Riverside Energy Park

Preliminary Environmental Information Report

CHAPTER:

11

PLANNING INSPECTORATE REFERENCE NUMBER:

EN010093

TERRESTRIAL BIODIVERSITY

June 2018 | Revision 0

Planning Act 2008 | Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

CORY
RIVERSIDE ENERGY

Tables

Appendix G

11 Terrestrial Biodiversity

11.1 Introduction

11.1.1 This chapter presents the preliminary findings of the assessment of likely significant effects on terrestrial biodiversity arising from the construction, operation and decommissioning of the Proposed Development.

11.1.2 The Proposed Development has the potential to result in the following effects on terrestrial biodiversity:

- habitat loss, disturbance (including through shading) or fragmentation during site clearance and/or construction;
- noise and/or visual disturbance during site clearance, construction or operation;
- dust during site clearance and/or construction;
- surface water drainage during construction or operation;
- lighting during construction or operation; and
- effects as a result of emissions / deposition during operation.

11.1.3 In accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the Infrastructure EIA Regulations 2017), a statement outlining the relevant expertise and qualifications of competent experts appointed to prepare this Preliminary Environmental Impact Report (PEIR) is provided in **Appendix A.3**. Note that separate consideration has been made within **Chapter 4** of this PEIR with regards to the approach required for Habitats Regulations Assessment and the likely significant effects of the Proposed Development on European designated sites, in accordance with the requirements of the Conservation of Habitats and Species Regulations 2017.

11.2 Policy Context, Legislation, Guidance and Standards

11.2.1 As outlined in **Chapter 2**, the relevant National Policy Statements (NPS) provide the primary basis for decisions by the Secretary of State on nationally significant infrastructure projects.

11.2.2 The policy and legislation context in relation to terrestrial biodiversity is described in outline below.

Legislation and Policy

Conservation of Habitats and Species Regulations 2017

11.2.3 The Conservation of Habitats and Species Regulations transpose the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("The Habitats Directive") into law. The regulations provide for:

- designation and protection of European Sites (Special Protection Areas (SPA) and Special Areas of Conservation (SAC)) including the need for ‘Appropriate Assessment' of plans and proposals likely to affect those sites;
- protection of European protected species;

- adaptation of planning and other controls for the protection of European Sites;
- making it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2; and
- that no steps that will impact upon a European protected species or its habitat can be undertaken unless authorised by a European Protected Species licence issued by Natural England. Such a licence is granted until after planning consent has been granted once Natural England are satisfied that adequate measures are to be put in place to mitigate for the impact of the development.

Wildlife and Countryside Act 1981 (as amended)

11.2.4 The Act implements the Convention of European Wildlife and Natural Habitats (The Bern Convention) and the Directive 2009/147/EC 'The Birds Directive'.

11.2.5 Schedules 1 (birds) and 5 (animals) of the Act identify species of bird and other animal in relation to which the Act makes killing, injury, taking and disturbance an offence while Schedule 8 to the Act lists species of plant in relation to which the Act makes it an offence to intentionally pick, uproot or destroy.

11.2.6 Section 14(2) of the Act makes it an offence to cause any species of animal or plant listed in Schedule 9 of the Act to grow in the wild. Of these species, those encountered frequently in land development and regeneration projects include Japanese Knotweed, Giant Hogweed and Floating Pennywort.

11.2.7 The Act further provides for notification and confirmation of Sites of Special Scientific Interest (SSSI) for their flora, fauna, geological or physiographical features. It also contains measures for the protection and management of SSSIs.

The Natural Environmental and Rural Communities Act 2006 ('NERC')

11.2.8 The NERC Act sets a duty on public bodies (including Local Authorities) to have due regard for habitats and Species of Principal Importance for biodiversity in England when carrying out their duties.

11.2.9 Section 41 (S.41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list is used by decision-makers, such as Local Authorities, in implementing their protection duties under this Act when carrying out their functions.

11.2.10 The S.41 list includes 56 habitats and almost 1000 Species of Principal Importance in England. Since the UN Convention on Biological Diversity (CBD) in 2010 the UK identify these habitats and species as conservation priorities under the UK Post-2010 Biodiversity Framework (these were formerly identified as UK Biodiversity Action Plan (BAP) habitats and species).

11.2.11 Paragraph 117 of the National Planning Policy Framework (NPPF) (see below) guides local planning authorities to create policies which promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species.

National Planning Policy

National Policy Statements (NPS)

NPS EN-1

11.2.12 Section 5.3 Biodiversity and geological conservation states that:

"*Where the development is subject to EIA the applicant should ensure that the ES [Environmental Statement] clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity…*

The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests."

11.2.13 The document goes on to reiterate the Government's biodiversity strategy with its aim to ensure:

- "*a halting, and if possible a reversal, of declines in priority habitats and species, with wild species and habitats as part of healthy, functioning ecosystems; and*
- *the general acceptance of biodiversity's essential role in enhancing the quality of life, with its conservation becoming a natural consideration in all relevant public, private and non-governmental decisions and policies*."

The policy goes onto say:

"…development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives… where significant harm cannot be avoided, then appropriate compensation measures should be sought."

1.2.6 Section 5.3.15 of the NPS EN-1 also refers to biodiversity within developments stating:

"*Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design."*

1.2.7 With regards to Mitigation section 5.3.18 states – *"The applicant should include appropriate mitigation measures as an integral part of the proposed development. In particular, the applicant should demonstrate that:*

- *during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works;*
- *during construction and operation best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised, including as a consequence of transport access arrangements;*
- *habitats will, where practicable, be restored after construction works have finished; and*
- *opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals."*

NPS EN-3

11.2.14 Paragraph 2.4.2 of NPS EN-3 describes the criteria for good design for energy infrastructure. It states that *"Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology."*

National Planning Policy Framework (2012)

11.2.18 Paragraph 109 under the heading 'Conservation and enhancing the natural environment' states that:

"The planning system should contribute to and enhance the natural and local environment by:

- *protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *recognising the wider benefits of ecosystem services;*
- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."*

1.2.9 Paragraph 114 also states that local planning authorities should:

- *"set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure; and*
- *maintain the character of the undeveloped coast, protecting and enhancing its distinctive landscapes, particularly in areas defined as Heritage Coast, and improve public access to and enjoyment of the coast."*

1.2.10 Paragraph 117 outlines measures that planning policies should include to minimise impacts on biodiversity and geodiversity. These are:

- *"plan for biodiversity at a landscape-scale across local authority boundaries;*
- *identify and map components of the local 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 local partnerships for habitat restoration or creation;*
- *promote the preservation, restoration and re-creation of priority habitats ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan;*
- *aim to prevent harm to geological conservation interests; and*
- *where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas."*

1.2.11 Paragraph 118 states that:

"*When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity and by applying the following principles*:

- *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 should be refused;*
- *proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in*

combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have 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;

- *development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and*
- *the following wildlife sites should be given the same protection as European sites:*
  - *potential Special Protection Areas and possible Special Areas of Conservation;*
  - *listed or proposed Ramsar sites; and*
  - *sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites."*

UK Post-2010 Biodiversity Framework

11.2.23 The UK Post-2010 Biodiversity Framework was published on 17 July 2012. It was produced by Joint Nature Conservation Committee (JNCC) and the Department for Environment, Food and Rural Affairs (Defra), on behalf of the Four Countries' Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together.

11.2.24 The Framework covers the period from 2011 to 2020 and identifies the activities required to complement the country biodiversity strategies, and where work in the country strategies contributes to international obligations.

11.2.25 Many of the tools developed under the UK BAP remain of relevance; for example, information about the lists of priority habitats and species, which can be found on the priority species and habitats web-pages. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work in the countries and have been adopted as the list of Habitats and Species of Principal Importance for the purpose of conserving biodiversity, which are required to be identified and taken into consideration in accordance with Section 41 of the Natural Environment and Rural Communities Act, 2006.

Planning Practice Guidance (online resource)

11.2.26 The Planning Practice Guidance includes a section on the Natural Environment which explains key issues in implementing policy to protect biodiversity. The most relevant section explains the statutory basis for planning to seek to minimise impacts on biodiversity and provide net gains in biodiversity where possible as follows:

"Section 40 of the Natural Environment and Rural Communities Act 2006….. places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. A key purpose of this duty is to embed consideration of biodiversity as an integral part of policy and decision making throughout the public sector, which

should be seeking to make a significant contribution to the achievement of the commitments made by government in its Biodiversity 2020 strategy.

The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution."

11.2.27 The guidance goes on to explain how development can not only protect but also enhance biodiversity:

"Biodiversity maintenance and enhancements through the planning system have the potential to make a significant contribution to the achievement of Biodiversity 2020 targets. Biodiversity enhancement in and around development should be led by a local understanding of ecological networks, and should seek to include:

- *habitat restoration, re-creation and expansion;*
- *improved links between existing sites;*
- *buffering of existing important sites;*
- *new biodiversity features within development; and*
- *securing management for long term enhancement."*

National Planning Policy for Waste (2014)

11.2.28 This planning policy doesn't include any separate specific sections on terrestrial biodiversity. However, the Policy includes reference to the Government's ambition to work towards a more sustainable and efficient approach to resource use and management, including reference to positive planning "*helping to secure the re-use, recovery or disposal of waste without endangering human health and without harming the environment."*

Emerging National Planning Policy

Draft National Planning Policy Framework (2018)

11.2.17 The draft NPPF will strengthen the goal of conserving and enhancing the natural environment and providing net gains for biodiversity, providing for resilient ecological networks, reflecting the key points in the recent 25 year Environment Plan. Key sections most relevant to this chapter are paragraph 168 (d) and (e):

"168. Planning policies and decisions should contribute to and enhance the natural and local environment by:

d) minimising impacts 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 should, wherever possible, help to improve local environmental conditions such as air quality."

and paragraph 173 a), b) and d):

"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 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;

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for the environment."

