from 2023.

7.2.4 Cumulative effects have been considered for all ecological features for which assessment has been undertaken and are based upon residual effects.

7.2.5 On the basis of the desk-based study and field survey work undertaken, the professional judgement of the Environmental Impact Assessment (EIA) team, experience from other relevant projects and policy guidance or standards, and feedback received from consultees, the following topic areas have been 'scoped out' of detailed assessment, as a result of additional information being available and only outlined briefly in this ES:

- i) Impacts to certain statutory designated sites (Site of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR)) >1.5km from the Site (the closest of which is 1.8km to the Site) and with no downstream hydrological connection to the Site or geological (G) interest only, including:
 - a) Crossness LNR;

¹ *Guidelines for Ecological Impact Assessment In The UK and Ireland, Terrestrial, Freshwater, Coastal and Marine (2024) version 1.3. CIEEM, Winchester. [EclA-Guidelines-v1.3-Sept-2024.pdf](#)*

- b) Purfleet Road, Aveley SSSI (G);
 - c) Purfleet Chalk Pits SSSI (G);
 - d) Ingrebourne Marsh SSSI;
 - e) Lesnes Abbey Woods LNR
 - f) Abbey Wood SSSI (G);
 - g) Ingrebourne Valley LNR;
 - h) Beam Valley (Environment Agency) LNR;
 - i) Dagenham Village Churchyard;
 - j) Scrattons Ecopark and Extension LNR; and
 - k) West Thurrock Lagoon & Marshes SSS.
- ii) Potential impacts to Local Wildlife Sites (LWS) > 250m from the Site are not anticipated as there are no anticipated air quality impacts and no downstream impacts.

7.3 Assessment Methodology

Legislation, Planning Policy and Guidance

- 7.3.1 The assessment has been carried out with reference to the legislation, policy (National and Local) and guidance detailed in **Error! Reference source not found.** The list of guidance is not exhaustive and other relevant guidance documents are referred to in this chapter and its appendices as appropriate.

Table 7.1 - Legislation and Guidance Relevant to Ecology

Document	Key provisions of relevance to this assessment
Legislation	
The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations)	Protection of Special Protection Areas (SPAs) and Special Areas of Conservation (SAC).
The Wildlife and Countryside Act (WCA) 1981 (as amended)	Protection of certain animal species and their places or rest or shelter.
Protection of Badgers Act 1992	Protection of badgers from killing and injury, and badger setts from disturbance.
Hedgerow Regulations 1997	Protection of hedgerows deemed "important" under ecological or historical criteria set out in the Regulations.
Environment Act 2021	Mandatory biodiversity net gain (BNG) in England through Schedule 14 of the Town and Country Planning Act 1990. Developments need to achieve a minimum 10% net gain in biodiversity and maintain habitat management for 30 years.

Document	Key provisions of relevance to this assessment
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017	Part 3 of the Regulations provides for the protection of areas of habitats or species where maintenance of the status of water is an important factor.
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.
National Planning Policy	
Natural Environment & Rural Communities (NERC) Act 2006	Specific policies relating to habitats and biodiversity are set out in Paragraphs 180, 181 and 185-188 of the NPPF. Paragraph 180 states that: <i>'Planning policies and decisions should contribute to and enhance the natural and local environment by:</i> <i>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);</i> <i>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;</i> <i>c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;</i> <i>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;</i> <i>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 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</i> <i>f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate'.</i> Paragraph 181 states that: <i>Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.</i> Paragraph 185 states that: <i>'To protect and enhance biodiversity and geodiversity, plans should:</i> <i>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</i>

Document	Key provisions of relevance to this assessment
	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 186 of the NPPF 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 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 187-188 relate to European sites (referred to in the NPPF 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.'

Document	Key provisions of relevance to this assessment
Govt Circular 06/05	This circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It includes sections related to internationally designated sites, nationally designates sites, habitats and species as well as other duties by planning authorities. The circular makes clear that: <i>'4. Planning authorities should follow the procedures for SPAs, cSACs, and SACs, and, more generally, should have regard to the [EC Birds and Habitats] Directives in the exercise of their planning functions in order to fulfil the requirements of the Directive in respect of the land use planning system.</i> <i>61. The Government expects all section 28G authorities, including planning authorities, to:</i> <i>a) apply strict tests when carrying out any functions within or affecting SSSIs, to ensure that they avoid or at least minimise adverse effects;</i> <i>b) adopt the highest standards of management in relation to SSSIs in their ownership, and to take appropriate action to prevent damage by third parties; and</i> <i>c) as owners or otherwise to take positive steps, wherever possible, to conserve and enhance the special interest features of a SSSI where their activities may be affecting it, or as opportunities arise in the exercise of their functions.</i> <i>English Nature will advise on a case-by-case basis as to opportunities for enhancement.</i> <i>99. It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by the development.'</i>
Local Planning Policy	
Mayor of London – London Environment Strategy 2018	Covers air quality, green infrastructure, climate change mitigation and energy, waste, adaptation, noise and a low-carbon circular economy. The plan committed London to becoming net zero carbon by 2050.
The London Plan 2021 - Policy G6 Biodiversity and access to nature	The policy aims to protect and expand key environmental sites to ensure that all communities have access to green spaces. The policy aims to improve high quality cycling and walking infrastructure. Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. The policy recommends using the best available ecological information to inform development proposals.

Document	Key provisions of relevance to this assessment
Havering Local Plan 2016-2031 Adopted November 2021	Policy 30: Biodiversity and geodiversity, and Policy 31: Rivers and river corridors
Guidance	
'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3'. (Chartered Institute of Ecology and Environmental Management (CIEEM), 2024)	Guidance for the ecological impact assessment process.
Bird Survey Guidelines for assessing ecological impacts, v.1.1.0, Bird Survey & Assessment Steering Group. 2023. https://birdsurveyguidelines.org/ .	
Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (the Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society: London. and Dean, M (2021) Water Vole Field Signs and Habitat Assessment A Practical Guide to Water Vole Surveys. (Exeter, Pelagic Publishing)	Guidance relating to water vole <i>Arvicola amphibius</i> survey methodology.
UKHab Ltd (2023) <i>UK Habitat Classification Version 2.0'</i> (at http://www.ukhab.org)	Guidance related to habitat survey methodology.

