The Great Grid Upgrade

Sea Link

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Volume 6: Environmental Statement

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Part 3 Kent
Chapter 2
Ecology and Biodiversity

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Version History			
Date	**Issue**	**Status**	**Description/ Changes**
March 2025	A	Final	For DCO submission
July 2025	B	Final	Update to reflect Procedural Decision from the Examining Authority
October 2025	C	Final	Update following Rule 6 Errata List
November 2025	D	Final	Updated for Deadline 1
February 2026	E	Final	Updated for Deadline 4A

2. Ecology and Biodiversity

2.1 Introduction

2.1.1 This chapter of the Environmental Statement (ES) presents the assessment of the likely significant ecology and biodiversity effects that could result from the Proposed Project (as described in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**).

2.1.2 This chapter highlights the ecological baseline in respect of the Kent Onshore Scheme and how this may be impacted by the Proposed Project. It describes the results of surveys undertaken, the legislative context and the potential impact on habitats and species in relation to this. The impacts on ecology and biodiversity of the Suffolk Onshore Scheme are addressed in **Application Document 6.2.2.2 Part 2 Suffolk Chapter 2 Ecology and Biodiversity**. The impacts on ecology and biodiversity of the Offshore Scheme are addressed in **Application Document 6.2.4.2 Part 4 Marine Chapter 2 Benthic Ecology**, **Application Document 6.2.4.3 Part 4 Marine Chapter 3 Fish and Shellfish**, **Application Document 6.2.4.4 Part 4 Marine Chapter 4 Marine Mammals** and **Application Document 6.2.4.5 Part 4 Marine Chapter 5 Marine Ornithology**.

2.1.3 The Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Application Document 2.2.1 Overall Location Plan** and the Kent Onshore Scheme Boundary is illustrated on **Application Document 2.2.3 Kent Location Plan**.

2.1.4 This chapter should be read in conjunction with:

- **Application Document 6.2.1.3 Part 1 Introduction Chapter 3 Main Alternatives Considered**;
- **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**;
- **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology**;
- **Application Document 6.2.1.6 Part 1 Introduction Chapter 6 Scoping Opinion and EIA Consultation**;
- **Application Document 6.6 Habitats Regulations Assessment Report**; and
- **Application Document 6.10 Arboricultural Impact Assessment**.

2.1.5 This chapter is supported by the following figures:

- **Application Document 6.4.3.2.A Phase 1 Habitat Survey Report;** and
- **Application Document 6.4.3.2.N Aquatic Ecology Report**.

2.1.6 This chapter is supported by the following appendices:

- **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report (including Badgers and Important Hedgerows)**;

- **Application Document 6.2.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2022-2023**;
- **Application Document 6.2.3.2.C Appendix 3.2.C Wintering Bird Survey Report 2023-2024**;
- **Application Document 6.2.3.2.D Appendix 3.2.D Breeding Bird Survey Report 2023**;
- **Application Document 6.2.3.2.E Appendix 3.2.E Breeding Bird Survey Report 2024**;
- **Application Document 6.2.3.2.F Appendix 3.2.F Vantage Point Survey Report** incorporating Collision Risk Assessment;
- **Application Document 6.2.3.2.G Appendix 3.2.G Overhead Line Mortality Monitoring Survey Report**;
- **Application Document6.2.3.2.H Appendix 3.2.H Riparian Mammals Survey Report**;
- **Application Document 6.2.3.2.I Appendix 3.2.I Reptile Survey Report**;
- **Application Document 6.2.3.2.J Appendix 3.2.J Terrestrial Invertebrates Survey Report**;
- **Application Document 6.2.3.2.K Appendix 3.2.K Bat Tree Surveys Report;**
- **Application Document 6.2.3.2.L Appendix 3.2.L Nighttime Bat Walkover and Static Detector Report**;
- **Application Document 6.2.3.2.M Appendix 3.2.M Hazel Dormouse Survey Report**; and
- **Application Document 6.2.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**.

2.1.7 This chapter is supported by the following application documents:

- **Application Document 7.5.3 Outline Onshore Construction Environmental Management Plan (CEMP)**;
- **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**;
- **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**;
- **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**; and
- **Application Document 6.12 Biodiversity Net Gain Feasibility Report**.

2.2 Regulatory and Planning Context

2.2.1 This section sets out the legislation and planning policy that is relevant to the ecology and biodiversity effects assessment. A full review of compliance with relevant national and local planning policy is provided within the **Application Document 7.1 Planning Statement** submitted as part of the application for Development Consent.

2.2.2 Policy generally seeks to minimise ecology and biodiversity effects from development and to avoid significant adverse effects. This applies particularly to internationally protected sites, European protected species and the need to maintain or improve biodiversity within the natural environment.

Legislation

The Conservation of Habitats and Species Regulations 2017 (as amended) (HM Government, 2017)

2.2.3 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.

2.2.4 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 Proposed 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). 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 (HM Government, 2006)

2.2.5 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).

2.2.6 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) (HM Government, 1981)

2.2.7 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').

2.2.8 The main relevant provisions of the WCA 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 (HM Government, 2000)

2.2.9 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 Sites of Special Scientific Interest (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 (HM Government, 2021)

2.2.10 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 (HM Government, 2006)

2.2.11 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 (HM Government, 1992)

2.2.12 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 (HM Government, 1996)

2.2.13 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 (HM Government, 1997)

2.2.14 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 or Development Consent Order (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.

2.2.15 Part II of Schedule 1 of 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.

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

2.2.17 The regulations apply to any stretch of hedgerow that is:

- 20 metres or more long; or
- 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.

2.2.18 The regulations also apply to 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) (HM Government, 2019)

2.2.19 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

2.2.20 National Policy Statements (NPS) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Proposed Project would be considered. Table 2.1 and Table 2.2 below provides details of the elements of NPS for Energy (EN-1) (H M Government, 2023) and NPS for Electricity Networks Infrastructure (EN-5) (HM Government, 2023) that are relevant to this chapter. NPS EN-3 Renewable Energy Infrastructure has relevance to the Proposed Project, but only in respect of the offshore elements. As such it has no relevance to the assessment presented in this chapter.

Table 2.1 NPS EN-1 requirements relevant to ecology and biodiversity

NPS EN-1 section	Where this is covered in the ES
5.4.8 *"Development on land within or outside a SSSI, 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 (including need) 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 SSSIs."*	Careful attention has been paid to this requirement in the design (trenchless construction) and timing of works close to Sandwich Bay to Hacklinge Marshes SSSI in particular. The application of the mitigation hierarchy enables a conclusion of no likely significant effects on SSSIs once mitigation is taken into account. Details of the mitigation measures proposed and assessment of effects are provided in Section 2.9 of this chapter.
5.4.17 *"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."*	Effects on internationally, nationally and locally designated sites, protected species, and habitats and species of principal importance are reported in Section 2.9 of this chapter. Impacts on sites of geological importance are covered in **Application Document 6.2.3.5 Part 3 Kent Chapter 5 Geology & Hydrogeology**.
5.6.13 *"The applicant should be particularly careful to identify any effects of physical changes on the integrity and special features of Marine Protected Areas (MPAs).* *These could include MCZs, habitat sites including Special Areas of Conservation and Special Protection Areas with marine features, Ramsar Sites, Sites of Community Importance, and SSSIs with marine features. Applicants should also identify any effects on the special character of Heritage Coasts."*	Assessment of marine impacts and likely significant effects are covered in: • Section 1.9, **Application Document 6.2.4.1 Part 4 Marine Chapter 1 Physical Environment**; • Section 2.9, **Application Document 6.2.4.2 Part 4 Marine Chapter 2 Benthic Ecology**; • Section 3.9, **Application Document 6.2.4.3 Part 4 Marine Chapter 3 Fish and Shellfish**; • Section 4.9**, Application Document 6.2.4.4 Part 4 Marine Chapter 4 Marine Mammals**; and • Section 5.9, **Application Document 6.2.4.5 Part 4**

NPS EN-1 section	Where this is covered in the ES
	Marine Chapter 5 Marine Ornithology. Assessments of the integrity of designated sites with marine features are covered in: • **Application Document 6.6 Habitats Regulations Assessment Report**; and • **Application Document 6.11 Marine Conservation Zone Assessment**.
5.4.19 *"The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests."*	Commitments to conserve biodiversity interests taken advantage of for the Proposed Project are set out in Sections 2.8 and 2.9 of this chapter. Opportunities to enhance biodiversity interests are contained in a separate Biodiversity Net Gain assessment detailed in **Application Document 6.12 Biodiversity Net Gain Feasibility Report**. Opportunities to enhance geodiversity are covered in **Application Document 6.2.3.5 Part 3 Kent Chapter 5 Geology and Hydrogeology**.
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."*	See above
5.4.22 *"The design of Energy NSIP proposals will need to consider the movement of mobile / migratory species such as birds, fish and marine and terrestrial mammals and their potential to interact with infrastructure. As energy infrastructure could occur anywhere within England and Wales, both inland and onshore and offshore, the potential to affect mobile and migratory species across the UK and more widely*	Impacts on mobile and migratory species resulting from the Kent Onshore Scheme are covered in section 2.10 of this chapter. In particular, a collision risk assessment for the new section of overhead line has been undertaken and is presented in **Application Document**