Regional Planning Policy

London Plan 2016

11.2.18 The relevant sections from Policy 7.19 (Biodiversity and Access to Nature) are:

- *"Any proposals promoted or brought forward by the London Plan will not adversely affect the integrity of any European site of nature conservation importance (to include special areas of conservation (SACs), special protection areas (SPAs), Ramsar, proposed and candidate sites) either alone or in combination with other plans and projects…"*

11.2.19 It also states that development proposals should:

- *"wherever possible, make a positive contribution to the protection, enhancement, creation and management of biodiversity*
- *prioritise assisting in achieving targets in biodiversity action plans (BAPs), set out in Table 7.3, and/or improving access to nature in areas deficient in accessible wildlife sites*
- *not adversely affect the integrity of European sites and be resisted where they have significant adverse impact on European or nationally designated sites or on the population or conservation status of a protected species or a priority species or habitat identified in a UK, London or appropriate regional BAP or borough BAP."*

11.2.20 On Sites of Importance for Nature Conservation development proposals should:

- *"give the highest protection to sites with existing or proposed international designations (SACs, SPAs, Ramsar sites) and national designations (SSSIs, NNRs [National Nature Reserve]) in line with the relevant EU [European Union] and UK guidance and regulations*
- *give strong protection to sites of metropolitan importance for nature conservation (SMIs). These are sites jointly identified by the Mayor and boroughs as having strategic nature conservation importance*
- *give sites of borough and local importance for nature conservation."*

11.2.21 When considering proposals that would affect directly, indirectly or cumulatively a site of recognised nature conservation interest, the following hierarchy will apply:

- *"1 avoid adverse impact to the biodiversity interest*
- *2 minimise impact and seek mitigation*

- *3 only in exceptional cases where the benefits of the proposal clearly outweigh the biodiversity impacts, seek appropriate compensation."*

Relevant Mayoral strategy and planning guidance documents

11.2.29 The Mayor's planning guidance document states that the Mayor's priorities with regard to Nature Conservation (and with reference to London Plan Policy) are:

"There is no net loss in the quality and quantity of biodiversity" (London Plan policy 5.3, 7.19); and

"Developers make a contribution to biodiversity on their development site" (London Plan policy 5.3, 7.19).

Emerging Regional Planning Policy

Draft London Plan (2017)

11.2.22 Policy G6 – Biodiversity Access to Nature states that:

"A - Sites of Importance for Nature Conservation (SINCs) should be protected. The greatest protection should be given to the most significant sites."

11.2.23 In relation to plans, the Draft includes the following policy wording which may also be relevant to proposed development:

"C - Where harm to a SINC (other than a European (International) designated site) is unavoidable, the following approach should be applied to minimise development impacts:

1) avoid adverse impact to the special biodiversity interest of the site

2) minimise the spatial impact and mitigate it by improving the quality or management of the rest of the site

3) seek appropriate off-site compensation only in exceptional cases where the benefits of the development proposal clearly outweigh the biodiversity impacts.

D - Biodiversity enhancement should be considered from the start of the development process.

E - Proposals which create new or improved habitats that result in positive gains for biodiversity should be considered positively, as should measures to reduce deficiencies in access to wildlife sites."

Draft London Environment Strategy

11.2.24 Policy 5.1.1 states "*Protect, enhance and increase green areas in the city to provide green infrastructure services and benefits London needs now and in the future*"

11.2.25 Policy 5.2.1 states "*Protect a core network of nature conservation sites and ensure a net gain in biodiversity*."

Local Planning Policy

Bexley Core Strategy (2012)

11.2.26 Policy CS18 Biodiversity and geology states that the council will protect and enhance its biodiversity assets by:

"ensuring development in Bexley does not adversely affect the integrity of any European site of nature conservation importance (including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites) outside the borough. In particular, consideration will be given to potential impacts on the Thames Estuary and Marshes SPA through increased visitor pressure and reduce water quality, and on Epping Forest SAC through reduced air quality;

protecting, conserving and enhancing Bexley's Sites of Special Scientific Interest (SSSI) and Sites of Importance for Nature Conservation (SINC);

resisting development that will have a significant impact on the population or conservation status of protected species and priority species as identified in the UK, London and Bexley Biodiversity Action Plans;…

protecting and enhancing the natural habitat as far as practicable, seeking biodiversity enhancements and improved access to nature, particularly in areas of deficiency, through new development…….Preference will also be given to enhancements which help to deliver the targets for habitats and species set out in the London Plan and Bexley Biodiversity Action Plan;

….and

Seeking opportunities to provide for greening of the built environment, including green roofs and walls in new buildings."

London Borough of Bexley Unitary Development Plan (2004) Saved Policies (2012)

11.2.30 The relevant policies are:

- Policy ENV32 states: *"Development will not be permitted within Sites of Special Scientific Interest as indicated on the Proposals Map, and which may be notified from time to time by English Nature, unless it can be shown that there would be no damage to scientific or nature conservation interests."*

- Policy ENV33 states: *"Development of land adjoining Sites of Special Scientific Interest will be resisted unless it can be shown that there would be no damage to scientific or nature conservation interests."*

- Policy ENV28 states: *"The Council will declare and manage as Local Nature Reserves (LNR) sites in which it has a legal interest, that are of special importance to the local community for wildlife and nature conservation. Within these areas development will be resisted that would endanger the preservation of those special characteristics that lead to designation."*

Bexley Growth Strategy (2017)

11.2.31 The Bexley Growth Strategy includes six growth themes. Of relevance to this chapter is Theme 6: Green and blue infrastructure and biodiversity, in particular, ambition 4: Protecting and enhancing biodiversity and strategic green corridors which includes the following:

"Bexley has a rich network of Sites of Importance for Nature Conservation (SINCs) across the borough and within the vicinity of the Growth Areas, many of which are home to legally protected species such as water voles, bats and reptiles. These sites include sites of importance to London such as the River Thames, Erith Marshes and Crayford Marshes.

Due regard will be given to the legal duties associated with protecting these important habitats and species, whilst taking opportunities to enhance them wherever possible. The hierarchy of avoid, minimise, compensate will be followed in relation to biodiversity.

Strategic green corridors, such as roadway verges and along railway lines and the southeast London green chain, are important for wildlife and are also located within or adjacent to the growth areas. The integrity and connectivity of these corridors will be enhanced where possible and the aims of relevant Biodiversity Action Plan targets will also be carefully considered.

Improving the recreational resource of green corridors such as the green chain, along with the integration of green spaces within and through development, for example, the incorporation of green roofs within building design, will add to the quality of the built environment, providing opportunities for health and wellbeing benefits to residents."

Dartford Borough Council Core Strategy (2011)

11.2.27 The Dartford Borough Council Core Strategy recognises the importance of Dartford Borough's biodiversity assets including Inner Thames grazing marsh by the river, through to heathland, lowland grasslands and significant amounts of ancient woodland further inland. The area's importance in terms of biodiversity is recognised in the Thameside Green Corridor Biodiversity Opportunity Area and the Central North Downs Biodiversity Opportunity Area. The main biodiversity issue for the Dartford Borough identified in the Core Strategy is at paragraph 1.30:

"Maintain and enhance areas of greatest biodiversity value as development takes place in the urban area"

Dartford Borough Council Development Policies Plan and Policies Map (2017)

11.2.28 Policy DP25: Nature Conservation and Enhancement states:

"1. Development on the hierarchy of designated sites, featuring nationally recognised and other protected sites, shown on the Policies Map will not be permitted. Development located within close proximity to designated sites, or with likely effects on them, should demonstrate that the proposal will not adversely impact on the features of the site that define its value or ecological pathways to the site…

3. Proposals should seek to avoid or should reduce any significant adverse impact on existing biodiversity features. Any potential loss or adverse impact must be mitigated, including with reference to the following guidance points:

a) Where mitigation measures require relocation of protected species this will only be acceptable when accompanied by clear evidence that the proposed method is appropriate and will provide for successful translocation.

b) Proposals should include provision for protection during construction, and mechanisms for on-going management and monitoring.

4. Developments will be expected to preserve and, wherever possible, enhance existing habitats and ecological quality, including those of water bodies, particularly where located in Biodiversity Opportunity Areas. Particular regard should be had to points a) and b) below. Developments for the enhancement of biodiversity will normally be permitted where:

a) New biodiversity areas make use of native and local species as set out in the Kent Biodiversity Strategy and consider ecological links and adaptability to the effects of climate change.

b) Biodiversity features strengthen existing green and ecological corridors; and contribute to the creation and enhancement of the Green Grid.

5. In all development proposals existing trees should be retained wherever possible. If retention is demonstrated not to be feasible, replacement provision should be of an appropriate tree species and maturity and/ or canopy cover taking into account the tree that is being replaced and the location."

Kent Minerals and Waste Local Plan, 2013-2030 (2016)

11.2.29 This regional policy guidance contains policy DM2 which is of most relevance to the Proposed Development:

"Environmental and Landscape Sites of International, National and Local Importance: Proposals for minerals and/or waste development will be required to ensure that there is no unacceptable adverse impact on the integrity, character, appearance and function, biodiversity interests, or geological interests of sites of international, national and local importance. Legislation"

Guidance and Standards

11.2.32 The impact assessment element of this chapter is guided by best practice guidance for ecological impact assessment (EcIA) set out by the Chartered Institute of Ecology and Ecological Management (CIEEM, 2016). Further information regarding the assessment methodology approach is provided below in **Section 11.5**.

11.2.33 Ecological surveys undertaken in relation to the Proposed Development either have, or will have, regard for best practice relevant to that specific ecological feature (i.e. habitat, species or species group). The approach to the surveys undertaken to date are provided in **Section 11.5**. For survey work being undertaken following this PEIR submission, full details of the survey guidance and standards followed will be provided within the terrestrial biodiversity chapter of the ES or its supporting appendices.

11.3 Consultation

11.3.1 A list of key consultation responses received to date relating to terrestrial biodiversity is presented in **Table 11.1** below, along with how these have been responded to.

Table 11.1 Summary of Key Consultation Responses in Relation to Terrestrial Biodiversity

Reference	Comment	Response
SoS Scoping Opinion		
Section 4.6 ID 2 – Surveys	The Inspectorate expects full consideration to be given to the entire Application Site with regards to the undertaking of ecology surveys, and that the survey scope is agreed with the Local Planning Authorities and Natural England.	Initial consultation has taken place with Local Planning Authorities and Natural England, in order to inform baseline survey scope and surveys have been (and will be where there are still surveys to complete) carried out accordingly.
Section 4.6 – ID 3 – Designated Sites	The Inspectorate recommends that relevant screening distances for designated areas with respect to assessing the effects from combustion plan emissions are discussed and agreed with the EA.	Consultation with the EA identified that screening distances for statutory designated areas, with respect to assessing the effects from combustion, should be extended to 15 kilometres (km)
Section 4.6 – ID 4- Study Area	The ES will need to clearly set out and justify the study areas applied to each receptor and effect.	The extent of the Study Area, where this varies dependent on the ecological feature, is

Reference	Comment	Response
		set out and justified within **Section 11.5**.
Kent County Council		
7.7	Any proposed construction work within the Littlebrook substation would need to be informed by detailed, up-to-date survey information.	No survey of the Littlebrook substation is proposed as the Electrical Connection route links into an existing building. Therefore the need for further ecological survey within the Littlebrook substation site has been scoped out.
Natural England		
2.1-2.5, 7	Natural England provided some general comments around the approach to ecological assessment with respect to the identification of potential effects and proposed assessment methodology.	The approach to ecological assessment will be appropriate and compliant with current best practice (see **Section 11.5**).
2.7 – Biodiversity Net Gain	Natural England highlight the requirement to conserve biodiversity and provide net gain where possible, as part of the Proposed Development.	The scheme design will be informed by the ecological baseline and scale of ecological impacts, in order to deliver a policy compliant scheme.
3 – Green Infrastructure	The development resides within the Ridgeway Link which forms a green link between Crossness Sewage Treatment Works, Thamesmead and Plumstead; and is a key gateway from the West into the rich network of green open spaces and waterways in Thamesmead and Erith Marshes. As such there will be green infrastructure and green space requirements for the development.	The scheme design is being informed by the ecological baseline and scale of ecological impacts, in order to deliver a policy compliant scheme. Ecologists will work with Architects and other technical disciplines to determine opportunities for habitat creation and enhancement for the development which will be described, at least in outline, in the ES.
5 – Air Quality	The assessment should take account of the risks of air pollution and how these can be managed or reduced	The ES will include a full air quality assessment with respect to nearby designated areas and the scheme design informed accordingly.
6 – Climate Change Adaptation	The ES should give consideration of biodiversity and the effects of climate change, and identify how the development's effects on the natural environment will be	The assessment will consider impacts on terrestrial biodiversity from future climate change scenarios, as per the Scoping Report.