7.4 Approach to the Assessment

Study Area

- 7.4.1 The study area used for the EclA differs according to feature, as recommended by relevant good practice survey guidance.
- 7.4.2 PEA survey was undertaken across the entire Site as defined at the time of survey, plus a 30m buffer where accessible. All the proposed landfill activities lie within the Site defined at the time of survey.
- 7.4.3 The Breeding Bird surveys were undertaken across the entire Site.



- 7.4.4 The water vole survey encompassed ponds and watercourses on site and within a minimum buffer of 250m from the Site, where accessible.
- 7.4.5 The survey area boundaries are shown in the relevant reports within Technical Appendices 7.1 – 7.3.
- 7.4.6 Within this report the following terms are used:
- i) Desk Study area: This is the 2km zone around the Site.
 - ii) Survey area: This is the area within the RLB.
 - iii) Areas other than these, which have been included in the assessment (such as ponds within 250m, or internationally designated sites within 5km), are specifically described.

Desk Study

- 7.4.7 A comprehensive desk-based data search has been undertaken to collate existing information on designated sites, habitats and species at and around the Site. Primary sources of contextual data from the desk study are as follows:
- i) Greenspace Information for Greater London (GiGL) and shared via eCountability on 5th November 2024 and Essex Field Club (EFC) on 11th November 2024, provided records of statutory and non-statutory protected sites and of protected and otherwise notable species, for the Site and land within a 2km radius of it.
 - ii) Multi-Agency Geographic Information for the Countryside (MAGIC) website (<http://magic.gov.uk>) was searched for:
 - a) International Statutory Sites within 5km;
 - b) National Statutory Sites – within 2km;
 - c) Ancient Woodland and Priority Habitats within 2km; and
 - d) European Protected Species (EPS) Licences – within 2km for all species.

Field Surveys

- 7.4.8 Field surveys which have been undertaken and to inform this EcIA comprise a Preliminary Ecological Appraisal (PEA), breeding bird survey and water vole survey. Full details of these are provided in Technical Appendices 7.1 – 7.3 with a summary provided below.



PEA Survey

- 7.4.9 The field survey was undertaken in 2023 and comprised a UK Habitat Classification (UKHab) survey of the Site. This method was extended to include preliminary checks for protected, priority and otherwise notable species of both flora and fauna.
- 7.4.10 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 priority plant or animal species. Notes of principal habitat types, supported by photographs, were made.
- 7.4.11 In addition, the presence of plant species included within Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA 1981) was searched for during the survey. Plants included within the schedule are considered derogated pest species that are pernicious or injurious, such as Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera* and giant hogweed *Heracleum mantegazzianum*.

Breeding Bird Survey

- 7.4.12 A suite of six surveys were undertaken in 2023 within the survey area following an adapted Common Bird Census (CBC) methodology described by Gilbert *et al* (1998).
- 7.4.13 The surveyor traversed the Site so that each part had been approached within 50m, stopping at regular intervals of 100m to scan the area with binoculars and listen for calls and/or songs. The direction of the transect was varied over the surveys to ensure different areas were accessed at different times of the morning.
- 7.4.14 All bird species seen or heard were recorded on a map using British Trust for Ornithology (BTO) standard species codes. Behavioural notations were also recorded; flying, calling, alarm calling, singing, birds with material for nests, or carrying food to provision young, fledged young and any nests observed were recorded.

Water Vole Survey



- 7.4.15 The water vole survey was undertaken in 2023 on all ponds and suitable watercourses on site and within a minimum 250m buffer of the Site in accordance with best practice methods.

Determining Importance of Ecological Features

- 7.4.16 In accordance with the CIEEM guidelines only ecological features (habitats, species, ecosystems and their functions/processes), which are considered to be important and potentially affected by the project should be subject to detailed assessment. Ecological features can be important for a variety of reasons and the rationale used to identify them is explained here. Importance may relate, for example, to the quality or extent of the habitats within the Site; 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.
- 7.4.17 Ecological features are considered within a defined geographical context. For this project the following geographic frame of reference has been used, relying on known/published accounts of distribution and rarity where available, an professional judgement:
- i) International;
 - ii) UK;
 - iii) National (England);
 - iv) Region (East of England);
 - v) County/Borough (London Borough of Havering (LBH)); and
 - vi) Local (Rainham).
- 7.4.18 For designated sites, importance should reflect the geographical context of the designation. For example, a SSSI would normally be considered nationally important and a LWS of county level importance.
- 7.4.19 In accordance with CIEEM guidelines the value of habitats has been measured against published selection criteria where available. Examples of relevant criteria include Annex 1 of the Habitats Directive, descriptions of habitats included in Section 41 of the Natural Environment and Rural Communities Act (2006), local Wildlife Site Criteria, and Habitat Action Plans (HAPs) contained within the Local Biodiversity Action Plan.



7.4.20 In assigning a level of value to a species, it is necessary to consider its 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.

7.4.21 Important species are considered here to be those:

- i) of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive) so far as it applies to the UK and as transposed by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (as amended);
- ii) specially protected under the terms of the Wildlife and Countryside Act 1981 (as amended);
- iii) of principal importance for biodiversity under Section 41 of the NERC Act 2006;
- iv) Red listed or listed as near threatened using International Union for the Conservation of Nature (IUCN) criteria (IUCN, 2012; IUCN, 2016; IUCN 2019), e.g. in one of the UK Species Status Project reviews, or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book);
- v) which are listed as a Nationally Rare or Nationally Scarce species (e.g., in one of the Species Status Project reviews) or listed as a nationally notable species where a more recent assessment of the taxonomic group has not yet been undertaken;
- vi) endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place); and/ or
- vii) listed in Havering Nature Conservation and Biodiversity Action Plan (2014-2016)².

7.4.22 In accordance with CIEEM Guidelines detailed assessment is only required for important ecological features. For the purposes of this assessment only ecological features of local importance or greater and/or subject to legal protection that are potentially subject to effects resulting from the Proposed Development have been subject to detailed assessment. Effects on other ecological features are considered

² *Havering Nature Conservation and Biodiversity Action Plan (2014-2016) Item 7c - Action Plan*



unlikely to be significant in legal or policy terms and have therefore been omitted from the assessment process.

