The Great Grid Upgrade

Sea Link

Preliminary Environmental Information Report

Volume: 1

Part 3 Kent Onshore Scheme

Chapter 3 Ecology and Biodiversity

Version A

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3.3 Ecology and Biodiversity

3.3.1 Introduction

3.3.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents information about the preliminary environmental assessment of the likely significant effects identified on ecology and biodiversity to date, that could result from Sea Link (hereafter referred to as the Proposed Project) (as described in **Part 1, Chapter 4, Description of the Proposed Project**).

3.3.1.2 This chapter describes the methodology used, the datasets that have informed the preliminary assessment, baseline conditions, mitigation measures and the preliminary ecology and biodiversity residual significant effects that could result from the Proposed Project.

3.3.1.3 The draft Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Figure 1.1.1 Draft Order Limits** and the proposed Kent Onshore Scheme is illustrated on **Figure 1.1.3 Kent Onshore Scheme Boundary**.

3.3.1.4 This chapter should be read in conjunction with:

- **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**;
- **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**;
- **Volume 1, Part 1, Chapter 6, Scoping Opinion and EIA Consultation**;
- **Volume 1, Part 3, Chapter 1, Evolution of the Kent Onshore Scheme**; and
- **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report.**

3.3.1.5 This chapter is supported by the following figures:

- **Volume 3, Part 3, Figure 3.3.1, Designated Sites;**
- **Volume 3, Part 3, Figure 3.3.2, Phase 1 Habitat Survey;** and
- **Volume 3, Part 3, Figure 3.3.3, Survey Parcels – Kent.**

3.3.1.6 This chapter is supported by the following appendices:

- **Volume 2, Part 1, Appendix 1.4.A Outline Code of Construction Practice**;
- **Volume 2, Part 1, Appendix 1.4.F Outline Schedule of Environmental Commitment and Mitigation Measures**;
- **Volume 2, Part 3, Appendix 3.3.A Survey Methodologies**; and
- **Volume 2, Part 3, Appendix 3.3.B Phase 1 Habitat Report.**

3.3.2 Regulatory and Planning Context

3.3.2.1 This section sets out the legislation and planning policy that is relevant to the preliminary ecology and biodiversity assessment. A full review of compliance with relevant national and local planning policy will be provided within the Planning Statement that will be submitted as part of the application for Development Consent.

3.3.2.2 Policy generally seeks to minimise ecology and biodiversity effects from development and to avoid significant adverse effects. This applies particularly to land designated for their ecological importance but which lack direct protection through statute (such as local wildlife sites), as well as to rare and notable species of animal and plant. Policy also sets out positive enhancement requirements regarding Biodiversity Net Gain (BNG).

Legislation

3.3.2.3 There are numerous pieces of legislation applicable to England & Wales which provide protection to certain species, or ecologically important sites. Although the UK is no longer part of the European Union (EU), legislation originally devised to reflect EU Directives (notably the Habitats and Birds Directives) remain part of UK law.

The Conservation of Habitats and Species Regulations 2017 (as amended) [Ref. 3.3.36]

3.3.2.4 The Conservation of Habitats and Species Regulations 2017 (as amended) transposed the requirements of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') into domestic legislation.

3.3.2.5 The Regulations identify European Protected Species (EPS) and various habitats of importance within Europe, with important sites for these habitats/species or both being designated as Special Areas of Conservation (SAC) and important sites for birds being designated as Special Protection Areas (SPAs). Any project that may have a significant effect on a SAC or SPA should be assessed in relation to the site's 'conservation objectives' (i.e., the reasons for which the site is designated).

3.3.2.6 The Regulations also implement the species protection regime set out within the Habitats Directive, providing a clear legal basis for surveillance and monitoring of European Protected Species.

The Natural Environment and Rural Communities Act 2006 [Ref. 3.3.37]

3.3.2.7 Section 41 of the Natural Environment and Rural Communities Act 2006 ('the NERC Act') requires the listing of habitats and species that are of principal importance for the conservation of biodiversity, including those that have been identified as priorities within the UK Biodiversity Action Plan (UK BAP).

3.3.2.8 The NERC Act requires that the Section 41 list be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 'to have due regard' to the conservation of biodiversity when carrying out their normal functions.

Wildlife and Countryside Act 1981 (as amended) [Ref. 3.3.34]

3.3.2.9 The Wildlife and Countryside Act 1981 (as amended) ('the WCA') is the major domestic legal instrument for wildlife protection in the UK and is the primary means by which the following are implemented:

- The Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention'); and
- The Council Directive 79/409/EEC on the Conservation of Wild Birds ('the Bird Directive').

3.3.2.10 The main relevant provisions of the Act are the allowance for the protection of the most important habitats and species by designating Sites of Special Scientific Interest (SSSIs), providing a level of protection to all nesting wild birds (with protection from disturbance to some bird species), and providing similar protection to some other species (such as water voles (*Arvicola amphibius)* and beavers (*Castor fiber)*). It also lists some invasive non-native species that should not be allowed to spread.

The Countryside and Rights of Way Act 2000 [Ref. 3.3.38]

3.3.2.11 Part III of the Countryside and Rights of Way Act 2000 ('the CRoW Act') deals specifically with wildlife protection and nature conservation in England and Wales. The CroW Act strengthened the safeguards afforded to SSSIs and adds to the protection of wild animals designated under the WCA 1981 by making it an offence to "recklessly disturb" the sheltering places of wild animals designated under Schedule 5 of the WCA.

Environment Act 2021 [Ref. 3.3.39]

3.3.2.12 The Environment Act 2021, includes proposals to make biodiversity net gain (BNG) a mandatory requirement within the planning system in England. The biodiversity elements of the Act include:

- strengthened biodiversity duty;
- biodiversity net gain to ensure developments deliver at least 10% increase in biodiversity;
- Local Nature Recovery Strategies to support a Nature Recovery Network;
- duty upon Local Authorities to consult on street tree felling;
- strengthen woodland protection enforcement measures;
- Conservation Covenants;
- Protected Site Strategies and Species Conservation Strategies to support the design and delivery of strategic approaches to deliver better outcomes for nature;
- prohibit larger UK businesses from using commodities associated with wide-scale deforestation; and
- requires regulated businesses to establish a system of due diligence for each regulated commodity used in their supply chain.

Animal Welfare Act 2006 [Ref. 3.3.40]

3.3.2.13 This Act sets out the ways in which animals should be treated, considered and cared for throughout Britain. It applies primarily to domestic animals but some broad provisions, such as the potential for the government to introduce codes of conduct, could apply to wild animals.

Protection of Badgers Act 1992 [Ref. 3.3.41]

3.3.2.14 This Act protects Badgers (*Meles meles*) and their setts. In England and Wales this makes it an offence to:

- wilfully kill, injure or take a badger (or attempt to do so);
- cruelly ill-treat a badger;
- dig for a badger, intentionally or recklessly damage or destroy a badger sett, or obstruct access to it; cause a dog to enter a badger sett; and
- disturb a badger while it is occupying a sett.

Wild Mammals (Protection) Act 1996 [Ref. 3.3.42]

3.3.2.15 This Act makes it an offence to intentionally cause all wild mammals unnecessary suffering by certain methods (e.g. crushing, suffocation).

The Hedgerow Regulations 1997 [Ref. 3.3.43]

3.3.2.16 These regulations prevent the removal of most countryside hedgerows without first submitting a hedgerow removal notice to the local planning authority. This is not required if the removal is part of a planning application (as in this case). However, the Regulations still have value in these circumstances because the prescribed survey methods result in detailed contextual information to inform ecological impact assessment.

3.3.2.17 The regulations specify the criteria to be used to determine which hedgerows are important. The criteria relate to the value of the hedgerows from an archaeological, historical, landscape or ecological perspective. Hedgerows that are younger than 30 years old are excluded if supportive evidence of age can be provided, as are any hedgerows that mark the boundary of a house.

3.3.2.18 In addition, the regulations only apply to hedgerows that are of a certain length. These are:

- Hedgerows that are 20 metres or more long; or
- Hedgerows that are less than 20 metres long if they are connected at each end to another hedgerow – thereby forming a continuous network of hedgerows. The length of the adjoining hedgerows is immaterial, the significant factor being the connection; or
- Any stretch within one of these hedgerows; or
- Any hedgerows that are over 30 years old and qualify under any one of the criteria would be termed ‘important’.

Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) [3.3.44]

3.3.2.19 These regulations set out to address the problems concerned with invasive alien species (IASs) in order to protect native biodiversity and ecosystem services and minimize and mitigate the human health and/or economic impacts that IASs can have. It sets out rules to prevent and manage the introduction and spread of IASs through prevention, early detection and rapid eradication, and management.

National Policy

National Policy Statements

3.3.2.20 National Policy Statements (NPSs) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Proposed Project would be considered. A review of the NPS was announced in the 2020 Energy white paper: Powering our net zero future. This review was to ensure the NPSs were brought up to date to reflect the policies set out in the white paper. The below information reflects these updates currently under consultation. Table 3.3.1 and Table 3.3.2 below provides details of the elements of NPS for Energy (EN-1) (Ref. 3.3.45) and NPS for Electricity Networks Infrastructure (EN-5) (Ref. 3.3.46) that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the Environmental Statement (ES).

3.3.2.21 The draft version of the updated Overarching National Policy Statement for Energy (EN-1) and NPS for Electricity Networks Infrastructure was published in March 2023 (Ref. 3.3.7 and Ref. 3.3.8) and also includes factors that should be considered when submitting an application and preparing a ecology and biodiversity assessment. Table 3.3.1 and Table 3.3.2 provides a comparison between the adopted and draft versions.

Table 3.3.1: NPS EN-1 requirements relevant to ecology and biodiversity

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
	4.5.4 Energy NSIP proposals, whether onshore or offshore, should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, or the wider environment where possible.	Mitigation measures to ensure the conservation of ecological receptors are reported in Section 3.3.9 of this chapter. Where the Environmental Impact Assessment (EIA) process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
		submitted with the application for development consent and will be included within a biodiversity net gain assessment.
5.3.3 Where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance (including those outside England), on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats. *5.5.9 The applicant should be particularly careful to identify any effects of physical changes on the integrity and special features of Marine Conservation Zones, candidate marine Special Areas of Conservation (SACs), coastal SACs and candidate coastal SACs, coastal Special Protection Areas (SPAs) and potential coastal SPAs, Ramsar sites, Sites of Community Importance (SCIs) and potential SCIs and Sites of Special Scientific Interest.*	*5. 4.17 Same as 5.3.3 in adopted EN-1*	Designations, habitats and species of principal importance, and protected species have been identified within the Section 3.3.8 of this chapter, as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing (see Table 3.3.7). The likely effects on these features have been assessed as far as possible and are reported in Section 3.3.10 of this chapter.
5.3.4 The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and	*5.4.19 same text as EN-1*	Mitigation measures to ensure the conservation of ecological receptors are reported in Section 3.3.9 of this

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
geological conservation interests.		chapter. Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent and will be included within a biodiversity net gain assessment.
	5.4.20 Applicants should consider wider ecosystem services and benefits of natural capital when designing enhancement measures	Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent.
	5.4.21 As set out in Section 4.6, the design process should embed opportunities for nature inclusive design. Energy infrastructure projects have the potential to deliver significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains (see Section 4.5 on Environmental and Biodiversity Net Gain). The scope of potential gains will be dependent on the type, scale, and location of each project.	Opportunities for nature inclusive design will be taken in design of the Proposed Project and reported in the ES.
	5.4.22 The design of Energy NSIP proposals will need to consider the movement of	Impacts on mobile species (such as otter and water

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
	mobile / migratory species such as birds, fish and marine and terrestrial mammals and their potential to interact with infrastructure.	vole, bats and birds) have been identified within Section 3.3.8 of this chapter, as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing (see Table 3.3.7). The likely effects on these features have been assessed as far as possible and are reported in this PEIR chapter.
4.3.1 Prior to granting a development consent order, the IPC must, under the Habitats and Species Regulations, (which implement the relevant parts of the Habitats Directive and the Birds Directive in England and Wales) consider whether the project may have a significant effect on a European site, or on any site to which the same protection is applied as a matter of policy, either alone or in combination with other plans or projects. Further information on the requirements of the Habitats and Species Regulations can be found in a Government Circular. Applicants should also refer to Section 5.3 of this NPS on biodiversity and geological conservation. The applicant should seek the advice of Natural England and/or the Countryside Council for Wales, and provide	*5.4.25 The applicant should seek the advice of the appropriate Statutory Nature Conservation Body (SNCB) and provide the Secretary of State with such information as the Secretary of State may reasonably require, to determine whether an Appropriate Assessment (AA) is required. Applicants can request and agree 'Evidence Plans' with SNCBs, which is a way to agree and record upfront the information the applicant needs to supply with its application, so that the HRA can be efficiently carried out. If an AA is required, the applicant must provide the Secretary of State with such information as may reasonably be required to enable the Secretary of State to conduct the AA. This should include information on any mitigation measures that are proposed to*	The relevant SNCB (Natural England) are involved in regular meetings over this Proposed Project with the Project Team, and a Habitats Regulations Screening Assessment is appended to the PEIR (see **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report**).

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
the IPC with such information as it may reasonably require to determine whether an Appropriate Assessment is required. In the event that an Appropriate Assessment is required, the applicant must provide the IPC with such information as may reasonably be required to enable it to conduct the Appropriate Assessment. This should include information on any mitigation measures that are proposed to minimise or avoid likely effects.	*minimise or avoid likely significant effects.*	
5.3.14 The IPC should not grant development consent for any development that would result in its loss or deterioration unless the benefits (including need) of the development, in that location outweigh the loss of the woodland habitat. Aged or 'veteran' trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided. Where such trees would be affected by development proposals the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons why.	*5.4.32 Applicants should include measures to mitigate the direct and indirect effects of development on ancient woodland, veteran trees or other irreplaceable habitats during both construction or decommissioning and operational phase.*	Impacts on ancient woodland, veteran trees and other irreplaceable habitats have been identified within Section 3.3.8 of this chapter, as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing. No loss of ancient woodland will arise. The likely effects on these features have been assessed as far as possible and are reported as part of Section 3.3.9 of this chapter. For the application for development consent there will also be a specific arboricultural impact assessment.

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
5.3.15 Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, the IPC should maximise such opportunities in and around developments, using requirements or planning obligations where appropriate.	*5.4.33 Applicants should consider any reasonable opportunities to maximise the restoration, creation, and enhancement of wider biodiversity, and the protection and restoration of the ability of habitats to store or sequester carbon as set out under Section 4.5.*	**Volume 1, Part 5, Chapter 1, Introduction** of the PEIR discusses climate change and carbon sequestration. Where the EIA process identifies opportunities to build in biodiversity features as part of good design, these will be reported in the Planning Statement submitted with the application for development consent and will be related where possible to wider initiatives such as Local Nature Recovery Strategies.
5.3.17 Consideration should be given to improvements to, and impacts on, habitats and species in, around and beyond developments, for wider ecosystem services and natural capital benefits, beyond those under protection and identified as being of principal importance. This may include considerations and opportunities identified through Local Nature Recovery Strategies, and national goals and targets set through the government's strategy for nature for example.	*5.4.34 same text as EN-1*	Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent and will be related where possible to wider initiatives such as Local Nature Recovery Strategies.
5.3.18 The applicant should include appropriate mitigation measures as an integral part of the proposed development.	*5.4.35 Applicants should include appropriate avoidance, mitigation, compensation and enhancement measures as an*	Mitigation measures to ensure the conservation of ecological receptors

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
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*	*integral part of the Proposed Project. In particular, the applicant should demonstrate that:* *• during construction or decommissioning, they will seek to ensure that activities will be confined to the minimum areas required for the works* *• the timing of construction or decommissioning has been planned to avoid or limit disturbance* *• during construction or decommissioning 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 or decommissioning works have finished* *• opportunities will be taken to enhance existing habitats rather than replace them, and where practicable, create new habitats of value within the site landscaping proposals. Where habitat creation is required as mitigation, compensation, or enhancement the location and quality will be of key importance. In this regard habitat creation should be focused on areas where the most ecological and ecosystems benefits can be realised*	during and after construction are reported in Section 3.3.9 of this chapter, to the extent they have been identified at this stage. Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent.
	5.4.36 Applicants should produce and implement a Biodiversity Management	A Biodiversity Management Strategy will be

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
	Strategy as part of their development proposals. This could include provision for biodiversity awareness training to employees and contractors so as to avoid unnecessary adverse impacts on biodiversity during the construction or decommissioning and operation stages.	produced to accompany the Development Consent Order once the impact assessment process is complete at the ES stage.
5.3.11 Where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect, after mitigation, on the site's notified special interest features is likely, an exception should only be made where the benefits (including need) 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 SSSIs.		The likely effects on SSSIs have been assessed as far as possible and are reported in Section 3.3.10 of this chapter.
5.11.7 The applicant should consult EA and Natural England (NE), or the Countryside Council for Wales (CCW), as necessary and in particular with regard to assessment of noise on protected species or other wildlife. The results of any noise surveys and predictions may inform the ecological assessment. The seasonality of potentially affected species		Consideration of disturbance including from noise is covered in Section 3.3.9 of this chapter as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing.

NPS EN-1 section (2011 NPS)	NPS EN-1 section (2023 Draft NPS)	Where this is covered in the PEIR
in nearby sites may also need to be taken into account.		Natural England will be consulted on this chapter through the PEIR consultation process and have been involved in ongoing discussions over the Proposed Project. Once surveys are complete, National Grid Electricity Transmission plc (National Grid) will aim to agree parameters for noise assessment of birds in particular with Natural England.