Reference	Comment	Response
	influenced by climate change, and how ecological networks will be maintained.	
The Environment Agency		
Lighting	The development will have to clearly demonstrate that there is no change from the existing lighting on site, particularly in relation to the adjacent nature reserve and the River Thames, which is subject to considerable amounts of change and possible in-combination affects from other developments.	The EIA will consider lighting impacts on important ecological features, with the Proposed Development responding to mitigate impacts, as required.
Thames Defences	The development must be set back to allow embankment raising to take place. This is so that no encroachment takes place and the tidal Thames habitats can be protected and enhanced where feasible to do so.	The proposed development takes this into account. See also **Chapter 12** – Hydrology, Flood Risk and Water Resources.
Biodiversity Net Gain	The development must consider how it can deliver a net gain for ecology, to achieve further mitigation for its proximity to the adjacent nature reserve, but also on the River Thames.	The scheme design will be informed by the ecological baseline and scale of ecological impacts, in order to deliver a policy compliant scheme. A biodiversity metric calculation is being undertaken to enable a biodiversity balance to be determined and to provide evidence of overall net gain in accordance with policy and consultee comments.
Proximity to nature conservation sites at risk from emissions to air	The proposed energy from waste plant is within 2 km of Sites of Special Scientific Interest (SSSI) the closest one being the Inner Thames Marshes. Detailed consideration will need to be given to the proposal if the critical levels for pollutants such as ammonia, nitrogen oxides or sulphur dioxide, or critical loads for acidification or eutrophication are exceeded or close to the threshold. These operations may require consideration of	The ES will include a full air quality assessment, informed by modelling, with respect to designated areas within the zone of influence of Riverside Energy Park (REP), and the scheme design will be informed accordingly.

Reference	Comment	Response
	additional pollution prevention and control methods as well as the height and location of major emission points	

11.3.2 A meeting was held with Natural England's Sustainable Development Advisor on the 22nd March, 2018, to provide an overview of the Proposed Development and to provide an opportunity for initial discussion of Natural England's Scoping Responses. Consultation with Natural England will continue as survey results and other relevant technical studies are completed (e.g. noise modelling, air quality modelling etc) to agree appropriate mitigation, compensation and enhancement with respect to terrestrial biodiversity.

11.3.3 Consultation is currently ongoing with other statutory consultees, including London Borough of Bexley's Strategic Planning and Growth Team, amongst others, with regards to baseline survey work and scheme design requirements.

11.4 Parameters Used for the Assessment

11.4.1 The reasonable worst-case scenario for assessment takes account of the impacts associated with the Proposed Development during construction, decommissioning and operation, and the resulting ecological effects. This includes consideration of the significance of loss of habitats within the Application Site, and any direct or indirect effects on protected or notable species. This is determined as a result of confirmation of the ecological baseline, as currently understood from the surveys completed to date, and the maximum REP design parameters and construction programme, such that assessments are worst case. This assessment also includes all Electrical Connection route options from the REP site to the Electrical Connection Point at the Littlebrook substation.

11.4.2 The full assessment of terrestrial biodiversity impacts reported in the ES will also be considered through use of a biodiversity metric, to determine the value of habitats affected by the Proposed Development and whether off site compensation will be required to secure biodiversity gain.

11.4.3 The ecological effects arising from other technical issues relevant to the terrestrial biodiversity assessment, for example, changes in air quality, noise or hydrology as a result of the Proposed Development are also taken into consideration in the reasonable worst-case scenario, based on the results of modelling completed by other specialists in those areas where required, and in the light of consultation responses from consultees.

11.5 Assessment Methodology and Significance Criteria

Study Area

11.5.1 The Proposed Development, during construction or operation, has the potential to have direct and indirect effects to terrestrial biodiversity, referred to as "ecological features". The mobility of some ecological features, and the outputs from the Proposed Development (e.g. in airborne outputs), is such that impacts have the potential to cause ecological effects at some distance from the REP site. For the purposes of this assessment, the Application Site has been split into the following distinct areas as described in the overall introduction (**Chapter 3**):

- The REP site and the Main Temporary Construction Compounds; and
- The Electrical Connection Route options and the Cable Route Temporary Construction Compounds.

11.5.2 The wider study area is defined as the area within 2 km of the Application Site in relation to protected / notable species, and non-statutory designated areas; the area within 15 km of the Application Site is included within the study area in relation to any internationally or nationally statutory designated areas.

11.5.3 The assessment of direct impacts from REP is limited to the Application Site as no land outside would be directly disturbed. However, the construction, operation and decommissioning of REP has the potential to result in indirect impacts on some ecological features, which are considered in this chapter, including as a result of changes to air quality and chemical deposition rates, in the wider area. The significance of these more distant potential impacts relating to airborne deposition will be considered with reference to internationally and nationally statutory designated sites within 15 km and with reference to non-statutory nature conservation areas within 2 km of the Application Site, in accordance with good practice guidance (e.g. CIEEM, 2017), and taking account of feedback from consultees.

11.5.4 The study areas considered for protected or otherwise notable ecological features which may be affected by REP as a result of their mobility, are described in the rationale provided for the approach to field surveys below.

Baseline Data Collection

Desk Study

11.5.5 Existing data in relation to the Application Site and the wider study area have been obtained in order to secure a better understanding of the ecological context of the Application Site. Biological records in relation to statutory and non-statutory nature conservation sites within 2 km of the Application Site were obtained from Greenspace Information for Greater London (GiGL) and Kent and Medway Biological Records Centre (KMBRC) in April 2018. Records and other information in relation to protected and notable species were also obtained from GiGL and KMBRC up to 2 km from the Application Site in April 2018. On-line resources, including data available through the Multi Agency Geographic Information for the Countryside website (www.magic.gov.uk - MAGIC) complemented information obtained from GiGL and Kent and Medway Biological Records Centre (KMBRC). Information regarding statutory national and international designated site were secured from MAGIC, JNCC and Natural England websites.

11.5.6 In addition, Wetland Bird Data (Core Count Data) was sourced for the section of the River Thames adjacent to the Application Site (monthly data covering the most recent five-year period).

Field Surveys

11.5.7 At the time of writing, only some of the planned ecological surveys have been undertaken at the Application Site. These include:

- Extended Phase 1 Habitat Survey - December 2017 (updated April 2018 to include the Electrical Connection route options to the Littlebrook substation, to be updated further throughout the 2018 survey season). The study area included the whole Application Site (see **Figures 11.3a-d, Appendix G.1**). Survey work was undertaken in accordance with standard methodology (JNCC, 2010) extended to include consideration of potential for, or evidence of, protected or otherwise notable ecological features.

- Wintering Bird Survey - To gather baseline information on the use of intertidal areas adjacent to the REP site and along the nearby south bank of the River Thames by over-wintering waterbirds, a field survey was undertaken by Peter Brett Associates between October 2017 and March 2018. Surveys were carried out monthly, with low and high tide counts taking place in each month of survey. This recorded the numbers of waterbird species within a series of counting compartments covering the shoreline adjacent to the REP site (to the north) as well as further west and east (shoreline compartments).

Waterbirds using the open water toward the centre of the River Thames itself (offshore compartments) were also recorded for context and additional information. Counting compartments in relation to the Application Site are shown in **Figure 11.4, Appendix G.1**.

11.5.8 In addition to the above, a range of habitat and protected or notable species surveys have recently commenced, or will be undertaken, during the 2018 spring / summer period. These include:

- Terrestrial invertebrate scoping surveys, and further targeted surveys, between April and August 2018, to include targeted habitats within the Application Site (including the REP site and the Main Temporary Construction Compounds.
- Breeding bird surveys (April, May and June 2018) based on the Common Bird Census (CBC) technique. The survey will include the REP site, as well as the Main Temporary Construction Compounds and the section of the Electrical Connection route (Route 1) heading south-west from the REP site through Crossness LNR as far as the A2016/Eastern Way.
- Reptile survey (late March to June 2018, inclusive), involving presence / absence surveys in accordance with standard best practice (Froglife, 1999) focusing on areas of the Application Site known to support suitable habitat. At this stage, this includes the REP site, margins of the Main Temporary Construction Compounds and the section of the Electrical Connection route 1 heading south-west from the REP site through Crossness LNR as far as the A2016/Eastern Way.
- Water vole survey (mid-April to mid-June and July to September) in accordance with current guidance (i.e. 2016 Water Vole Mitigation Handbook) focusing on areas of the Application Site known to support suitable habitat. At this stage this includes ditches/waterbodies within the areas surrounding the REP site, the Main Temporary Construction Compounds areas and the section of the Electrical Connection route 1 heading south-west from the Application Site through Crossness LNR as far as the A2016/Eastern Way.
- Botanical survey (June or July 2018) to include the open mosaic habitat and species-rich grassland within the REP site. As this habitat type does not fall clearly within National Vegetation Classification categories, the species will be recorded with reference to standard nomenclature (i.e. Stace).

11.5.9 Given the findings to date, further survey work pertaining to bats and great crested newts (GCN) *Triturus cristatus* has been scoped out as just three records of amphibian species of conservation concern were provided during the desk study (2 km search area from the Application Site); namely common toad, common frog and palmate newt. No records of great crested newt were provided. Although a number of ponds are known to occur in close proximity to the Application Site (e.g. in Crossness LNR to the south of the REP site), the lack of records of GCN from within 2 km of the Application Site suggests this species is absent from the area, particularly given the history of recent developments surrounding the REP site (including RRRF itself), for which detailed survey work would have previously been carried out. This has also been confirmed through contact with the Crossness LNR. For these reasons, it is considered appropriate to scope out GCN survey from the baseline survey work; this approach has been agreed by LBB.