Assessing Impacts and the Significance of an Effect

7.4.23 The impact assessment process involves the following steps:

- i) identifying and characterising impacts;
- ii) incorporating measures to avoid and mitigate (reduce) these impacts (embedded and applied mitigation);
- iii) assessing the significance of any residual effects assuming that all embedded and applied mitigation measures are implemented;
- iv) identifying additional mitigation or appropriate compensation measures to offset significant residual effects (if required); and
- v) identifying opportunities for ecological enhancement.

7.4.24 When describing impacts, reference has been made to the following characteristics, as appropriate:

- i) positive or negative;
- ii) extent;
- iii) magnitude;
- iv) duration (short term <5years, mid-term 5-10 years, long term >10 years);
- v) timing;
- vi) frequency; and
- vii) reversibility.

7.4.25 Both direct and indirect impacts are considered: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during a specific phase. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or feature, e.g. changes in ground level and surface water management which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of marshy grassland.

7.4.26 The concept of ecological significance is addressed in the CIEEM guidelines. Significance is a concept related to the weight that should be attached to effects when decisions are made. For the purposes of ecological impact assessment, a



‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy). Effects can be considered significant at a wide range of scales from international to local. For example, a significant effect on a SSSI is likely to be of national significance whilst a significant effect on a regionally important population of a species is likely to be of regional significance.

7.4.27 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

7.4.28 Paragraphs 7.24 – 7.34 of the CIEEM guidelines cover how significant effects are determined. To summarise:

- i) for designated sites – effects may be significant if they are likely to undermine the conservation objectives of the site; or positively or negatively affect the conservation status of species or habitats for which the site is designated; or may affect the condition of the site or its interest/qualifying features.
- ii) for ecosystems – effects may be significant if the project is likely to result in a change in ecosystem structure and function. Consideration should be given as to whether any processes or key characteristics will be removed or changed, if there will be an effect on the nature, extent, structure and function of component habitats or if there is an effect on the average population size and viability of component species.
- iii) for habitats and species - consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance. Conservation status is defined as follows:
 - a) Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area.
 - b) Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

Avoidance, Mitigation, Compensation and Enhancement



- 7.4.29 Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied, residual effects are then identified along with any necessary compensation measures, and incorporation of proposals for biodiversity enhancement.
- 7.4.30 It is important for the EclA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:
- i) Avoidance is used where an impact has been avoided e.g. through changes in scheme design;
 - ii) Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects;
 - iii) Compensation describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible; and
 - iv) Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Assessment of Cumulative Impacts and Effects

- 7.4.31 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a particular location. The potential for cumulative effects with other projects has been considered and no other plans or projects have been identified that may result in cumulative effects.

7.5 Biodiversity Net Gain (BNG)

- 7.5.1 Biodiversity Net Gain (BNG) is an approach to development activities that leaves the natural environment in a measurably better state than it was before. BNG works with and does not replace the mitigation hierarchy. It does not replace existing legal requirements (e.g., in relation to protected species) and it should not be applied to



compensate for impacts on irreplaceable habitats. Veolia's cognisant of the good practice in respect of BNG and the proposal aligns with the ten principles developed by CIEEM, IEMA and CIRIA (Baker et al., 2019) are summarised within the BNG Assessment Report Appendix 7.4.

7.5.2 The Statutory Metric uses a comparison of habitats as a proxy for biodiversity and describes these habitats using standard units referred to as Biodiversity Units (BUs). BUs are calculated using the size of a parcel of habitat and its quality. The overall calculation of the change in biodiversity resulting from a project or development is made by subtracting the value of pre-project or 'baseline' BUs of an area of land from the number of post-project units. Post-project units incorporate temporary and permanent losses resulting from the project, along with the value of any mitigation, compensation and enhancement proposals include as part of the project. It is a requirement of the Statutory Metric that habitat required to deliver BNG must be secured for at least 30 years.

7.5.3 The proposed development's approach to BNG is set out in detail Appendix 5.4, which includes condition improvement of existing habitats, such as grassland and mixed scrub, and additional planting of hedgerow.

7.6 Uncertainty and Technical Difficulties Encountered

Desk Study

7.6.1 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 protected species not identified within the data may 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 from areas adjacent to the Site.

Field Surveys

7.6.2 No significant limitations were associated with the surveys. Please refer to the survey reports in Appendices 7.1-7.3 in respect of the main assumptions and limitations associated with each. Limitations associated with each survey type are also summarised below.



- 7.6.3 Active landfill parts of the Site were not accessible during the field surveys. These areas were assessed from a distance with the use of high-powered binoculars and were constantly undergoing change and disturbance, and therefore, seen to offer limited opportunities except for foraging bird species.
- 7.6.4 During the breeding bird survey, the Site was surveyed four times within optimal conditions, with a further two surveys undertaken in northern parts of the site only. Therefore, most of the Site was not surveyed during April; however, as most of the bird species identified on site were utilising the Site for breeding May onwards, this is not seen as a significant limitation.
- 7.6.5 During the water vole survey, due to health and safety concerns within dense vegetation and steep banks small areas were not accessed, and as such, some features may have been missed in the inaccessible areas. However, in proportion to the areas that were surveyed, this is not seen as a significant limitation.

7.7 Baseline Conditions

Designated Sites

- 7.7.1 Table 7.2 provides summary descriptions for statutory and non-statutory sites and a brief rationale for scoping sites in or out of assessment. Locations of each in relation to the Site are shown in Figure 7.1 and 7.2 with full citations for designated sites provided at Appendix 7.5.

Table 7.2 - Statutory and non-statutory Designated Sites within search radius.

Site Name and Designation	Reason for notification/ designation	Distance & Orientation from Application Site	Reason for scoping in or out of assessment
Statutory Designated Sites			
Inner Thames Marshes SSSI	The Inner Thames Marshes form the largest remaining expanse of wetland 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 the numbers of wintering wildfowl, waders, finches and birds of prey, with wintering teal <i>Anas crecca</i> populations reaching levels of international importance. The Marshes also support a wide range of wetland	Adjacent to the northeast boundary.	Scoped in - located immediately adjacent.