Table 3.3.2: NPS EN-5 requirements relevant to ecology and biodiversity

NPS EN-5 section (2011 NPS)	NPS EN-5 section (2023 Draft NPS)	Where this is covered in the PEIR
2.7.1 …large birds such as swans and geese may collide with overhead lines associated with power infrastructure, particularly in poor visibility. Large birds in particular may also be electrocuted when landing or taking off by completing an electric circuit between live and ground wires. Even perching birds can be killed as soon as their wings touch energised parts. *2.7.2 The applicant will need to consider whether the proposed line will cause such problems at any point along its length and take this into consideration in the preparation of the Environmental Impact*	*2.9.5 and 2.9.6 (part) …Large birds may also be electrocuted when landing or taking off by completing an electric circuit between live and ground wires. Even perching birds can be killed as soon as their wings touch energised parts of the infrastructure…The Applicant will need to consider whether the proposed line will cause such problems at any point along its length and take this into consideration in the preparation of the ES (see Section 4.2 of EN-1). Particular consideration should be given to feeding and hunting grounds, migration corridors and breeding grounds, where they are functionally linked to sites designated or allocated under*	There will be an overhead line as part of the proposed Kent Onshore Scheme. Potential impacts through bird strike have therefore been considered in Table 3.3.26 in this chapter of the PEIR and will also be covered in the ES, informed by flight-height vantage point survey.

NPS EN-5 section (2011 NPS)	NPS EN-5 section (2023 Draft NPS)	Where this is covered in the PEIR
Assessment (EIA) and ES (see Section 4.2 of EN-1). Particular consideration should be given to feeding and hunting grounds, migration corridors and breeding grounds.	*the 'national site network' provisions of the Conservation of Habitats and Species Regulations.*	
2.7.4 to 2.7.6 Careful siting of a line away from, or parallel to, but not across, known flight paths can reduce the numbers of birds colliding with overhead lines considerably.	*2.10.2 similar text to adopted EN-5*	Considerations of making new lines parallel to existing lines have been factored into the proposed Kent Onshore Scheme.
2.7.4 to 2.7.6 Making lines more visible by methods such as the fitting of bird flappers and diverters to the earth wire, which swivel in the wind, glow in the dark and use fluorescent colours designed specifically for bird vision can also reduce the number of deaths. The design and colour of the diverters will be specific to the conditions – the line and pylon/transmission tower specifications and the species at risk.	*2.10.3 similar text to adopted EN-5*	Mitigation measures are considered as far as possible in Section 3.3.9 of this chapter and will also be covered in the ES.
2.7.4 to 2.7.6 contain similar text to the draft 2023 EN-5	*2.10.4 Electrocution risks can be reduced through the design of crossarms, insulators and the construction or decommissioning of other parts of high voltage power lines so that birds find no opportunity to perch near energised power lines on which they might electrocute themselves.*	Mitigation measures are considered as far as possible in Section 3.3.9 of this chapter and will also be covered in the ES.

National Planning Policy Framework

3.3.2.22 The National Planning Policy Framework (NPPF) (Ref. 3.3.19) will be an important consideration and relevant to the Secretary of State's (SoS) consideration of the Proposed Project. Table 3.3.3 below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the ES.

Table 3.3.3: NPPF requirements relevant to ecology and biodiversity

NPPF section	Where this is covered in the PEIR
Paragraph 174 "Planning policies and decisions should contribute to and enhance the natural and local environment by [inter alia] … protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); … [and] recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services; … [and] minimising impacts on and providing net gains for biodiversity; …[and] 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".	Designations, habitats and species of principal importance (sites of biodiversity value), and protected species have been identified within Section 3.3.8 of this chapter of this chapter, as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing. The likely effects on these features have been assessed as far as possible and are reported as part of this chapter of the PEIR. Mitigation measures to ensure the conservation of ecological receptors are reported in Section 3.3.9 of this chapter, to the extent they have been identified at this stage. Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent and in a BNG Assessment.
Paragraph 179 "To protect and enhance biodiversity and geodiversity, plans should: Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; [and] promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority	This paragraph is mainly concerning documents such as Local Plans, However, identification of designations, habitats and species of principal importance (local wildlife rich habitats), and protected species is contained within Section 3.3.8 of this chapter, as far as they have been determined at this stage of the Proposed Project, given

NPPF section	Where this is covered in the PEIR
species; and identify and pursue opportunities for securing measurable net gains for biodiversity."	some surveys are ongoing or have not yet been commenced. The likely effects on these features have been assessed as far as possible and are reported as part of this chapter. Mitigation measures to ensure the conservation of ecological receptors are reported in Section 3.3.9 of this chapter, to the extent they have been identified at this stage. Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent and in a BNG Assessment.
Paragraph 180 "When determining planning applications, local planning authorities should apply the following principles: 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; Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their	The mitigation hierarchy defined in paragraph 180 has been used and will be used during further Proposed Project design development, construction or decommissioning methods for the Proposed Project in Kent.

NPPF section	Where this is covered in the PEIR
design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.	
Paragraph 181 "The following should be given the same protection as habitats 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 habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.	The Information to Inform Habitats Regulations Assessment that constitutes **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** of the PEIR considers all potential SAC and SPA designations, as well as Ramsar sites.

National planning practice guidance

3.3.2.23 Most planning practice guidance for biodiversity is associated with strategic planning rather than planning applications. Guidance available on planning applications covers BNG[1], protection of trees and woodlands[2] and the appropriate assessment process[3]. The guidance is high-level and not prescriptive.

Local Planning Policy

3.3.2.24 The proposed Kent Onshore Scheme lies within the jurisdiction of Kent County Council. County planning guidance which is relevant to a study of ecology and biodiversity and has informed the assessment of preliminary effects in this chapter are as follows:

- Thanet District Council Local Plan (Adopted 2020) (Ref. 3.3.24).
- Draft Dover District Local Plan (Reg 19) (Ref. 3.3.9).

3.3.2.25 The proposed Kent Onshore Scheme (refer to **Figure 1.1.3 Kent Onshore Scheme Boundary**) lies within the jurisdiction of Kent County Council.

3.3.2.26 The Kent Onshore Scheme lies within the boundary of Thanet District Council Local Plan (Ref. 3.3.24) and Dover District Local Plan (Ref. 3.3.9). Local Plan policies which are relevant to ecology and biodiversity matters and will inform the assessment in the ES are detailed in Table 3.3.4 and Table 3.3.5.

[1] https://www.gov.uk/government/collections/biodiversity-net-gain

[2] https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas

[3] https://www.gov.uk/guidance/appropriate-assessment

Table 3.3.4: Local Planning Policies relevant to ecology and biodiversity – Thanet Local Plan

Thanet Local Plan – Policy	Where this is covered in the PEIR
SP28: Protection of International and European Designated Sites This policy is designed to protect international and European designated sites from development which will have a significant effect. Development should incorporate measures to avoid or mitigate any adverse impacts.	The Information to Inform Habitats Regulations Assessment that constitutes **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** of the PEIR considers all potential SAC and SPA designations, as well as Ramsar sites.
SP29: Strategic Access Management and Monitoring Plan (SAMM) This policy requires new residential development to comply with the Strategic Access Management and Monitoring Plan in order to mitigate again the in-combination effects of new development, through the pathway of recreational pressure on Thanet Coast SPA and Ramsar site.	This policy is specifically concerned with addressing recreational pressure impacts on Thanet Coast & Sandwich Bay SPA/Ramsar site. Since the Proposed Project is not a residential project this policy does not apply.
SP30: Biodiversity and Geodiversity Assets This policy sets out that developments will, where appropriate, be required to make a positive contribution to the conservation, enhancement and management of biodiversity and geodiversity assets resulting in a net gain for biodiversity assets.	Designations, habitats and species of principal importance, and protected species (biodiversity assets) have been identified within Section 3.3.8 of this chapter, as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing. The likely effects on these features have been assessed as far as possible and are reported in this chapter of the PEIR. Mitigation measures to ensure the conservation of ecological receptors are reported in Section 3.3.9 of this chapter to the extent they have been identified at this stage. Where the EIA process identifies opportunities to enhance biodiversity interests these

Thanet Local Plan – Policy	Where this is covered in the PEIR
	will be reported in the Planning Statement submitted with the application for development consent and in a biodiversity net gain assessment. The mitigation hierarchy defined in paragraph 180 has been used and will be used during further Proposed Project design development, construction or decommissioning methods for the Proposed Project in Kent. The Information to Inform Habitats Regulations Assessment that constitutes **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** of the PEIR considers all potential SAC and SPA designations, as well as Ramsar sites. This includes consideration of impacts on functionally linked habitat for SPA birds.
SP31: Biodiversity Opportunity Areas This policy states that the council will support proposals that enhance, maintain and protect the identified Biodiversity Opportunity Areas, particularly where proposals increase the biodiversity value of the site.	The proposed Kent Onshore Scheme lies within the Lower Stour Wetlands Biodiversity Opportunity Area. As part of the work towards the application for development consent (and as part of the requirement for Biodiversity Net Gain) enhancements to this area will be sought.

Table 3.3.5: Local Planning Policies relevant to ecology and biodiversity – Dover District Local Plan

Draft Dover District Local Plan – Policy	Where this is covered in the PEIR
Strategic Policy 13: Protecting the District's Hierarchy of Designated Environmental Sites and Biodiversity Assets	Designations, habitats and species of principal importance, and protected

Draft Dover District Local Plan – Policy	Where this is covered in the PEIR
This policy sets out that development which is likely to adversely affect the integrity of international or European designated sites will not be permitted unless there are imperative reasons of overriding public interest and that it is demonstrated that any necessary compensatory measures in the absence of alternative solutions can be secured.	species have been identified within Section 3.3.8 of this chapter, as far as they have been determined at this stage of the Proposed Project, given some surveys are ongoing or have not yet been commenced at the time of writing (see Table 3.3.7). The likely effects on these features have been assessed as far as possible and are reported in this chapter of the PEIR (see section 3.3.9). Mitigation measures to ensure the conservation of ecological receptors are reported in Section 3.3.9 of this chapter to the extent they have been identified at this stage. Where the EIA process identifies opportunities to enhance biodiversity interests these will be reported in the Planning Statement submitted with the application for development consent and in a biodiversity net gain assessment. The mitigation hierarchy defined in paragraph 180 has been used and will be used during further Proposed Project design development, construction or decommissioning methods for the Proposed Project in Kent. The Information to Inform Habitats Regulations Assessment that constitutes **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** of the PEIR considers all potential SAC and SPA designations, as well as Ramsar sites. This includes consideration of

Draft Dover District Local Plan – Policy	Where this is covered in the PEIR
	impacts on functionally linked habitat for SPA birds.
Strategic Policy 14: Enhancing Green Infrastructure and Biodiversity The policy sets out all development must avoid a net loss of biodiversity and are required to achieve a net gain in biodiversity above the ecological baseline. It also states that every development will be required to connect to and improve the wider ecological networks in which it is located, providing on-site green infrastructure that connects to off-site networks.	National Grid is committed to BNG and hence as we develop the Proposed Project the enhancement is considered/will be considered throughout. The proposed Kent Onshore Scheme lies within the Lower Stour Wetlands Biodiversity Opportunity Area. As part of the work towards the application for development consent and as part of the requirement for BNG, enhancements to this area will be sought. This will enable the Proposed Project to contribute to BNG for biodiversity and to enhance that important ecological corridor.

3.3.3 Scoping Opinion and Consultation

Scoping

3.3.3.1 A Scoping Report (Ref. 3.3.28) for the Proposed Project was issued to the Planning Inspectorate (PINS) on 24 October 2022 and a Scoping Opinion (Ref. 3.3.29) was received from the SoS on 1 December 2022. Table 3.3.6 sets out the comments raised in the Scoping Opinion and how these have been addressed in this PEIR or will be addressed within the ES. The Scoping Opinion takes account of responses from prescribed consultees as appropriate.

Table 3.3.6: Comments raised in the Scoping Opinion

ID	Inspectorate's comments	Response
4.2.1	[*Permanent habitat loss (intertidal) as a result of construction of converter station and underground cables/overhead line, construction of any temporary works areas, potential pollution from maintenance crews, and traffic movements during maintenance works (construction and maintenance)*]	The likely effects on the intertidal zone have been assessed as far as possible and are reported in this chapter and will be discussed further in the ES for the application for development consent. There will be no

ID	Inspectorate's comments	Response
	This matter is to be scoped out on the basis that no permanent infrastructure is to be installed above ground level within the intertidal zone. Similarly, no day-to-day maintenance of underground cables would be required in the intertidal zone. In the absence of information on the likely activities in the intertidal area and the habitats present, the Inspectorate cannot agree to scope out this potential effect at this stage. The ES should include an assessment of permanent habitat loss in the intertidal area, where likely significant effects could occur.	permanent habitat loss within the intertidal area.
4.2.2	[*Temporary habitat loss/disturbance (terrestrial and intertidal) from temporary works areas and traffic movements during maintenance works (operation)*] These matters are scoped out on the basis that it is considered unlikely that significant additional habitat loss would occur through operation. The Inspectorate agrees that the operation of the Proposed Project would not give rise to further temporary habitat loss/disturbance and can be scoped out of the assessment. The Inspectorate notes that 'traffic movements during maintenance works' during the construction or decommissioning and maintenance stages is scoped in (Table 3.3.3) but the same activity is stated to be scoped out for operation. For clarity, 'traffic movements during maintenance works' should be scoped in to the assessment.	Noted. All ecological effects during maintenance works are assessed as far as possible and are reported in this chapter and will be discussed further in the ES for the application for development consent.
4.2.3	[*Permanent habitat loss to Margate and Long Sands Special Area of Conservation (SAC) and Outer Thames Estuary SPA (all stages)*] These designated sites are stated to be scoped out of this assessment as they are marine sites with qualifying features that are considered likely to be not affected by the onshore activities associated with the Proposed Project due to the absence of a potential effect pathway from onshore activities. They will however be considered for the offshore	Noted.

ID	Inspectorate's comments	Response
	activities. The Inspectorate agrees that permanent habitat loss to Margate and Long Sands SAC (designated for 'Sandbanks which are slightly covered by sea water all the time') and the Outer Thames Estuary SPA (designated for wintering red throated diver and foraging breeding little tern and common tern) can be scoped out of the assessment of the Kent Onshore Scheme for all stages due to a likely absence of potential effect pathway from the onshore activities and on the understanding that effects on these designated sites from the Offshore Scheme activities will be considered in the relevant aspect chapters, namely Benthic Ecology and Marine Ornithology.	
4.2.4	[*Permanent habitat loss to Stodmarsh SAC and Thanet Coast SAC (all stages)*] Stodmarsh SAC and Thanet Coast SAC are stated to be screened out due to an absence of impact pathway. Stodmarsh SAC is described as being upstream of the Kent Onshore Scheme (at a distance of 5.8 km from the Kent Onshore Scheme) and is designated for Desmoulin's whorl snail. Thanet Coast SAC (2.2 km from the Kent Onshore Scheme) is designated for reefs and sea caves, which are stated as being outside of the Kent Onshore Scheme boundary and therefore no impact pathway exists. The ES should include evidence to demonstrate that activities during construction or decommissioning, operation and decommissioning would have no potential to affect these sites or their features. If this information is provided the Inspectorate agrees to scope out the assessment of permanent habitat loss to these designated sites from the ES.	The Information to Inform Habitats Regulations Assessment that constitutes **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** of the PEIR considers all potential SAC and SPA designations, including Thanet Coast SAC and Stodmarsh SAC, as well as Ramsar sites and will be discussed further in the ES for the application for development consent.
4.2.5	[*Permanent habitat loss of Notable Habitats (all stages)*] The Scoping Report states that "hedgerows, arable field margins and other notable habitats could be impacted by cable installation. However, a combination of routeing, HDD where	Noted. Habitat loss during construction or decommissioning is assessed as far as possible and are reported in Section 3.3.10 of this chapter and will be discussed further in the

ID	Inspectorate's comments	Response
	possible and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts to temporary. These impacts will therefore be assessed as temporary rather than permanent. The converter station would be located within an arable field so will not result in permanent loss of notable habitats." At this stage and in the absence of information regarding location of notable habitats, routing and installation techniques, and mitigation, the Inspectorate cannot agree to scope out permanent loss of notable habitats at this stage. The ES should include an assessment of this matter, where likely significant effects could occur.	ES for the application for development consent.
4.2.6	[*Incidental mortality of protected or notable invertebrate species (all stages)*] This matter is scoped out on the basis that it is unlikely that notable population assemblages will be significantly affected by direct mortality once mitigation measures are in place, as such populations will be linked to habitat. The Scoping Report states that the likely presence of notable invertebrate assemblages will be determined through the Phase 1 Habitat Surveys to be undertaken and there are habitats present that may support notable invertebrates, such as grazing marsh, semi-improved grassland, hedgerows and coastal habitats. In the absence of baseline information on notable invertebrate assemblages, the Inspectorate is not in a position to agree to scope these matters from the assessment. The ES should include an assessment of these matters, or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a likely significant effect.	The potential for the site to support notable invertebrates is discussed within Section 3.3.8 of this chapter, as far as it has been determined at this stage of the Proposed Project, given surveys are ongoing. The likely effects on notable invertebrates have been assessed as far as possible given that invertebrate surveys will be undertaken in 2024, are reported in Section 3.3.10 of this chapter and will be discussed further in the ES for the application for development consent.
4.2.7	[*Incidental mortality of protected or notable intertidal and terrestrial non-breeding bird species (all stages)*] This matter is identified as being scoped in for non-breeding birds during operation	The likely collision risk on non-breeding birds has been assessed as far as possible and are reported in Section 3.3.10 of this chapter and will be discussed further in the

ID	Inspectorate's comments	Response
	due to the potential for bird strike on new overhead line in Table 3.3.4, but it is stated to be scoped out for all stages in Table 3.3.7. Without reasoning as to why this matter is proposed to be scoped out and considering the potential for bird strike on new overhead lines, the Inspectorate cannot agree to scope this matter out at this stage. The ES should include an assessment of incidental mortality on non-breeding birds (terrestrial and intertidal) for all stages, where likely significant effects could occur.	ES for the application for development consent.
4.2.8	[*Incidental mortality of protected or notable riparian mammal species (otter, water vole and beaver) (all stages)*] This matter was not described in Table 3.3.4 but is noted to be included in Table 3.3.7. No reasoning is provided to scope this matter out. The Inspectorate considers there is potential for impacts during construction or decommissioning and decommissioning in particular and therefore, the Inspectorate does not agree to scope this matter out. The ES should assess incidental mortality of protected or notable riparian mammal species where significant effects are likely to occur.	The potential for mortality of protected or notable riparian mammals has been assessed as far as possible and are reported in Section 3.3.10 of this chapter and will be discussed further in the ES for the application for development consent.
4.2.9	[*Study area, surveys for bird species, and confidential annexes*] See comments 3.2.4, 3.2.5, 3.2.8 for Suffolk Onshore Scheme above, which are equally applicable to the Kent Onshore Scheme. *[These concerns clearly define and justify the study area, providing an indication of the likely spatial extent of the potential suite of bird surveys, and keeping badger sett data confidential]*	Each impact pathway discussed in this chapter has a specific referenced zone of influence (ZOI). ZOI are discussed in Section 3.3.7. The bird surveys being undertaken for the Proposed Project have covered the November 2022 to March 2023 survey season and the March 2023 to June 2023 survey season. Surveys will be repeated in September 2023 to March 2024 and March to June 2024 to ensure two full seasons of coverage. The surveys are covering all suitable habitat within the draft Order Limits of the proposed Kent

ID	Inspectorate's comments	Response
		Onshore Scheme and will therefore enable areas of functionally linked habitat to be identified. Once the surveys are complete, maps will be submitted as part of the ES to be submitted with the application for development consent which will clearly show the areas of survey coverage. Sensitive ecological data will be provided in a confidential annex to the ES for the application for development consent. All surveys for relevant ecological receptors are ongoing, or have not yet commenced, and they are therefore not presented in a confidential annex to this chapter of the PEIR.
4.2.10	[*Beaver*] The Applicant should note that from 1 October 2022, Eurasian beavers in England became a European Protected Species, being listed in Schedule 2 of the Conservation of Habitats and Species Regulations.	Noted. Eurasian beavers are included within the scope of riparian mammal surveys and impacts have been considered in Section 3.3.10 of this chapter as far as possible at this stage and will be assessed fully in the ES to accompany the application for development consent.