11.5.10 Regarding bats, the REP site itself represents poor quality bat foraging/commuting habitat given the predominance of open habitat (including large areas of unvegetated habitat such as hard-standing and bare ground or species-poor amenity grassland). The Electrical Connection route options similarly do not represent high quality bat foraging/commuting habitat, being dominated by the existing road network and heavily modified habitats such as amenity grassland and small areas of ornamental shrubs. It is possible that bats may move across the Application Site on occasion as part of wider foraging/commuting areas, although nearby areas such as the margins

of the River Thames / Thames Path or the adjacent Crossness nature reserve and horse-grazed pasture south of the REP site are likely to be more attractive to bats than the habitats provided by the Application Site itself (confirmed by Crossness Nature Reserve and LBB through consultation). In addition, buildings and other structures associated with the Application Site were not found to have features suitable for use by roosting bats and trees present within the Application Site are typically small or young and lacking features suitable for use by roosting bats. For these reasons, it is considered appropriate to scope out further surveys for bats from the baseline survey work. This has been agreed with LBB although note that potential indirect impacts on bats using habitats around the REP site will still be considered within the assessment.

11.5.11 Full survey methodologies in relation to the proposed 2018 spring / summer surveys described above will be provided within Appendices to the ES. All survey work to be undertaken will have regard for best practice survey guidance and feedback from consultees.

Assessment

11.5.12 The ecological assessment with respect to the Proposed Development is undertaken having regard to guidance set out in the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment (2016) ('the CIEEM Guidelines'). The CIEEM Guidelines state that '*EcIA is a process of identifying, quantifying and evaluating the potential effects of development-related or other proposed actions on habitats, species and ecosystems*'. It requires an assessment of likely significant effects on important ecological features, and as such, does not require consideration of effects on every species or habitat that may be present within the Application Site or the wider Study Area.

11.5.13 In order to determine whether there are likely to be significant effects, it is first necessary to identify whether an ecological feature is 'important', and therefore whether an effect upon it could be significant, and thus, material in decision-making. To achieve this, where possible, animal species and their populations will be valued on the basis of a combination of their rarity, status and distribution, using contextual information where it exists. Habitats and plant communities are evaluated against existing selection criteria, wherever possible (such as those developed to aid the designation of SSSIs or non-statutory designated areas).

11.5.14 The ecological assessment examines effects on important ecological features with reference to the extent, magnitude, duration, timing, frequency, and reversibility of the impacts. For each ecological feature within the relevant study area, the baseline is identified and evaluated. For each important ecological feature, relevant impacts (during construction or operation) are then characterised; effects defined taking into account embedded mitigation and their significance assessed; any further mitigation identified and residual impacts reported. This exercise is carried out for each phase of the Proposed Development and taking into account additional potential influences of climate change.

Determining the Importance of Ecological Features

11.5.15 The importance of each ecological feature within the study area is determined having regard to a number of contributory factors relating to conservation value. The CIEEM Guidelines recognise that determining importance is a complex process, which is a matter of professional judgement guided by the importance and relevance of a number of factors. These include designation and legislative protection as well as biodiversity value, potential value and secondary/supporting value. Consideration of each ecological feature having regard to these factors allows their importance to be determined, with reference to the geographic context set out below:

- International and European;
- National;

- Regional (South of England);
- County (Greater London and Kent); and
- Local (London Borough of Bexley (LBB) and Dartford Borough Council (DBC)).

11.5.16 Once the importance of each ecological feature that will potentially be affected by the Proposed Development is determined, those features that are deemed to be important, and therefore require full consideration in the impact assessment. These features are those that are important within a 'Local' context or above. This approach allows exclusion of those ecological features that are of less than 'Local' importance. Ecological features considered to be of less than local importance will be considered within an appendix to the main assessment (where appropriate) where legislative issues, rather than ecological importance, may require consideration in project design or implementation.

Establishing Potential Air Quality and Noise Effects

11.5.17 Modelling of the emissions from the stack, as a result of the operation of REP, has been undertaken as described in **Chapter 7**, Air Quality. Critical loads (to be used as standards for the assessment of significance) have been obtained from the Air Pollution Information System (APIS) (see **Chapter 7**).

11.5.18 In addition, baseline noise monitoring has been undertaken and modelling of predicted noise levels during construction and operation. This provides for an assessment of changes in noise levels by noise specialists. Changes in noise levels, as a result of REP's construction and operation, will be assessed to determine the likelihood of significant ecological effects.

Determining Significance

11.5.19 The CIEEM Guidelines (CIEEM, 2016) state that an effect should be determined as being significant when it 'either supports or undermines biodiversity conservation objectives for important ecological features'. It relates to the weight that should be afforded to effects when decisions are made, and to the consequences, in terms of legislation, policy and/or development control. Therefore, a significant negative effect on a feature of importance at one level would be likely to trigger related planning policies and, if permissible at all, generate the need for development control mechanisms, such as planning conditions or legal obligations, as described in those policies. In determining significance, consideration is given to aspects of the structure and function of designated areas and habitats, the conservation status of species, and the likely resilience of ecological features to change.

11.5.20 An effect on an important ecological feature may be significant at the same geographic scale at which the feature is determined to be important, or at a lesser geographical scale, depending on the characterisation of the impact. By way of example, limited impacts on a woodland of county importance might be assessed as being significant at a local level of importance. This methodology supports an evidence based approach and supersedes and replaces the previously used matrix-based assessment methodologies (CIEEM, 2016).

11.5.21 Whilst the approach outlined above expresses the significance of ecological effects with reference to a geographic frame of reference, as advocated in the CIEEM Guidelines; significance is also expressed using the generic significance criteria used for other topics. This approach has been taken in order to allow integration with the assessment of all environmental impacts in other chapters.

11.5.22 The generic criteria used are based on an expression of severity, to describe the significance of environmental impacts. For ease of reference, **Table 11.2** below provides a means of relating the two approaches and is provided in order to allow this chapter to be integrated into the wider PEIR, without compromising the CIEEM best practice approach.

Table 11.2 Significance Criteria

Effect Significance Level	Criteria	CIEEM Geographical Criteria
Substantial	Only adverse effects are assigned this level of significance as they represent key factors in the decision-making process. These effects are generally, but not exclusively associated with sites and features of international, national or regional importance. A change at a regional or district scale site or feature may also enter this category.	Ecological impacts assessed as being significant at **National or higher geographical scales** and that have triggered a response in development control terms are considered to represent impacts that overall fit within this assessment, are of severe significance.
Major	These effects are likely to be important considerations at a local or district scale but, if adverse, are potential concerns to the project and may become key factors in the decision-making process.	Ecological impacts assessed as being significant at the **Regional** scales and that have triggered a response in development control terms are considered to represent impacts that overall within this assessment are of major significance.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.	Ecological impacts assessed as being significant at the **County** scale, and that have triggered a response in development control terms, will be considered to represent impacts that overall within this assessment are of moderate significance.
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in enhancing the subsequent design of the project and consideration of mitigation or compensation measures.	Ecological impacts assessed as being significant at the **Local** scale, and that have triggered a response in development control terms, will be considered to represent impacts that overall within this assessment are of minor significance.
Negligible	No effect or effect which is beneath the level of perception, within normal bounds of variation or within the margin of forecasting error.	Ecological impacts that have been assessed as **Not Significant** at any geographic level.

Limitations

11.5.23 This ecological assessment is limited by virtue of the fact that the ecological baseline data for the Application Site is not yet complete. This is primarily due to seasonal restrictions associated with ecological survey. This chapter presents the preliminary findings of the assessment of likely significant effects based on available information at this stage. A full assessment will be provided within the ES.

11.5.24 In addition, changes to the Application Site from development of the Electrical Connection route options have resulted in the need to revise the data requests to the Local Records Centres. Records have been reviewed within reference to sites closest to the Application Site. Further analysis will be undertaken to provide a more in-depth assessment within the ES.

11.5.25 A full ecological impact assessment will be provided within the ES, and the scheme design may be refined to reflect the potential for likely significant effects, as and when these are better understood.

11.6 Baseline Conditions and Receptors

Designated Areas

11.6.1 A site check completed using data on the government MAGIC (Multi Agency Geographic Information for the Countryside) database identified two international statutory designated sites within 15 km of the Application Site: Epping Forest Special Area of Conservation (SAC) and Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site. This site check area of 15 km has been established in response to the consultation comment regarding potential air quality impacts.

11.6.2 A 15 km site check area from the proposed stack location (with allowance for micrositing of the proposed stack within limits of deviation within the REP site) is considered appropriate to measure the potential source of airborne impacts. Only Epping Forest SAC lies within 15 km of the proposed stack location.

Table 11.3 International Statutory Designated Sites within 15 km of the proposed stack.

Site Name	Approx. Distance and Bearing from REP Site	Description
Epping Forest SAC	12.13 km to the NW of the proposed stack location	Habitats that are a primary reason for selection of this site are acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (Quercion robori-petraeae or *Ilici-Fagenion*) Epping Forest represents Atlantic acidophilous beech forests in the north-eastern part of the habitat's UK range. Although the epiphytes at this site have declined, largely as a result of air pollution, it remains important for a range of rare species, including the moss *Zygodon forsteri*. The long history of pollarding, and resultant large number of veteran trees, ensures that the site is also rich in fungi and dead-wood invertebrates. Also present as a qualifying feature (but not a primary reason for selection) are wet and dry heathlands.

11.6.3 Thirty seven national statutory designated sites were identified within 15 km of REP; this includes those SSSI designated for their geological interest, as well as those designated for their biological interest. Only those designated for their biological interest are considered in this chapter of the PEIR. The closest of the SSSI designated for their biological interest (within 2 km of the Application Site) are provided in **Table 11.4** below. Those within 15 km of REP's stack location will be described in full for the ES.

11.6.4 **Figure 11.1, Appendix G.1** shows the location of the International and National Statutory Designated Sites within 15 km of the Application Site and REP's stack.

Table 11.4 National Statutory Designated Sites within 2 km of the Indicative Application Site

Site Name	Approx. Distance from Application Site	Description
Inner Thames Marshes SSSI	1.38 km from the Application Site	An area of wetland and grazing marsh bordering the upper reaches of the Thames Estuary. The site is of note for its diverse ornithological interest including a variety of breeding birds and numbers 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 the London area, including some that are nationally rare or scarce.
Abbey Wood SSSI	1.51 km from the Application Site	An area of woodland designated for its fossil deposits. Note the SSSI is part of the larger LNR area known as Lesnes Abbey Woods (see below)
West Thurrock Lagoon and Marshes SSSI	1.37 km from the Application Site	An area of lagoon, marshes and intertidal mudflats known to be of importance to wintering waders and wildfowl. This site is known to contain a high-tide roost attracting nationally important numbers of waders and large numbers of other species.