Site Name and Designation	Reason for notification/ designation	Distance & Orientation from Application Site	Reason for scoping in or out of assessment
	plants and insects with a restricted distribution in the London area, including some that are nationally rare or scarce.		
Rainham Marshes LNR	The grasslands, fringing reedbeds and network of ditches here support a number of rare plants, insects and birds and are also home to a large population of water voles <i>Arvicola amphibius</i> . In summer the reserve supports reed <i>Acrocephalus scirpaceus</i> and sedge warbler <i>Acrocephalus schoenobaenus</i> and large flocks of lapwing <i>Vanellus vanellus</i> overhead during the winter. Notable species include plants like golden dock <i>Rumex maritimus</i> and scarce emerald damselfly <i>Lestes dryas</i> .	0.345km northwest	Scoped in – potentially linked via hydrological connections.
Crossness LNR	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 at Crossness Nature Reserve. A number of rare aquatic and terrestrial invertebrates are present, as well as some important flora species.	1.8km west	Scoped out - separated from Site by River Thames.
Ingrebourne Marshes SSSI	The Ingrebourne Valley supports the largest and one of the most diverse coherent areas of freshwater marshland in Greater London. The variety of habitat includes extensive areas of reed sweet-grass <i>Glyceria maxima</i> and common reed <i>Phragmites australis</i> swamp; wet neutral grassland, and tall fen. Nowhere else in London do these habitats occur on such a large scale or in such intimate juxtaposition. These habitats also support a rich assemblage of associated invertebrates and a diverse breeding bird population with 61 species of bird regularly breeding in the area, 14 of which are particularly associated with wetlands.	2.1km north	Scoped out – separated from Site by major road infrastructure and no hydrological connection.
Ingrebourne Valley LNR	The local nature reserve has a range of habitats including secondary woodland, rough grassland, acid grassland, river, marshes, wetland grazing, and reedbeds. It is important for a wide range of plants, animals, birds including an active heronry, insects, and reptiles. Species include great crested newt <i>Triturus cristatus</i> , slow worm <i>Anguis fragilis</i> , harvest mouse	2.3km north	Scoped out – separated from Site by major road infrastructure and no hydrological connection.

Site Name and Designation	Reason for notification/ designation	Distance & Orientation from Application Site	Reason for scoping in or out of assessment
	<i>Micromys minutus</i> , water vole, bumblebees, green woodpecker <i>Picus viridis</i> , grey partridge <i>Perdix perdix</i> , house martin <i>Delichon urbicum</i> , pochard <i>Aythya ferina</i> , reed bunting <i>Emberiza schoeniclus</i> , skylark <i>Alauda arvensis</i> and song thrush <i>Turdus philomelos</i> .		
Lesnes Abbey Woods LNR	Ancient woodland and coppice with wildflowers and spring bulbs with one of the most important populations of wild daffodils <i>Narcissus pseudonarcissus</i> in the southeast. Other habitats include parks and open spaces, heathland, wetlands and hedgerows. Also, bluebells <i>Hyacinthoides non-scripta</i> and wood anemones <i>Anemone nemorosa</i> . There are stag beetles <i>Lucanus cervus</i> , song thrush, bats and newts as well as a wide range of other woodland and parkland birds, animals and insects. A recent comprehensive study of the site has found 906 species of invertebrate, 46 birds including red data book redwing <i>Turdus iliacus</i> and fieldfare <i>Turdus pilaris</i> , 59 species of fungi, 292 species of plants and 12 species of mammal.	2.9km southwest	Scoped out - separated from Site by River Thames.
Beam Valley (Environment Agency) LNR	Land leased by LBBD from Environment Agency and consists of neutral grassland, scrub and former Romford Canal.	3.2km northwest	Scoped out – separated from Site by major road infrastructure and no hydrological connection.
Scrattons Ecopark and extension LNR	Former marshland and allotments with small areas of recently planted woodland areas of open grass, leaving blocks of bramble <i>Rubus fruticosus</i> and preserving existing shrubs and trees. The overall aim being to create a diverse range of habitats for plants, birds, insects and mammals.	4.3km northwest	Scoped out – separated from Site by major road infrastructure and no hydrological connection.
West Thurrock Lagoon & Marshe SSSI	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	4.5km southwest	Scoped out – separated from Site by major road infrastructure and no hydrological connection.

Site Name and Designation	Reason for notification/ designation	Distance & Orientation from Application Site	Reason for scoping in or out of assessment
	saltmarsh is noted for the size and character of its high marsh plant community. Large reed beds with abundant common reed and sea club-rush <i>Scirpus maritimus</i> border its south and eastern perimeter where reed warbler <i>Acrocephalus scirpaceus</i> , sedge warbler <i>A. schoenobaenus</i> and the notable bearded tit <i>Panurus biarmicus</i> breed. In addition, locally important numbers of teal, snipe and grey heron roost on the shallow waters, grassy islands and lagoon margins. 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 <i>Sterna hirundo</i> , black <i>Chlidonias niger</i> and arctic terns <i>S. paradisaea</i> .		
Dagenham Village Churchyard LNR	Main importance for wildlife lies in its invertebrates, including butterflies and crickets, which provide food for bats. Woodpeckers feed on an avenue of lime trees, and a family of foxes live in the churchyard.	4.7km northwest	Scoped out – separated from Site by major road infrastructure and no hydrological connection.
The Chase – Barking LNR	Offers a diverse mix of habitats. Shallow wetlands, woodland, grassland and the River Rom support an abundance of wildlife. Kingfishers <i>Alcedo atthis</i> , skylark, little ringed plover <i>Charadrius dubius</i> and lapwing all breed here but The Chase is best known for its rare visitors during the migration periods such as pine bunting <i>Emberiza leucocephalos</i> , great snipe <i>Gallinago media</i> and spotted crake <i>Porzana porzana</i> . Other animals include water voles, great crested newts, slow worms and badgers <i>Meles meles</i> .	4.9km north	Scoped out – separated from Site by major road infrastructure and no hydrological connection.
Non-statutory Designated Sites			
M031 River Thames and tidal tributaries SINC	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	Adjacent to southwest and southeast boundary.	Scoped in - located immediately adjacent.