Consultation and Project Engagement

3.3.3.2 Proposed ecology survey methodologies were shared with Natural England in April 2022 and a response received in May 2022. Subsequent discussions with Natural England confirmed that impacts on great crested newt (*Triturus cristatus)* could be managed through the District Licencing Scheme for Kent and therefore specific surveys for great crested newt were not required. Throughout the course of the Proposed Project there have been regular (typically monthly) meetings between Natural England and National Grid.

3.3.5 Approach and Methodology

3.3.5.1 **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** sets out the overarching approach which has been used in developing the preliminary environmental information. This section describes the technical methods used to determine the baseline conditions, sensitivity of the receptors and magnitude of effects and sets out the significance criteria that have been used for the preliminary ecology and biodiversity assessment.

Guidance Specific To The Ecology And Biodiversity Assessment

3.3.5.2 The preliminary ecology and biodiversity assessment has been carried out in accordance with the following good practice guidance documents:

- Guidelines for Ecological Impact Assessment from the Chartered Institute for Ecology and Environmental Management (CIEEM) (Ref. 3.3.4);
- Guidance on Habitats Regulations Assessment on the UK Government website (https://www.gov.uk/guidance/appropriate-assessment) (Ref. 3.3.26); and
- Planning Inspectorate Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects (Ref. 3.3.25).

3.3.5.3 The principal guidance is the CIEEM ecological impact assessment guidance, which is summarised below:

- Ecological features that are both present and might be affected by the proposed Kent Onshore Scheme are identified (both, those likely to be present at the time works begin and those predicted to be present under a future baseline) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions.
- The importance of the identified ecological features evaluated, placing their relative biodiversity and nature conservation value into geographic context. This is then used to define the relevant ecological features that need to be considered further within the assessment process.
- The changes or perturbations predicted to result as a consequence of the proposed Kent Onshore Scheme (i.e., the potential impacts), and which could potentially affect relevant ecological features are identified and their nature described. Established good-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account.
- The likely effects (beneficial or adverse) on relevant ecological features are then assessed, and where possible quantified.
- Measures to avoid or reduce any predicted significant effects, if possible, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines). If necessary, measures to compensate for effects on features of nature conservation importance are also included.
- Any residual effects of the proposed Kent Onshore Scheme are reported.
- Scope for ecological enhancement is considered.

3.3.5.4 The desk study included a search for:

- International statutory nature conservation sites (e.g., SAC, SPA and Ramsar sites) within 10 km of the proposed Kent Onshore Scheme draft Order Limits and 30 km for SACs designated for bats. Note that there are no SACs designated for bats within 30 km of the Kent Onshore Scheme draft Order Limits, the nearest being The Mens SAC over 120 km to the west;
- National statutory nature conservation designations (e.g. SSSI, excluding geological SSSIs, National Nature Reserve (NNRs) and Local Nature Reserves (LNRs)) within 5 km, also referencing Natural England Impact Risk Zones for SSSIs on the Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref. 3.3.30); and
- Non-statutory nature conservation designations (e.g. Local Wildlife Sites (LWS) and Roadside Nature Reserves (RNR)) within 2 km; and
- Records of protected and notable species and notable habitats (e.g. Habitats of Principal Importance Section 41 of the Natural Environment and Rural Communities (NERC) Act) have also been identified up to 1 km (for most species) and 500 m (for habitats and great crested newts) from the proposed Kent Onshore Scheme draft Order Limits.

3.3.5.5 The surveys that are being undertaken or planned to be undertaken at the time of writing are shown in Table 3.3.7. The majority of these are underway or have yet to commence, and therefore the amount of field survey data in this PEIR is limited. Great crested newt surveys are not being undertaken as it has been agreed with Natural England that impacts on that species can be addressed through the District Level Licensing Scheme.

Table 3.3.7: Survey Summary (Type, Extent and Timing)

Survey Type	Spatial Extent	Survey Period	Status at Time of Writing
Extended Phase 1 Habitat Survey	All habitats within proposed Kent Onshore Scheme draft Order Limits	Any, but April to August preferred	Completed, based on a combination of detailed resolution aerial overflight photography and physical walkover of the route.
Hedgerow	Hedgerows identified within the proposed Kent Onshore Scheme by extended Phase 1	Any, but April to August preferred	Survey completed north of the River Stour; south of the River Stour will be completed in late 2023.
Invasive non-native species	All habitats within the proposed Kent Onshore Scheme draft Order Limits	May to August	Undertaken as part of the field Phase 1 Habitat Surveys. No further survey planned.
Terrestrial invertebrates	Key habitats within the proposed Kent	March to October	Not yet commenced; will be undertaken in 2024.

Survey Type	Spatial Extent	Survey Period	Status at Time of Writing
	Onshore Scheme identified by extended Phase 1		
Common reptiles (presence/absence and population)	Suitable habitat within proposed Kent Onshore scheme	March to October. Optimal – April, May, September	Not yet commenced; will be undertaken in spring and/or autumn 2024.
Intertidal birds (Low/High Tide Counts)	Tidal counts at landfall locations.	Tidal counts throughout year	Landfall to be west of Saint Augustine's Golf Club, meaning direct intertidal bird survey is now less relevant.
Wintering birds (Field counts / inland walkovers)	Winter walkovers targeting temporary and permanent infrastructure	November to March	Ongoing. First season of surveys completed (November 2022 to March 2023). A summary of the first season of survey results is provided in this chapter. However, the full report will be produced and included in the ES. Second season of surveys being undertaken in autumn/winter 2023/24.
Breeding birds (common bird census (CBC))	Common bird census targeting permanent infrastructure	March to July	Completed for 2023 season. A summary is provided in this chapter. However, the full report for both 2023 and 2024 seasons to be produced and included in the ES. Second season of surveys will be undertaken in 2024.
Bats (presence/absence emergence/re-entry)	Trees suitable for roosting bats to be unavoidably impacted by proposed Kent Onshore Scheme	May to September, May to August Optimal	Not yet commenced; need not yet determined as it will depend on impacts on trees and their bat roost potential as design of the Proposed Project evolves. Surveys will be undertaken in 2024 as necessary, to inform the ES.
Bats (tree climbing inspection)	Trees suitable for roosting bats to be unavoidably impacted by the	Anytime	Not yet commenced; need not yet determined as will depend on impacts on trees and their bat roost potential as design of the

Survey Type	Spatial Extent	Survey Period	Status at Time of Writing
	proposed Kent Onshore Scheme		Proposed Project evolves. Surveys will be undertaken in 2024 as necessary, to inform the ES.
Bats (activity surveys/advanced survey techniques)	Transects to target permanent and temporary infrastructure, and identify impacts to rarer species	April to October	Commenced in August 2023 and will resume in summer 2024. Report to be provided with the ES.
Hazel dormouse	Suitable hedgerows to be intersected by the proposed Kent Onshore Scheme and adjacent woodlands	April to November	Nest tubes installed in July 2023. Will continue through 2024 until May 2024. Report to be provided with the ES.
Water vole	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme draft Order Limits.	Mid-April to the end of the June and between July to the end of September	Not yet commenced. Will commence spring 2024. Report to be provided with the ES.
Otter	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme draft Order Limits	Any time of year, optimal period May to September	Not yet commenced. Will commence spring 2024. Report to be provided with the ES.
Beaver	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme	Any time of year, optimal period May to September	Not yet commenced. Will commence spring 2024. Report to be provided with the ES.
Badger (presence/absence)	All habitats within the proposed Kent Onshore Scheme draft Order Limits and adjacent	Anytime	Not yet commenced. Signs of badger have been recorded during the extended Phase 1 Survey. Need for presence /absence of setts will be determined as design of Proposed Project evolves. Report to be provided with the ES.

Survey Type	Spatial Extent	Survey Period	Status at Time of Writing
In river aquatic ecology surveys (fish and aquatic invertebrates)	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme draft Order Limits.	Anytime	Not yet commenced. Will commence in 2024. Report to be provided with the ES.

3.3.5.6 A brief descriptive summary of the surveys outlined in Table 3.3.7 is provided below for each survey type.

Extended Phase 1 Habitat Survey

3.3.5.7 An extended Phase 1 Habitat Survey has been undertaken to provide an environmental baseline for the proposed Kent Onshore Scheme, identify any areas that are of potential importance for nature conservation and assist with assessing which Phase 2 surveys (see Table 3.3.7) would be deemed necessary to further evaluate the potential impact of the proposed Kent Onshore Scheme. Due to the size of the area requiring survey, an aerial overflight was undertaken which produced high-resolution photography. This was used to create initial habitat maps. These were then refined and ground-truthed through walkovers.

3.3.5.8 The walkovers involved teams of suitability qualified ecologists, who mapped the habitats based on Phase 1 classifications as described in the Handbook for Phase 1 Habitat Survey (Ref. 3.3.17). While on site any incidental features highlighted as being of ecological interest and suitable for supporting protected species were also target noted, particularly regarding trees with bat roost potential and locations of badger setts and activity.

3.3.5.9 The survey covered the entirety of the proposed Kent Onshore Scheme and was primarily undertaken during June and July 2023, as this is when deciduous and annual plant species are identifiable.

Hedgerow

3.3.5.10 As part of the extended Phase 1 Habitat Survey all hedgerows within the proposed Kent Onshore Scheme were noted and flagged for further survey. Detailed hedgerow surveys were used to establish the state of hedgerows, in terms of length and condition, and character of species present within the hedgerows. These were assessed against criteria detailed in The Hedgerow Regulations 1997 (Ref. 3.3.6) to identify which hedgerows are of particular importance for wildlife and landscape and so worthy of protection and conservation. The broad definition of a hedgerow as defined in Ref. 3.3.6 is: "*Any boundary line of trees or shrubs over 20m long and less than 5m wide, provided that at one time the trees or shrubs were more or less continuous. It includes an earth bank or wall only where such a feature occurs in association with a line of trees or shrubs*."

3.3.5.11 Suitably qualified ecologists walked the lengths of hedgerows identified on site, and surveyed sections of the hedge noting woody species present, ground flora present and standard trees, as well as any breaks in the hedge, or connectivity to other hedgerows. This species list will then be used as a condition assessment and the hedgerow is assigned a richness value. The timing of these surveys was between April and August 2023 as this is when deciduous and annual plant species are identifiable. For areas where access was not possible in 2023, these will be completed in 2024.

Invasive non-native species

3.3.5.12 Any invasive non-native plant species were identified as part of the extended Phase 1 Habitat Survey, and the location of all species, density of the stand and any other identifying features was noted.

Terrestrial invertebrates

3.3.5.13 Sub-sites suitable for terrestrial invertebrate surveys will be selected based on their nature conservation value and on the presence of semi-natural habitats such as unimproved and semi-improved grassland, woodland and wetland vegetation. Recording of species uses various methods, such as sweep netting, sieving dead wood/leaf litter and pitfall traps as per published guidelines and identification, where possible, should take place in the field, however, if this is not possible, using microscopes within a lab.

3.3.5.14 The field survey would aim to sample as wide a range of invertebrates as possible, which would involve the use of the following standard equipment and recommended methods:

- fine-meshed and calico sweep nets to sample flower-rich and other grassland and tall herb/ruderal vegetation;
- hand collection of specimens on the ground and from various types of vegetation as the opportunity arose; and
- beating of scrub, climbers and young trees with beating tray and beater at various points within the study area.

3.3.5.15 The surveys will follow sampling protocols suitable for capturing ground dwelling invertebrates, likely requiring three survey visits spread across summer and autumn 2023 and spring 2024, as detailed in Drake et al (2007) Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation (Ref. 3.3.11) by experienced entomologists. The sampling protocols consist of grubbing or hand searching refugia, sweep netting, and visual checks (spot observations).

Common reptiles

3.3.5.16 Reptile surveys will be undertaken to determine the presence/absence of reptiles in suitable habitat such as rough grassland, verges, scrub and dunes through the deployment of artificial refugia. The use of artificial refugia is the most commonly used method for locating reptiles. All reptiles tend to use certain materials that warm up in the sun and the use of artificial refugia exploits this tendency by providing a suitable basking site, as well as an area to avoid predation (Herpetofauna Workers Manual; Ref. 3.3.12).

3.3.5.17 The refugia will be deployed and allowed at least two weeks for the reptiles to become used to them. They will be distributed across the site where suitable habitat is present in a suitable density (10 per hectare as a minimum). The refugia will be a combination of corrugated metal-based roofing material sheets and roofing felt (measuring approximately 0.5 m by 0.5 m). These will be placed in sunny locations near to cover, such as the edge of scrub and woodland patches, grassy banks and south facing areas. Suitable habitat to be visually inspected for evidence of reptile activity, including dead/alive reptiles and shed skins. Potential basking spots should be targeted, including the edge of hardstanding areas, pathways, short grassland habitats and drain sides (Froglife Advice Sheet 10: Reptile Survey; Ref. 3.3.11).

3.3.5.18 To establish presence or absence of reptiles, seven visits in suitable weather conditions (within a constant temperature range of between 10 – 20°C) will take place between March and September. Appropriate weather is typically encountered in the spring and late summer/autumn. All refugia will be checked and any reptile species will be recorded (Survey Protocols for British Herpetofauna; Ref. 3.3.22). Since reptiles sometimes use different habitats at different times of day, the survey visits will be undertaken at different times of day.

3.3.5.19 Following these initial seven surveys, up to 20 surveys can be undertaken to establish population size class for the survey area. To determine the population class size of any present reptile species the adult peak count result across all surveys as averaged for each refugia.

Wintering birds

3.3.5.20 The field surveys for wintering birds are based on the transect methodologies detailed by Bibby et al (2000) Bird Census Techniques (Ref. 3.3.1) and Gilbert et al (1998) Bird Monitoring Methods (Ref. 3.3.11). During each survey visit, a suitably experienced ornithologist walked a transect route through the survey area using the Public Rights of Way and the best possible route accessible to capture the Kent Onshore Scheme site. For the 2022-2023 season these generally involved surveys from Public Rights of Way (PRoW), although given the number of PRoW in the area this still enabled good coverage. Transect routes were interspersed with stops at viewing points during which the survey area was scanned for birds using binoculars. Visual counts of all bird species encountered were made, with birds that could not be located visually identified through calls or songs. The species present and their behaviours are recorded on field maps using standard British Trust for Ornithology species codes and behaviour notation.

3.3.5.21 While such surveys primarily targeted permanent infrastructure locations (i.e., the proposed Minster Converter Station and Minster Substation, or overhead line (OHL)), the entire accessible area of the proposed Kent Onshore Scheme was covered, as temporary works can also have significant effects.

Intertidal birds

3.3.5.22 A low tide count was used to record all waterbird species within the intertidal area of the proposed Kent Onshore Scheme and a buffer of up to 500 m. The survey area was divided into sectors viewed from vantage points with birds recorded mapped on a 1:25,000 Ordnance Survey map. These surveys were undertaken within two hours of low tide, avoiding times earlier than one hour after sunrise or one before sunset to avoid dusk and dawn flighting. Spring tides were targeted as the lowest tides expose the greatest possible areas of intertidal mud with which foraging by waders and wildfowl is associated. A suitably experienced ornithologist undertook these surveys monthly through the year.

Breeding birds

3.3.5.23 Breeding bird survey uses a territory-mapping approach to estimate the number and positions of territories of each species present in a survey area during the breeding season (March to July). Survey areas were used to target areas where there will be new permanent infrastructure, although as for wintering birds all suitable habitat within the proposed Kent Onshore Scheme was covered as temporary works can also have significant effects. Survey routes were mapped, and the direction walked alternated on each visit, to ensure that all areas are covered at various times of day across the duration of the survey. Two suitably qualified ecologists undertook a walkover of the survey area to record all species of breeding birds present, and detail bird behaviour, including singing, calling, flights and movements between areas, carrying food, nest building, aggressive encounters, and other bird behaviour. For part of the 2023 breeding bird survey this was done from PRoW, but as with the wintering bird surveys provided good coverage. While a standardised number of survey visits for Common Bird Census (CBC) in respect of development has not been published, a minimum of five visits is the core survey effort.

Bat roost surveys

3.3.5.24 Potential bat roost features were identified as part of the extended Phase 1 Habitat Survey and a preliminary roost assessment (PRA) undertaken on these features and assigned a suitability, low, moderate or high, based on the individual feature.