11.6.5 The desk study reports completed by GIGL and KMBRC also confirm the presence of three statutory designated Local Nature Reserves (LNR) within 2 km of the Application Site. With regards to non-statutory designated sites, GIGL and KMBRC confirmed the following within 2 km of the Application Site: 38 Sites of Importance for Nature Conservation (SINCs; GiGL data), two Local Wildlife Sites (LWS; KMBRC data) and one Roadside Nature Reserve (RsNR; KMBRC data). The biological interest of these sites is summarised in **Table 11.5** below. **Figure 11.2, Appendix G.1** shows the location of the LNR in relation to the Application Site, obtained from MAGIC. The non-statutory designated sites will be presented in a figure within the ES but are described in summary in the table below.

Table 11.5: Summary of Statutory LNR and Non-Statutory Designated Sites within 2 km of Application Site. Those in closest proximity to the REP site or Electrical Connection route options are indicated with an asterisk (*)

LNR/SINC/LWS Name	Description
Crossness LNR*	One of the last remaining areas of grazing marsh in Greater London and the largest reedbed in LBB. Other habitats include a network of ditches and open water, scrub and rough grassland.
Lesnes Abbey Woods LNR	An area of ancient woodland.

LNR/SINC/LWS Name	Description
Rainham Marshes LNR	The grasslands, fringing reedbeds and network of ditches support diverse breeding and wintering birds and a number of rare plants, insects and birds and are also home to a large population of water voles *Arvicola amphibius*. The LNR is part of the Inner Thames Marshes SSSI.
Belvedere Dykes SINC*	A number of drainage dykes supporting rare plants and animals.
River Thames and tidal tributaries SINC*	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.
Erith Marshes SINC*	An area of Thames-side grazing marsh in London, supporting scarce birds, plants and insects.
Lower River Beam and Ford Works Ditches SINC	The River Beam and ditches supporting water vole, with nearby grassland containing uncommon plants.
Crossness Sewage Treatment Works Pond SINC	An angling lake supporting populations of common waterfowl.
Thamesview Golf Course SINC	An area of grassland and small ponds with reedbeds.
Ridgeway in Greenwich SINC	Green walkway extending into Bexley.
The Ridgeway SINC	Linear walk with a range of habitats.
Southmere Park and Woodland Way SINC	A large lake mainly used for recreation, and an area of poplar woodland.
Dagenham Breach and the lower Beam River in Dagenham SINC	An angling lake and a stretch of the River Beam.
Church Manorway Nature Area SINC	Small site specifically developed for nature conservation.
Crossway Park and Tump 52 SINC	Informal parkland with areas of woodland, scrub and wetlands.
Crossways Lake Nature Reserve SINC	A reed-fringed lake valuable for water birds.
Franks Park SINC	Mature woodland and acid grassland, containing regionally important plants.
Wennington, Aveley and Rainham Marshes SINC	A large area of wetland and grassland alongside the Thames, and the only RSPB (Royal Society for the Protection of Birds) reserve in the capital. One of the most important sites in London for birds.
Lesnes Abbey Woods and Bostall Woods SINC	A large complex of ancient and secondary woodland, with adjacent areas of heathland and acid grassland.

LNR/SINC/LWS Name	Description
Erith Quarry SINC	A mixture of woodland, scrub and grassland supporting a range of birds, invertebrates and plants.
Hollyhill Open Space SINC	Former heathland, now mainly grassland and scrubby parkland.
Streamway, Chapman's Land and Erith Cemetery SINC	A small stream with patchy woodland and a cemetery with grassland habitats.
Rainham Railsides SINC	A network of undisturbed habitats acting as corridors for wildlife.
Mudlands SINC	A series of wetlands supporting water voles, great crested newts and rare insects.
Riverside Sewage Treatment Works SINC	Woodland with a large pond.
Goresbrook and the Ship & Shovel Sewer SINC	Goresbrook stream and ditch habitats.
St John the Baptist Churchyard, Erith SINC	Small churchyard with grassland and an important colony of ivy broomrape, a nationally scarce plant.
Bursted Wood Open Space SINC	Ancient sweet chestnut woodland.
Land at Larner Road, Erith SINC*	An informal open space with a mosaic of scrub rough grassland.
Crayford Marshes SINC	One of the few remaining areas of grazing marsh in London, supporting rare plants and animals and a range of breeding birds.
Edendale Rough SINC	An area of scrub and rough grassland surrounded by housing.
Slade Green Recreation Ground SINC*	A grassland site with a hedgerow and large colony of common lizards.
Railsides from Bexleyheath to Slade Green Triangle SINC*	Well-vegetated railway land.
Barnehurst Golf Course SINC	Golf course with a number of wildlife habitats, including woodland, flower-rich grassland and scattered trees.
St Paulinus Churchyard, Crayford SINC	Churchyard with grasslands and mature trees.
Hall Place (North) and Shenstone Park SINC	Historic site with acid grassland and native shrub plantings.

LNR/SINC/LWS Name	Description
Martens Grove SINC	A steep-sided woodland with a parkland area.
Crayford Landfill and Howbury Grange SINC	A former landfill site, now left as wasteland, providing a roosting area for wading birds at high tide.
Dartford Marshes LWS*	No specific information provided, but evidently a large area of marshland and wetland habitat along the River Darent and on the Darent floodplain.
Crayford Rough SINC	Former rail yard developed to include a variety of habitats.
Braeburn Park SINC	Woodland with associated chalk and neutral grasslands and several ponds.
River Cray SINC*	Chalk stream with associated wet pastures.
Dartford Heath LWS	No specific information provided.

Habitats

11.6.6 A description of the habitats recorded within the Application Site is provided below with reference to plans including target notes (TN) (**Figures 11.3a-d, Appendix G.1**). For clarity, the description has been split into two sections; the first covering the REP site and Main Temporary Construction Compounds, with the second summarising habitats within the Electrical Connection route options and Cable Route Temporary Construction Compounds.

The REP site and Main Temporary Construction Compounds

11.6.7 The western and southern parts of the REP site are characterised by artificial habitats including bare ground and hard-standing. These areas are currently in use for storage (shipping containers), temporary offices and vehicle parking and are largely unvegetated. Similar hard-standing is also present toward the north of the REP site (close to the river frontage) with shipping containers being stored within a fenced area. A car-park and associated road/pavement infrastructure (all also hard-standing) is present toward the centre of the REP site, with an access road heading south and a vehicle ramp leading up to the upper section of RRRF and adjacent jetty area. Small areas of short-mown amenity grassland are present as road verges/roundabouts close to RRRF. These are dominated by red fescue (*Festuca rubra*); likely sown as part of a seed mix. Herb species include ribwort plantain (*Plantago lanceolata*), white clover (*Trifolium repens*) and creeping buttercup (*Ranunculus repens*) among others. Small warehouse/office buildings (pre-fabricated structures) are present in the south-western part of the REP site, with a large electrical sub-station in the central part of the REP site. The existing RRRF building is present to the east of REP (excluded from the Application Site).

11.6.8 The central/western part of the REP site accommodates an area of mixed species-rich grassland and ephemeral/short-perennial vegetation present as a mosaic habitat with loose aggregate/rubble and earth/aggregate bunds present adding structural diversity. It is understood that this area was specifically created as ‘open mosaic habitat’ and seeded with a species-rich grassland mix as part of the RRRF development. As such, much of the habitat structure has evidently been designed to benefit invertebrate species, with a large number of insect ‘boxes’ or ‘bug hotels’ present on wooden posts (e.g. TN1) within the area. A barn owl box was also noted on a pole toward the western edge of this area (TN3). The vegetation (noting winter survey conditions) included a wide-range of species such as false oat-grass

(*Arrhenatherum elatius*), yarrow (*Achillea millefolium*), narrow-leaved ragwort (*Senecio inaequidens*), mugwort (*Artemisia vulgaris*), butterfly-bush (*Buddleja davidii*), oxeye daisy (*Leucanthemum vulgare*), bird's-foot trefoil (*Lotus corniculatus*), bristly oxtongue (*Helminthotheca echioides*), teasel (*Dipsacus fullonum*) and common reed (*Phragmites australis*) among others. As such, this area is indicative of seeded grassland and self-seeded vegetation, with species reflecting the structural diversity of the soils and drainage. This habitat type (although more typically as species-rich neutral grassland) continues around the northern edge of the REP site and to the east of RRRF. Other species noted here and on the edges of the adjacent Thames Path include a small (presumably self-seeded) false-acacia tree (*Robinia pseudoacacia*) (TN4) with young growth of giant hogweed (*Heracleum mantegazzianum*) also evident close to the river banks. North-east of RRRF a shallow depression is present acting as a wetland area, now dominated by common reed. This extends south (to the east of RRRF) along a ditch on the eastern boundary with amenity grassland adjacent to the ditch (to the west) before the main access road and security building/gatehouse.

11.6.9 South of the REP site, within the Application Site, an area of species-poor semi-improved grassland is present as a verge along Norman Road, see the area identified as 'Data Centre (Consented)' on **Figure 1.3, Appendix A.1**. This links to two larger, open land parcels both characterised by a mosaic of species-poor grassland and tall ruderal vegetation. These areas have the appearance of overgrown storage yards or otherwise previously cleared or developed land. Vegetation here includes common couch (*Elytrigia repens*), cock's-foot (*Dactylis glomerata*), goat's-rue (*Galega officinalis*), creeping thistle (*Cirsium arvense*), false oat-grass and mugwort. More open parts of this area contain ephemeral/short-perennial vegetation growing on otherwise bare ground. Species include red fescue, bristly oxtongue, goat's-rue, butterfly-bush, non-native fleabane (*Conyza* sp.), melilot (*Melilotus* sp.) and bramble (*Rubus fruticosus*) on the edges. This habitat type is also present further south along Norman Road (to the west) as open vegetation on bare ground around a recently developed industrial building/warehouse.

11.6.10 GiGL and KMBRC provided records of a variety of plant species of conservation concern (including some nationally rare species) from within the search area. This includes some records from close proximity (or within) the Application Site, such as greater pond sedge (*Carex riparia*), common cudweed (*Filago vulgaris*), dittander (*Lepidium latifolium*), Borrer's saltmarsh-grass (*Puccinellia fasciculata*), marsh sow-thistle (*Sonchus palustris*) and brookweed (*Samolus valerandi*).

11.6.11 In addition, recent (<10yr old) records of the specially protected plants pennyroyal (*Mentha pulegium*) and Jersey cudweed (*Gnaphalium luteoalbum*) were supplied by KMBRC, with older records of other protected plants also supplied by both GiGL and KMBRC. None of these records pertain to the Application Site itself, but indicate that these (and other) plants may occur locally where suitable conditions exist.

11.6.12 Whilst the bare ground and hardstanding within the REP site has no ecological value, the other habitats within the site were created with the purpose of providing ecological value. Given the supporting role these habitats within the REP site are likely to provide for species associated with adjacent designated areas (e.g. Crossness LNR, Erith Marshes SINC) the other habitats within the site are considered likely to be of Local value; this will be confirmed in the ES following completion of further botanical surveys of habitats within the site in early summer 2018.