NPS EN-1 section	Where this is covered in the ES
across Europe (transboundary effects) requires consideration, depending on the location of development."	**6.2.3.2.F Appendix 3.2.F Vantage Point Survey Report**. Impacts on mobile and migratory species from the Offshore Scheme are covered in **Application Document 6.2.4.3 Part 4 Marine Chapter 3 Fish and Shellfish, Application Document 6.2.4.4 Part 4 Marine Chapter 6 Marine Mammals** and **Application Document 6.2.4.5 Part 4 Marine Chapter 5 Marine Ornithology**.
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 minimise or avoid likely significant effects."*	Information to inform the Secretary of State's decision over Habitat Regulations Assessment (HRA) matters including Appropriate Assessment (AA) are set out in **Application Document 6.6 Habitats Regulations Assessment Report**.
5.4.32 *"Applicants should include measures to mitigate fully the direct and indirect effects of development on ancient woodland, ancient and veteran trees or other irreplaceable habitats during both construction and operational phases."*	There are no losses from the Kent Onshore Scheme on ancient woodland, ancient and veteran trees or other irreplaceable habitats. Following mitigation to protect trees from encroachment into the root protection zone of some veteran/ancient trees, there will be no likely significant effects. These measures are documented in **Application Document 6.10 Arboricultural Impact Assessment**.
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 4.6."*	Opportunities to maximise the restoration, creation and enhancement of wider biodiversity are set out in the **Application Document 6.12 Biodiversity Net Gain Feasibility Report**. Opportunities to restore the ability of habitats to sequester carbon are set out in Part 6 of **Application**

NPS EN-1 section	Where this is covered in the ES
	Document 6.2.5.1 Part 5 Project Wide Effects Chapter 1 Climate Change.
5.4.34 *"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 Environment Act 2021 and the Environmental Improvement Plan 2023."*	Impacts on habitats and species in, around and beyond the Kent Onshore Scheme are discussed in paragraphs 2.9.6 to 2.9.278 of this Chapter. Opportunities to enhance habitats beyond the Proposed Project are documented in the Biodiversity Net Gain assessment in **Application Document 6.12 Biodiversity Net Gain Feasibility Report**. **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**, sets out opportunities regarding habitat enhancements delivered around the Minster Converter Station and Substation.
5.4.35 *"Applicants should include appropriate avoidance, mitigation, compensation and enhancement measures as an integral part of the proposed development. In particular, the applicant should demonstrate that:* *• during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works* *• the timing of construction has been planned to avoid or limit disturbance* *• 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* *• 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."*	Avoidance, mitigation and compensation requirements are set out in Section 2.8 of this Chapter. Attention has been given to the timing of works to avoid or limit disturbance. Other than timing of works best practice measures to avoid disturbance have been taken into account, and modelling to inform those measures has been undertaken. See paragraphs 2.9.32 and 2.9.47. Habitat creation proposed around the Minster Converter Station and Substation is being delivered for reasons of landscaping and drainage and is focussed on areas where ecological benefit is greatest. These proposals are detailed in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**, as are restoration proposals for habitats.

NPS EN-1 section	Where this is covered in the ES
5.4.36 *"Applicants should produce and implement a Biodiversity Management 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 and operation stages."*	National Grid has not produced a document called a Biodiversity Management Strategy but the requirements identified in 5.4.36 are addressed in **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan - Kent**, **Application Document 7.5.3 Outline Onshore Construction Environmental Management Plan (CEMP)**, **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**, or **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**. The oLEMP effectively constitutes the Biodiversity Management Strategy for the DCO and among other provisions sets out biodiversity awareness training (using the standard term 'toolbox talks').
4.6.6 *"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."*	Enhancement of biodiversity and Environmental Net Gain more broadly are covered by **Application Document 6.12 Biodiversity Net Gain Feasibility Report**.
5.12.10 *"Some noise impacts will be controlled through environmental permits and parallel tracking is encouraged where noise impacts determined by an environmental permit interface with planning issues (i.e. physical design and location of development). The applicant should consult the EA and/or the SNCB, and other relevant bodies, such the MMO or NRW, as necessary, and in particular regarding 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 in nearby sites may also need to be considered."*	Natural England were consulted over the assessment of noise impacts on wildlife as set out in the section on Further Engagement and in paragraphs 2.9.32 to 2.9.82 of this chapter. The seasonality of interest features was taken into account in this assessment as discussed earlier in this table regarding NPS paragraph 5.4.8, regarding Sandwich Bay to Hacklinge Marshes SSSI and other features such as wintering and nesting birds and water voles. There will be no need for any permits to cover noise impacts on wildlife as mitigation measures that do not require a permit will be deployed to address this. See paragraphs 2.10.1 and 2.10.2.

Table 2.2 NPS EN-5 requirements relevant to ecology and biodiversity

NPS EN-5 section	Where this is covered in the ES
2.9.3 *"Electricity networks infrastructure pose a particular potential risk to birdlife including large birds, such as swans and geese, and perching birds. These may collide with overhead lines and risk being electrocuted. 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."*	A collision risk assessment for the new section of overhead line has been undertaken. The assessment is discussed in paragraphs 2.9.174 to 2.9.184 of this chapter and is provided in full in **Application Document 6.3.3.2.F Appendix 3.2.F Vantage Point Survey Report** incorporating Collision Risk Assessment).
2.9.4 "*Applicants should consider measures to make lines more visible such as bird flappers and diverters which are covered in more detail in paragraphs 2.10.3 and 2.10.4."*	
2.9.5 *"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 4.3 of EN-1)."*	
2.9.6 *"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 the 'national site network' provisions of the Conservation of Habitats and Species Regulations"*	The collision risk assessment particularly (but not exclusively) considered features of sites that form part of the National Sites Network and are thus related to the East Atlantic Flyway.
2.10.2 *"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."*	The alignment of the overhead line was considered in developing the Kent Onshore Scheme. A full discussion of alternatives for the new section of overhead line is provided in **Application Document 6.2.1.3 Part 1 Introduction Chapter 3 Main Alternatives Considered**.
2.10.3 *"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."*	Paragraph 2.9.71 of this ES chapter has provided a collision risk assessment which has concluded no significant mortality would occur even without the use of bird deflectors. Nonetheless, bird deflectors will be incorporated into the new section of overhead line.
2.10.4 "*Electrocution risks can be reduced through the design of lattice steel tower crossarms, insulators and the construction of other parts of*	The key birds perching will be peregrine and corvids. The line spacing is sufficient that even for a large wingspan

NPS EN-5 section	Where this is covered in the ES
high voltage power lines so that birds find no opportunity to perch near energised power lines on which they might electrocute themselves."	bird they should not be touching two wires and therefore no material electrocution risk exists.

National Planning Policy Framework

2.2.21 The National Planning Policy Framework (NPPF) as revised in December 2024 (Ministry of Housing, Communities, and Local Government, 2024) sets out national planning policies that reflect priorities of the Government for operation of the planning system and the economic, social, and environmental aspects of the development and use of land. The NPPF has a strong emphasis on sustainable development, with a presumption in favour of such development. The NPPF has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the Proposed Project.

2.2.22 Table 2.3 below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the ES.

Table 2.3 NPPF requirements relevant to ecology and biodiversity

NPPF section	Where this is covered in the ES
Paragraph 182 "*Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity…*"	Commitment to design measures to function for both ecology and drainage are reflected in this Chapter and in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**.
Paragraph 187 *"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 – including the economic and other benefits of the best and most versatile agricultural land, and of trees*	Commitments to conserve biodiversity interests taken advantage of for the Proposed Project are reported in Sections 2.8 and 2.9 of this chapter. Enhancement of biodiversity and Environmental Net Gain more broadly are covered by **Application Document 6.12 Biodiversity Net Gain Feasibility Report.** Opportunities for biodiversity enhancement on-site are also contained in this document.

NPPF section	Where this is covered in the ES
and woodland; … [and] maintaining the character of the undeveloped coast, while improving public access to it where appropriate; … [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"; … [and] remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.	
Paragraph 188 "*Plans should: distinguish between the hierarchy of international, national and locally designated sites; … [and] take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries*"	**Application Document 6.6 Habitats Regulations Assessment Report** covers these sites where applicable. This chapter has specific sections on designated sites covering all tiers of designation.
Paragraph 192 "*To protect and enhance biodiversity and geodiversity, plans should: a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*"	Measures to protect these features are covered in this ES chapter. Enhancement of biodiversity and Environmental Net Gain more broadly are covered by **Application Document 6.12 Biodiversity Net Gain Feasibility Report**.
Paragraph 193 "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	Details of proposed mitigation, and the assessment of potential effects on protected habitats and species are provided in Section 2.8 and 2.9 of this chapter. No likely significant adverse effects on any of these designations have been identified.

NPPF section	Where this is covered in the ES
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 design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."	**Application Document 6.2.1.3 Part 1 Introduction Chapter 3 Main Alternatives Considered** sets out the main alternatives considered in relation to the Kent Onshore Scheme and the reasons behind the decision to cross Sandwich Bay to Hacklinge Marshes SSSI by trenchless technique, and to locate Minster Converter Station and Substation within Minster Marshes. Opportunities to enhance habitats beyond the Proposed Project are documented in **Application Document 6.12 Biodiversity Net Gain Feasibility Report** and **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**.
Paragraph 194 *"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."*	**Application Document 6.6 Habitats Regulations Assessment Report** covers these sites where applicable. Other than Ramsar sites there are no other sites in the list which need considering in addition to Habitats Sites.