Site Name and Designation	Reason for notification/ designation	Distance & Orientation from Application Site	Reason for scoping in or out of assessment
	pecially protected black redstart. The Thames is extremely important for fish, with over 100 species now present. 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.		
M039 Wennington, Aveley and Rainham Marshes SINC	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.	Adjacent to northeast boundary.	Scoped in - located immediately adjacent.
M107 Crayford Marshes,	Detailed in Appendix 5.5	>0.250km	Scoped out – separated from

Site Name and Designation	Reason for notification/ designation	Distance & Orientation from Application Site	Reason for scoping in or out of assessment
BxB102 Belvedere Dykes SINC, BxBI120 St John the Baptist Churchyard, Erith SINC, BxBII32 Parish's Pit Woodland, HvBI142F Rainham Railside SINC, BxBI04 Erith Quarry and Fraser Road.			Site by major road infrastructure and no hydrological connection

Ancient Woodland and Priority Habitat

7.7.2 The MAGIC website indicated no ancient woodlands³ present within 2km of the Site but there are several priority habitat areas, which are mudflats, reedbeds, coastal saltmarsh, coastal and floodplain grazing marsh, deciduous woodland, wood pasture and parkland BAP priority habitat and traditional orchard within 2km (Table 7.3, Figure 7.3).

Table 7.3 - Priority Habitats (identified within Natural England Datasets) within search radius.

Site Name	Size (ha)	Distance (m) and Direction from Application Site
Mudflats	Multiple parcels, varying sizes	Closest immediately adjacent on S, SE and W riverbanks.
Reedbeds	Multiple parcels, varying sizes	Closest immediately adjacent to SW corner.
Coastal Saltmarsh	Multiple parcels, varying sizes	Closest immediately adjacent on SE, S and W riverbanks.

³ 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.

Site Name	Size (ha)	Distance (m) and Direction from Application Site
Coastal and Floodplain Grazing Marsh	Multiple parcels, with largest approx. 40.79	Closest 40 NE.
Deciduous Woodland	Multiple parcels, varying sizes	1100 closest SW
Woodpasture and Parkland BAP Priority Habitat	Approx. 20	1400 W
Traditional orchard	0.47	1900 N

Habitats

7.7.3 The Site comprises active landfill, small areas of urban infrastructure and some restored areas mainly supporting neutral grassland (for full details refer to report at Appendix 7.1). A summary of the habitat types recorded within the Site is provided in **Error! Reference source not found.**, the locations of which are also shown on within Appendix 7.1.

Table 7.4 - Summary of the habitat types recorded within the Site.

Level 3 UKHab Primary Code	Habitat Type and Secondary Codes	Extent with the Site
g3c	Other neutral grassland (16 tall forbs, 61 re-created habitat, 500 dry, 510 bare ground, 521 unmanaged)	37.81ha
g3c	Other neutral grassland (18 species-rich grassland, 61 re-created habitat, 500 dry, 510 bare ground, 517 recent management)	13.26ha
g3c	Other neutral grassland (61 re-created habitat, 500 dry, 510 bare ground, 517 recent management)	48.68ha
g4	Modified grassland (521 unmanaged)	11.95ha
u1c	Artificial unvegetated, unsealed surface (831 landfill)	10.68ha
u1c	Artificial unvegetated, unsealed surface (510 bare ground, 839 tracks)	29.02ha
r1	Standing open water and canals (40 Pond, Priority Habitat)*	1.24ha
r1	Standing open water and canals (50 Ditch)*	1,811.61m
h3a	Blackthorn scrub	1.14ha
h2a	Native hedgerow (Priority Habitat)	686m
u1b	Developed land, sealed surface (800 road, 804 car park, 815 commercial buildings).	11.74ha

*Updated from r1a Eutrophic Standing Water, 41 Pond (non-priority) following confirmation of protected species presence: water vole.

Species

Protected and notable plants and fungi

7.7.4 The GiGL and EFC data search reports returned no records within the Site and 22 for notable plant or fungi species within 2km of the Site.

- 7.7.5 No protected or otherwise notable plant or fungal species have been recorded within the Site during surveys to date. It should be borne in mind that exhaustive searching for particular species has not been undertaken, and as plants may only be evident at certain times of year the presence of additional species remains a possibility. This has been accounted for in the evaluation and assessment of impacts; the field survey and desk study information are considered adequate for the purpose of EIA.
- 7.7.6 Invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) that were recorded within the Site include Japanese knotweed and giant hogweed. Butterfly bush *Buddleia davidii* was also recorded; it is included within the London Invasive Species Initiative (LISI), category LISI 3⁴.

Invertebrates

- 7.7.7 The GiGL and EFC data search reports returned no records for the Site, and 633 records for notable species within 2km. With the exception of the active landfill areas, the range of habitats present at the Site is suitable for use for a range of priority and notable invertebrates species recorded locally.

Amphibians

- 7.7.8 The GiGL and EFC data search reports returned no records for the Site and seven species of amphibian within 2km; common frog *Rana temporaria* and pool frog *Pelophylax lessonae*. There are no records for great crested newt (GCN) within the GiGL or EFC data, and no evidence of EPS licence for GCN within 2km on the MAGIC website.
- 7.7.9 There are two ponds at the Site that may be suitable for use by common species of amphibian for breeding because of the quality of water and aquatic vegetation present. The range of terrestrial habitats present at the Site is also suitable for foraging and sheltering amphibians that may be present.

Reptiles

⁴ [*LISIspeciesofconcernNov2014.pdf*](#)



- 7.7.10 The GiGL and EFC data search reports returned no records for the Site and 35 records of reptile species within 2km; grass snake *Natrix helvetica* and common lizard *Zootoca vivipara* have been recorded within 2km of the Site. There are no records for smooth snake *Coronella austriaca* within the GiGL or EFC data, and no evidence of EPS licence for smooth snake within 2km on the MAGIC website.
- 7.7.11 The waterbodies on site are suitable for use by foraging grass snake and the mosaic of habitat types with a variety of sward height are suitable for use grass snake and common lizard for basking, foraging and shelter.

Breeding Birds

- 7.7.12 The GiGL and EFC data search reports returned no records for the Site and several thousand records of protected, priority or notable bird species within 2km of the Site. This is a reflection of the Site's proximity to Inner Thames Marshes SSSI, which is designated for the bird populations it supports.
- 7.7.13 Full details of the breeding bird survey, including territory maps, are included in Appendix 7.2; a summary of key findings for protected and notable species is presented in the Table 7.5 below.

Table 7.5 - Summary of the findings for protected and notable bird species recorded on site.