Electrical Connection Route

11.6.13 Route 1 of Electrical Connection route option heads south-west from the REP site through a narrow area of species-poor grassland associated with horse-grazed fields. It then crosses a wide section of wet ditch south of a small pumping station. At this point the ditch is open in character and largely lacking vegetation, although it becomes increasingly vegetated with common reed and bulrush (*Typha latifolia*) further south. This Electrical Connection route option follows the course of a bridleway heading south through Crossness Nature Reserve; a ditch runs parallel to the bridleway. This bridleway comprises a mixture of bare ground (track)

overgrown with species-poor grassland characterised by perennial rye-grass (*Lolium perenne*), creeping bent (*Agrostis stolonifera*) and cock's-foot with species such as hogweed (*Heracleum sphondylium*), common nettle (*Urtica dioica*), creeping cinquefoil (*Potentilla reptans*) and false oat-grass on the edges. At the southern end of the bridleway the route passes through a narrow belt of woodland alongside the A2016/Eastern Way. This is dominated by ash with shrub species including hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*) below. A small pond (TN8) is located within this woodland close to the route. This has open water with common reed and bulrush on the margins. At this point the Electrical Connection route joins the existing road network.

11.6.14 For the majority of their length, the Electrical Connection route options are focussed on the existing road network which is largely unvegetated and dominated by artificial hard surfacing (the roads themselves plus associated pavements). Narrow verges of short amenity grassland are present in places, including in some of the central reservations on wider sections of road. These are typically characterised by grass species associated with seeded mixtures or heavily managed swards such as perennial rye-grass and red fescue, with self-seeded herb species tolerant of regular cutting such as ribwort plantain, dandelion (*Taraxacum officinale* agg.) and yarrow also present in many areas. Taller 'screening' vegetation comprising scattered broadleaved trees and introduced shrubs are also present in some places, particularly around the central part of the Electrical Connection route. These include a mixture of ornamental species such as bay laurel (*Laurus nobilis*), cherry laurel (*Prunus laurocerasus*), cotoneaster species (*Cotoneaster* spp.; e.g. TN10), viburnum (*Viburnum* sp.), firethorn (*Pyracantha* sp.), Oregon grape (*Mahonia aquifolium*) and hebe (*Hebe* spp.) along with trees such as cherry (*Prunus* spp.), hazel (*Corylus avellana*) and hornbeam (*Carpinus betulus*). Self-seeded or invading species such as bramble and wild clematis (*Clematis vitalba*) are also present in places. Individual or groups of standard planted trees and small shrubs also occur in association with, or adjacent to, amenity grassland verges in a few locations and on some roundabouts. Species recorded include hawthorn, silver birch (*Betula pendula*), field maple (*Acer campestre*), hornbeam, common lime (*Tilia x europaea*), Norway maple (*Acer platanoides*) and London plane (*Platanus x hispanica*).

11.6.15 Sections of wet ditch are present adjacent to the Application Site along the north-western parts of the Electrical Connection route options (Electrical Connection route option 1 and route 1A). These generally appear to have poor water quality but could be used by water vole, given the known populations of this species nearby. There is a large balancing pond to the west of Electrical Connection route 2A at ~1 km chainage marker (see **Figure 5.2, Appendix A.1**) (part of the Ocado premises) which supports areas of reed, with the potential to support breeding birds, water vole, and grass snake. Moving a little further south-east from here, the route passes adjacent to an established church yard (between 2-2.5 km for Electrical Connection route 1 and 1.5-2 km for route 2A) which likely has some well-established grassland, although this sits outside the proposed Electrical Connection route itself, so will not be directly affected. At the point where the route passes Slade Green rail station (5.5 km at Electrical Connection route option 2A) it evidently crosses the railway. There is little in the way of 'habitat' here, but there is a cotoneaster species growing as part of an introduced shrub bed.

11.6.16 Moving toward the eastern/south-eastern end of the Electrical Connection route options (where the route along the road passes through the Dartford Marshes area and crosses the River Darent (7-8.5 km of Electrical Connection route option 1) vegetation on the road margins contains sections of dense scrub comprising species such as hawthorn, blackthorn (*Prunus spinosa*), sea-buckthorn (*Hippophae rhamnoides*), field maple, cherry and bramble. Areas of more open (scattered) scrub and small trees in conjunction with species-poor grassland and mixed ruderal species such as mugwort, melilot, common mallow (*Malva sylvestris*) and Alexanders (*Smyrnium olusatrum*) are also present close to the River Darent. In the area where the Electrical Connection route crosses the River Darent, the road is situated on a flyover, with the river below being wide and evidently partially tidal with some exposed mud banks around low tide/low flow and scattered common reed growing in-channel and on parts of the margins. The river banks are characterised by unmanaged grassland dominated by species such as false oat-grass and creeping bent.

11.6.17 The Electrical Connection route option 2B (0-0.5 km) passes across an area which appears to be in use as an informal footpath, comprising bare ground, scattered and denser scrub to the north and bare ground to the south. The proposed Electrical Connection route itself follows the line of the informal footpath, which comprises a dirt path with species-poor grassland either side. However, dense scrub is present to the north of the route which has the potential to support nesting birds and the ecotone between these habitats has the potential to support good numbers of reptiles. The land south of the footpath is open land evidently recently part of a construction site, although works appear to have ceased (possibly temporarily) or it may have been a construction compound. The ground is very disturbed and rutted with a lot of bare ground and partially re-vegetated with rough grassland (Yorkshire fog, false oat grass, etc.) and some ruderal species (e.g. goat's-rue and Alexanders). At the eastern end of the open land the route enters the active building area/new housing (around the 0.5 km marker for Electrical Connection route option 2B) and then follows surfaced roadways again.

11.6.18 Records of notable plant species from the 2 km search area around the Application Site were supplied as part of the desk study. The Electrical Connection route options generally pass through areas of existing road infrastructure/paved areas or associated verges which are highly modified and typically lacking botanical diversity. As such, much of the land within the Electrical Connection route is unlikely to support botanical interest or protected or otherwise notable species.

Species

Wintering Birds

11.6.19 Full analysis of the wintering bird data is ongoing as the survey work was completed at the end of March 2018. An initial overview of the wintering bird survey findings is provided below. This will be confirmed within the ES, once full analysis of the field data has been undertaken.

11.6.20 A total of 34 waterbird species were recorded using the survey area across all survey visits combined. The parts of the survey area contained within compartments 3 and 2 (see **Figure 11.4 in Appendix G.1**) were found to be of the greatest apparent importance to birds within the context of this section of the River Thames (south bank). Within these compartments, the channel associated with the sewage outfall and adjacent intertidal areas (compartment 3) and the base of the retaining wall/river bank defence and adjacent mudflats (compartment 2) were recorded to be regularly in use by a range of waterbird species.

11.6.21 In terms of species, numbers of shoveler *Anas clypeata* exceeding the national threshold of importance were recorded on one occasion, confirming important numbers of this species can make use of this stretch of the Thames on occasion. Numbers of common sandpiper *Actitis hypoleucos* also exceeded the national threshold (of 1 bird), but this is well below the minimum qualifying threshold of 50 individuals for SSSI (with this species also being numerous and widespread on passage). Other species with both regular occurrence and sometimes large flock sizes (albeit below national or international thresholds) included black-tailed godwit *Limosa lapponica*, dunlin *Calidris alpina*, gadwall *Anas strepera*, lapwing *Vanellus vanellus*, redshank *Tringa totanus*, shelduck *Tadorna tadorna* and teal *Anas crecca*.

Baseline Evolution

11.6.22 It is unlikely that the ecological baseline of the REP site and Electrical Connection route options will change significantly between that set out in the baseline section above (to be completed with the baseline information presented within the ES, once seasonal surveys have been completed) and commencement of construction, given that baseline surveys will be completed over the coming months and site construction is targeted to commence in early 2021, just over 2 years' later. Whilst ecological resources are not static, the habitats within the Application Site and study area are considered unlikely to change significantly within that timeframe, particularly given the dominance of hardstanding and tarmac within the Application Site.

11.7 Embedded Mitigation

11.7.1 Embedded Mitigation measures considered within this chapter include:

- The Application Site is focussed on previously developed land and hardstanding/tarmacked areas, thereby limiting disturbance to ecologically sensitive areas, and
- Design measures to minimise operational effects arising from the Proposed Development, such as: airborne emissions abatement, surface water run-off/management, light spill and shadowing, and noise abatement.

11.8 Assessment of Likely Effects

The REP Site and Main Temporary Construction Compounds

Construction and Decommissioning

Designated Areas

11.8.1 The footprint of the Proposed Development does not affect any designated area directly, therefore there will be no significant effects on designated areas in terms of direct land take. However, there is the potential for indirect effects of the Proposed Development during construction and decommissioning on designated areas. During the construction and decommissioning phases, indirect effects are most likely to be relevant for those designated areas within the immediate zone of influence of the REP site: i.e. Crossness LNR, Belvedere Dykes SINC, River Thames and Tidal Tributaries SINC, and Erith Marshes SINC.

11.8.2 Protection and appropriate working measures will be required during construction and decommissioning to protect the habitats and species within these nearby designated areas from significant indirect adverse effects. This includes consideration of noise, lighting, and pollutant impacts as a result of spillages or leaks from equipment during construction and decommissioning. All such issues are anticipated to be addressed within an outline Code of Construction Practice to be submitted as part of the REP Development Consent Order (DCO) application, which will consider (amongst other issues, timing of works to address noise issues, construction lighting and good practice construction methods) and therefore significant effects in this regard are not anticipated.

Habitats

11.8.3 The proposed construction work within the REP site is likely to result in the loss (at least temporarily) of the existing habitats within the REP site and within the Main Temporary Construction Compounds. The loss of bare ground and hardstanding is of no ecological significance. However, the loss of other habitats, at least temporarily during construction, from within the REP site and the Main Temporary Construction Compounds is considered to be a direct adverse effect, likely to be of significance at the Local level (reasonable worst case pending confirmation of the diversity of these habitats and their role in supporting invertebrate species of conservation importance), in the absence of mitigation or compensation.

11.8.4 In determining the appropriate approach to amelioration of effects of the scheme on habitats the mitigation hierarchy is to be employed with avoidance or reduction measures to be considered first ahead of other mitigation or compensation measures. However, acknowledging that the footprint of REP will take up much of the REP site, the mitigation measures being considered for the REP site include habitat recreation and enhancement within areas outside the footprint of the Main REP Building. Such measures, if achievable in the final scheme, are likely to be focussed on the floodbank in the northern part of the REP site. The benefit of this is that the floodbank will continue to provide a corridor of habitat of value for biodiversity within the site, providing continued habitat linkages. However, it is acknowledged that the nature of the footprint of the proposed development limits the opportunity for habitat creation and

enhancement within the REP site. Given this, a biodiversity metric is currently being undertaken to quantify the potential habitat losses and gains as a result of REP, in order to help determine the significance of the habitat changes, and to confirm whether off-site compensatory measures will be required to achieve the aim of net biodiversity gain for REP, in terms of habitat value, in accordance with local and national policy and consultee requirements. The outcome of the biodiversity metric will be discussed with consultees and reported within the ES.