National Planning Practice Guidance

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

Local Planning Policy

2.2.24 The Kent Onshore Scheme (refer to **Application Document 2.2.3 Kent Location Plan**) lies within the jurisdiction of Kent County Council. County planning guidance which is

[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

relevant to a study of ecology and biodiversity and has informed the assessment of preliminary effects in this chapter is the Kent Biodiversity Strategy.

2.2.25 The Kent Biodiversity Strategy 2020 to 2045 (Kent Nature Partnership, 2020), aims to deliver, over a 25-year period, the maintenance, restoration and creation of habitats that are thriving with wildlife and plants and ensure that the county's terrestrial, freshwater, intertidal and marine environments regain and retain good health. Terrestrial, freshwater and intertidal priority habitats and species relevant to the Kent Onshore Scheme are lowland mixed broadleaved woodland, hedgerows, rivers, coastal and floodplain grazing marsh, intertidal mudflats and coastal saltmarsh, otter (*Lutra lutra)*, water vole (*Arvicola amphibius*), soprano pipistrelle bat (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), European eel (*Anguilla anguilla*), lapwing (*Vanellus armatus*) and nightingale (*Luscinia megarhynchos*).

Local Plans

2.2.26 The majority of the Kent Onshore Scheme lies within the jurisdiction of Thanet District Council (TDC). Local planning policy for Thanet District Council consists of the Thanet Local Plan (adopted July 2020) (Thanet District Council, 2020). Thanet Local Plan policies which are relevant to ecology and biodiversity assessment matters and have informed the ecology and biodiversity assessment are detailed in Table 2.4.

Table 2.4 Local planning policies relevant to ecology and biodiversity – Thanet Local Plan

Thanet Local Plan - Policy	Where this is covered in the ES
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.	Details of proposed mitigation, and the assessment of potential effects on international and European designated sites are provided in Section 2.8 and 2.9 of this chapter. In addition **Application Document 6.6 Habitats Regulations Assessment Report** covers these sites where applicable. **Application Document 6.2.1.3 Part 1 Introduction Chapter 3 Main Alternatives Considered** sets out the main alternatives considered in relation to the Kent Onshore Scheme and the reasons behind the decision to cross Sandwich Bay to Hacklinge Marshes SSSI by trenchless technique, and to locate Minster Converter Station and Substation within Minster Marshes.
SP30: Biodiversity and Geodiversity Assets	Impacts on habitats and species in, around and beyond the Proposed

Thanet Local Plan - Policy	Where this is covered in the ES
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.	Project are discussed in paragraphs 2.9.6 to 2.9.278 of this chapter. These include discussion of measures taken to avoid (where possible) or mitigate or compensate for significant harm to biodiversity. An assessment of impacts on designated sites including SSSIs and parts of the National Site Network is contained in paragraphs 2.9.7 to 2.9.58 (construction), 2.9.169 to 2.9.217 (operation and maintenance) and 2.9.279 (decommissioning) of this chapter. (decommissioning) of this chapter. No significant adverse effects on any of these designations have been identified with mitigation. **Application Document 6.2.1.3 Part 1 Introduction Chapter 3 Main Alternatives Considered** sets out the main alternatives considered in relation to the Kent Onshore Scheme and the reasons behind the decision to cross Sandwich Bay to Hacklinge Marshes SSSI by trenchless technique, and to locateMinster Converter Station and Substation within Minster Marshes. Opportunities to enhance habitats beyond the Proposed Project are documented in the **Application Document 6.12 Biodiversity Net Gain Feasibility Report** and **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**, the latter regarding habitat enhancements delivered around the Minster Converter Station and Substation.
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 Kent Onshore Scheme will be delivering some habitat improvements in the form of a series of wetland scrapes along the River Stour within the Order Limits, part of which lies within the Lower Stour Wetlands Biodiversity Opportunity Area. These are discussed

Thanet Local Plan - Policy	Where this is covered in the ES
	in paragraphs 2.7.13 of this chapter and in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent.** This will increase the habitat diversity and thus biodiversity value of the Stour Valley, the Biodiversity Opportunity Area, and the Ash Level and South Richborough Pasture Local Wildlife Site, in the long-term.

2.2.27 Parts of the Kent Onshore Scheme lie within the jurisdiction of Dover District Council (DCC). The Dover District Local Plan (Adopted 2024) is relevant (Dover District Council, 2024). Local Plan policies which are relevant to ecology and biodiversity matters are identified in Table 2.5.

Table 2.5 Local planning policies relevant to ecology and biodiversity – Dover District Local Plan

Dover District Local Plan - Policy	Where this is covered in the ES
Strategic Policy 13: Protecting the District's Hierarchy of Designated Environmental Sites and Biodiversity Assets 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. It also sets out wintering bird survey requirements for functionally-linked land, and sets out protection to SSSIs. It also states regarding Local Wildlife Sites and priority and locally important habitats and priority species, development likely to have an adverse effect will be permitted only where the damage can be avoided or adequately mitigated, or when its need outweighs the biodiversity interest of the site and when the coherence of the local ecological network is maintained.	An assessment of impacts on designated sites including SSSIs and parts of the National Site Network is contained in paragraphs 2.9.7 to 2.9.58 (construction), 2.9.169 to 2.9.217 (operation and maintenance) and 2.9.279 (decommissioning) of this chapter. No significant adverse effects on any of these designations have been identified with mitigation. **Application Document 6.6 Habitats Regulations Assessment Report** covers these sites where applicable.
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	Opportunities to enhance habitats beyond the Proposed Project are documented in the Biodiversity Net Gain assessment in **Application Document**

Dover District Local Plan - Policy	Where this is covered in the ES
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.	**6.12 Biodiversity Net Gain Feasibility Report**. Habitat creation proposed around the Minster Converter Station and Substation is being delivered for reasons of landscaping and drainage. This is discussed in this Ecology ES chapter when assessing the impacts of the Kent Onshore Scheme on ecological features regarding habitat loss. **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**, details how habitat enhancements will be delivered around the Minster Converter Station and Substation.

2.3 Scoping Opinion and Consultation

Scoping

2.3.1 A Scoping Report for the Proposed Project was issued to the Planning Inspectorate (PINS) on 24 October 2022 (**Application Document 6.14 Environmental Scoping Report 2022**) and a Scoping Opinion was received from the SoS on 1 December 2022 (**Application Document 6.15 Scoping Opinion 2022**). Table 2.6 sets out the comments raised in the Scoping Opinion and how these have been addressed in this ES. The Scoping Opinion takes account of responses from prescribed consultees as appropriate. **Application Document 6.3.1.6.A Appendix 1.6.A Response to Scoping Opinion** provides responses to the comments made by the prescribed consultees at scoping stage and how each comment has been considered.

Table 2.6 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)*] 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-today maintenance of underground cables would be required in the	This Chapter includes an assessment of all permanent habitat losses. It is confirmed there will be no permanent habitat loss in the intertidal zone.

ID	Inspectorate's comments	Response
	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.	
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 into the assessment.	Traffic movements during operation of the Minster Converter Station and Substation is covered in paragraph 2.9.214 of this Chapter within the context of vehicle emissions impacts on designated sites. The conclusion is reached that operational (including maintenance) traffic movements will be well below the annual average daily traffic thresholds that would cause significant effects on designated sites, or trigger air quality modelling.
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 Development due to the absence of a potential effect pathway from onshore activities. They will however be considered for the offshore 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 scoped out of the assessment of the Kent Onshore Scheme for all stages due to a likely absence of potential effect pathway from the	Impacts on this designated site are considered in **Application Document 6.2.4.2 Part 4 Marine Chapter 2 Benthic Ecology** and **Application Document 6.2.4.5 Part 4 Marine Chapter 5 Marine Ornithology**.

ID	Inspectorate's comments	Response
	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 5.8km from the Kent Onshore Scheme) and is designated for Desmoulin's whorl snail. Thanet Coast SAC (2.1km 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, 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.	Impacts on Stodmarsh SAC are discussed in paragraphs 2.9.37 to 2.9.43 and 2.9.169 to 2.9.179 of this chapter, with regard to water quality, this being the only identified potential pathway of impact.
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 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	Permanent loss of habitats is considered in paragraphs 2.9.224 to 2.9.227 of this chapter.

ID	Inspectorate's comments	Response
	of this matter, where likely significant effects could occur.	
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.	A survey for notable invertebrates is presented in **Application Document 6.3.3.2.J Appendix 3.2.J Terrestrial Invertebrate Survey Report** and in **Application Document 6.3.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**. Impacts on invertebrates are covered in paragraphs 2.9.142 to 2.9.144 of this chapter.
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 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.	Incidental mortality through damage to eggs and nests during construction is addressed through careful timing of works as discussed in paragraphs 2.9.91 to 2.9.97 of this chapter. Bird strike on ornithology during operation is considered in paragraphs 2.9.169 to 2.9.179 of this report.
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.	Incidental mortality of riparian mammals is covered in paragraphs 2.9.135 to 2.9.137 of this chapter.