3.3.5.25 Following the PRA trees with moderate or high potential for roosting bats will be confirmed as to whether they need further survey, based on whether they are likely to be affected by the proposed Kent Onshore Scheme. If they do require further surveys emergence/re-entry surveys would be undertaken. The minimum number of visits is determined by the suitability and outlined in the Table 3.3.8 below, and is based on Collins (ed) (2016) Bat Surveys for Professional Ecologists; [Ref. 3.3.5].

Table 3.3.8: Minimum number of visits to determine presence/absence of bat roosts in trees/woodland and buildings/structures (subject to review as an updated version of Ref 3.3.5 guidance was published in September 2023).

Feature	Negligible Suitability	Low Suitability	Moderate Suitability	High Suitability/Confirmed Roost
Trees/woodland	No further survey	No further survey	Two survey visits – one survey at dusk and one at dawn	Three survey visits – dusk or dawn (at least one dawn)

3.3.5.26 Surveyors would be strategically positioned to collectively allow full visibility of all features suitable for roosting bats on the buildings, structures and/or trees. Visual observations of bats entering or leaving a structure would be supported by ultrasonic full spectrum bat detector recordings. Dusk emergence surveys start approximately 15 mins before sunset and end one and a half to two hours after sunset. Dawn re-entry surveys start one and a half to two hours before sunrise and end 15 mins after sunrise. Surveys are only to be undertaken May to September during suitable weather conditions, i.e., in temperatures above 7°C and in the absence of rain, strong wind and fog. Where roosting is confirmed a total of three dusk or dawn surveys were then undertaken (where time allowed) to help characterise the roost/s (Collins (ed) (2016) Bat Surveys for Professional Ecologists; Ref. 3.3.5).

Bat activity transect surveys

3.3.5.27 Bat activity transects are being undertaken of suitable habitats on site. These are focussed on areas where permeant infrastructure will be built along the route but also cover areas of temporary habitat loss. The proposed Kent Onshore Scheme has been divided into several transects designed to include potential flight paths or foraging areas within the site. From August 2023, two surveyors walked a transect route that will include a series of ‘spot counts’ at pre-determined points along the transects, located at potentially important features with regards to foraging or commuting bats.

3.3.5.28 Two survey visits have been undertaken during July/August 2023 and September/October 2023 and a third visit will be undertaken in May/June 2024. This is the necessary level of survey effort for low suitability habitat, but also reflects the fact that the vast majority of habitat impacts will be temporary, with relatively little permanent habitat loss from habitats suitable for bats.

3.3.5.29 At each point surveyors will record bat activity for three minutes using bat echolocation detectors to help determine which species were present. All activity encountered whilst walking between points will also be noted.

3.3.5.30 The starting points and walked direction of the transects will vary during each survey visit in order to ensure different areas of the transect are walked close to dusk or dawn. Dusk surveys will be carried out from sunset to at least two hours after sunset.

3.3.5.31 The time, location, number, species (where possible) and direction of flight will be recorded for each bat pass (discrete burst of echolocation heard or bat activity observed) encountered during the survey. Surveyors will record the echolocation calls detected to a digital recorder (Elekon Batlogger M, Wildlife Acoustics Echometer Touch and Edirol) to allow use of sound analysis software (Bat Sound and Kaleidoscope) to verify bat calls where required. GPS points of bat activity will be recorded using bat detectors such as Elekon Batlogger M and Echometer Touch and to provide the detailed distribution maps of activity.

3.3.5.32 Static bat detectors will be used to supplement transect survey and will be placed in representative habitats to record bat activity over a longer period of time. Static devices will be either pole mounted, or tree mounted at least 1 m above ground level and with the detection zone in front of the microphone free of any obstructions (e.g. branches, leaves). Static detectors will generally be deployed on five consecutive nights in tandem with activity transect surveys. Recordings will be analysed to determine species present and activity with an estimate of relative bat activity, known as a 'bat activity index'.

Hazel dormouse

3.3.5.33 Survey methodology for dormice reflects the life-cycle of this species and requires the installation of artificial nest boxes or tubes in suitable woodland and hedgerows, which are checked on a monthly basis by a suitably qualified ecologist for the presence of dormouse (*Muscardinus avellanarius*) nests and individuals.

3.3.5.34 Usually at least 50 nest tubes should be deployed at a spacing of 15-20m intervals. Preferably they should be kept in place for the majority of the active season (April to November) and checked once a month to maximise the chance of detecting any dormice present (Bright et al (2006) The Dormouse Conservation Handbook; Ref. 3.3.2). In this case, nest boxes have been installed from July 2023 and will remain until at least May 2024.

Water vole

3.3.5.35 Water vole surveys will be undertaken on aquatic habitats that are to be crossed by the proposed Kent Onshore Scheme or lie directly adjacent to the proposed Kent Onshore Scheme. Any survey will not only cover the crossing point but a stretch of watercourse 100 m either side of the crossing point will be covered where possible. These will be subject to a detailed search for water vole field signs, including:

- Latrine sites – distinct piles of water vole droppings found near nest sites or burrows, at the ranges of territorial boundaries and where the animals enter and leave the water.
- Feeding stations – areas with distinct neat piles of chewed lengths of vegetation along pathways or haul out platforms along the water's edge.
- Burrows – above and below water with a cropped "garden" or "lawn" around the burrow entrance.
- Paths and runs – along the water's edge, runs in the vegetation and footprints in soft mud.
- Sightings, sounds entering the water.

3.3.5.36 A minimum of two surveys to determine water vole presence/likely absence will be undertaken; between mid-April to the end of June, and between July to the end of September 2024. Surveys will not be undertaken following periods of heavy rain (taken to be >0.3 inches of rain falling in one hour) and/or high-water levels, or after bankside or in-channel management has taken place. These factors can obscure/remove signs of water vole presence and result in false negative survey results (Strachan & Moorhouse (2011) Water Vole Conservation Handbook; Ref. 3.3.23).

Otter

3.3.5.37 Otter surveys will be undertaken on aquatic habitats that are to be crossed by the proposed Kent Onshore Scheme or lie directly adjacent to the proposed Kent Onshore Scheme. At least 100m upstream and downstream of the watercourse from the footprint of the potential impact (direct or indirect) will be surveyed. These locations will be subject to detailed searched for field signs of otters indicating presence/absence. These field signs include:

- Spraints – characteristic sweet-smelling, black tar-like (where fresh/relatively recent i.e., within a few weeks) or grey crumbly (when old) faecal deposits usually containing fish scales, bones and occasionally invertebrate exoskeletons and bird feathers.
- Footprints – in soft substrate, typically asymmetrical and showing five toes arched around a large pad and, depending on substrate, webbing and claw marks (coarser substrates do not often enable the identification of Otter footprints).
- Feeding remains – which may include partially eaten fish, frogs, piles of mussel shells or crayfish remains.
- Slides and haul-outs – routes into and out of the water, which are usually associated with terrestrial routes such as short cuts around meanders or along traditionally used Otter paths/routes.
- Couches and hovers – above ground resting place which are usually associated with cover such as dense scrub, rushes or reed, flood debris or fallen trees.
- Holts – below ground resting site, usually associated with spraints which can be important for breeding (natal holts) where other signs are usually absent.

3.3.5.38 Otter surveys can be carried out at any time of year, though the period May to September is optimal when water levels are less variable. Surveys will not be undertaken following periods of heavy rain and/or high-water levels as these factors can obscure/remove signs of otter presence and result in false negative survey results. A minimum of one survey visit will be undertaken of each suitable aquatic or terrestrial habitat feature.

Beaver

3.3.5.39 Beaver surveys will be undertaken on aquatic habitats that are to be crossed by the proposed Kent Onshore Scheme or lie directly adjacent to the proposed Kent Onshore Scheme. At least 100m upstream and downstream of the watercourse from the footprint of the potential impact (direct or indirect) will be surveyed. These locations will be subject to detailed searched for field signs of beavers indicating presence/absence, as per the method in Campbell-Palmer et al (2020) (Ref. 3.3.3). These field signs include:

- Feeding remains – classified as woody feeding, soft feeding or crop feeding, as well as feeding stations and feeding trails.
- Scent sites and scent mounds – Piles of material (usually mud) scraped together, with scent deposited.
- Canals, dams, burrows and lodges – Evidence of beavers digging into substrate, either for shelter or to access foraging grounds.

3.3.5.40 Beaver surveys can be carried out at any time of year but are best done over winter when vegetation has died back, and beaver signs are more visible. Surveys will not be undertaken following periods of heavy rain and/or high-water levels as these factors can obscure/ remove signs of beaver presence and result in false negative survey results. A minimum of one survey visit will be undertaken of each suitable aquatic or terrestrial habitat feature.

Badger

3.3.5.41 Badger surveys include an initial habitats assessment to be undertaken within the footprint of the proposed Kent Onshore Scheme (including all temporary and permanent works) and all suitable habitat within 50m to 100 m of the proposed Kent Onshore Scheme draft Order Limits for badger field signs. This was undertaken as part of the extended Phase 1 Habitat Survey.

3.3.5.42 Signs of badgers' presence on a site include setts (categorised as main, annexe, subsidiary or outlier), latrines (dung pits), tracks, hairs caught on fences and vegetation, footprints, distinctive pathways through vegetation, scratching posts, feeding signs, snuffle holes in grassland and day laydowns (Harris et al (1989) Surveying Badgers; Ref. 3.3.14). If two or more main setts are present within or up to 100m from the proposed Kent Onshore Scheme draft Order Limits, then a badger bait marking study will be undertaken. This would enable the boundaries between different badger clans to be determined.

Assessment Criteria

Sensitivity

3.3.5.43 The sensitivity of sites uses established value systems (e.g., SSSIs are all of national importance and thus are classified as being sensitive at that scale) and reflects the geographical context of the valuation. The categories shown in Table 3.3.9 are applied to give geographic context.

Table 3.3.9: Examples of criteria used to evaluate important ecological features in a defined geographical context

Geographical level at which ecological feature is important	Example of criteria
International (Very high)	An internationally important site, e.g., SPA, SAC or Ramsar; a regularly occurring population of an internationally important species (listed on Annex IV of the Habitats Directive)

Geographical level at which ecological feature is important	Example of criteria
National (High)	A nationally designated site, e.g., SSSI, or a site considered worthy of such designation; a large regularly occurring population of a nationally important species
Regional (Medium)	An ecological feature identified in the local BAP. A smaller area of local BAP habitat which are essential to maintain the viability of a larger whole; non-statutory designated sites; a regularly occurring, locally significant number of a nationally important species. An ecological feature identified as of priority within Section 41 of the NERC Act 2006.
District (Low)	An ecological feature that is scarce within the district or borough or which appreciably enriches the district or borough habitat resource.
Local (Very low)	A good example of a common or widespread ecological feature in the local area.
Negligible	No or very limited ecological value.

3.3.5.44 The local (very low) criterion adds a level of detail that is not present in the sensitivity scale described in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** and reflects that there is a tier of ecological sensitivity between district and negligible.

Magnitude

3.3.5.45 In line with Section 1.2 in the CIEEM guidelines (Ref. 3.3.31), the terminology used within this chapter draws a clear distinction between the term 'impact' and 'effect'. For the purposes of this chapter these terms are defined as follows:

- Impact – actions resulting in changes to an ecological feature. For example, construction or decommissioning activities of a development removing a hedgerow.
- Effect – outcome resulting from impact acting upon the conservation status or structure and function of an ecological feature. For example, the effects on a population of bats as a result of the loss of a bat roost.

3.3.5.46 When describing potential impacts consideration has been given to the following characteristics likely to influence this (sections 5.11-5.18 in the CIEEM guidelines (Ref. 3.3.31)):

- Positive/Negative – i.e., is the change likely to be in accordance with nature conservation objectives and policy:
  - Positive – a change that improves the quality of the environment, or halts or slows an existing decline in quality e.g., increasing the extent of a habitat of conservation value.
  - Negative – a change that reduces the quality of the environment, e.g. destruction of habitat.

- Extent – the spatial or geographical area or distance over which the impact/effect occurs.
- Magnitude – the 'size', 'amount' or 'intensity' and 'volume' of an impact - this is described on a quantitative basis where possible.
- Duration – the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration has been given to how this duration relates to relevant ecological characteristics such as a species' lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact.
- Timing and frequency – i.e. consideration of the point at which the impact occurs in relation to critical life-stages or seasons.
- Reversibility – i.e., is the impact temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

3.3.5.47 Cumulative effects have been assessed and are those occurring from several sources (also known as inter-relationships) and/or the combined effects of other developments in the area. These are reported within **Volume 1, Part 3, Chapter 13, Kent Onshore Scheme Intra-project Cumulative Effects** and **Volume 1, Part 3, Chapter 14, Kent Onshore Scheme Inter-project Cumulative Effects**.

Significance of effects

3.3.5.48 The potential magnitude of effect is discussed in Table 3.3.10. This is then related to an overall conclusion of significant or not significant. This is a matter for judgment but in general minor positive or adverse effects are not significant, while moderate beneficial or adverse effects may be significant. Major beneficial or adverse effects will normally be significant.

Table 3.3.10: Relating CIEEM assessment terms to those used in other EIA chapters

Effect classification terminology used in other EIA chapters	Equivalent CIEEM assessment
Major beneficial (positive)	1) Permanent addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Moderate beneficial (positive)	1) Temporary addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.

Effect classification terminology used in other EIA chapters	Equivalent CIEEM assessment
Minor beneficial (positive)	1) Permanent addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible beneficial (positive)	1) Temporary addition of, improvement to, or restoration of a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible adverse (negative)	1) Temporary/reversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Minor adverse (negative)	1) Permanent/irreversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Moderate adverse (negative)	1) Temporary/reversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
Major adverse (negative)	1) Permanent/irreversible damage to a biodiversity resource; and 2) the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.

3.3.5.49 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** the general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels.

Assumptions and Limitations

3.3.5.50 The major limitations at this stage are as follows:

- Parts of the proposed Kent Onshore Scheme survey area only became accessible from June 2023 except from PRoW. Some surveys that can be done from a slight distance (such as bird surveys) could be undertaken from PRoW, but other surveys were unable to commence until access was obtained to all relevant land parcels.

- Two full seasons of non-breeding and breeding bird survey are required to inform the ES. At time of writing, the first season of non-breeding bird survey is complete while the first season of breeding bird survey is being completed. The second season of both bird surveys have yet to commence. Currently, there is thus an incomplete picture of bird use of the proposed Kent Onshore Scheme survey area.

3.3.5.51 For the ES these limitations will have been addressed. However, since they remain in place at time of writing, no definitive conclusions have been reached in this chapter, which is in line with a PEIR, where all conclusions are by definition preliminary.

3.3.6 Basis of Assessment

3.3.6.1 This section sets out the assumptions that have been made in respect of design flexibility maintained within the Proposed Project and the consideration that has been given to alternative scenarios and the sensitivity of the preliminary assessment to changes in the construction or decommissioning commencement year.

3.3.6.2 Details of the available flexibility and assessment scenarios are presented in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project** and **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**.

Flexibility Assumptions

3.3.6.3 The main preliminary assessments have been undertaken based on the description of the Proposed Project provided in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project.** To take account of the flexibility allowed in the Proposed Project, consideration has been given to the potential for preliminary effects to be of greater or different significance should any of the permanent or temporary infrastructure elements be moved within the Limits of Deviation (LoD) or draft Order Limits.

3.3.6.4 The assumptions made regarding the use of flexibility for the main assessment, and any alternatives assumptions are set out in Table 3.3.11: below. Should the flexibility assumptions alter the results of the preliminary assessment of effects, this has been noted within the preliminary assessment section (see section 3.3.10)

Table 3.3.11: Flexibility assumptions

Element of flexibility	Proposed Project assumption for initial preliminary assessment	Flexibility assumption considered
Lateral LoD HVDC cables	High Voltage Direct Current (HVDC) cables laid anywhere within the lateral LoD	The maximum flexibility has already been assessed under the preliminary assessment in section 3.3.9 of this chapter.
Lateral LoD Minster Converter Station and Minster Substation	Proposed Minster Converter Station and Minster Substation to be constructed within the footprint based on the indicative location of converter station and substation as shown in **Figure**	Proposed Minster Converter Station and Minster Substation could be constructed anywhere within the lateral LoD.

Element of flexibility	Proposed Project assumption for initial preliminary assessment	Flexibility assumption considered
	1.4.12 Minster 400kV Substation and Minster Converter Station Indicative Location.	
Lateral LoD overhead line	Overhead line options built within the lateral LoD as shown in **Figure 1.4.1 Lateral Limits of Deviation.**	The maximum flexibility has already been assessed under the preliminary assessment in section 3.3.9 of this chapter. However, the assessment has assumed that new pylons will be situated to avoid standing in waterbodies even if these lie within the lateral LoD.
Vertical LoD overhead line	Assessed at the height shown in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project** .	The assessment has considered the possible effects of pylons being 6 m above the heights shown in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**

Consideration of Scenarios and Options

3.3.6.5 Two alternative scenarios have been considered within each of the technical assessment chapters in Part 3. These are:

- the use of either low height or standard height pylons for the High Voltage Alternating Current (HVAC) connection. Within this scenario there are three options as explained in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**; and
- permanent access to proposed Minster Converter Station and Minster Substation is either taken off A256 (through bellmouth BM02) or off Jutes Lane through bellmouth BM03 but with bellmouth BM02 being retained for any abnormal indivisible load (AIL) movements during maintenance and operation as explained in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**.

3.3.6.6 Table 3.3.12 details where these scenarios are relevant to the preliminary ecology and biodiversity assessment and how they have been assessed and reported in section 3.3.10, preliminary assessment of effects.

Table 3.3.12: Consideration of scenarios

Assessment scenario	How it has been considered within the preliminary assessment
Pylon types	All three pylon options have been considered in the preliminary assessment. Where the potential ecology and biodiversity effect associated with a specific pylon option is considered to result in a different magnitude of effect or significance for a specific receptor, this is identified in the assessment.
Permanent access to proposed Minster Converter Station and Minster Substation	Both, permanent access options have been considered in the preliminary assessment. Where the potential ecology and biodiversity effect associated with a specific access option is considered to result in a different magnitude of effect or significance for a specific receptor, this is identified in the assessment.