11.8.5 As for designated areas, habitats not affected directly by REP will require protection and appropriate working measures during construction and decommissioning, to protect them from significant indirect adverse effects. This includes consideration of noise, lighting, and pollutant impacts, as a result of spillages or leaks from equipment during construction and decommissioning. All such issues are anticipated to be addressed within an outline CoCP to be submitted as part of the REP DCO application and therefore significant effects in this regard are not anticipated.

Wintering Birds

11.8.6 Potential impacts on passage (spring/autumn) or over-wintering waterbird species could include disturbance of birds using intertidal areas adjacent to the REP site as a result of noise, lighting and other activity during the construction or decommissioning phase. However, the areas immediately adjacent to the REP site (compartments 4 and 5 – see **Figure 11.4 Appendix G.1**) were found to be unexceptional in terms of the numbers (and variety) of waterbirds they supported (in terms of regular use). These areas did not show any patterns of use that suggested they are of particular value to waterbirds over and above similar sections of the shoreline in the local area. The risk of disturbance of waterbirds using these areas, to the extent that it may become significant in terms of local distribution or at a population level, is therefore low.

11.8.7 Areas of the shoreline nearby, particularly the sewage outfall within compartment 3, have been found to be of importance to local waterbird populations. However, this feature is located approximately 300 metres (m) from the REP site (to the west) at its closest point. There is also a retaining wall along the riverside edge of the Thames Path which provides some screening of this area from the lower-lying land beyond (where the REP site is situated). Disturbance of waterbirds using the outfall as a result of visual stimuli at ground level (e.g. construction staff or vehicle movements) is therefore unlikely to occur, assuming works will be mainly restricted to the REP site and the Main Temporary Construction Compounds. However, construction and decommissioning of the new facility will likely involve some works at height (e.g. using cranes and other lifting equipment), with the structure itself anticipated to visible from the adjacent shoreline (as per RRRF). In practice, given the distances to the REP site and existing levels of human activity in the area, it is possible that birds are, or will be, habituated to, or tolerant of, activity nearby. However, disturbance during some periods of highly intensive activity cannot be ruled out, if this were to occur when passage/overwintering birds are present (i.e. September to March inclusive). This is more likely to be a risk during activities resulting in increased noise levels, particularly sudden loud percussive noises such as associated with piling, for example.

11.8.8 Noise levels have been monitored and modelled with respect to existing and predicted noise levels during construction; a fully quantified assessment is to be presented within the ES. However, noise impacts and other issues pertaining to potential indirect effects on the wintering/passage birds during construction/decommissioning are anticipated to be addressed within the outline CoCP. Taking the preliminary assessment findings in **Chapter 8**, likelihood of impacts, and the outline CoCP into account, significant effects on wintering bird populations are not anticipated during construction or decommissioning.

Other Species

11.8.9 An assessment of the effects of the Proposed Development on other species will be made in full within the ES Chapter once baseline surveys are completed, as outlined in **Section 11.5.8** above.

11.8.10 However, impacts on reptiles, commuting/foraging bats, breeding birds and invertebrates are considered unlikely to be significant, providing appropriate mitigation and compensation measures can be identified. Such measures may include appropriate timing or precautionary methods of work, measures to limit lighting and noise inputs, to be provided within the outline CoCP and the provision of replacement or compensatory habitats within the REP site or nearby, where required.

Operation

Designated Areas

11.8.11 Effects of the Proposed Development during operation on designated areas will vary dependent of the potential zone of influence of various aspects of REP. For example, the ES will consider the potential for impacts from lighting, shade and surface run-off pollution on those designated areas within the immediate zone of influence of the REP site e.g. Crossness LNR, Belvedere Dykes SINC, River Thames and Tidal Tributaries SINC, Erith Marshes SINC.

11.8.12 The potential effects of airborne pollutants on ecological resources are also being carefully considered. As described in the Air Quality Chapter (**Chapter 7**), the nitrogen and sulphur emissions from the stack can lead to acid deposition and have the potential to adversely affect designated areas. Nitrogen and acid deposition within designated areas has been calculated from the maximum predicted concentration using the approach in Environment Agency guidance AQTAG06. Detailed modelling has been carried out to predict the process contribution (PC) and Predicted Environmental Concentration (PECs) of relevant pollutants from the proposed stack location to 14 designated areas (i.e. all Internationally Designated Areas and Nationally Designated SSSIs within 15 km of the proposed stack); for the SSSIs only those designated for their biological (rather than geological) interest were considered.

11.8.13 The predicted deposition has been compared against the relevant critical loads for the most ecologically sensitive habitats within the designated areas. Where the critical level or load is already exceeded as a result of the baseline concentrations or deposition rates, then the additional contribution from the process should be less than 1 % of the assessment value, otherwise the additional contribution is potentially significant and further ecological consideration of the results would be necessary.

11.8.14 All of the PCs are less than 1% of the critical level, or the PECs do not exceed the critical level, apart from at three receptor locations for predicted annual average oxides of nitrogen concentrations: the PC is 1.6%, 2.8% and 2.1% of the critical level at Crossness LNR, Inner Thames Marshes / Rainham Marshes SSSI and Ingrebourne Marshes SSSI respectively. Whilst the PC is above the threshold for potential significance, the annual mean NOx critical level is primarily related to the potential for impacts of nutrient nitrogen deposition. In all cases, the nutrient nitrogen deposition PC is less than 1% of the relevant critical load and therefore it is unlikely that there will be a significant effect on the habitats. The acid deposition PC is less than 1% of the critical load at all of the designated areas.

11.8.15 Separate to this assessment of outputs from the stack location, contour plots of the PCs for hourly mean NO2, annual mean NOx and daily mean NOx concentrations have been modelled specifically for the predicted values from the operation of the Anaerobic Digestion Plant (see details in Air Quality **Chapter 7**). The contour plots indicate that the effects of the anaerobic digestion combustion are limited to the immediate vicinity of the REP site. This includes a small area of the Crossness LNR which is predicted to have hourly mean NO2 concentrations above 10% of the objective and therefore potentially significant. However the PEC does not exceed the assessment level. The significance of these effects on Crossness LNR will be assessed in the ES.

11.8.16 The current design parameters for assessment are mindful of the need to secure an eventual Environmental Permit. Design decisions for the stack height and other mitigation measures relating to Air Quality emissions are also being made with reference to the emissions modelling,

with the goal being to reduce any exceedances affecting designated areas to below the relevant critical loads, where these are likely to result in significant effects. Emissions will be controlled in line with the environmental permitting requirements pursuant to the Industrial Emissions Directive (IED).

Habitats

11.8.17 A biodiversity metric calculation is being undertaken to quantify the potential habitat losses and gains as a result of REP, in order to help determine the significance of the habitat changes, and to confirm whether off-site compensatory measures will be required to achieve the aim of net biodiversity gain for REP, in terms of its habitat value and in accordance with local and national policy, once the scheme is complete and operational. Therefore, providing any required compensatory measures are secured, residual significant effects to habitats are not anticipated as a result of the Proposed Development.

Wintering Birds

11.8.18 Potential impacts on passage (spring/autumn) or over-wintering waterbird species could include:

- Displacement of birds using areas adjacent to the REP site as a result of the physical presence of the new facility (e.g. overshadowing or other ambient light effects such as glare resulting from the presence of highly reflective materials).

- Disturbance of birds using areas adjacent to the REP site as a result of operational activity (i.e. activity associated with the operation of Riverside Energy Park) and lighting. This would include potential new or increased shipping movements using the existing jetty.

11.8.19 The areas immediately adjacent to the REP site (compartments 4 and 5) were found to be unexceptional in terms of the numbers (and variety) of waterbirds they supported (in terms of regular use). These areas did not show any patterns of use that suggested they are of particular value to waterbirds over and above similar sections of the shoreline in the local area. The risk of disturbance of waterbirds using these areas, to the extent that it may become significant in terms of local distribution or at a population level, is therefore low.

11.8.20 During the operational phase, disturbance or displacement of waterbirds as a result of activity on the REP site is unlikely to occur as the majority of works will take place within the new facility itself, with external operational areas likely being screened from the River Thames via the existing retaining wall and the lower ground levels (i.e. there is no direct line of sight between the shoreline and the REP site). External activities at height on the Main REP Building structure (i.e. areas that may be visible from the shoreline) are not anticipated. The greatest potential for disturbance or displacement of waterbirds during the operational phase may arise from increased river traffic on the nearby section of the Thames. However, as this will use the existing jetty (servicing RRRF) it is likely that waterbirds in the local area are already habituated to activity in this area. In addition, the River Thames at this point is a busy shipping corridor, so the potential for birds to be significantly affected by changes in shipping patterns is very low.

11.8.21 In addition, noise levels have been monitored and will be modelled with respect to existing and predicted noise levels during operation for terrestrial biodiversity. Taking the preliminary work undertaken to date, the likelihood of significant effects on wintering bird populations, as a result of noise, is not anticipated during operation of REP. A fully quantified assessment will be presented within the ES. Monitoring during construction may be employed to confirm minimal impacts on patterns of wintering bird activity, if the assessment work considers this to be necessary.

Other Species

11.8.22 An assessment of the effects of the Proposed Development on other species will be made in full within the ES chapter once baseline surveys are completed, as outlined in **Section 11.5.8** above.

11.8.23 However, impacts on reptiles, breeding birds, commuting/foraging bats and invertebrates are considered unlikely to be significant, providing appropriate mitigation and compensation measures can be identified. Such measures may include appropriate timing or precautionary methods of work, measures to limit lighting and noise inputs, as provided within the outline CoCP, and the provision of replacement or compensatory habitats, where required.

The Electrical Connection and the Cable Route Temporary Construction Compounds

Construction and Decommissioning

Designated Areas

11.8.24 The footprint of the Electrical Connection route options does not affect any designated areas directly, with the exception of the section of Electrical Connection route option 1 (chainage 0 – 0.5 km) which runs from the south western corner of the REP site down the existing bridleway to join the A2016 Eastern Way. The bridleway falls within the Crossness LNR and Erith Marshes SINC (Crossness LNR covers part of the same area designated as Erith Marshes SINC). Should the connection route directly affect the SINC/LNR, this would only be a short-term, temporary impact along the line of the bridleway, and working methods will be employed to minimise the working corridor. In addition, habitats affected by the Electrical Connection will be reinstated afterwards and therefore impact of the connection route will be minimised and are unlikely to be residually significant in the Local context that the LNR and SINC are valued.