ID	Inspectorate's comments	Response
	The Inspectorate considers there is potential for impacts during construction 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.	
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	The Environmental Statement has used an initial scoping distance of 10 km to identify designated sites that could potentially be affected. However, the assessment has then refined that in the impact assessment to consider the zones of influence from each impact and the distance at which they may impact designated sites. For air quality it is 200 m (up to 250 m for dust), for noise it is determined by the 60 dB contour, for functionally-linked land it uses the unpublished guidance from Natural England (which varies depending on the birds in question), for hydrological impacts no distance is used but rather hydrological connections are used. The spatial extent of the bird surveys is set out in **Application Document 6.3.3.2.B Appendix 2.2.B Wintering Bird Survey Report 2022-2023**, **Application Document 6.3.3.2.C Appendix 2.2.C Wintering Bird Survey Report 2023-24**, **Application Document 6.3.3.2.D Appendix 2.2.D Breeding Bird Survey Report 2022-23** and **Application Document 6.3.3.2.E Breeding Bird Survey Report 2023-24**. These cover the breeding and wintering bird surveys. These each include a figure which shows the survey area (walked

ID	Inspectorate's comments	Response
		transects) and the results of the surveys. The Chapter includes consideration of impacts on functionally-linked land, as does **Application Document 6.6 Habitats Regulations Assessment Report**. A confidential annex has been prepared for **Application Document 6.3.3.2.A Appendix 3.2.A Extended Phase 1 Habitat Survey Report**, showing the location of badger setts identified as part of the surveys for the Proposed Project.
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.	Beaver surveys have been undertaken and are reported in **Application Document 6.3.3.2.H Appendix 6.2.H Riparian Mammal Survey Report**.

Statutory Consultation

2.3.2 Statutory Consultation for the Proposed Project took place between 24 October and 18 December 2023. A further Targeted Consultation exercise on the main changes to the Proposed Project introduced after the 2023 statutory consultation, was undertaken between 8 July and 11 August 2024. In addition, localised engagement took place between 22 November 2024 and 12 January 2025, focusing on design amendments made following Targeted Consultation. A summary of relevant feedback received during consultation relating to ecology and biodiversity is provided in subsequent paragraphs below. Further details on how National Grid have had regard to the consultation responses can be found in **Application Document 5.1 Consultation Report** and **Application Document 5.1.9 Appendix H Summary 2023 Response**.

2.3.3 The ecological responses to the consultation mainly reflected the fact that at the time the consultation was undertaken considerable further ecological survey remained to be undertaken and therefore the impact assessment was limited. The consultation comments were therefore mainly recommendations for detailed survey and further impact assessment work, which has now been undertaken and has informed the development of this chapter.

2.3.4 Other key feedback related to concerns over impacts on Minster Marshes and Ash Level & South Richborough Pasture (including from the new section of overhead line), and the designated sites (Sandwich Bay SAC, Thanet Coast to Sandwich Bay SPA/Ramsar, Sandwich Bay to Hacklinge Marshes SSSI). In the latter case this was particularly due to uncertainty at the time the consultation was undertaken as to whether open cut trenching would be required within the SSSI (Pegwell Bay) to deliver the Kent

Onshore Scheme. The commitment to a trenchless method and matters such as drill depth are included in the impact assessment of this chapter. Concern was also expressed regarding risk of frac out[4] and impacts on surface hydrology in Pegwell Bay if a trenchless option was chosen. Risk of frac out is also covered in the impact assessment section of this chapter. Concern was also expressed as to whether all alternatives to avoiding traversing the SSSI at all had been explored. **Application Document 6.2.1.3 Part 1 Introduction Chapter 3 Main Alternatives Considered** sets out the main alternatives considered in relation to the Kent Onshore Scheme including the reasons behind the decision to cross Sandwich Bay to Hacklinge Marshes SSSI using a trenchless technique and crossing the River Stour by overhead line. Concern was also expressed about the potential for locating a compound in the former hoverport site given the presence of rare invertebrates and orchids, leading to the compound location being altered. Concern was expressed by some consultees over whether the land proposed as mitigation as loss of functionally linked land for golden plover would be used by that species and whether it would be adversely affected by lighting or road noise. This has therefore been addressed in the ES Chapter in the impact assessment section.

2.3.5 These matters were discussed further with key consultees during further engagement on the Proposed Project.

Further Engagement

2.3.6 A total of seven terrestrial and aquatic ecology thematic meetings were held with officers from Natural England, Kent County Council, Thanet District Council and Dover District Council between February 2024 and January 2025. Two ecology-specific meetings were held with RSPB, and two meetings with Kent Wildlife Trust (other meetings were held by National Grid with both organizations but were not restricted to terrestrial ecology). A separate meeting was also held with Natural England concerning Biodiversity Net Gain.

2.3.7 The above thematic meetings included discussion and progress updates on ecological survey and assessment work being undertaken. The HRA was discussed at these meetings in addition to the key results from the ecological impact assessment and proposed mitigation. Noise impacts on Sandwich Bay to Hacklinge Marshes SSSI and Thanet Coast & Sandwich Bay SPA/Ramsar were discussed, along with appropriate thresholds for noise assessment and suitable mitigation measures such as noise fencing and seasonal avoidance. The noise thresholds agreed with Natural England in thematic meetings in June 2024 are used in this impact assessment. RSPB also agreed in a thematic meeting with the use of a 60 dB LAmax threshold for noise disturbance. Trenchless proposals for traversing the SSSI/SPA/Ramsar were discussed, including feasibility and depth of the trenchless method, and risk of ‘frac out’. These issues were all requested for inclusion in the assessment by consultees and are therefore covered in the impact assessment section of this chapter.

2.3.8 Impacts on other protected species were also discussed in the later meetings with Natural England and the Kent Planning Authorities including an outline impact assessment for each key ecological receptor and the proposed approach to mitigation. Proposals for addressing loss of functionally-linked land for golden plover from the Minster Converter Station and Substation were discussed in thematic meetings with

[4] Frac out is where drilling fluids may reach the surface due to fissures in the geology while undertaking trenchless bores beneath the Suffolk coast

Natural England on 19 February 2024, 24 May 2024, 18 September 2024 and 21 January 2024. Draft proposals were shared and commented upon in writing on 4 July 2024, 9 August 2024 and 11 December 2024, as was the collision risk assessment for the new section of overhead line across the River Stour and associated mitigation proposals as reflected in this ES chapter. A complete draft Habitats Regulations Assessment was shared with Natural England in December 2024 and comments received were taken into account in the submitted HRA and in this ES chapter where relevant. The thematic meetings including main issues discussed are detailed in the Statements of Common Ground between the applicant and Natural England, and between the applicant and the three Kent Councils.

Summary of Scope of Assessment

2.3.9 This section details what aspects have been scoped in and scoped out of the assessment through the scoping process and consultation with stakeholders.

Aspects scoped into the assessment

2.3.10 The scope of this assessment covers temporary and permanent impacts on terrestrial and freshwater aquatic biodiversity, including designated sites (statutory and non-statutory), protected species, and other rare and notable species and habitats. It includes the effects of land take, disturbance, killing & injury, disruption of habitat connectivity (where relevant), and pollution (both to air and via water). It covers the construction, operation and maintenance, and decommissioning stages.

Aspects scoped out of the assessment

2.3.11 The only aspects that have been scoped out of the assessment are the potential for further temporary habitat loss due to operation of the Kent Onshore Scheme, and impacts on great crested newts (as this latter impact is to be addressed through the District Level Licensing process, an approach that has been agreed with Natural England).

2.4 Approach and Methodology

2.4.1 **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology** sets out the overarching approach which has been used in developing the ES. This section describes the technical methods used to determine the baseline conditions, importance of the receptors and magnitude of effects and sets out the significance criteria that have been used for the ecology and biodiversity assessment.

Guidance Specific to the Ecology and Biodiversity Assessment

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

- Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. (CIEEM, 2018);
- The Dormouse Conservation Handbook (Bright P, 2006);
- Hazel dormice: advice for making planning decisions. (HM Government, 2022);

- Herpetological Workers' Manual (Gent & Gibson, 2003);
- Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation (Froglife, 1999);
- English Nature Research Report (Chanin, 2003);
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Bat Conservation Trust, 2023);
- Surveying for bats in trees and woodland (British Standards Institute, 2015);
- Surveying freshwater and terrestrial invertebrates for conservation evaluation (Harris, Cresswell, & Jefferies, 1989);
- Surveying Badgers (Drake, Lott, Alexander, & Webb, 2007);
- Handbook for Phase 1 Habitat Survey – a technique for environmental audit. (JNCC, 2010);
- Freshwater macro-invertebrate analysis of riverine samples Operational Instruction 024_08 (Environment Agency, 2014);
- Freshwater macro-invertebrate sampling in rivers Operational Instruction 018_08 (Environment Agency, 2017);
- UKTAG River Assessment Method Macrophytes (WFD-UKTAG, 2024);
- UKTAG River Assessment Method Macrophytes and Phytobenthos: Macrophytes (River LEAFPACS2) (WFD-UKTAG, 2014);
- UKTAG River Assessment Method Benthic Invertebrate Fauna: Invertebrates (General Degradation): Whalley, Hawkes, Paisley & Trigg (WHPT) metric in River Invertebrate Classification Tool (RICT) (WFD-UKTAG, 2023);
- Seine Netting for Monitoring Fish (Environment Agency, 2008);
- Guidelines for Electric Fishing Best Practice (Beaumont, Taylor, Lee, & Welston, 2002);
- Monitoring the Otter (ON112) (Natural England, 2007);
- Water Vole Conservation Handbook (Strachan, Moorhouse, & Gelling, 2011);
- Bird Census Techniques (Bibby, Burgess, Hill, & Mustoe, 2000);
- Bird Survey Guidelines for assessing ecological impacts (Bird Survey & Assessment Steering Group, 2024); and
- Hedgerow Survey Handbook (DEFRA, 2007).