Species	Status	Detail
Marsh harrier <i>Circus aeruginosus</i>	Annex 1 of the Birds Directive Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Amber List species.	Site may be within home range of one breeding pair. Site is unsuitable for nesting.
Red Kite <i>Milvus milvus</i>	Annex 1 of the Birds Directive Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Green List species.	Site may be within home range of one breeding pair. Site is unsuitable for nesting.
Cetti's warbler <i>Cettia cetti</i>	Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Green List species.	Probable breeding within the Site. Seven breeding territories were established by territory analysis, along the northwestern and western Site boundary. The presence of scrub and wetland vegetation on site provides breeding habitat for this species.
Herring gull <i>Larus argentatus</i>	Schedule 41 of the NERC Act 2006. Red List species.	Large flocks foraging and loafing. Site is unsuitable for nesting.
Skylark <i>Alauda arvensis</i>	Schedule 41 of the NERC Act 2006. Red List species. LBH BAP priority species.	Probable breeding within the Site. Seven breeding territories were established by territory

Species	Status	Detail
		analysis. Skylark prefer to nest on open ground with short crops or tussocky grass, and as such there is suitable breeding habitat available on site, particularly to the west and in the southern corner.
Starling <i>Sturnus vulgaris</i>	Schedule 41 of the NERC Act 2006. Red List species.	Flocks foraging and loafing. Site is unsuitable for nesting.
Linnet <i>Carduelis cannabina</i>	Schedule 41 of the NERC Act 2006. Red List species.	Possible breeding within the Site, within blackthorn scrub.
Corn bunting <i>Emberiza calandra</i>	Schedule 41 of the NERC Act 2006. Red List species.	One breeding pair present on site. The neutral grassland found on site is suitable breeding habitat for this species.
Pochard <i>Aythya ferina</i>	Red List species. Nationally rare. LBH BAP priority species.	One breeding pair on site, within wetland.
Reed bunting <i>Emberiza schoeniclus</i>	Schedule 41 of the NERC Act 2006. Amber List species. LBH BAP priority species	Possible breeding within the Site, within blackthorn scrub.

- 7.7.14 The majority of the territories recorded (for all species) were concentrated in the northwestern/northern corner of the Site where waterbodies, mixed scrub and hedgerow habitat are found, and in areas of neutral grassland across the Site.

Water Vole

- 7.7.15 The GiGL and EFC data search reports returned 599 records of water vole within 2km of the Site. None were from within the Site; however, the closest record was at Rainham Marshes LNR, which is directly adjacent.
- 7.7.16 Field survey confirmed that water vole are present at Pond 1, Pond 2, and Ditch 1 within the Site (refer to Appendix 5.3 for full details); no evidence was recorded at other waterbodies but future presence remains possible. Based upon the number of latrines and burrows recorded, a low population is assumed present within waterbodies at the Site.

Other notable or protected species

- 7.7.17 No evidence of other protected or notable species has been recorded at the Site during surveys; however, two records of hedgehog *Erinaceus europaeus*, two records of brown hare *Lepus europaeus* and one record of harvest mouse *Micromys minutus* were returned in the GiGL or EFC data. The two latter species are also

identified as priority species within the LBH BAP. Based upon available data to date and the types of habitat present at the Site, protected or notable species other than those already listed are considered likely absent.

Summary of Important Ecological Features

7.7.18 Table 7.6 outlines the important ecological features that have been identified within the relevant study areas, or which based upon desk study information, habitat suitability or via more recent survey data are considered likely to be present within the relevant study areas, and which may be affected by the project.

Table 7.6 - Importance Ecological Features to be taken forward to Impact Assessment.

Ecological Feature	Reason for Importance	Geographical Scale of Importance
Inner Thames Marshes SSSI (which includes Rainham Marshes LNR and M039 Wennington, Aveley and Rainham Marshes SINC)	Statutory designated site protected via legislation, national and local planning policies.	National
M031 River Thames and tidal tributaries SINC	Non-statutory designation recognised as of value within the Greater London Authority and London borough councils, Site of Metropolitan Importance grade, not formally protected by legislation but planning policy seeks to avoid loss or detrimental impact.	County
Habitats including neutral grassland, mixed scrub, hedgerow and ponds (non-priority)	The habitats listed exist in close mixture or mosaic, are functionally linked, and are adjacent to designations listed above. It has therefore not been considered helpful to consider them separately and they are here presented as a single important ecological feature of greater value than the individual parts. Only hedgerow is listed on S41 but other habitats are considered of value locally.	Local
Notable Plant Species	Potential for populations of S41 species and/ or Red Data Book (RDB) species primarily associated with coastal habitats, including Inner Thames Marshes SSSI.	Local
Invasive non-native plant species	Two species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) recorded within the Site.	N/A
Invertebrates	Potential for populations of S41 species and/ or Red Data Book (RDB) species primarily associated with coastal habitats and marsh grasslands, including Inner Thames Marshes SSSI. Populations of local importance are likely based upon evidence of designated sites for invertebrate species, and desk study information.	Local

Ecological Feature	Reason for Importance	Geographical Scale of Importance
	The Site is considered likely to be of critical importance to local populations of invertebrate species and is therefore assessed as being of local value.	
Common amphibians (i.e. excluding GCN)	Pool frog is a S41 species. Based on GiGL and EFC data amphibian species are of low abundance and sparsely distributed within the local area.	Local
Reptiles	Grass snake and common lizard are protected from intentional killing, injuring and sale under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are both S41 species. Based on GiGL and EFC data both species are of low abundance and sparsely distributed within the local area.	Local
Breeding Birds	Presence of confirmed breeding pairs within the Site (Canada goose <i>Branta canadensis</i> and mute swan <i>Cygnus olor</i>), with other species noted as 17 probable and 14 possible breeding pairs and recognised as important locally. Presence of one breeding species within the Site that is protected through inclusion on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended): Cetti's warbler. The population recorded represents considerably less than 1% of the national breeding population (Woodward et al., 2020) but is likely to be of local importance. Presence of several other species within the Site that are included on the BoCC Red list and/ or S41 species, including skylark, linnet, Cetti's warbler, corn bunting, reed bunting and pochard. All of the populations recorded represent considerably less than 1% of the national population (Woodward et al., 2020) and are likely to be of local importance.	Local
Water Vole	Fully protected through its inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), it is also a S41 species and priority species in LBH BAP. A low population is present at waterbodies within the Site, populations are also present in Inner Thames Marshes SSSI.	Local

7.8 Future Baseline in the Absence of the Proposed Development

7.8.1 Condition 2 of the extant planning consent requires that: “Waste disposal and all other processing operations cease on or before 31st December 2024 and restoration

shall be completed by the 31st December 2026, in accordance with the scheme approved under condition 4...