11.8.25 There is the potential for indirect effects of the Proposed Development during on designated areas. During construction, indirect effects are most likely to be relevant for those designated areas within the immediate zone of influence of the Electrical Connection route e.g. Crossness LNR and Erith Marshes SINC, as described above, but also, Land at Larner Road, Erith SINC, Slade Green Recreation Ground SINC, Railsides from Bexleyheath to Slade Green Triangle SINC, Dartford Marshes SINC and River Cray SINC. Protection and appropriate working measures will be required during construction to protect the habitats and species within these designated areas from significant adverse effects. This includes consideration of noise, lighting and pollutant impacts as a result of spillages or leaks from equipment during construction; all such issues will be addressed within the outline Code of Construction Practice (CoCP) and therefore long-term significant adverse effects as a result of the proposed Electrical Connection are not anticipated.

Habitats

11.8.26 The habitats within the footprint of the Electrical Connection routes are largely dominated by existing roads and hardstanding; no significant adverse effects will result from the sections of the Electrical Connection within these habitats. For more semi-natural habitats, and as described above in relation to designated areas, the creation of the Electrical Connection is unlikely to cause significant effects on other habitats, including those within the designated areas, due to the associated temporary, short term impacts. Habitats affected by the Electrical Connection will be reinstated afterwards. Care will be taken to avoid disturbance to any non-native invasive species during this work. If this is not possible, the non-native invasive plant will be disposed of appropriately and care taken during the work not to spread the plant further.

Wintering Birds

11.8.27 Potential impacts on passage (spring/autumn) or over-wintering waterbird species associated with the intertidal areas adjacent to the REP site as a result of the creation of the Electrical Connection route is considered unlikely due to the limited nature of the connection route works and the separation of the intertidal areas used by birds and the connection route locations.

Other Species

11.8.28 An assessment of the effects of the proposed Electrical Connection route options on other species will be made in full within the ES chapter once baseline surveys are completed, as outlined in **Section 11.5.8** above.

11.8.29 However, impacts on reptiles, commuting/foraging bats, breeding birds and invertebrates are considered unlikely to be significant, providing appropriate mitigation and compensation measures can be identified. Such measures may include appropriate timing or precautionary methods of work, measures to limit lighting and noise inputs, to be provided within the outline CoCP, and the provision of replacement or compensatory habitats within the REP site or nearby, where required.

11.8.30 At the end of its operational life, it is currently anticipated that the ducting for the Electrical Connection will be left in situ, such that there will be no decommissioning works and therefore no effect.

Operation

11.8.31 The operation of the Electrical Connection is not anticipated to give rise to significant adverse effects to the environment. The Electrical Connection comprises an underground trefoil of cables, and thus potential impacts are associated within the construction phase only.

Summary of Assessment

Construction and Decommissioning

11.8.32 It is not anticipated that consideration of the construction and decommissioning of REP, Main Temporary Construction Compounds, the Electrical Connection and the Cable Route Temporary Construction Compounds together, will result in an increase in significance of effects from those described in the section above. This is because, taken together, the construction and decommissioning activities within the Application Site are not expected to have an additive effect that is greater than the sum of its parts, and that the mitigation and compensation measures described in the sections above are anticipated to be effective, such that there remains no significant residual impact when considering the Proposed Development as a whole.

Operation

11.8.33 The operation of the Electrical Connection is not anticipated to give rise to significant adverse effects to the environment. The operation of REP and Electrical Connection together will not result in an increase in significance of effects on terrestrial biodiversity features, when compared to the predicted operational effects of REP itself, taking into account the mitigation described in the Operation section described above.

11.9 Cumulative Assessment

Construction/Decommissioning

11.9.1 Construction and decommissioning of REP could occur simultaneously with other projects located in the vicinity of the Application Site. The ‘other developments’ with the most potential

for simultaneous construction effects are identified in **Chapter 4**. Construction phase mitigation measures will be employed during the construction of REP, as such significant adverse cumulative construction effects are not anticipated to be likely. However, this PEIR presents the preliminary findings of the assessment to date which will be subject to further detailed assessment within the ES.

11.9.2 It is assumed for the purposes of this assessment that the REP generating equipment would be removed once the plant had ceased operations permanently. Any decommissioning phase is assumed to be of a similar or shorter duration to construction, and therefore environmental effects are considered to be of a similar level to those during the construction phase.

Operation

11.9.3 The operation of REP could occur simultaneously with other projects located in the vicinity of the Application Site. The 'other developments' with the most potential for simultaneous operational effects are identified in **Chapter 4**. Operational phase mitigation measures will be employed during the construction of REP, with the aim of avoiding significant adverse cumulative operational effects. However, this assessment is subject to further detailed assessment, the results of which will be detailed within the ES.

11.10 Further Mitigation and Enhancement

Construction and Decommissioning

11.10.1 As described in **Section 11.4.2** above, a biodiversity metric is being undertaken to quantify the potential habitat losses and gains as a result of the Proposed Development, in order to determine whether off-site compensatory measures will be required to achieve the aim of net biodiversity gain for the Proposed Development, in accordance with local and national policy. The detail of any proposed compensation or enhancement, its rationale and how the mitigation would be implemented and/or secured will be considered within the ES.

Operation

11.10.2 The findings of the full assessment of the effects of airborne deposition will be presented in the ES. This will determine whether further mitigation or enhancement measures will be required beyond the embedded mitigation, pursuant to meeting requirements of the Industrial Emissions Directive (IED). This will be confirmed in the Air Quality and Terrestrial Ecology chapters of the ES.

11.11 Preliminary Residual Effects and Monitoring

Construction and Decommissioning

11.11.1 It is not possible to provide a full and reasoned assessment of the residual effects of REP, taking into account further mitigation and enhancement measures given the baseline surveys are not yet complete and therefore assessment of effects cannot yet be fully made. With respect to habitats, a biodiversity metric calculation will be undertaken to quantify the potential habitat losses and gains as a result of the Proposed Development, in order to help determine whether off-site compensatory measures will be required; this will be set out within the ES. However, the policy and legislation described in **Section 11.2** provides a framework for delivery of a development which will avoid, mitigate or compensate for significant impacts on terrestrial biodiversity and to provide for biodiversity gains where possible. Provided the Proposed Development is developed in accordance with this framework, significant residual effects on terrestrial biodiversity are not anticipated.

Operation

11.11.2 Until a full assessment of the significance of the effects of the Proposed Development operation on wintering bird populations associated with the River Thames corridor is undertaken, it is not possible to determine whether there will be residual effects. However, the preliminary work undertaken to date indicates that noise levels will not exceed those likely to cause disturbance to this species group. In addition, the birds are habituated to the movements of vessels along the Thames and coming to/from the existing jetty.

11.11.3 In the same way, until a full assessment of the potential for significant impacts as a result of airborne deposition has been undertaken, it is not possible to understand whether further mitigation or enhancement measures will be required beyond the embedded mitigation which would affect the residual impacts of the scheme and/or require monitoring. However, the stack height identified within the current design parameters for assessment is mindful of the need to secure an eventual Environmental Permit. Emissions will be controlled in line with the environmental permitting requirements pursuant to the Industrial Emissions Directive (IED). Design decisions for the stack height and other mitigation measures relating to Air Quality emissions will be finally determined with reference to the emissions modelling. Any emissions exceedances affecting designated areas should be reviewed to determine whether these are likely to result in significant effects on terrestrial biodiversity. Where necessary, additional mitigation measures would be employed to reduce impacts to acceptable levels. Provided appropriate mitigation can be delivered through scheme design to ameliorate any identified potentially significant impacts as a result of deposition of airborne pollutants, there will be no significant residual impacts in this regard.

11.12 Summary of Residual Effects

	Receptor Name and Description	Potential Mitigation	Preliminary Assessment of Residual Effects
The REP DCO			
Construction / decommissioning	Designated Areas	Avoid impacts by using connection route which avoids any direct impacts on designated areas. If not possible, minimize working footprint and employ protection measures.	Effects are not anticipated to be significant following mitigation.
Construction / decommissioning	Habitats	Habitat recreation and enhancement within REP site, potential requirement for compensation off-site to be confirmed through use of biodiversity metric, in order to achieve biodiversity net gain. Outline CoCP containing measures to protect habitats retained within site and off-site.	Effects are not anticipated to be significant following mitigation and compensation (the latter if required).

	Receptor Name and Description	Potential Mitigation	Preliminary Assessment of Residual Effects
Construction / decommissioning	Wintering birds	Outline CoCP and monitoring.	Effects are not anticipated to be significant following mitigation.
Construction / decommissioning	Other species	Impacts on reptiles, commuting/foraging bats, breeding birds and invertebrates are considered unlikely to be significant, providing appropriate mitigation and compensation measures can be identified. Such measures may include appropriate timing or precautionary methods of work, measures to limit lighting and noise inputs, to be provided within the outline CoCP, and the provision of replacement or compensatory habitats within REP or nearby, where required.	Effects are not anticipated to be significant following mitigation and compensation (the latter if required).
Operation	Designated Areas	Detailed design of scheme to address potential for impacts from lighting, shade and surface run-off pollution on designated areas within immediate zone of influence. Emissions will be controlled in line with the environmental permitting requirements pursuant to the Industrial Emissions Directive (IED). Modelling of emissions will confirm potential for critical loads to be exceeded and assessment will determine whether this is significant enough to warrant consideration of further mitigation.	Significant effects not anticipated, providing appropriate mitigation identified, where required.
Operation	Habitats	A biodiversity metric calculation is being undertaken to quantify the potential habitat losses and gains and to confirm whether off-site compensatory measures will be required to achieve aim of biodiversity gain.	Biodiversity net gain is a goal of development, in line with local and national policy.
Operation	Wintering birds	No mitigation anticipated, given survey findings and screening provided by current landform.	Effects are not anticipated to be significant.
Operation	Other species	Impacts on reptiles, commuting/foraging bats, breeding birds and invertebrates are considered unlikely to be significant, providing appropriate mitigation and compensation measures can be identified. Such measures may include measures to limit lighting and noise inputs, and the provision of replacement or compensatory habitats within the REP site or nearby, where required.	Effects are not anticipated to be significant following mitigation and compensation

	Receptor Name and Description	Potential Mitigation	Preliminary Assessment of Residual Effects
			(the latter if required).

11.13 Preliminary Conclusion and Further Assessment

11.13.1 Based on the preliminary findings of this assessment of a limited number of ecological features, no significant ecological effects are considered likely to result from the Proposed Development, taking into account embedded mitigation and the policy objective to achieve biodiversity net gain, and subject to satisfactory outcome with respect to consideration of air quality emissions modelling and noise modelling. A full ecological assessment will be undertaken for the ES which will provide a full ecological baseline for assessment, along with further information on the potential ecological impacts of the Proposed Development, and associated mitigation and compensation, with reference to achieving policy and legal compliance.

11.14 References

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