Baseline Data Gathering and Forecasting Methods

Desk Study

2.4.3 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 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 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 (DEFRA, 2024);
- 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 newt (*Triturus cristatus*)) from the proposed Kent Onshore Scheme Order Limits.

Survey Summary

2.4.4 The table below denotes the surveys undertaken, the spatial extent and the survey period for each of the surveys. Great crested newt surveys have not been undertaken as it was agreed with Natural England that any impacts on that species could be addressed through the District Licensing Scheme which essentially involves enhancing great crested newt habitat at a strategic scale rather than for individual schemes. If a developer proposing to develop land where great crested newts may live pays to join the relevant district level licensing scheme there is no requirement to carry out surveys of great crested newts or to plan and carry out mitigation work to move the newts to safety[5]. The payment must be secured by Natural England before construction commences on the Kent Onshore Scheme.

Table 2.7 Survey summary (type, extent and timing)

Survey Type	Spatial Extent	Survey Period
Extended Phase 1 Habitat Survey	All habitats within proposed Kent Onshore Scheme Order Limits	26-28 June 2023, 9-10 April 2024, 19-20 September 2024, 24 October 2024, 13 Nov 2024.
Hedgerow	Hedgerows identified within the proposed Kent Onshore Scheme by extended Phase 1	1 May 2024, 7 May 2024, 24 October 2024, 13 Nov 2024.
Invasive non-native species	All habitats within the proposed Kent Onshore Scheme Order Limits	26-28 June 2023, 9-10 April 2024, 19-20 September 2024, 24 October 2024, 13 Nov 2024.
Terrestrial invertebrates	Key habitats within the proposed Kent Onshore	8 May 2020, 19 June 2024 and 2 September 2024

[5] https://www.gov.uk/government/publications/great-crested-newts-district-level-licensing-schemes-for-developers/developers-how-to-join-the-great-crested-newt-district-level-licensing-scheme

Survey Type	Spatial Extent	Survey Period
	Scheme identified by extended Phase 1	
Common reptiles (presence/absence and population)	Suitable habitat within the proposed Kent Onshore Scheme	May to June 2024
Intertidal birds (Low/High Tide Counts)	Tidal counts at landfall locations.	October 2022 to March 2023 October 2023 to March 2024
Wintering birds (Field counts / inland walkovers)	Winter walkovers targeting temporary and permanent infrastructure	October 2022 to March 2023 October 2023 to March 2024
Breeding birds (common bird census (CBC))	Common bird census targeting permanent infrastructure	March 2023 to July 2023 March 2024 to July 2024
Bird vantage points	Around existing OHLs and the crossover between those and the proposed OHL for the Kent Onshore Scheme	Monthly February 2023 to January 2024
Bird corpse search	Around existing OHLs south of the River Stour	January 2024 to April 2024
Bats (ground level tree assessment)	Trees within the proposed Kent Onshore Scheme	26-28 June 2023, 9-10 April 2024, 13 Nov 2024.
Bats (activity and statics surveys)	Transects to target permanent and temporary infrastructure, and identify impacts to rarer species	Activity surveys July 2023, October 2023, May 2024. Static detector surveys October 2023, May to September 2024
Hazel dormouse (*Muscardinus avellanarius*)	Suitable hedgerows to be intersected by the proposed Kent Onshore Scheme and adjacent woodlands	20-22 September 2023, 14-16 November 2023, 13-15 May 2024, 23-25 July 2024, 10 and 26 September 2024
Water vole	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme Order Limits.	June 2024 and September 2024
Otter	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme Order Limits	June 2024 and September 2024
Beaver	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme	June 2024 and September 2024

Survey Type	Spatial Extent	Survey Period
Badger (presence/absence)	All habitats within the proposed Kent Onshore Scheme Order Limits and adjacent	26-28 June 2023, 9-10 April 2024, 19-20 September 2024, 24 October 2024, 13 Nov 2024.
Aquatic macrophytes	The Main River water bodies that could be impacted within the Kent Onshore Scheme Order Limits	24 July 2024
Aquatic invertebrates	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme Order Limits	27-29 November 2023, 29 May 2024
Fish	Where watercourses are to be crossed or adjacent to the proposed Kent Onshore Scheme Order Limits.	24 July 2024

2.4.5 A brief descriptive summary of the methodology for surveys outlined in Table 3.7 is provided below.

Extended Phase 1 habitat survey

2.4.6 An extended Phase 1 habitat survey was undertaken to provide an environmental baseline for the proposed Kent Onshore Scheme, to identify any areas that are of potential importance for nature conservation and to assist with assessing which Phase 2 surveys (see Table 2.7) would be deemed necessary to further evaluate the potential impact of the proposed Kent Onshore Scheme on biodiversity. Due to the size of the area that required 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.

2.4.7 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 (JNCC, 2016). While in the field 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.

2.4.8 The survey covered the entirety of the proposed Kent Onshore Scheme and was primarily undertaken during June 2023 and April 2024, as this is when deciduous and annual plant species are identifiable. As the Order Limits were refined some surveys fell into September, October and November 2024, but this was sufficient to classify them to habitat type. The survey is documented in **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report** (including Badgers and Important Hedgerows).

Hedgerow

2.4.9 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 (HM Government, 1997) 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 The Hedgerow Regulations 1997 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*."

2.4.10 Suitably qualified ecologists walked the lengths of hedgerows identified within the proposed Kent Onshore Scheme, 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 was then used as a condition assessment and the hedgerow was assigned a richness value. The timing of these surveys was primarily May 2024 as this is when deciduous and annual plant species are identifiable with supplementary surveys in October and November 2024. The survey is documented in **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report** (including Badgers and Important Hedgerows).

Invasive non-native species

2.4.11 Any invasive non-native plant species were identified and reported as part of the extended Phase 1 habitat survey, and the location of all species, density of the stand and any other identifying features were noted. The survey is documented in **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report** (including Badgers and Important Hedgerows).

Terrestrial invertebrates

2.4.12 Sub-sites suitable for terrestrial invertebrate surveys were 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 the species used various methods, such as sweep netting, sieving dead wood/leaf litter and pitfall traps as per published guidelines and identification, where possible, took place in the field, however, if this was not possible, microscopes were used within a lab.

2.4.13 The field survey aimed to sample as wide a range of invertebrates as possible, which involved the use of the following standard equipment and recommended methods:

- fine-meshed and calico sweep nets were used 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 was undertaken as the opportunity arose; and
- beating of scrub, climbers and young trees with beating tray and beater at various points within the study area was also undertaken.

2.4.14 The surveys followed sampling protocols suitable for capturing ground dwelling invertebrates. Three survey visits in May, June and September 2024, as is suitable in Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation (Drake, Lott, Alexander, & Webb, 2007) by experienced entomologists. The sampling protocols consist of grubbing or hand searching refugia, sweep netting, and visual checks (spot

observations). The survey is documented in **Application Document 6.2.3.2.J Appendix 3.2.J Terrestrial Invertebrates Survey Report**.

Common reptiles

2.4.15 Reptile surveys were undertaken to determine the presence/absence of reptiles in suitable habitat including as rough grassland, verges, and scrub 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 (Gent & Gibson, 2003).

2.4.16 The refugia was deployed and allowed at least two weeks for the reptiles to become used to them. They were distributed across the proposed Kent Onshore Scheme where suitable habitat was present in a suitable density (10 per hectare as a minimum). The refugia was a combination of corrugated metal-based roofing material sheets and roofing felt (measuring approximately 0.5 m by 0.5 m). These were placed in sunny locations near to cover, such as the edge of scrub and woodland patches, grassy banks and south facing areas. Suitable habitat was visually inspected for evidence of reptile activity, including dead/alive reptiles and shed skins. Potential basking spots were targeted, including the edge of hardstanding areas, pathways, short grassland habitats and drain sides (Froglife, 1999).

2.4.17 To establish presence or absence of reptiles, seven visits in suitable weather conditions (within a constant temperature range of between 10 – 20°C) took place in May and June 2024. Appropriate weather is typically encountered in the spring and late summer/autumn. All refugia were checked and any reptile species was recorded (Sewell, Griffiths, Beebee, Foster, & Wilkinson, 2013). Since reptiles sometimes use different habitats at different times of day, the survey visits were undertaken at different times of day. The survey is documented in **Application Document 6.2.3.2.I Appendix 3.2.I Reptile Survey Report**.

Wintering Birds

2.4.18 The field surveys for wintering birds are based on the transect methodologies detailed by Bird Census Techniques (Bibby, Burgess, Hill, & Mustoe, 2000) and Bird Monitoring Methods (Gilbert, Gibbons, & Evans, 1998). During each survey visit, a suitably experienced ornithologist walked a transect route through the survey area using the Public Rights of Way (PRoW) and the best possible route accessible to capture the proposed Kent Onshore Scheme. For the 2022-2023 season these generally involved surveys from PRoW, although given the number of PRoW in the area this still enabled good coverage. Survey access during the 2023-2024 season was more comprehensive. 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 (BTO) species codes and behaviour notation.

2.4.19 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 throughout the wintering period.

2.4.20 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. The survey is documented in **Application Documents 6.2.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2022-2023** and **Application Document 6.2.3.2.C Appendix 3.2.C Wintering Survey Bird Report 2023-24**.