Sensitivity Test

3.3.6.7 It is likely that under the terms of the draft DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be 2026. Consideration has been given to whether the preliminary effects reported would be any different if the works were to commence in any year up to year five. Where there is a difference, this is reported in Section 3.3.10 preliminary assessment of effects.

3.3.7 Study Area

3.3.7.1 The study area for ecological surveys includes the land within the proposed Kent Onshore Scheme draft Order Limits and appropriate ZOI and are described in the following sections.

3.3.7.2 The boundaries and zone for the ecology and biodiversity study area reflect standard industry good practice and the distances that statutory consultees would typically expect to be considered for identification of features external to the proposed Kent Onshore Scheme that could be affected. This is informed by published guidance and professional judgement.

3.3.7.3 The nature of the proposed Kent Onshore Scheme influences the study area as it determines the likely impact pathways and their zones of influence. These are discussed below and in section in Section 3.3.9 of this chapter. As a precaution, all national statutory designated sites up to 5km and non-statutory designated sites up to 2 km from the proposed Kent Onshore Scheme draft Order Limits were identified and considered, along with all internationally important sites up to 10 km distant. These are shown on **Figure 3.3.1 Designated Sites**.

3.3.7.4 However, most impacts will be restricted to the area within the proposed Kent Onshore Scheme itself, particularly due to habitat loss from the footprint of the temporary and permanent works. Some construction or decommissioning-period impacts from within the draft Order Limits can affect receptors a small distance beyond the draft Order Limits, notably noise (which could affect receptors up to 200 m from the source or beyond), and dust (which according to Institute of Air Quality Management (IAQM) guidance (Ref. 3.3.15) can significantly affect receptors up to 50 m from the source).

3.3.8 Baseline Conditions

Designated Sites

3.3.8.1 The Information to Inform Habitats Regulations Assessment that constitutes **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** of the PEIR identifies that there are two European sites within 10 km of the Kent Onshore Scheme: Thanet Coast & Sandwich Bay SPA/Ramsar, 470 m east of the landfall, Thanet Coast SAC 1.5 km east of the land fall, and Stodmarsh SAC/SPA/Ramsar, 6.5 km (for the SAC) and 6.9 km (for the SPA/Ramsar) west of the proposed Kent Onshore Scheme. These are shown on **Figure 3.3.1 Designated Sites**. The **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** contains full descriptions of the interest features of these sites, but in summary:

- Thanet Coast & Sandwich Bay SPA – designated for its non-breeding golden plover and turnstone, and for its breeding little terns.
- Thanet Coast & Sandwich Bay Ramsar – designated for its non-breeding turnstone and its 15 British Red Data Book wetland invertebrates.
- Thanet Coast SAC – designated for its reefs and partially submerged sea caves.
- Stodmarsh SAC – designated for its population of Desmoulin's whorl snail (*Vertigo moulinsiana)*.
- Stodmarsh SPA – designated for an extensive assemblage of breeding and non-breeding waterfowl and waders.
- Stodmarsh Ramsar – designated for supporting six British Red Data Book wetland invertebrates, two nationally rare plants, and five nationally scarce species, and for supporting a diverse assemblage of rare wetland birds.

3.3.8.2 There is a single SSSI within 5 km of the proposed Kent Onshore Scheme. This is Sandwich Bay to Hacklinge Marshes SSSI, a very large site located approximately 20 m south of the proposed Minster Converter Station and Minster Substation. Part of the SSSI (a belt of dense trees and scrub along the railway line) also overlaps with the proposed Kent Onshore Scheme. The SSSI Management Unit in question is Management Unit 11 (Weather Lees Hill). The SSSI is designated for a wide range of features including non-breeding golden plover (*Pluvialis apricaria*), grey plover (*Pluvialis squatarola*), ringed plover (*Charadrius hiaticula*) and sanderling (*Calidris alba*), a wide range of breeding birds, diverse invertebrate communities of bare ground, short vegetation, open water and saltmarsh (including the scarce chaser dragonfly (*Libellula fulva*), fens, deciduous woodland, neutral grassland, dunes, saltmarsh, wet woodland and population of lizard orchid (*Himantoglossum hircinum)*, and bedstraw broomrape (*Orobanche caryophyllacea)*.

3.3.8.3 The only other statutory designated site within 5 km of the proposed Kent Onshore Scheme is Princes Beachlands LNR. This is a site designated for a mosaic of habitats that have importance for migrating birds and lies 1.7 km southeast of the Kent Onshore Scheme.

3.3.8.4 There are four non-statutory local wildlife sites within 2 km of the proposed Kent Onshore Scheme. The largest of these is Ash Level and South Richborough Pasture (site DO21), which overlaps with the proposed Kent Onshore Scheme south of the River Stour, specifically where the new proposed OHL would connect into the existing 400kV Canterbury to Richborough OHL. Woods & Grassland, Minster Marshes (site TH12) partly includes the rail corridor which traverses the proposed Kent Onshore Scheme. Two other non-statutory sites are more distant from the proposed Kent Onshore Scheme. Sandwich & Pegwell Bay Kent Wildlife Trust Site is a 615 ha mosaic of grassland, wetland and saltmarsh habitats. This designated site supports population of both lizard orchids and Deptford pink (*Dianthus armeria*) and is an important overwintering Site for wading bird species. It is located 470 m from the landfall. Site TH3 Pegwell Bay Infilled Dry Valley is located 1.1 km northeast of Kent Onshore Scheme.

3.3.8.5 The Special Protection Areas, Special Areas of Conservation and Ramsar sites are all of **international** importance. The SSSI is of **national** importance, while the local wildlife sites are of **regional** importance.

Habitats

3.3.8.6 The vast majority of the proposed Kent Onshore Scheme consisted of arable land in active use. The eastern fields were in use for corn (*Zea mays*) production at the time of survey, the northern fields for salad crops, and the remainder was mixture of different young crops.

3.3.8.7 The woodland within the proposed Kent Onshore Scheme was dominated by English oak (*Quercus robur*) with lower amounts of ash (*Fraxinus excelsior*) and hawthorn (*Crataegus monogyna*) with the latter more prevalent in the understory. English ivy (*Hedera helix*), bramble (*Rubus fruticosus* aggregate) and common nettle (Utica dioica) dominated the majority of the forest floor, with a few more notable species such as Lords and Ladies (*Arum maculatum*) and stinking iris (*Iris foetedissima*) also recorded within this habitat.

3.3.8.8 Wet ditches were present throughout the proposed Kent Onshore Scheme delineating the field edges through several land parcels (see **Figure 3.3.2 Phase 1 Habitat Survey**). These ditches are heavily colonised with aquatic macrophytes including giant salvinia (*Salvinia molesta*) and blanket weed (*Spirogyra adnate*). The ditches have steep-sided low banks bordered with swamp dominated by common reed (*Phragmites australis*).

3.3.8.9 There is one area of ephemeral/short perennial within the proposed Kent Onshore Scheme, located on a raised bank, comprised of a blend of common and widespread species including broad leaved dock (*Rumex obtusifolius*), common poppy (*Papaver rhoeas*) and ribwort plantain (*Plantago lanceolata*). A single area of dense scrub was recorded within the proposed Kent Onshore Scheme dominated by windmill palm (*Trachycarpus fortunei*), Japanese privet (*Ligustrum japonicum*), bramble and hawthorn. There are also extensive belts of dense hawthorn and bramble along many of the ditches on site. See **Figure 3.3.2 Phase 1 Habitat Survey** for locations.

3.3.8.10 The hedgerows on site are typically species-poor. Typical hedgerow species found on site include blackthorn (*Prunus spinosa*) and hawthorn, with mature trees such as ash, willow (*Salix* species) and sycamore (*Acer pseudoplatanus*).

3.3.8.11 The wetland scrapes north of the River Stour (known as Abbey Farm Wetland) consist of extensive areas of open water and emergent species such as common reed, rosebay willowherb (*Chamaenerion angustifolium*), wild carrot (*Daucus carota*), bullrush (*Typha latifolia*) and poison hemlock (*Conium maculatum*). Centred on the wetland scrapes north of the River Stour are extensive areas of tall species-poor sheep-grazed neutral grassland dominated by grass species such as cock's foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*) and false oat grass (*Arrhenatherum elatius*).

3.3.8.12 Beyond St Augustine's golf course, saltmarsh was present within the most eastern part of the Kent Onshore Scheme. These areas had saltbush (*Atriplex hortensis*) and dittander (*Lepidium latifolium*) but also included species more associated with swamp habitat such as bullrush and common reed.

3.3.8.13 The arable land and short ephemeral/perennial vegetation is of **negligible** importance. The areas of species-poor neutral grassland and areas of dense scrub are of **local** importance. The River Stour is of **national** importance. The Minster Stream, ditches, scrapes, lowland mixed broadleaved woodland, hedgerows, and area of saltmarsh are of **regional** importance. Although the lowland mixed broadleaved woodland and hedgerows are species-poor and structurally-poor they are also priority habitats in the 2020 Kent Biodiversity Strategy (Ref. 3.3.18), with a view to restoring such features to higher diversity and this is why they have been assigned **regional** importance.

Ornithology

3.3.8.14 Several Wildlife & Countryside Act (1981) (Ref. 3.3.34) Schedule 1 bird species have been recorded nesting within the survey area, most notably Cetti's warbler (*Cettia cetti*). At least fifteen territories have been recorded associated with the river corridor or ditches on site. In addition, fieldfare (*Turdus pilaris*), kingfisher (*Alcedo atthis*), marsh harrier (*Circus aeruginosus*) and redwing (*Turdus iliacus*) have all been recorded foraging along the River Stour or in nearby fields. With regard to other species, little egret (*Egretta garzetta*) has been recorded in a series of wetland scrapes that have been established along the River Stour (known as Abbey Farm Wetland) where the new section of OHL will cross.

3.3.8.15 A wide range of other notable species have been recorded during the breeding season, many of them likely breeding within the survey area (although not necessarily within the proposed Kent Onshore Scheme). These include bullfinch (*Pyrrhula pyrrhula*), corn bunting (*Emberiza calandra*), cuckoo (*Cuculus canorus*), dunnock (*Prunella modularis*), linnet (*Linaria cannabina*), mistle thrush (*Turdus viscivorus*), reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), yellowhammer (*Emberiza citronella*), meadow pipit (*Anthus pratensis*), and sedge warbler (*Acrocephalus schoenobaenus*). There were also birds recorded breeding in several ditches within the proposed Kent Onshore Scheme, including teal (*Anas crecca*) and mute swan (*Cygnus olor*).

3.3.8.16 With regard to non-breeding birds, a total of 100 species were recorded within the entire survey area (combined intertidal and inland areas) of which 69 species had notable status. A total of 61 species were recorded within the intertidal areas and 81 within the inland areas. Some species were recorded in both areas.

3.3.8.17 The intertidal zone was of considerable significance. Dunlin (*Calidris alpina*), cormorant (*Phalacrocorax carbo*), oystercatcher (*Haematopus ostralegus*) and sanderling were recorded in large numbers and peak counts approaching or exceeding the 1% Great Britain national thresholds. Golden plover and sanderling were recorded in large numbers (peaks of 307 and 413) within the survey area, comprising a large proportion of the most recent SPA/Ramsar Wetland Bird Survey (WeBS) 5 year mean peak of 433. Sanderling was also recorded in significant numbers. Ringed plover, turnstone and red-throated diver (*Gavia stellata*) were recorded in much smaller numbers than the original SPA/Ramsar counts but comparable to the latest Pegwell Bay WeBS data.

3.3.8.18 The River Stour mouth in particular was noted as a roost location for large aggregation of species including oystercatcher, cormorant, gulls and used by large numbers of most waterbirds during low tide. The saltmarsh fringe varied in use with tide, generally of most importance during mid-winter high tide with some of the highest numbers of dunlin, oystercatcher and curlew (*Numenius arquata*) recorded in these areas at this time. The expanse of exposed mud-flat at low tide was used by varying number of waterbirds, but the largest flocks generally appeared to use locations in proximity to the River Stour or tide line near the low tide itself.

3.3.8.19 Inland, the only non-breeding SPA bird recorded in significant numbers within the proposed Kent Onshore Scheme is golden plover. The first season (2022-2023) of wintering bird surveys has identified that fields northeast of the River Stour through which the proposed Kent Onshore Scheme will pass supported significant numbers (more than 1% of both the SPA population and the latest WeBS counts) of golden plover, albeit only on a single visit in December, when a flock of more than 700 individuals was recorded. This record appears correlated with localised standing water within these fields. These fields overlap with the location of the proposed Minster Converter Station and Minster Substation.

3.3.8.20 Non-breeding hen harrier (*Circus cyaneus*), marsh harrier, skylark and lapwing (*Vanellus vanellus*) were noted to use the inland areas occasionally in numbers comparable to county peak data. All species favoured areas in proximity to the River Stour or fields to the north. The remaining species numbers and assemblage was generally reflective of the habitats present. The species assemblage recorded within the inland area, based upon numbers and conservation status is broadly reflective of the habitats present and has been assessed as of local importance, but noting that the River Stour and surrounds supports the greatest diversity of habitats and species within this area. Notable exceptions to the above include golden plover, hen harrier, marsh harrier, lapwing, snipe (*Gallinago gallinago*), teal and skylark with recorded numbers being comparable to peak county counts.

3.3.8.21 Although bird surveys are ongoing for the proposed Kent Onshore Scheme, it is clear that the intertidal zone is of at least **national** importance, while the inland area is of at least **district** importance for breeding and non-breeding birds.

Other Faunal Species

3.3.8.22 As discussed earlier in this chapter, great crested newt surveys are not being undertaken as Natural England has agreed that the District Level Licensing Scheme for Kent can be used for the Proposed Project. District Level Licensing Schemes take a strategic approach to great crested newt protection, preservation and enhancement such that individual projects contribute to the delivery of strategic initiatives rather than undertaking their own surveys and project-scale mitigation.

3.3.8.23 Surveys for all other faunal species are either in their early stages or have not yet commenced at the time of writing. However, the areas of greatest value for most animal species will be areas of rough grassland, field margins, hedgerows, rivers and ditches, ponds (such as the scrapes along the River Stour corridor known as Abbey Farm Wetland) and blocks of woodland. In contrast, large open arable fields, or closely grazed pasture will be of commensurately lower value. There are seven hedgerows and/or woodland areas, and many ditches, plus the River Stour, within the proposed Kent Onshore Scheme draft Order Limits that are likely to need to be traversed. There are others which lie parallel to the likely cable/OHL corridor and haul route, or construction or decommissioning compounds/proposed Minster Converter Station and Minster Substation and are within the draft Order Limits but which could be preserved without impact.

3.3.8.24 These features may support populations of badger, foraging and potentially roosting bats and dormice. Ditches and scrapes may also support fish, aquatic invertebrates and riparian mammals. The River Stour is known to support a population of beaver. There are also some areas of woodland or rough grassland/field margins which could support populations of reptiles or uncommon invertebrates. However, at this stage, with many surveys ongoing or still to be undertaken, it is not possible to provide a value to the survey area for faunal groups other than birds.

Future Baseline

3.3.8.25 Relative to the current baseline, the value of ecological features present is not expected to change significantly by the end of the construction or decommissioning period in 2031. Management of the habitats is unlikely to change over this period, and consequently no significant degradation or improvement of habitat condition is expected. Due to development pressure year on year within the wider landscape, protected and notable species and habitats are likely to remain priorities for conservation within future baseline scenarios.

3.3.9 Mitigation

3.3.9.1 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**, mitigation measures typically fall into one of the three categories: embedded measures; control and management measures; and mitigation measures.

Embedded Measures

3.3.9.2 Embedded measures have been integral in reducing the ecology and biodiversity effects of the Proposed Project. Measures that have been incorporated are:

- sensitive routeing and siting of infrastructure and temporary works; and
- commitments made within **Volume 2, Part 1, Appendix 1.4.F, Schedule of Environmental Commitment and Mitigation Measures**.

Control and Management Measures

3.3.9.3 The following measures have been included within **Volume 2, Part 1, Appendix 1.4.A, Outline Code of Construction Practice** relevant to the control and management of impacts that could affect ecology and biodiversity receptors:

- GG03 - A Construction Environmental Management Plan (CEMP), a Landscape and Ecological Management Plan (LEMP) and a Construction Traffic Management Plan (CTMP) will be produced prior to construction.
- GG04 - The CEMP shall include measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans. The name and contact details of person(s) accountable for issues relating to dust, waste, water, noise, vibration and soil will be displayed at site boundary.
- GG06 - Construction or decommissioning workers will undergo training to increase their awareness of environmental issues as applicable to their role on the project. Topics will include but not be limited to pollution prevention and pollution incident response; dust management and control measures; location and protection of sensitive environmental sites and features.
- GG08 - Land used temporarily will be reinstated where practicable to its pre-construction or decommissioning condition and use, unless agreed otherwise. Hedgerows, fences and walls (including associated earthworks and boundary features) will be reinstated to a similar style and quality to those that were removed, with landowner consultation.
- GG09 - Where sensitive features are to be retained within or immediately adjacent to the draft Order Limits, an appropriate protective area will be established using appropriate fencing and signage and will be inspected, repaired and replaced as necessary. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.
- GG15 - Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. Where practicable, they will be stored >15m from watercourses, ponds and groundwater dependent terrestrial ecosystems.
- GG16 - Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There will be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of an emergency).
- GG22 - Construction or decommissioning lighting will be of the lowest luminosity necessary to safely perform each task. It will be designed, positioned and directed to reduce the intrusion into adjacent properties, protected species and habitats.
- LV03 - A five-year aftercare period will be established for all reinstatement and mitigation planting.
- LV04 - Separation and storage of subsoil and topsoil to ensure no degradation in quality and reinstatement undertaken as soon as possible after completion of construction or decommissioning of each section/area of works.
- LV05 - Temporary and separate placement of topsoil and subsoil will be stored adjacent to the trench with the additional height of the subsoil storage used on whichever side requires greater screening benefit, where practicable.;

- B01 - The contractor(s) will comply with relevant protected species legislation. Appropriate licences will be obtained where necessary from Natural England for all works affecting protected species as identified by the ES and through pre-construction or decommissioning surveys. All applicable works will be undertaken in accordance with the relevant requirements and conditions set out in those licences.
- B02 - The assumption will be that vegetation with the potential to support breeding birds will not be removed during the breeding bird season (March to August inclusive). If any works become necessary during the breeding bird season, works will be supervised by an Environmental Clerk of Works (ECoW). Appropriate protection measures will be put in place should active nests be found. These will include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the ECoW.
- B03 - Where there will be a risk of animal entrapment, a means of escape will be installed into all excavations left open overnight.
- B04 - To control the spread of invasive weeds in accordance with the Wildlife and Countryside Act 1981, any plant or machinery that has been used in areas infested with invasive species (both terrestrial and aquatic), such as Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*), will be thoroughly cleaned. Water used to clean vehicles will be controlled to prevent the spread of the plant (through seeds, rhizomes, fragments, etc.). The area will be cordoned off to prevent any inadvertent spreading.
- B05 - All habitats suitable for common reptiles will be subject to two-stage habitat manipulation that will take place between mid-March and mid-October. Firstly, vegetation will be cut to approximately 150 mm (with the arisings removed) under the supervision of an ECoW and the site left for a minimum of two days to allow reptiles to naturally disperse from the area. Secondly, vegetation will be cleared down to ground level under the supervision of an ECoW. Vegetation will be cleared using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of mortality or injuring reptiles. Construction or decommissioning works could commence immediately after completion of the second stage. Reptile hibernacula will be retained and protected during construction or decommissioning where practicable. If unavoidable, the removal of vegetation and groundworks at hibernacula will be timed to avoid the hibernation season (late October to early March). Replacement hibernacula and refugia will be provided.
- B06 – Where necessary, alternative roost structures (bat boxes) will be provided (with landowner consent) on retained trees within the draft Order Limits or areas outside of the Order Limits agreed with relevant landowners. Three boxes will be provided for each tree with moderate bat roost potential to be felled. Five boxes will be provided for each tree with high bat roost potential to be felled.
- B07 - Where the works require the crossing or removal of hedgerows, the gap will be reduced to a width required for safe working. Where hedge removals are necessary, ‘dead hedging’ should be used, where practicable, in the interim periods to retain connectivity during construction or decommissioning. Dead hedging can comprise vegetation arisings or artificial provision, such as willow screening panels or Heras fencing covered in camouflage netting. New hedgerow planting will contain native, woody species of local provenance.