7.8.2 This application to which this EclA relates is to allow waste disposal and open windrow composting operations to continue until 31st December 2029, with restoration to be completed by 31st December 2031. Save for proposed amendments to the proposed landfill phasing plan, there are no other changes to the approved and current operations for either the landfill or composting operations

7.8.3 Therefore, in the absence of the proposed development, the Site would be wholly restored by 2026 (see Appendix 7.4 for the restoration plan). In the medium to long term the restored habitat would be expected to succeed to areas of grassland interspersed with scattered scrub.

7.9 Assessment of Effects

7.9.1 The assessment of effects is based on the project description as outlined in Chapter 2: Proposed Development. Construction effects are scoped out of this assessment as it relates to the extension of time and construction has already been completed. The operational phase of the landfill site is therefore the focus of this assessment. Unless otherwise stated, potential effects identified are considered to be negative.

7.9.2 The key sources of impact have been identified as:

- i) disturbance (from human activity, noise, dust and light);
- ii) alterations to surface water flow and quality; and
- iii) presence of pest species.

Inner Thames Marshes SSSI (which includes Rainham Marshes LNR and M039 Wennington, Aveley and Rainham Marshes SINC) and M031 River Thames and tidal tributaries SINC

Potential Impacts

7.9.3 The Site is located adjacent to the Inner Thames Marshes SSSI and in close proximity to the other identified sites; however, the sites are separated by Coldharbour Lane, a well-used, sealed-surface access road, and therefore, no direct impacts are predicted.



- 7.9.4 There are no predicted changes to the current environment with respect to noise, visual, dust and lighting disturbance, although the current conditions would continue for a further five years. It is considered that populations of all protected and notable fauna associated with the above designated sites that may be affected by changes to these conditions would have already adapted to those conditions prevalent at the landfill and no additional impacts are predicted.
- 7.9.5 The Air Quality chapter at 4.0 confirms that the *'facility will continue to operate in accordance with the existing Dust Mitigation measures'* and therefore, *'not considered likely to give rise to additional significant adverse impact'*.
- 7.9.6 Lighting levels will remain unchanged and the Site is surrounded by several other sources of light, and therefore continued illumination for a further five years is deemed unlikely to produce any new impacts.
- 7.9.7 All surface water flow from the application site will be managed by the existing surface water drainage systems at the Site. The landfill operates within the context of its Environmental Permit and therefore any continued risks to surface or ground water would be effectively controlled. No changes in surface water flow and quality are therefore anticipated and no impacts are predicted, outlined in detail within Appendix B Flood Risk Assessment.
- 7.9.8 The potential for continued presence of pest species (i.e. foxes, gulls, and corvids) as a result of continued landfilling for a further five years would be minimised via control measures implemented in line with the Environmental Permit. These actions would prevent significant increases in pest species and thus no significant impacts on the adjacent designated sites as a result of an increase in pest species are predicted.

Proposed Mitigation Measures

- 7.9.9 No additional mitigation measures are proposed beyond those avoidance measures already in operation at the Site.

Significance of Residual Effects

- 7.9.10 No significant negative impacts on designated sites are anticipated.



Habitats including neutral grassland, mixed scrub, hedgerow (priority habitat) and ponds (priority habitat), and Notable plant species

Potential Impacts

- 7.9.11 There were two Section 41 Habitats (priority habitats) identified on site (hedgerow and ponds) and two identified within the RLB but outside of the Site's fenced boundary (intertidal mudflats and coastal saltmarsh). The two later habitats will remain outside of the current or future activities of the Site and therefore, no significant impacts are predicted.
- 7.9.12 Potential impacts relate to a delay to unrestored parts of the Site, as such no direct loss is predicted to any of the above noted habitats or Notable species; however, the extension of the operational period will lead to a delay to the restoration programme.
- 7.9.13 Impacts related to disturbance, surface water flow and pests will continue for a further five years; however, for retained habitats the habitat quality and resilience is unlikely to be affected. No significant impacts are therefore predicted.

Proposed Mitigation Measures

- 7.9.14 No additional mitigation measures are proposed beyond those avoidance measures already in operation at the Site.

Significance of Residual Effects

- 7.9.15 No significant negative impacts are anticipated.

Invasive non-native plant species

- 7.9.16 The continued operation of the landfill results in ongoing risk of spread of invasive and non-native plant species (INNS). The primary ways the project could increase the spread of INNS is via;
- i) disturbance to existing INNS populations within the Site;
 - ii) inadvertently importing INNS from elsewhere, primarily on vehicles, but also other equipment or personnel; and
 - iii) via seeds, planting stock or planting substrate.



- 7.9.17 This risk would continue to be minimised via control measures implemented in line with best practice.

Proposed Mitigation Measures

- 7.9.18 The Site is an operational waste management facility with open windrow composting operations, and as such controls are in place for the protection of groundwater and surface water receptors, including protected nature conservation sites such as the adjacent SSSI. No additional mitigation measures are proposed beyond these avoidance measures already in operation at the Site.

Significance of Residual Effects

- 7.9.19 No significant negative impacts are anticipated.

Invertebrates, Common Amphibians (i.e. excluding GCN), Reptiles, Breeding Birds and Water Vole

- 7.9.20 Protected and notable species at the Site are predominantly associated with the restored habitats, and as such would not be directly affected by the extension to life. It is also considered that the populations of all protected and notable fauna identified as currently using the Site would have already adapted to those conditions prevalent at the landfill and no additional impacts are predicted as a result of landfilling activity for a further five years.

- 7.9.21 The delay to final restoration does however represent an adverse impact, since habitat that could potentially be used by these species will remain absent for an additional five years. However, this is not considered to be significant, since the five-year delay is considered unlikely to significantly affect the abundance or distribution of local populations present.

- 7.9.22 In the absence of mitigation measures, the recontouring operations involved with the restoration phase of the Site are likely to impact the above species and therefore, significantly negative impacts are anticipated.

Proposed Mitigation Measures

Invertebrates



- 7.9.23 The Site currently offers great potential to support locally important invertebrates identified on the adjacent SSSI. During the restoration phase, important habitats, such as open mosaic, bare ground, open water, flower-rich grassland and structural diverse grassland, need to be managed sympathetically and monitored.