Breeding birds

2.4.21 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 were covered at various times of day across the duration of the survey.

2.4.22 Two suitably qualified ecologists undertook a walkover of the survey area and recorded all species of breeding birds present, and detailed 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. Access for the remainder of the 2023 season and 2024 season was more comprehensive. While a standardised number of survey visits for Common Bird Census (CBC) in respect of development has not been published, a minimum of six visits is recommended and was therefore undertaken.

2.4.23 The low tide count mentioned for wintering birds, above, was also extended through the breeding season. The survey is documented in **Application Documents 6.2.3.2.D Appendix 3.2.D Breeding Bird Survey Report 2023** and **Application Document 6.2.3.2.E Appendix 3.2.E Breeding Bird Survey Report 2024**.

Bird vantage point survey

2.4.24 The purpose of the flight activity or vantage point survey was to record flight lines of species potentially sensitive to collision with infrastructure to inform a qualitative assessment of collision risk with infrastructure, in this case, overhead lines (OHL) within the proposed Kent Onshore Scheme. The survey method followed that outlined within Scottish Natural Heritage (SNH) guidance (Scottish Natural Heritage, 2017), with the direction of movement, height and activity of all target and secondary species recorded, in addition to any details recorded on number, age, sex and behaviour of individual birds (where possible). The resulting data allowed bird flightlines to be identified and assessment of a likelihood of bird collisions was made.

2.4.25 Six hours of survey visits were undertaken from each vantage point (VP) per month, with each VP watch period comprising a maximum of two continuous hours with at least a 30-minute break between watches to assist surveyor concentration. rThe surveys

were undertaken between February 2023 and January 2024, covering 12 months and 72 hours of survey effort at each VP (144 hours total survey effort).

2.4.26 Survey visits were conducted both during daylight hours and after sunset and were timed to coincide with the rising and high tide periods for the Thanet Coast and Sandwich Bay Ramsar, SPA, to record use of inland areas of birds from the nearby estuary. Each VP survey visit included survey periods within the window two hours either side of high tide. Survey visits were also planned to encompass dusk and dawn periods, with each month's visits planned to encompass at least one dawn and one dusk period whenever possible (when tide timings and daylight allowed).

2.4.27 The survey is documented in **Application Document 6.2.3.2.F Appendix 3.2.F Vantage Point Survey Report** incorporating Collision Risk Assessment.

Existing overhead line bird mortality survey

2.4.28 The methodology of the bird mortality survey for the existing overhead line combined an adapted version of the Scottish Natural Heritage (SNH) (Nature Scot from 2020) 2009 bird corpse search methodology (Scottish Natural Heritage, 2009) (incorporating methods for bats (Nature Scot, 2021) and the most recent guidance on bird assessment (Scottish Natural Heritage, 2017) for wind turbine mortality monitoring. The survey was conducted across areas located in direct proximity to the existing overhead line, south of the River Stour canal.

2.4.29 This entailed a walked transect near the existing overhead line to record bird corpses that could be attributable to OHL collisions. A control transect was also walked in fields located away from the OHL, approximately 500 m to the south. This was to provide data to account for any comparable background rates of corpse occurrence.

2.4.30 The survey ran from January 2024 to April 2024, this covered the winter period in January/February when highest bird concentrations may occur in conjunction with periods of poor visibility, and weather which may increase the risk of overhead line collisions. It also covered the spring migration season, where large numbers of migrant species could also conduct flights through the overhead line, again increasing the risk of overhead line collision.

2.4.31 Where possible and safe to do so, searches were undertaken following periods of notably cold weather and/or poor visibility, as these conditions were assessed as being when bird collisions with the overhead line were most likely to occur.

2.4.32 Weekly or fortnightly searches (depending on access availability) were undertaken by suitably experienced and trained surveyors. The survey visits commenced shortly after sunrise, to minimise opportunity for diurnal scavengers to remove corpses and maximise the chance of finding corpses as a result of nocturnal activity. The surveyors walked each transect within the pre-defined transect visually searching a minimum 5 m on each side of the transect centreline (though any visible signs between the two pairs of OHL or within 25 m were also investigated). An approximate one-hour search time is expected per transect. When a dead bird was encountered, the surveyor recorded the location of the corpse using a GPS device, to an accuracy of +/- 5 m (subject to any spatial accuracy limitations caused by e.g. dense cloud cover).

2.4.33 If required, the corpse was flagged with a wooden cane and the search continued. Following the completion of the search of the quadrat, the surveyor returned to each corpse and recorded information on the fatality onto a standard recording form. The

survey is documented in **Application Document 6.2.3.2.G Appendix 3.2.G Overhead Line Mortality Monitoring Survey Report**.

Bat roost survey

2.4.34 An initial Daytime Bat Walkover (DBW) was undertaken as part of the extended Phase 1 habitat survey to identify trees with potential for bat roosts. Suitability was assigned and categorised as 'none' (i.e. no potential roost features (PRF) or highly unlikely to be any), 'FAR' (further assessment required) or 'PRF' (at least one PRF present). For those with PRF, a Ground Level Tree Assessment (GLTA) was completed. This was undertaken in accordance with the current Bat Conservation Trust (BCT) survey guidelines (Collins, 2023) and BS 8596:2015 Surveying for bats in trees and woodland.

2.4.35 Trees were examined from the ground using close focusing binoculars for features such as loose bark, cavities and ivy that could be utilised by bats. Trees were also checked for any signs of bats such as droppings, scratch marks, staining and feeding remains. Based on this inspection, each tree was then classified using a scale of likely none (no potential roost features (PRF)), likely PRF-I (i.e. suitable for individual or small numbers of bats), or likely PRF-M (i.e. suitable for multiple bats, so could potentially support a maternity roost). The survey is documented in **Application Document 6.2.3.2.K Appendix 3.2.K Bat Tree Survey Report**.

Bat activity transect survey

2.4.36 Bat activity transects were undertaken within suitable habitats within the proposed Kent Onshore Scheme. These are focused on areas where permanent infrastructure will be built along the route but also cover areas of temporary habitat loss. The proposed Kent Onshore Scheme was divided into six transects designed to include potential flight paths or foraging areas within the proposed Kent Onshore Scheme. Two surveyors walked a transect route which included a series of 'spot counts' at pre-determined points along the transects, located at potentially important features with regards to foraging or commuting bats.

2.4.37 Three surveys were undertaken during summer (July 2023) and autumn (October 2023) and spring (May 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.

2.4.38 The time, location, number, species (where possible) and direction of flight was recorded for each bat pass (discrete burst of echolocation heard or bat activity observed) encountered during the survey.

2.4.39 Static bat detectors were used to supplement transect survey and were placed in representative habitats to record bat activity over a longer period of time. The statics were deployed once a month in October 2023 and from May to September 2024. Static devices were mounted within hedgerows 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 were generally deployed for at least five consecutive nights in tandem with activity transect surveys. Recordings were analysed to determine species present and activity with an estimate of relative bat activity, known as a 'bat activity index'. The survey is documented in **Application Document 6.2.3.2.L Appendix 3.2.L Nighttime Bat Walkover and Static Detector Report**.

Hazel dormouse

2.4.40 Survey methodology for hazel 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 bi-monthly basis by a suitably qualified ecologist for the presence of dormouse nests and individuals.

2.4.41 At least 50 nest tubes per-zone were deployed at a spacing of 15-20 m intervals. Preferably they should be kept in place for the majority of the active season (April to November) and checked once every other month to maximise the chance of detecting any dormice present (Bright, Morris, & Mitchell-Jones, 2006). In this case, nest boxes have been installed from July 2023 and remained in situ until September 2024. The survey is documented in **Application Document 6.2.3.2.M Appendix 3.2.M Hazel Dormouse Survey Report**.

Water vole

2.4.42 Water vole surveys have been 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. Survey not only covered the crossing point but a stretch of watercourse 100 m either side of the crossing point was also covered where possible. These were subject to a detailed search for water vole field signs, including: latrine sites, feeding stations, burrows, paths and runs, sightings and sounds of individuals entering the water.

2.4.43 Two surveys were undertaken to determine water vole presence/likely absence in June 2024 and September 2024. Surveys were not 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 had taken place. These factors can obscure/remove signs of water vole presence and result in false negative survey results (Strachan, Moorhouse, & Gelling, 2011). The survey is documented in **Application Document 6.2.3.2.H Appendix 3.2.H Riparian Mammal Survey Report**.

Otter

2.4.44 Otter surveys were 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 alongside the water vole surveys. At least 100 m upstream and downstream of the watercourse from the footprint of the potential impact (direct or indirect) was surveyed. These locations were subject to detailed searched for field signs of otters indicating presence/absence. These field signs include spraints, footprints, feeding remains, slides and haul-outs, couches and hovers, and holts.

2.4.45 Otter surveys were carried out in June 2024 and September 2024. Surveys were not 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 is required for each suitable aquatic or terrestrial habitat feature. Two surveys were undertaken; one between mid-April and the end of June, and the second between July and end of September 2024. The survey is documented in **Application Document 6.2.3.2.H Appendix 3.2.H Riparian Mammal Survey Report**.