Mitigation Measures

3.3.9.4 Mitigation measures are additional topic and site-specific measures that have been applied to mitigate or offset any likely significant effects. Mitigation measures included that are relevant to ecology and biodiversity receptors are included in **Volume 2, Part 1, Appendix 1.4.F, Schedule of Environmental Commitment and Mitigation Measures**, and are:

- The construction or decommissioning phases of the Proposed Project will minimise land take from Sandwich Bay to Hacklinge Marshes SSSI and non-statutory site TH12 (Woods & Grassland, Minster Marshes).
- Where sections of hedgerow are removed, and are ecologically worth preserving, they shall be removed in sections retaining intact root balls where possible. This will speed up the restoration process.
- Where ditches and watercourses are identified as environmentally sensitive the crossing technology, design, installation and decommissioning works will be assessed to mitigate the potential impacts of the works. Mitigation could be through the reduction in width of the construction swathe, the inclusion of ecology mitigation factors within the design such as mammal passes, the use of trenchless crossing techniques and/or the introduction of staged clearance and construction works.
- Consider using line markers on earth wires and/or conductors for the new section of overhead line across the River Stour, to reduce bird collision risk.
- As far as practicable, consider undertaking maintenance activities outside of the non-breeding season, reducing risk of disturbance of (for example) golden plover using fields along the River Stour.
- Where feasible and necessary, the most potentially disturbing construction or decommissioning activities at the proposed Minster Converter Station and Minster Substation will take place between July and February to minimise disturbance of any breeding birds in the SSSI;
- Annually monitor the presence of nesting Cetti's warbler and kingfisher within the watercourses within Kent Onshore Scheme boundary during construction (as territory distribution may change) and take steps (such as removing habitat outside the nesting season, and introducing buffer zones or noise barriers during the nesting season) to ensure that no disturbance of nesting pairs occurs.
- Maintain a suitable buffer between the proposed Minster Converter Station and Minster Substation construction and Sandwich Bay to Hacklinge Marshes SSSI.
- Ensure the haul route is located beyond the tree canopy and root protection zone of the SSSI boundary.
- Implement (if noise modelling indicates it is required) noise barriers such as close board fencing between the proposed Minster Converter Station and Minster Substation construction or decommissioning and the SSSI.
- Implement similar noise and visual disturbance screening measures elsewhere on the construction or decommissioning site if feasible and identified as being necessary to protect specific features e.g. bat roosts, badger setts, or otter holts.

- Where it is necessary to cross watercourses using open cut methods, removal of riparian vegetation and damage to the banks will be kept to the minimum required, will not obstruct the passage of wildlife, and will be restored on cessation of works.
- Investigate opportunities to deliver long-term improved habitat (for example, in the form of seasonally flooded grassland and new riverside scrapes) to offset the permanent loss of fields currently used by non-breeding golden plover, and to enhance the Stour corridor. This would contribute towards enhancing the Lower Stour Wetlands Biodiversity Opportunity Area. Any such habitat creation would need to be compatible with, and augment, Natural England's existing habitat restoration proposals for the Stour corridor. Areas involved are to be confirmed once surveys are complete.
- Plant permanent new woodland and hedgerows, to achieve biodiversity net gain but also to compensate for permanent loss of woody habitat due to the proposed Minster Converter Station, and the temporary removal of hedgerow sections for cable installation and the haul route. Areas involved are to be confirmed once surveys are complete.
- Where bridges need constructing over the River Stour or Minster Stream, they will be designed to achieve a height:width ratio of 0.7 where possible. Using this height: width ratio, the soffit of a 4 m wide bridge would need to be 2.8 m above the water level to allow sufficient light to penetrate.

3.3.10 Preliminary Assessment of Effects

3.3.10.1 The preliminary assessment of the effects of the proposed Kent Onshore Scheme described in this section considers the embedded, control and management and mitigation measures described in Section 3.3.9. These measures are all included in either **Volume 2, Part 1, Appendix 1.4.A, Code of Construction Practice** or **Volume 2, Part 1, Appendix 1.4.F, Schedule of Environmental Commitment and Mitigation Measures**.

3.3.10.2 The preliminary ecology and biodiversity assessment of the effects of the proposed Kent Onshore Scheme is presented in the following tables.

3.3.10.3 Table 3.3.13 presents the preliminary assessment of direct loss of habitats during construction or decommissioning.

Table 3.3.13: Preliminary assessment of direct loss of habitats during construction or decommissioning

	Preliminary assessment
Receptor	Habitats within the proposed Kent Onshore Scheme
Potential Impact	Direct loss (temporary or permanent) of habitats.
Proposed Project phase	Construction or decommissioning. While habitat loss for the proposed Minster Converter Station and Minster Substation will be permanent, it will only occur during the construction phase.
Duration	Most habitat loss will last for the duration of construction or decommissioning, which depending on location could

	Preliminary assessment
	take up to five years. Most temporary habitat losses will be from arable land that can be restored immediately following completion of construction or decommissioning in that section. Field margins in this landscape are generally narrow and botanically species poor. Loss of ruderal vegetation or hedgerow gaps can be restored within 1-2 years of cessation of works. Losses for the footprint of the proposed Minster Converter Station and Minster Substation, and associated access track, will be permanent.
Mitigation	GG08, LV03, LV04, LV05, B07 Where sections of hedgerow are removed, and are ecologically worth preserving, they should be removed in sections retaining intact root balls where possible. This will speed up the restoration process. Where ditches and watercourses are identified as environmentally sensitive the crossing technology, design, installation, and decommissioning works will be assessed to mitigate the potential impacts of the works. Mitigation could be through the reduction in width of the construction swathe, the inclusion of ecology mitigation factors within the design such as mammal passes, the use of trenchless crossing techniques and/or the introduction of staged clearance and construction works. Where it is necessary to cross watercourses using open cut methods, removal of riparian vegetation and damage to the banks will be kept to the minimum required, will not obstruct the passage of wildlife, and will be restored on cessation of works. Investigate opportunities to deliver long-term improved habitat (for example, in the form of seasonally flooded grassland and new riverside scrapes) to offset the permanent loss of fields currently used by non-breeding golden plover, and to enhance the Stour corridor. This would contribute towards enhancing the Lower Stour Wetlands Biodiversity Opportunity Area. Areas to be confirmed once surveys are complete. Plant permanent new woodland and hedgerows, to achieve biodiversity net gain but also to compensate for permanent loss of woody habitat due to the proposed Minster Converter Station, and the temporary removal of hedgerow sections for cable installation and the haul route. Areas to be confirmed once surveys complete.
Preliminary sensitivity	The arable land is of **negligible** importance. The areas of species-poor neutral grassland and areas of dense scrub are of **local** importance. The River Stour is of **national** importance. The Minster Stream, ditches, lowland mixed broadleaved woodland, and hedgerows are of **regional** importance. Although the lowland mixed broadleaved woodland and hedgerows are species-poor

	Preliminary assessment
	and structurally-poor they are also priority habitats in the 2020 Kent Biodiversity Strategy, with a view to restoring such features to higher diversity, and this is why they have been assigned **regional** importance.
Preliminary magnitude	Moderate adverse <u>Temporary loss</u> Most temporary land take would be from arable fields of negligible intrinsic value. Approximately 310 m of hedgerow will be removed to facilitate construction or decommissioning access, typically in approximately 42 m long sections. The construction or decommissioning crossing over the River Stour will involve loss of approximately 250 m^2 of tall grassland adjacent to one of the scrapes that has been created along the north bank of the river in Abbey Farm Wetland. Three construction or decommissioning crossings over the Minster Stream will be required. These could involve the loss of up to approximately 500 m^2 of tall ruderal vegetation that lies adjacent to the stream. Up to nine other ditch crossings will be required for the construction or decommissioning haul route and cable corridor resulting in loss of up to 1,500 m^2 of ruderal bankside vegetation. The construction or decommissioning crossing over the railway will use the existing bridge structure (or at least be on the same alignment) and thus will not involve vegetation removal. <u>Permanent loss</u> Habitat loss due to the proposed Minster Converter Station and Minster Substation will be permanent. Most of this is arable land but an approximately 0.7 ha area of hedgerows, species-poor neutral grassland and a ditch will be permanently lost to the footprint of the proposed Converter Station and Minster Substation. One of the crossings of Minster Stream will also be permanently retained as an access to the proposed Minster Converter Station and Minster Substation, resulting in a permanent loss of 40 m^2 of ruderal bankside vegetation. Of the 210 m of hedgerow removed to facilitate construction or decommissioning, approximately 100 m of hedgerow will be permanent loss, in order to facilitate the access track to the proposed Minster Converter Station and Minster Substation. Approximately 80 m of

	Preliminary assessment
	this loss will be roadside hedgerow at the proposed bellmouth onto the A256. The new pylons may involve loss of approximately 300 m^2 (Option 2) or 600 m^2 (Option 3) of species-poor tall neutral grassland adjacent to the existing scrapes north of the River Stour in Abbey Farm Wetland.
Preliminary likely significance of effect	Significant for River Stour, Minster Stream and lowland mixed broadleaved woodland and hedgerows, until the details of the mitigation identified above are further developed. Not significant for arable land and species-poor neutral grassland and dense scrub.
Sensitivity Test	Permanent access to the proposed Minster Converter Station and Minster Substation involve the loss of the same habitats (principally arable land). One will involve a greater loss of hedgerow/treeline and it is this version that has therefore been used for the main assessment, as a worst-case. OHL (Options 2 and 3) both involve loss of tall semi-improved grassland adjacent to the existing wetland scrapes north of the River Stour in Abbey Farm Wetland. These have therefore been assessed as the worst-case options. OHL Option 1 does not place pylons adjacent to the existing scrapes. The proposed Minster Converter Station and Minster Substation impacts are the same wherever they are located within the LoD. This is also true for the buried cable LoD.
Confidence in prediction	High

3.3.10.4 Table 3.3.14 provides the preliminary assessment of direct loss of designated sites during construction or decommissioning.

Table 3.3.14: Preliminary assessment of direct loss of designated sites during construction or decommissioning

	Preliminary assessment
Receptor	Designated sites
Potential Impact	Direct loss of designated sites
Proposed Project phase	Construction or decommissioning
Duration	Construction or decommissioning period is up to five years
Mitigation	GG06, GG09

	Preliminary assessment
	The construction or decommissioning phases of the Proposed Project will minimise land take from Sandwich Bay to Hacklinge Marshes SSSI and from non-statutory site TH12 (Woods & Grassland, Minster Marshes) Plant permanent new woodland and hedgerows, to achieve biodiversity net gain but also to compensate for permanent loss of woody habitat due to the proposed Minster Converter Station, and the temporary removal of hedgerow sections for cable installation and the haul route. Areas involved are to be confirmed once surveys are complete.
Preliminary sensitivity	Sandwich Bay to Hacklinge Marshes SSSI is of national sensitivity. Woods & Grassland, Minster Marshes (non-statutory site TH12) is of regional sensitivity.
Preliminary magnitude	Moderate adverse Part of Unit 11 (a belt of dense trees and scrub east of the railway line at Weather Lees Hill) of Sandwich Bay to Hacklinge Marshes SSSI lies within the proposed Kent Onshore Scheme. Some of this lies adjacent to the railway line and will need to be traversed by the new OHL. This will necessitate some tree cutting or removal within this part of the SSSI. The area affected is likely to total less than 4000 sqm or 0.02% of the SSSI. Vegetation removal will be kept to the minimum necessary. However, pending detailed surveys of the area of SSSI concerned a judgment of moderate adverse impact has been made. Woods & Grassland, Minster Marshes (non-statutory site TH12) partly includes the rail corridor which traverses the proposed Kent Onshore Scheme. There may need to be small scale localised vegetated removal around the current level crossing to upgrade it for construction traffic.
Preliminary likely significance of effect	**Significant mainly due to vegetation removal from SSSI**
Sensitivity Test	The two options for permanent access to the proposed Minster Converter Station and Minster Substation, differences in the three OHL options and variations in the converter station and substation and buried cable locations within the LoD will not affect the impact assessment of designated sites.
Confidence in prediction	High

3.3.10.5 Table 3.3.15 provides the preliminary assessment of direct loss of bird habitat during construction or decommissioning, including functionally-linked habitat for Thanet Coast & Sandwich Bay SPA and Stodmarsh SPA.

Table 3.3.15: Preliminary assessment of direct loss of bird habitat during construction or decommissioning, including functionally-linked habitat for Thanet Coast & Sandwich Bay SPA and Stodmarsh SPA.

	Preliminary assessment
Receptor	Ornithology
Potential Impact	Direct loss of bird habitat during construction or decommissioning, including functionally-linked habitat
Proposed Project phase	Construction or decommissioning. While habitat loss for the proposed Minster Converter Station and Minster Substation will be permanent, it will occur during the construction or decommissioning phase.
Duration	Most habitat loss will last for the duration of construction or decommissioning, which depending on location could take up to five years. Most temporary habitat losses will be from arable land that can be restored immediately following completion of construction or decommissioning in that section. Field margins in this landscape are generally narrow and botanically species poor. Loss of ruderal vegetation or hedgerow gaps can be restored within 1-2 years of cessation of works. Habitat lost to the footprint of the proposed Minster Converter Station and Minster Substation, and associated access track, will be permanent.
Mitigation	GG08, LV03, LV04, LV05, B07 Where sections of hedgerow are removed, and are ecologically worth preserving, they should be removed in sections retaining intact root balls where possible. This will speed up the restoration process. Where ditches and watercourses are identified as environmentally sensitive the crossing technology, design, installation and decommissioning works will be assessed to mitigate the potential impacts of the works. Mitigation could be through the reduction in width of the construction swathe, the inclusion of ecology mitigation factors within the design such as mammal passes, the use of trenchless crossing techniques and/or the introduction of staged clearance and construction works. Where it is necessary to cross watercourses using open cut methods, removal of riparian vegetation and damage to the banks will be kept to the minimum required, will not obstruct the passage of wildlife, and will be restored on cessation of works. Investigate opportunities to deliver long-term improved habitat (for example, in the form of seasonally flooded grassland and new riverside scrapes) to offset the permanent loss of fields currently used by non-breeding golden plover, and to enhance the Stour corridor. This would contribute towards enhancing

	Preliminary assessment
	the Lower Stour Wetlands Biodiversity Opportunity Area. Areas to be confirmed once surveys complete. Replant removed hedgerow sections within five years of removal. Plant permanent new woodland and hedgerows, to achieve biodiversity net gain but also to compensate for permanent loss of woody habitat due to the proposed converter station, and the temporary removal of hedgerow sections for cable installation and the haul route. Areas involved are to be confirmed once surveys are complete.
Preliminary sensitivity	The affected area is of at least district importance for breeding and non-breeding birds.
Preliminary magnitude	<u>Special Protection Areas</u> The fields in which the proposed Minster Converter Station and Minster Substation will be located held a flock of more than 700 non-breeding golden plover (one of the species for which Thanet Coast & Sandwich Bay SPA is designated) on a single survey visit in December 2022 when the fields were partly flooded. This constitutes more than 1% of the SPA population, albeit only on a single occasion to date. These fields, amounting to 13.6 ha of arable land, will be permanently lost. Although the entire fields will not be occupied by the Proposed Project, they will effectively cease to support significant non-breeding bird assemblages. No birds associated with the Stodmarsh SPA were recorded on site and according to Natural England guidance, the proposed Kent Onshore Scheme lies beyond the distance birds from that SPA will travel to forage or roost. <u>Other ornithology</u> Non-breeding hen harrier, marsh harrier, skylark and lapwing were recorded using the inland survey area in occasionally notable numbers, either for foraging or resting. They were generally focussed on the River Stour or the fields immediately adjacent. The loss of 13.6 ha of arable habitat within which the proposed Minster Converter Station and Minster Substation will be located will therefore also reduce feeding and resting opportunities for these species. Hedgerows and wooded blocks within the survey area support territories of nesting species, while ditches on site (and the River Stour corridor) support nesting Cetti's warbler. The precise locations of territories are likely to change annually. The temporary removal of