Common Amphibians and Reptiles

- 7.9.24 Prior to the commencement of any vegetation clearance works within previously undisturbed areas of the Site, a two-staged cutting regime will be undertaken during the activity season of these species (April to October). This will involve a first cut, using handheld brush cutter or strimmer, to a height of no lower than 30cm and working in the direction of retained vegetation to encourage amphibians and reptiles to disperse. The arisings will be collected and removed from the working area. A period of at least 24 hours will lapse prior to the commencement of the second cut, whereby the vegetation can be taken down to soil or a shorter sward.
- 7.9.25 Any animals observed during either of the stages will be carefully removed from the working area and placed within vegetation which will be unaffected by the clearance works.

Breeding Birds

- 7.9.26 The Site currently offers great potential for ground nesting bird species, such as skylark. In the absence of mitigation measures during vegetation clearance works and recontouring phase, there is a risk that nests could be damaged or destroyed. This could result in a breach of the Wildlife & Countryside Act 1981 (as amended).
- 7.9.27 In order to ensure compliance with the legislation, vegetation clearance in undisturbed areas will either be timed to take place outside the main bird breeding season (typically March to August inclusive) or suitable habitat will be checked for nests by a suitably qualified ecologist prior to works taking place. A buffer zone (typically no less than 5m) will be set up around any active nests identified and remain in place until chicks have fledged and/or the nest is deemed inactive.

Water vole



7.9.28 The waterbodies on site currently support water vole. As a protected species suitable mitigation measures will be implemented and some activities in and around such areas will require an approved licence from Natural England to be undertaken.

7.9.29 The waterbodies will be maintained and monitored for the benefit of water vole throughout the operational and restoration phases.

Biodiversity and Ecological Management Plan (BEMP)

7.9.30 The additional mitigation measures identified above will be outlined in detail within a Biodiversity and Ecological Management Plan (BEMP) in order to manage the ecological risks of existing fauna and ensure maximum biodiversity enhancement for the Site.

Significance of Residual Effects

7.9.31 No significant negative impacts are anticipated.

7.10 Biodiversity Enhancements

7.10.1 A Habitat Management and Monitoring Plan (HMMP) will outline in detail how the biodiversity enhancements of the onsite habitats required to ensure the statutory 10% net gain will be achieved within the Proposed Development and Restoration Plan.

7.10.2 The HMMP will be based on the calculation of the BNG Assessment Report, Appendix 7.4.

7.10.3 It is also a requirement of the Environment Act 2016, national and local planning policy that development provides benefits for biodiversity. A range of measures are proposed, which go beyond the current restoration proposals as follows:

- i) Manage and monitor enhanced grassland habitat to maintain flower-rich plant species, such as clover, vetch and trefoils, to benefit bumblebee species, such as brown-banded carder-bee *Bombus humilis* (recorded on adjacent SSSI and identified within LBH BAP);
- ii) Additional planting/ creation of at least 60m (0.06km) of species-rich, native hedgerow and manage for the benefit of nesting bird species;



- iii) Design a bespoke skylark mitigation strategy, which will include grassland management and monitoring to support existing breeding populations on site (Red Listed species, recorded on site and identified within LBH BAP); and
- iv) Install two pole-mounted bird boxes; one suitable for kestrel (Amber Listed species and recorded on site) and one suitable for barn owl (Sch 1, identified within LBH BAP and recorded on adjacent SSSI).

7.11 Summary and Conclusions

- 7.11.1 SLR Consulting Ltd (SLR) was commissioned by Veolia ES Landfill UK Ltd (Veolia) in October 2024 to undertake an EclA of proposed plans to retain the Proposed Development for a further five years at Rainham Landfill. Rainham Landfill currently operates under planning consent reference P1566.12, which expires on 31st December 2024. Veolia wish to retain the existing Proposed Development at Rainham Landfill for a further five years (up until 31st December 2029).
- 7.11.2 Other than the time extension of life, no changes to the existing Proposed Development or the agreed tonnage throughput limit are anticipated. Vehicle numbers attributed to the current agreement would continue to be controlled within the approved vehicle limit for the landfill site as a whole and there would be no increase upon previously approved traffic limits. Hours of operation would remain as currently approved.
- 7.11.3 The network of designated sites in proximity to the application site (Inner Thames Marshes SSSI (which includes Rainham Marshes LNR and M031 River Thames and tidal tributaries SINC) and M039 Wennington, Aveley and Rainham Marshes SINC) have been identified as the only important ecological feature requiring assessment. The EclA has concluded that extending the Proposed Development for a further five years would have no significant impact upon the designated sites adjacent to the application site provided avoidance measures currently implemented are maintained throughout the operational activities. A neutral impact on the adjacent designated sites is therefore predicted.
- 7.11.4 The habitats occurring within the application site (neutral grassland, mixed scrub, hedgerow (priority habitat) and ponds (priority habitat), and Notable plant species) are of local importance to biodiversity value and are considered suitable to support protected and notable species. The EclA has concluded that extending the Proposed

Development for a further five years would have no significant impact upon these habitats provided avoidance measures currently implemented are maintained throughout the operational activities. A neutral impact on these habitats is therefore predicted.

- 7.11.5 Protected species occurring within the application site (invertebrates, common amphibians (i.e. excluding GCN), reptiles, breeding birds and water vole) are of local importance to biodiversity value. The EclA has concluded that extending the Proposed Development for a further five years would have no significant impact upon these species provided avoidance measures currently implemented are maintained throughout the operational activities.
- 7.11.6 The EclA has concluded that during the recontouring involved with the restoration phase likely impacts to the onsite fauna are predicted and therefore, significantly negative impacts are anticipated in the absence of mitigation measures.
- 7.11.7 A Biodiversity and Ecological Management Plan (BEMP) will be produced and followed and therefore, ensuring impacts on these species will be neutral.
- 7.11.8 This impact assessment concludes that on the basis of the information available, there are no likely significant residual effects.
- 7.11.9 New legal/ policy implications of the development are predicted and will require a BNG agreement and 30-year Habitat Management and Monitoring Plan (HMMP) to ensure that the delayed restoration plan will be able to deliver and maintain a minimum of 10% net gain in biodiversity.