Beaver

2.4.46 Beaver surveys were carried out in June 2024 and September 2024. At least 100 m upstream and downstream of the watercourse from the footprint of the potential impact

(direct or indirect) was surveyed. These locations were subject to detailed searched for field signs of beavers indicating presence/absence, as per the method in "*Using field sign surveys to estimate spatial distribution and territory dynamics following reintroduction of the Eurasian beaver to British river catchments*" (Campbell-Palmer, et al., 2020). These field signs include: feeding remains, slides, scent sites and scent mounds, canals, dams, burrows and lodges.

2.4.47 According to the Eurasian Beaver Handbook, 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 were undertaken during the otter and water vole surveys and the level of vegetation was not considered to limit the surveys. Surveys were not 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 is recommended for each suitable aquatic or terrestrial habitat feature. Two surveys were undertaken; one between mid-April and the end of June, and the second between July and end of September 2024. The survey is documented in **Application Document 6.2.3.2.H Appendix 3.2.H Riparian Mammal Survey Report**.

Badger

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

2.4.49 Signs of badgers' presence were recorded these can 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, Cresswell, & Jefferies, 1989). The survey is documented in **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report** (including Badgers and Important Hedgerows).

Aquatic macrophytes

2.4.50 Aquatic macrophyte surveys were undertaken in July 2024 on Main River aquatic habitats that are to potentially be impacted by the proposed Kent Onshore Scheme or lie directly adjacent to the proposed Kent Onshore Scheme. The surveys were completed by two suitably qualified aquatic ecologists walking within the channel of each watercourse along a 100 m transect, where safely accessible. Any inaccessible areas were bypassed as necessary before re-entering the channel at the next available access point. A list of all macrophytes encountered was collated and their relative abundance was recorded using Taxon Cover Values (TCV). The aquatic macrophyte surveys followed guidance set out in the UKTAG River Assessment Method (Macrophytes and Phytobenthos) for use with LEAFPACS2 (WFD-UKTAG, 2014), which conforms to BS EN 14184:2014 Water quality - Guidance for the surveying of aquatic macrophytes in running waters (British Standard, 2014). The survey is documented in **Application Document 6.2.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**.

Aquatic macroinvertebrates

2.4.51 The aquatic macroinvertebrate surveys were undertaken in November 2023 and May 2024 on all aquatic habitats that are affected by the proposed Kent Onshore Scheme or lie directly adjacent to the proposed Kent Onshore Scheme. The surveys were completed by suitably qualified and experienced aquatic ecologists. Sampling procedures followed those standardized by the Environment Agency (Environment Agency, 2017), which conforms to BS EN ISO 10870:2012 Water Quality – Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters. These methods allow the characterization of aquatic macroinvertebrate communities and can be used to determine whether rare or notable species or communities are present.

2.4.52 Each of the samples collected was sorted and analysed in a laboratory setting by suitably trained and experienced aquatic ecologists. Lists of the aquatic macroinvertebrate taxa present were produced in line with Environment Agency guidance (Environment Agency, 2014). The survey is documented in **Application Document 6.2.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**.

Fish

2.4.53 Fish surveys were undertaken in July 2024 on Minster Stream and the River Stour. These are the two waterbodies most likely to be affected by impacts from the proposed Kent Onshore Scheme. Fish surveys were completed by a team of four experienced aquatic ecologists.

2.4.54 All surveys were conducted following standard Environment Agency guidelines (Beaumont, Taylor, Lee, & Welston, 2002) and (Environment Agency, 2008). The most appropriate fishing methodology was applied at each site,

2.4.55 An electric fishing survey was completed at Minster Stream at low tide, in an upstream direction by wading and pulling the equipment on a boat. Bankside electric fishing kit was utilized with double anode. All fish caught were placed in well aerated holding buckets on the river margins, identified to species level, their fork length measured to the nearest mm and then released safely and unharmed to the watercourse.

2.4.56 Seine netting (4 runs) was carried out on the River Stour using a 30 m long x 2.5 m deep seine net. Similarly to Minster Stream, this site is tidal, and the survey was completed at slack tide. The survey is documented in **Application Document 6.2.3.2.M Appendix 3.2.M Aquatic Ecology Survey Report**.

Assessment Criteria

2.4.57 The adopted assessment methodology has been developed with reference to the CIEEM guidelines (CIEEM, 2018). It has been adapted, as necessary, to ensure that, as far as possible, it is also in alignment with the assessment approach in other ES chapters, but the use of the CIEEM approach means that the assessment diverts from some of the terminology used in **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology** to describe value/importance, magnitude (notably by including ‘very low’ and ‘negligible’ to define value or importance of receptors).

Importance of ecology receptors

2.4.58 CIEEM guidelines are not prescriptive about how to assign value to particular ecological features or receptors. For the purposes of this assessment, importance 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. In assessing the value or importance of the Order Limits for a particular ecological feature or receptor, consideration is given to the role of the Order Limits in ecological structure and function. The categories shown in Table 2.3.8 are applied to give geographic context.

Table 2.8 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).
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)	For the purposes of this assessment the region is typically synonymous with importance at the Kent level. An ecological feature identified in the local BAP of which there is a significant resource in the survey area. A smaller area of local BAP habitat 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 (in this case Thanet District or Dover District) 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.

2.4.59 The District criterion adds a level of detail that is not present in the sensitivity scale described in **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA**

Approach and Methodology. It reflects the fact that in ecological terms there is a tier of ecological importance between Regional and Local.

Magnitude of ecology impacts

2.4.60 In line with Section 1.2 in the CIEEM guidelines (CIEEM, 2018), the terminology used within this chapter draws a clear distinction between the terms '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.

2.4.61 The CIEEM guidelines are not prescriptive about how to define the magnitude of an impact, but 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 (CIEEM, 2018)):

- 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. For the purposes of this assessment the impact magnitude has then been classified as negligible, minor, moderate or major (either positive of negative);
- 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. For the purposes of this assessment short-term has generally been defined as less than two years, medium term as 2-10 years and long-term as 10 years and upwards;
- Timing and frequency – i.e. consideration of the point at which the impact occurs in relation to critical life-stages or seasons; and
- 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).

2.4.62 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 **Application Document 6.2.3.13 Part 3 Kent Chapter 13 Kent Onshore Scheme Inter-Project Cumulative Effects**.

Significance of effects

2.4.63 The CIEEM guidance does not prescribe a rigid matrix approach to relating impacts magnitude on a receptor of a given value/importance to a magnitude of effect (what other topics may refer to as 'significance level' in relation to the assessment of effects). Rather it is arrived at based on professional judgment. That is how the assessment has been undertaken in this chapter. The basis for the decision in each case is explained in each section of the impact assessment. In general, a given magnitude of impact would result in the same magnitude of effect.

2.4.64 The potential magnitude of effect is discussed in Table 2.9. 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 2.9 Relating CIEEM assessment terms to those used in other chapters

Effect classification terminology used in other 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) Permanent or temporary (depending on magnitude and duration) 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.
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	1) Effective absence of damage to or enhancement of a biodiversity resource, either because there is no meaningful impact pathway; and/or

Effect classification terminology used in other chapters	Equivalent CIEEM assessment
	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) 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.
Moderate adverse (negative)	1) Permanent/irreversible or temporary (depending on magnitude and duration) 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.

2.4.65 Despite the definitions of 'moderate adverse' and 'major adverse' being identical, professional judgment has been used to distinguish between moderate and major impacts, taking account of the scale, duration, or reversibility. According to CIEEM guidance, a significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project.

Assumptions and Limitations

2.4.66 Any limitations relevant to particular surveys are identified in the relevant survey report appendices. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for particular habitats or species does not necessarily mean that the habitats or species do not occur in the area for which data was reviewed. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest. Desk top studies and surveys are a snapshot in time and have a limited longevity (2 years).

2.5 Basis of Assessment

2.5.1 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 assessment to changes in the construction commencement year.

2.5.2 Details of the available flexibility and assessment scenarios are presented in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project** and **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 Approach and Methodology**.

Flexibility Assumptions

2.5.3 The environmental assessments have been undertaken based on the description of the Proposed Project provided in **Application Document 6.2.1.4 Part 1 Introduction 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 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 Order Limits.

2.5.4 The assumptions made regarding the use of flexibility for the main assessment, and any alternatives assumptions are set out in Table 2.10.

Table 2.10 Flexibility assumptions

Element of flexibility	How it has been considered within the assessment
Lateral LoD HVDC cables	For the HVDC cables the indicative alignments have been used as a reference but the assessment has assumed that in practice the cable could be laid anywhere within the lateral limit of deviation.
Lateral LoD Minster Converter Station and Minster Substation	For the Minster Converter Station and Minster Substation the indicative location has been used as a reference but the assessment has assumed that in practice the converter station and substation could be laid anywhere within the lateral limit of deviation. Since the LoD covers a single large arable field this does not materially affect the ecological assessment.
Vertical LoD Minster Converter Station and Minster Substation	Not relevant to ecological assessment.
Lateral LoD overhead line	For the overhead line the indicative alignments have been used as a reference but the assessment has assumed that in practice the overhead line (new pylons) could be installed anywhere within the lateral limit of deviation.
Vertical LoD overhead line	For the purposes of this impact assessment standard height pylons have been assumed (as described in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**), which are 50 m tall, with a potential LoD of 6 m further height.
Order Limits – temporary construction works	The assessment has considered the possibility of construction impacts happening anywhere within the Order Limits. Where

Element of flexibility	How it has been considered within the assessment
	the construction compounds and other features (e.g. culverts on ditches or the temporary bridge over the River Stour) have been given indicative locations, those have been the main basis of assessment. This is particularly important for impacts on water voles (for example) as the impact may vary depending on whether the culvert corresponds to the location of specific water vole burrows. These are considered representative of the worst-case impacts within the Order Limits.