	Preliminary assessment
	approximately 2,000 m^2 of bankside ruderal vegetation, approximately 310 m of hedgerow and approximately 0.8 ha of wooded strips will have a small impact on available nesting and foraging opportunities, given most such habitat in the survey area will be retained. Most of this habitat will be replanted within five years of removal, although 0.7 ha of hedgerows, species-poor neutral grassland and a ditch and 100 m of further hedgerow elsewhere will be permanently lost. Although the scrapes immediately north of the River Stour in Abbey Farm Wetland are (by design) of value to both breeding and non-breeding birds, the habitat loss associated with construction or decommissioning of the Proposed Project will not directly impact any of the scrapes. The impact is considered to be minor adverse, as the amount of habitat to be lost both permanently and temporarily is small relative to the total amount of habitat within the proposed Kent Onshore Scheme and wider landscape. As a precaution the loss of the 13.6 ha of arable land adjacent to the River Stour to the proposed Minster Converter Station and Minster Substation is considered to be a medium adverse impact, given its potential functional importance to the Thanet Coast & Sandwich Bay SPA.
Preliminary likely significance of effect	Significant, until the details of the mitigation identified above are developed.
Sensitivity Test	Permanent access to the proposed Minster Converter Station and Minster Substation involve the loss of the same habitats (principally arable land). One will involve a greater loss of hedgerow/treeline and it is this version that has therefore been used for the main assessment, as a worst-case. OHL (Options 2 and 3) both involve loss of tall semi-improved grassland adjacent to the existing wetland scrapes north of the River Stour in Abbey Farm Wetland. These have therefore been assessed as the worst-case options. OHL Option 1 does not place pylons adjacent to the existing scrapes. The proposed Minster Converter Station and Minster Substation impacts are the same wherever they are located within the LoD. This is also true for the buried cable LoD.
Confidence in prediction	High

3.3.10.6 Table 3.3.16 presents the preliminary assessment of direct habitat loss on other fauna.

Table 3.3.16: Preliminary assessment of direct habitat loss on other fauna

	Preliminary assessment
Receptor	Other fauna (reptiles, bats, riparian mammals, dormice, invertebrates, fish)
Potential Impact	Direct habitat loss on other fauna
Proposed Project phase	Construction or decommissioning. While habitat loss for the Proposed Minster Converter Station and Minster Substation will be permanent, it will occur during the construction or decommissioning phase.
Duration	Most habitat loss will last for the duration of construction or decommissioning, which depending on location could take up to five years. Most temporary habitat losses will be from arable land that can be restored immediately following completion of construction or decommissioning in that section. Field margins in this landscape are generally narrow and botanically species poor. Loss of ruderal vegetation or hedgerow gaps can be restored within 1-2 years of cessation of works, as can restoration of watercourses. Losses for the footprint of the proposed Minster Converter Station and Minster Substation, and associated access track, will be permanent.
Mitigation	GG08, LV03, LV04, LV05, B07 Where sections of hedgerow are removed, and are ecologically worth preserving, they should be removed in sections retaining intact root balls where possible. This will speed up the restoration process. Where ditches and watercourses are identified as environmentally sensitive the crossing technology, design, installation and decommissioning works will be assessed to mitigate the potential impacts of the works. Mitigation could be through the reduction in width of the construction swathe, the inclusion of ecology mitigation factors within the design such as mammal passes, the use of trenchless crossing techniques and/or the introduction of staged clearance and construction works. Where it is necessary to cross watercourses using open cut methods, removal of riparian vegetation and damage to the banks will be kept to the minimum required, will not obstruct the passage of wildlife, and will be restored on cessation of works. Investigate opportunities to deliver long-term improved habitat (for example, in the form of seasonally flooded grassland and new riverside scrapes) to offset the permanent loss of fields currently used by non-breeding golden plover, and to enhance the Stour corridor. This would contribute towards enhancing the Lower Stour Wetlands Biodiversity Opportunity Area. Areas to be confirmed once surveys complete.

	Preliminary assessment
	Replant removed hedgerow sections, and restore riparian corridors where affected, within five years of removal. Plant permanent new woodland and hedgerows, to achieve biodiversity net gain but also to compensate for permanent loss of woody habitat due to the proposed converter station, and the temporary removal of hedgerow sections for cable installation and the haul route. Areas to be confirmed once surveys complete.
Preliminary sensitivity	Not possible to state at this stage given surveys for other fauna are ongoing or will be undertaken in 2024.
Preliminary magnitude	Not possible to state at this stage given surveys for other fauna are ongoing or will be undertaken in 2024. Until surveys are complete, it is impossible to identify the relative importance of the habitat within the survey area for other faunal groups. However, the temporary removal of approximately 2,000 m^2 of bankside ruderal vegetation, approximately 310 m of hedgerow and approximately 0.8 ha of wooded strips will have an impact on available habitat, although most such habitat in the survey area will be retained and most habitat that is lost will be replanted within five years of removal. A total of 0.7 ha of hedgerows, species-poor neutral grassland and a ditch and 100 m of hedgerows elsewhere will be permanently lost. This may affect foraging and habitat opportunities for bats and dormice depending on the use of those features. Although the scrapes immediately north of the River Stour in Abbey Farm Wetland are expected to be of value to aquatic and riparian fauna (such as invertebrates, riparian mammals and reptiles), the habitat loss associated with construction or decommissioning of the Proposed Project will not directly impact any of the scrapes. Given the general approach to cable crossings via open cut methods, there could also be intermediate term reversible impacts on habitat for riparian mammals, fish and invertebrates for up to two years after the cables are installed.
Preliminary likely significance of effect	Not possible to state at this stage given surveys for other fauna are ongoing or will be undertaken in 2024.
Sensitivity Test	Permanent access to the proposed Minster Converter Station and Minster Substation involves the loss of the same habitats (principally arable land). One will involve

	Preliminary assessment
	a greater loss of hedgerow/treeline and it is this version that has therefore been used for the main assessment, as a worst-case. OHL (Options 2 and 3) both involve loss of tall semi-improved grassland adjacent to the existing wetland scrapes north of the River Stour in Abbey Farm Wetland. These have therefore been assessed as the worst-case options. OHL Option 1 does not place pylons adjacent to the existing scrapes. The proposed Minster Converter Station and Minster Substation impacts are the same wherever they are located within the LoD. This is also true for the buried cable LoD.
Confidence in prediction	Low

3.3.10.7 Table 3.3.17 presents the preliminary assessment of disturbance of designated sites during construction or decommissioning.

Table 3.3.17: Preliminary assessment of disturbance of designated sites during construction or decommissioning

	Preliminary assessment
Receptor	Designated sites
Potential Impact	Disturbance of designated sites during construction or decommissioning
Proposed Project phase	Construction or decommissioning
Duration	The proposed Minster Converter Station is likely to take up to four years from site preparation to commencement of restoration.
Mitigation	GG03, GG04, GG06, GG09, GG21 Where feasible and necessary, the most potentially disturbing construction or decommissioning activities at the proposed Minster Converter Station and Minster Substation will take place between July and February to minimise disturbance of any breeding birds in the SSSI. Maintain a suitable buffer between the proposed Minster Converter Station and Minster Substation construction and the Sandwich Bay to Hacklinge Marshes SSSI. Ensure the haul route is located beyond the tree canopy and root protection zone of the SSSI boundary. Implement (if noise modelling indicates it is required) noise barriers such as close board fencing between the proposed Minster Converter Station and Minster Substation construction or decommissioning and the SSSI.
Preliminary sensitivity	International for Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC, national for

	Preliminary assessment
	Sandwich Bay to Hacklinge Marshes SSSI, regional for Woods & Grassland, Minster Marshes, local wildlife site. Refer to **Figure 3.3.1 Designated Sites**.
Preliminary magnitude	Minor adverse <u>Internationally important sites</u> There will be no disturbance of internationally important wildlife sites during construction or decommissioning. Although the proposed Kent Onshore Scheme traverses the Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC, this will be accomplished using a trenchless technique. As such the nearest surface works will be on the opposite side of the golf course, 470 m from the SPA/Ramsar/SAC. <u>Nationally important sites</u> Sandwich Bay to Hacklinge Marshes SSSI is located approximately 20 m south of the proposed Minster Converter Station and Minster Substation, with the haul road being situated adjacent to the boundary. Part of the SSSI (a belt of dense trees and scrub along the railway line) overlaps with the proposed Kent Onshore Scheme and is approximately 20 m from the proposed substation. Given that the SSSI is adjacent to an active railway line wildlife would probably not be disturbed by traffic using the haul road. However, without mitigation, noise and lighting disturbance of the SSSI could arise from construction or decommissioning of the converter station and substation. This part of the SSSI is probably most sensitive to disturbance during the bird nesting season (March to June in particular). <u>Locally important sites</u> Woods & Grassland, Minster Marshes (non-statutory site TH12) partly includes the rail corridor which traverses the proposed Kent Onshore Scheme. Other than the haul road the site is approximately 70 m from the nearest area of construction or decommissioning (the proposed Minster Substation). It is also not designated for specific features that are highly disturbance sensitive but is rather intended to protect the wildlife corridor represented by the railway line. As a result significant disturbance of this site is not expected.
Preliminary likely significance of effect	**Not significant**
Sensitivity Test	The two options for permanent access to the proposed Minster Converter Station and Minster Substation,

	Preliminary assessment
	differences in the three OHL options and variations in the converter station and substation and buried cable locations within the LoD will not affect the impact assessment of designated sites.
Confidence in prediction	High

3.3.10.8 Table 3.3.18 presents the preliminary assessment of disturbance of birds and other fauna during construction or decommissioning.

Table 3.3.18: Preliminary assessment of disturbance of birds and other fauna during construction or decommissioning

	Preliminary assessment
Receptor	Ornithology and other fauna
Potential Impact	Disturbance of birds and other fauna during construction or decommissioning.
Proposed Project phase	Construction or decommissioning
Duration	Up to five years
Mitigation	GG03, GG04, GG06, GG09, GG21 Where feasible and necessary, the most potentially disturbing construction or decommissioning activities at the proposed Minster Converter Station and Minster Substation will take place between July and February to minimise disturbance of any breeding birds in the SSSI. Monitor the presence of nesting Cetti's warbler and kingfisher around the site (as territory distribution may change) and take steps (such as removing habitat outside the nesting season and introducing buffer zones or noise barriers during the nesting season) to ensure that no disturbance of nesting pairs occurs. Maintain a suitable buffer between the proposed Minster Converter Station and Minster construction and Sandwich Bay to Hacklinge Marshes SSSI. Ensure the haul route is located beyond the tree canopy and root protection zone of the SSSI boundary. Implement (if noise modelling indicates it is required) noise barriers such as close board fencing between the proposed Minster Converter Station and Minster Substation construction or decommissioning and the SSSI. Implement similar noise and visual disturbance screening measures elsewhere on the construction or decommissioning site if feasible and identified as being necessary to protect specific features e.g., bat roosts, badger setts, or otter holts.

	Preliminary assessment
Preliminary sensitivity	At least district importance for ornithology. Not currently possible to confirm for other fauna given surveys for other fauna are ongoing or will be undertaken in 2024.
Preliminary magnitude	Minor adverse Birds and other fauna using the site are likely to be sensitive to noise and visual disturbance during construction or decommissioning. The most sensitive features are likely to be the field boundaries (hedgerows and ditches) and the SSSI already referenced above. Disturbance is likely to arise throughout the construction or decommissioning period. Even with mitigation it will not be possible to avoid disturbance in some parts of the site. Approximately 15 territories of Cetti's warbler have been recorded around the proposed Kent Onshore Scheme associated with the ditch network. Kingfisher has also been recorded along the River Stour corridor. These are WCA Schedule 1 species. This protection not only makes it illegal to kill or injure the bird or damage eggs or nests (as with all birds), but also makes it illegal to disturb the species while they are nesting. While some bird species and other mobile fauna will be displaced to other locations during some of the construction or decommissioning period, this will be a temporary impact and will be minimised by the mitigation measures proposed, which will specifically target the most sensitive areas such as the SSSI. This is an active farmed landscape and agricultural machinery is common. With the exception of the SSSI, the Minster Stream and the River Stour the survey area does not contain features likely to be of particularly high importance for sensitive wildlife.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	OHL construction involves crossing of the River Stour whichever pylon option is chosen. However, pylon Options 2 and 3 involve a pylon adjacent to the scrapes north of the River Stour in Abbey Farm Wetland such that potential for disturbance of birds is greater for these options, which have therefore been assessed as a worst case. The construction or demolition period impacts of the proposed Minster Converter Station and Minster Substation are similar wherever they are located within the LoD. This is also true for the buried cable LoD.

	Preliminary assessment
Confidence in prediction	High.

3.3.10.9 Table 3.3.19 presents the preliminary assessment of air quality impacts on designated sites during construction or decommissioning.

Table 3.3.19: Preliminary assessment of air quality impacts on designated sites during construction or decommissioning

	Preliminary assessment
Receptor	Statutory designated sites
Potential Impact	Air quality impacts on designated sites during construction or decommissioning.
Proposed Project phase	Construction or decommissioning
Duration	Up to five years
Mitigation	GG03, GG04
Preliminary sensitivity	National
Preliminary magnitude	Minor adverse
	The potential sources of atmospheric pollution during construction or decommissioning are from dust, and from construction or decommissioning traffic exhaust emissions of oxides of nitrogen[4], which can lead to nitrogen deposition. IAQM guidance (Ref. 3.3.15) indicates that dust can significantly affect ecological receptors up to 50 m from the source, by coating vegetation and blocking photosynthesis. Sandwich Bay to Hacklinge Marshes SSSI is the most sensitive features with regard to dust and will lie within 50 m of construction or decommissioning activities or the haul route. The Design Manual for Roads and Bridges Volume LA105 (Ref. 3.3.20) indicates exhaust emission impacts on designated sites should be considered in ecological impact assessments. Guidance from IAQM (Ref. 3.3.16) and Natural England (Ref. 3.3.21) identifies that traffic exhaust emissions can affect designated ecological sites within 200 m of the source. Sandwich Bay to Hacklinge Marshes SSSI is the most sensitive designated site within 200 m of construction or decommissioning traffic movements. The SSSI is designated for a range of habitats distributed across its area. The habitat present within 200 m of the haul route is predominantly woodland with clearings. This is not identified as a sensitive habitat for the SSSI on the Site

[4] Petrol vehicle exhausts also emit ammonia but most construction or decommissioning vehicles use diesel

	Preliminary assessment
	Relevant Critical Load app on the Air Pollution Information System (APIS) (www.apis.ac.uk). Moreover, the number of construction or decommissioning vehicle movements will be too small to make a significant difference in atmospheric nitrogen deposition to the SSSI, which according to data on APIS is dominated by other sources such as agriculture. Given this, it is considered that further air quality impact assessment is not required.
Preliminary likely significance of effect	**Not Significant**
Confidence in prediction	High

3.3.10.10 Table 3.3.20 presents the preliminary assessment of spillages on habitats during construction or decommissioning.

Table 3.3.20: Preliminary assessment of spillages and introduction of non-native species on habitats during construction or decommissioning

	Preliminary assessment
Receptor	Habitats, particularly River Stour, Minster Stream, wetland scrapes north of River Stour (Abbey Farm Wetland) and other ditches within the proposed Kent Onshore Scheme.
Potential Impact	Spillages and introduction of non-native species on habitats during construction or decommissioning.
Proposed Project phase	Construction or decommissioning
Duration	Up to five years
Mitigation	GG03, GG04, GG06, GG09, GG15, GG16, B04
Preliminary sensitivity	River Stour and Sandwich Bay to Hacklinge Marshes SSSI are the most sensitive receptors that could be affected by pollution or introduction of non-native species if they occurred. These sites are both of national importance.
Preliminary magnitude	If it occurred the magnitude of impact would be at least moderate adverse, but with legally required mitigation the magnitude would be minor adverse to negligible as spillages and introduction of non-native species would not occur. Spillages of fuel, lubricant, oil, drilling fluid and other chemicals could result in negative impacts on all habitats within the proposed Kent Onshore Scheme, particularly aquatic habitats, and watercourses where they can quickly spread. This can result in direct toxicity and deoxygenation. Non-native species including, but

	Preliminary assessment
	not limited to, Japanese knotweed and giant hogweed (*Heracleum mantegazzianum*) can be introduced to and spread on sites by construction plant. During the field survey many of the wet ditches, particularly in the west of Parcel 244, contained extensive growth of giant salvinia. The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (Ref. 3.3.32) and the Environmental Permitting (England and Wales) Regulations 2016 (Ref. 3.3.33) make it an offence to pollute watercourses. Therefore, during construction and decommissioning, National Grid has a duty of care to the water environment and to produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. It also has a duty to prevent the spread of invasive species due to its activities.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	The assessment described above would not be affected by differences within the LoD.
Confidence in prediction	High

3.3.10.11 Table 3.3.21 presents the preliminary assessment of killing and injury of fauna during construction or decommissioning.

Table 3.3.21: Preliminary assessment of killing and injury of fauna during construction or decommissioning

	Preliminary assessment
Receptor	Ornithology and other fauna
Potential Impact	Killing and injury of fauna during construction or decommissioning
Proposed Project phase	Construction or decommissioning
Duration	Up to five years
Mitigation	GG03, GG06, GG09, B01, B02, B03, B05
Preliminary sensitivity	The proposed Kent Onshore Scheme (excluding the intertidal zone which will not be affected due to the works being accomplished through a trenchless technique) is considered to be of at least district importance for birds. Value for other fauna currently uncertain as surveys ongoing.
Preliminary magnitude	Major adverse, if it occurred, negligible with legally required mitigation in place

	Preliminary assessment
	Surveys are ongoing but the proposed Kent Onshore Scheme is known to hold populations of nesting birds, and may hold populations of roosting bats, dormice, badger, reptiles, or riparian mammals. All of these are vulnerable to killing or injury without appropriate care being taken. However, these are also all legally protected from reckless or intentional killing or injury. As such, in practice, standard measures identified earlier will be required to ensure that no killing or injury impacts arise.
Preliminary likely significance of effect	**Not Significant**, with mitigation
Sensitivity Test	The assessment described above would not be affected by differences within the LoD.
Confidence in prediction	High

3.3.10.12 Table 3.3.22 presents the preliminary assessment of shading impacts on riparian habitats during construction or decommissioning.

Table 3.3.22: Preliminary assessment of shading impacts on riparian habitats during construction or decommissioning

	Preliminary assessment
Receptor	Habitats, particularly River Stour, Minster Stream, and other ditches within the proposed Kent Onshore Scheme.
Potential Impact	Shading impacts on riparian habitats during construction or decommissioning
Proposed Project phase	Construction or decommissioning
Duration	Up to five years
Mitigation	Where bridges are constructed over the River Stour or Minster Stream, they will be designed to achieve a height:width ratio of 0.7 where possible. Using this height: width ratio, the soffit of a 4 m wide bridge would need to be 2.8 m above the water level to allow sufficient light to penetrate.
Preliminary sensitivity	River Stour and Minster Stream are the most sensitive receptors that could be affected by shading. These watercourses are both of regional importance.
Preliminary magnitude	If significant shading occurred from the permanent bridges (as it would require several growing seasons to have a significant impact), the magnitude of impact would be up to moderate adverse, but with mitigation the magnitude would be minor adverse to negligible.

The bridge crossing of the River Stour could have shading impacts. Shading due to bridges and viaducts is related particularly to the soffit (i.e., the underside of the piers) height of the bridge, the width of the bridge and the orientation of the bridge. If shading was sufficient in scale and duration to cause loss of vegetation, this could result in soil erosion from denuded banks during periods of high flow, which could then lead to water quality effects downstream by siltation.

Few studies have considered the shading effects of bridges on vegetation. The only relevant one identified was a study conducted in North Carolina, in which Broome et al. (Ref. 3.3.27) reported a correlation between the ratio of bridge height (H) and bridge width (W) and effects of shading on saltmarsh habitat at seven permanent bridges 3m-15m high. They found that bridges with height to width (H:W) ratios less than 0.5 affected marsh productivity and function under the bridges. At H:W ratios between 0.5 and 0.68, bridge effects were detected but were greatly diminished. Above H:W ratios of 0.70 the effects from shading by bridges were no longer measurable. Broome et al. (2005) therefore concluded that shading by bridges with H:W ratios >0.7 do not adversely impact the productivity or function of the underlying marsh.

There do not appear to be any similar studies of shading by bridges carried out for terrestrial or aquatic habitats in England or other parts of Europe prior a study undertaken by AECOM in 2017 to inform the application for a DCO for the A303 bypass on behalf of National Highways (Ref. 3.3.35). That study sampled 31 permanent single-deck bridges and three twin-deck bridges in southern England. A variety of measurements were taken from these bridges, including their width, height, aspect, vegetation cover and the light levels beneath the bridge relative to an unshaded control. Sketches and qualitative observations were also made. Analysis of these data was undertaken to determine any significant relationships between the variables, and any effect of the bridge's height-width (H:W) ratio and aspect on vegetation beneath. The study concluded that there is an increased likelihood of significant adverse effects on vegetation if the height to width ratio of the permanent structure is 0.6 or less. Therefore, the minimum recommended height-width ratio for a permanent bridge was considered to be in the range of 0.6 to 0.8.

The length of time for which the bridge is present is also highly relevant. It is very unlikely that a bridge in place

	Preliminary assessment
	for one growing season or less would cause any denuding even if the height: width ratio was 0.6 or below. In contrast, even a temporary bridge could cause denuding of bankside vegetation if it is in one place for multiple years, particularly since temporary bridges are more likely to have a soffit height very low above the watercourse. However, temporary bridges are also more likely to have a narrow deck. The narrower the deck the less important it is that the bridge sits high above the bank top to avoid significant shading.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	The LoDs are not relevant to the bridge crossing of the River Stour
Confidence in prediction	High

3.3.10.13 Table 3.3.23 presents the preliminary assessment of disturbance of designated sites during operation.

Table 3.3.23: Preliminary assessment of disturbance of designated sites during operation

	Preliminary assessment
Receptor	Designated sites
Potential Impact	Disturbance of designated sites during operation
Proposed Project phase	Operation
Duration	Temporary, whenever maintenance visits occur
Mitigation	GG03, GG04, GG06, GG09, GG21
Preliminary sensitivity	International for Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC, national for Sandwich Bay to Hacklinge Marshes SSSI, regional for Woods & Grassland, Minster Marshes, local wildlife site.
Preliminary magnitude	Negligible <u>Internationally important sites</u> There will be no disturbance of internationally important wildlife sites during operation. Although the proposed Kent Onshore Scheme traverses the Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC, this will be accomplished using a trenchless technique. As such the nearest surface works will be on the opposite side of the golf course, 470 m from the SPA/Ramsar/SAC. Four trenchless ducts would be

installed during the construction period; one more duct would be installed than for the terrestrial HVDC underground cables to allow for a spare. Should a section of cable need to be replaced at the landfall, this spare duct would allow for a new section of cable to be pulled through rather than a repair to the existing or needing to reinstall ducts. This would avoid the need to excavate trenchless sections.

Nationally Important Sites

Sandwich Bay to Hacklinge Marshes SSSI is located approximately 20 m south of the proposed Minster Converter Station and Minster Substation, with the haul road being situated adjacent to the boundary. Part of the SSSI (a belt of dense trees and scrub along the railway line) overlaps with the proposed Kent Onshore Scheme and is approximately 20 m from the proposed substation. The SSSI is adjacent to an active railway line such that wildlife are likely to be habituated to some level of noise and activity.

Locally Important Sites

Woods & Grassland, Minster Marshes (non-statutory site TH12) partly includes the rail corridor which traverses the proposed Kent Onshore Scheme. Other than the haul road the site is approximately 70 m from the nearest area of construction or decommissioning (the proposed substation). It is also not designated for specific features that are highly disturbance sensitive but is rather intended to protect the wildlife corridor represented by the railway line. As a result, significant disturbance of this site is not expected.

Once the Proposed Project is operational there will be no requirement for day-to-day presence of people, and the infrastructure does not produce sounds that would result in disturbance of birds. The only potential for disturbance would therefore be during maintenance. It is impossible to forecast exactly when maintenance crews may need to visit parts of the site. However, maintenance visits are likely to be infrequent and for short periods and will be much smaller in scale than construction. Given the area is an active agricultural landscape, with tractors, agricultural workers and other mobile plant present as a matter of course, it is considered that maintenance crews and activities would not constitute a material change to this background level of activity.

	Preliminary assessment
Preliminary likely significance of effect	**Not significant**
Sensitivity Test	Once the Proposed Project is operational, LoDs will not be relevant.
Confidence in prediction	High

3.3.10.14 Table 3.3.24 presents the preliminary assessment of disturbance of birds and other fauna during operation.

Table 3.3.24: Preliminary assessment of disturbance of birds and other fauna during operation

	Preliminary assessment
Receptor	Ornithology and other fauna
Potential Impact	Disturbance of birds and other fauna during operation
Proposed Project phase	Operation
Duration	Temporary, whenever maintenance visits occur
Mitigation	N/A
Preliminary sensitivity	At least district importance for ornithology. Not currently possible to confirm for other fauna as surveys are ongoing or due to be undertaken in 2024.
Preliminary magnitude	Minor adverse given the scale and intensity of any activity will be far smaller and more localised during operation than it would be during construction or decommissioning. During operation there may be the need for periodic maintenance visits. Birds and other fauna using the site are likely to be sensitive to noise and visual disturbance. The most sensitive features are likely to be the field boundaries (hedgerows and ditches) and the SSSI already referenced. Once the Proposed Project is operational there will be no requirement for day-to-day presence of people, and the infrastructure does not produce sounds that would result in disturbance of birds. The only potential for disturbance would therefore be during maintenance. It is impossible to forecast exactly when maintenance crews may need to visit parts of the site. However, maintenance visits are likely to be infrequent and for short periods and will be much smaller in scale than construction. Given the area is an active agricultural landscape, with tractors, agricultural workers and other mobile plant present as a matter of course, it is considered that maintenance crews and activities would

	Preliminary assessment
	not constitute a material change to this background level of activity.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	Once the Proposed Project is operational, LoDs will not be relevant.
Confidence in prediction	High

3.3.10.15 Table 3.3.25 presents the preliminary assessment of spillages and introduction of invasive species on habitats during operation.

Table 3.3.25: Preliminary assessment of spillages on habitats and introduction of invasive species during operation

	Preliminary assessment
Receptor	Habitats, particularly River Stour, Minster Stream, wetland scrapes north of River Stour (Abbey Farm Wetland) and other ditches within the proposed Kent Onshore Scheme.
Potential Impact	Spillages on habitats and introduction of invasive species during operation.
Proposed Project phase	Operation
Duration	Temporary, whenever maintenance visits occur
Mitigation	National Grid Business Procedures ETBP040 for Protection of the Water Environment and ETBP046 for management of Invasive species.
Preliminary sensitivity	River Stour and Sandwich Bay to Hacklinge Marshes SSSI are the most sensitive receptors that could be affected by pollution or introduction of non-native species if they occurred. These sites are both of national importance.
Preliminary magnitude	If it occurred the magnitude of impact would be at least moderate adverse, but with legally mandated measures in place the magnitude would be minor adverse to negligible as spillages and introduction of non-native species would not occur. Spillages of fuel, lubricant, oil, drilling fluid and other chemicals could result in negative impacts on all habitats within the proposed Kent Onshore Scheme, particularly aquatic habitats and watercourses where they can quickly spread. This can result in direct toxicity and deoxygenation. Non-native species including, but not limited to, Japanese knotweed and giant hogweed can be introduced to and spread on sites by

	Preliminary assessment
	maintenance plant. During the field survey many of the wet ditches contained extensive growth of giant salvinia. As with construction period impacts, the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (Ref. 3.3.32) and the Environmental Permitting (England and Wales) Regulations 2016 (Ref. 3.3.33) make it an offence to pollute watercourses. Therefore, during maintenance, National Grid has a duty of care to the water environment and produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. It also has a duty to prevent the spread of invasive species due to its activities.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	Once the Proposed Project is operational, LoDs will not be relevant.
Confidence in prediction	High

3.3.10.16 Table 3.3.26 presents the preliminary assessment of killing and injury of fauna during operation (including collision risk).

Table 3.3.26: Preliminary assessment of killing and injury of birds during operation (including collision risk)

	Preliminary assessment
Receptor	Ornithology associated with Thanet Coast & Sandwich Bay SPA/Ramsar and Stodmarsh SPA/Ramsar
Potential Impact	Killing and injury of birds during operation (including collision risk)
Proposed Project phase	Operation
Duration	Permanent
Mitigation	Consider using line markers on earth wires and/or conductors for the new section of OHL across the River Stour, to reduce bird collision risk. These are a standard mitigation measure that is known to be effective.
Preliminary sensitivity	Very high (international)
Preliminary magnitude	Impact assessment ongoing, but given presence of existing powerlines, moderate adverse magnitude prior to mitigation, reducing to minor adverse magnitude with mitigation. As discussed earlier, part of the proposed Kent Onshore Scheme will include a HVAC connection across the

Preliminary assessment

River Stour by OHL, from the existing Richborough to Canterbury 400 kV OHL to the proposed Minster Substation and Minster Converter Station. The main sources of potential risk to birds from the presence of transmission OHL are:

- Mortality of injury through collision with transmission lines (including conductors and earth wires) or supporting structures;
- Mortality through electrocution on transmission lines or supporting structures;

The principal factors affecting the risk of bird mortality through collision and electrocution are:

- Species specific morphology, biology and vision.
- Landscape and topography (e.g., siting of OHLs near important habitats or flyways).
- Weather affecting flight capability or visibility (strong winds/fog/heavy rain).
- Technical aspects of the transmission line (spacing of conductors, creation of perches).

Earth wires are thought to be responsible for a much higher rate of collisions than the thicker, often bundled conductor wires. Earth wires are harder for birds to see, being thinner in diameter and typically positioned at the top of the wire array. Birds trying to gain height to avoid the larger more visible conductor wires may fail to see earth wire.

Based on surveys during winter 2022-23 the only bird associated with Thanet Coast & Sandwich Bay SPA likely to be present in the broad proximity of these overhead powerlines would be golden plover. A significant assemblage (700 birds) was recorded on a single survey visit in December 2022, utilising flooded fields northeast of the River Stour. Golden plovers are at low risk of colliding with overhead powerlines as they are small and manoeuvrable. There are few, if any, records of collision mortality for this species.

However, the River Stour may be a migration corridor for non-breeding birds travelling to and from Stodmarsh SPA/Ramsar, approximately 8.4 km to the west of the location of the new powerlines crossing the river. Bittern (*Botaurus stellaris*), shoveler (*Anas clypeata*), gadwall (*Anas strepera*), hen harrier, mallard (*Anas platyrhynchos*), wigeon (*Anas penelope*), pochard

	Preliminary assessment
	(*Athya ferina*), tufted duck (*Aythya fuligula*), snipe, water rail (*Rallus aquaticus*) and lapwing are all referenced within the SPA citation assemblage. Any birds flying along the river to reach Stodmarsh must already cross one set of powerlines spanning the river, but the presence of a second set potentially increases collision risk for vulnerable species. A series of vantage point surveys have been undertaken during 2023, commencing in February, to identify birds flying at potential collision height. The work is ongoing, but marsh harrier, hobby, peregrine (*Falco peregrinus*), cormorant, buzzard (*Buteo buteo*), grey heron (*Ardea cinerea*), little egret, mute swan, cormorant, shelduck (*Tadorna tadorna*), mallard, teal, greylag goose (*Anser anser)* and curlew have all been recorded flying through the survey area at potential collision height, although not necessarily upstream. None of these are specifically identified as being part of the Stodmarsh non-breeding bird assemblage, but at this stage of the Proposed Project potential for collision risk associated with species travelling to Stodmarsh SPA/Ramsar cannot be dismissed without mitigation.
Preliminary likely significance of effect	Impact assessment ongoing, but standard mitigation is available that would reduce any impact. Until the impact assessment is complete and mitigation devised it is not possible to draw a conclusion
Sensitivity Test	Once the Proposed Project is operational, LoDs will not be relevant. The tallest pylons will be used for the basis of the collision risk modelling.
Confidence in prediction	Medium pending further survey and impact assessment

3.3.10.17 Table 3.3.27 presents the preliminary assessment of spillages and introduction of invasive species on habitats during operation.

Table 3.3.27: Preliminary assessment of shading impacts on habitats during operation

	Preliminary assessment
Receptor	Minster Stream
Potential Impact	Shading impacts on habitats during operation
Proposed Project phase	Operation
Duration	Permanent
Mitigation	Where bridges are constructed over the River Stour or Minster Stream, they will be designed to achieve a height:width ratio of 0.7 where possible. Using this height: width ratio, the soffit of a 4 m wide bridge would

	Preliminary assessment
	need to be 2.8 m above the water level to allow sufficient light to penetrate.
Preliminary sensitivity	Minster Stream is one of the most sensitive receptors that could be affected by shading and is of regional importance.
Preliminary magnitude	If significant shading occurred for a long enough duration, the magnitude of impact would be up to moderate adverse, but with mitigation the magnitude would be minor adverse to negligible. There will be a permanent crossing of the Minster Stream to enable access to the proposed Minster Converter Station and Minster Substation, which could have shading impacts unless the height:width ratio of the bridge was 0.7 or above. The narrower the deck the less important it is that the bridge sits high above the bank top to avoid significant shading.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	Once the Proposed Project is operational, LoDs will not be relevant.
Confidence in prediction	High

3.3.11 Summary

3.3.11.1 Survey work is ongoing or has yet to commence for most receptors. However, the first season of non-breeding bird survey and breeding bird survey has been completed and extended Phase 1 Habitat Survey has been undertaken. Desk study has also been completed. In general, the habitats present within the proposed Kent Onshore Scheme are common and widespread. The most significant are the River Stour and associated riverside scrapes (Abbey Farm Wetland), and the Minster Stream, although the latter has a considerable presence of giant salvinia. The local ditch network is also of some importance. Hedgerows in the landscape are generally poorly developed and species-poor, and field margins are narrow and contain common and widespread grasses. Most fields are arable cereals.

3.3.11.2 Thanet Coast & Sandwich Bay SPA/Ramsar site and Sandwich Bay SAC lie within the proposed Kent Onshore Scheme but will be traversed by a trenchless cabling technique, with the nearest surface works being 470 m away on the opposite side of the golf course. Sandwich Bay to Hacklinge Marshes SSSI and a local wildlife site (Woods & Grassland, Minster Marshes) lie within the proposed Kent Onshore Scheme but will not be directly affected by construction or decommissioning. They could be affected by noise and visual disturbance during construction of the proposed Minster Converter Station and Minster Substation given these lie within 20 m of both sites. Mitigation is identified to control noise and visual disturbance during the most sensitive (nesting) season. Cetti's warbler has been identified nesting in the river corridor and ditch network. Similar measures to avoid disturbance will be required to comply with the Wildlife & Countryside Act 1981 (as amended) (Ref. 3.3.34).

3.3.11.3 Two periodically flooded arable fields of potential significance for non-breeding golden plover (totalling 13.6 ha) will be permanently lost and are likely to constitute functionally linked habitat for the Thanet Coast & Sandwich Bay SPA/Ramsar site. The loss of these fields to the proposed Minster Converter Station and Minster Substation will require offsetting. This could be done through converting arable land along the river corridor to new areas of seasonally flooded grassland, or scrapes, thus also enhancing the Lower Stour Wetlands Biodiversity Opportunity Area. Enhancements to this Opportunity Area are also being considered to comply with Biodiversity Net Gain requirements, which will be reported for the ES to be submitted with the application for development consent.

3.3.11.4 Standard pollution control and invasive species control measures will ensure no significant effect occurs through those pathways. During operation, collision risk potentially exists for waterfowl and waders flying up the River Stour corridor due to the new section of OHL crossing the river. This is being investigated through vantage point surveys but standard mitigation measures, such as line markers on earth wires, exist to mitigate the impact.

3.3.11.5 Impacts on other fauna are still being investigated.

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