Sensitivity Test

2.5.5 It is likely that under the terms of the DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be 2026. Overall construction duration has been assumed to be approximately five years. Consideration has been given to whether the 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 2.12.

2.6 Study Area

2.6.1 The study area for ecological surveys includes the land within the proposed Kent Onshore Scheme Order Limits and appropriate zones of influence and are described in the following sections.

2.6.2 The Zones of Influence 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. The Zones of Influence vary for each receptor and impact pathway but are discussed where relevant in the impact assessment reported in Section 2.9.

2.6.3 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 in Section 2.9 of this chapter for each relevant impact pathway. 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 Order Limits were identified and considered, along with all internationally important sites up to 10 km distant. No impact pathways from the Kent Onshore Scheme to designated sites further afield were identified. Statutory designated sites are shown on **Application Document 6.4.3.2.A.5 Kent Designated Sites**. Due to data ownership considerations the boundaries of non-statutory wildlife sites are not shown although these have been covered by the impact assessment and specific non-statutory sites have been discussed in relation to the Kent Onshore Scheme where relevant.

2.6.4 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 Order Limits can affect receptors a small distance beyond the 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 (Institute of Air

Quality Management, 2024) can significantly affect receptors up to 50 m from the source).Feedback from Natural England in relation to the air quality assessment recommended a similar distance to that used for human health impacts (i.e. 250 m) specifically for dust. Therefore, in this chapter 250 m is used for dust impacts as a worst-case. Due to the distances between the Proposed Development and designated sites, no new designated sites are introduced by using a 250 m distance and the assessment of impacts on habitats does not change using a 250 m rather than 200 m distance.

2.7 Baseline Conditions

Designated Sites

2.7.1 **Application Document 6.6 Habitats Regulations Assessment Report** identifies that there are three European sites within 10 km of the Kent Onshore Scheme: Thanet Coast & Sandwich Bay SPA/Ramsar/Sandwich Bay SAC, 470 m east of the landfall; Thanet Coast SAC 1.5 km north-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 **Application Document 6.4.3.2.A.5 Kent Designated Sites**. **Application Document 6.6 Habitat Regulations Assessment Report** contains full descriptions of the interest features of these sites. 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.
- Sandwich Bay SAC – designated for its sand dunes.
- 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.

2.7.2 There is a single SSSI within 5 km of the proposed Kent Onshore Scheme, which is also shown on **Application Document 6.4.3.2.A.5 Kent Designated Sites**. This is Sandwich Bay to Hacklinge Marshes SSSI; a very large SSSI, part of which is 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*).

2.7.3 The only other statutory designated site within 5 km of the proposed Kent Onshore Scheme is Princes Beachlands LNR, which is also shown on **Application Document 6.4.3.2.A.5 Kent Designated Sites**. 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.

2.7.4 There are four non-statutory local wildlife sites within 2 km of the proposed Kent Onshore Scheme. For reasons already discussed, these are not shown on **Application Document 6.4.3.2.A.5 Kent Designated Sites**. The largest of these is Ash Level and South Richborough Pasture (site DO21), which overlaps with the proposed Kent Onshore Scheme particularly south of the River Stour, specifically where the new proposed OHL would connect into the existing 400 kV 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.

2.7.5 In addition, the Pegwell Bay part of Sandwich Bay to Hacklinge Marshes SSSI, Thanet Coast & Sandwich Bay SPA and Sandwich Bay SAC is also a Kent Wildlife Trust Reserve. Since it is already covered by three statutory designations the Wildlife Trust Reserve is not separately discussed in this chapter as an ecological receptor in itself.

2.7.6 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

2.7.7 This survey is reported in **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report** (including Badgers and Important Hedgerows). The vast majority of the proposed Kent Onshore Scheme boundary north of the River Stour consists of arable land in active use. The eastern fields were in use for corn (*Zea mays*) production during 2023 and 2024, the northern fields for salad crops, and the remainder was a mixture of different young crops.

2.7.8 The main woodland adjacent to the proposed Kent Onshore Scheme is Weather Lees Hill, immediately south of the proposed Minster Converter Station and Substation. It 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* agg.) and common nettle (*Urtica 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.

2.7.9 Areas of broadleaved plantation woodland were also present within the survey area; in the southwest of land parcel 232 (refer to **Application Document 6.4.3.2.A.2 Kent Phase 1 Land Parcels**, for survey parcel locations), east of the A256, within the field south of the wastewater treatment works and along the northern edge of land parcel

336 into in the north of land parcel 360. The area within 328 and 360 contains a mixture of dogwood (*Cornus sanguinea*), elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), and oak (*Quercus robur*) between immature and semi-mature. The area within 232 is composed of immature willow species (*Salix* sp.) and hawthorn (*Crataegus monogyna*).

2.7.10 Wet ditches were present throughout the proposed Kent Onshore Scheme delineating most field edges (see **Application Document 6.4.3.2.A Kent Phase 1 Survey Results**). These ditches were heavily colonised with aquatic macrophytes including giant salvinia (*Salvinia molesta*) and blanket weed (*Spirogyra adnate*). The ditches had steep-sided low banks fringed with swamp dominated by common reed (*Phragmites australis*).

2.7.11 There were two areas of ephemeral/short perennial vegetation within the Order Limits, 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*). These are adjacent to a track which will be used for access to the connection to the existing OHL north of the River Stour. There were also extensive belts of dense hawthorn and bramble along many of the ditches within and adjacent to the Proposed Kent Onshore Scheme Order Limits. See **Application Document 6.4.3.2.A.1 Kent Phase 1 Survey Results** for locations.

2.7.12 The hedgerows within and adjacent to the proposed Kent Onshore Scheme were typically species-poor. Typical hedgerow species recorded included blackthorn (*Prunus spinosa*) and hawthorn, some hedgerows included mature trees such as ash, willow (*Salix species*) and sycamore (*Acer pseudoplatanus*). A hedgerow survey in line with the Hedgerow Regulations has been undertaken, but no Important Hedgerows have been identified in the Kent Onshore Scheme boundary either using ecological or historical criteria.

2.7.13 The wetland scrapes north of the River Stour (known as Abbey Farm Wetland and located within Ash Levels and North Richborough Pasture Local Wildlife Site) 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 were 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*). There are also extensive areas of grassland south of the River Stour which although not botanically diverse (consisting mainly of perennial ryegrass, hawthorn, nettle, bramble, and dandelion, with patches of common reed) would constitute floodplain grazing marsh which is a Kent priority habitat. This is generally classified botanically as improved grassland, species-poor semi-improved grassland and marshy grassland.

2.7.14 East, beyond St Augustine's golf course, saltmarsh was present within 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.

2.7.15 The old hoverport includes an extensive area of hardstanding made up of old concrete with ephemeral encroachment; species include pendulous sedge, St John's wort (*Hypericum perforatum*), sea buckthorn (*Hippophae rhamnoides*), pampas grass (*Cortaderia selloana*), hard rush, soft rush (*Juncus effusus*), bramble and stonecrop (*Sedum* spp.).

2.7.16 Invasive plant species recorded on or near the Order Limits include giant hogweed (*Heracleum mantegazzianum*) in addition to wall cotoneaster (*Cotoneaster horizontalis*) and Japanese rose (*Kerria japonica*), all species on Schedule 9 of the Wildlife & Countryside Act 1981. The latter two species were observed in the former hoverport area.

2.7.17 The arable land and short ephemeral/perennial vegetation is of **Negligible** botanical (intrinsic) importance. The areas of species-poor neutral grassland and dense scrub are of **Local** importance. The River Stour is of **National** importance. The Minster Stream, ditches, scrapes, lowland mixed broadleaved woodland, hedgerows, grazing marsh, 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 (Kent Nature Partnership, 2020), with a view to restoring such features to higher diversity and this is why they have also been assigned **Regional** importance.

Ornithology

2.7.18 Desk study information was made available through bird ringing reports covering the Abbey Farm Wetlands. Species identified in the ringing reports included jack snipe (*Lymnocryptes minimus*), goldfinch (*Carduelis carduelis*), nightingale, yellowhammer (*Emberiza citrinella*), blackcap (*Sylvia atricapilla*), meadow pipit (*Anthus pratensis*), tree pipit (*Anthus trivialis*), greenfinch (*Chloris chloris*), whitethroat (*Sylvia communis*) and reed warbler (*Acrocephalus scirpaceus*). Non-breeding birds mentioned in the reports include skylark (*Alauda arvensis*), woodcock (*Scolopax rusticola*), grey partridge (*Perdix perdix*), common snipe (*Gallinago gallinago*), song thrush (*Turdus philomelos*) and fieldfare (*Turdus pilaris*). These data supplement the surveys undertaken specifically for the Proposed Project during 2023 and 2024, which also recorded many of these species.

2.7.19 National Grid recognises the importance of the English East Coast and its coastal wetlands as being globally important for migratory waterbirds using the East Atlantic Flyway (EAF) which extends from the Arctic to South Africa, as reflected in its potential for future designation as a UNESCO World Heritage Site. The importance of the English East Coast and these wetland sites is reflected by a series of existing protected nature conservation areas, designated for their international importance, including Special Protection Areas (SPAs) and Ramsar Convention Wetlands of International Importance and underpinned by other national designations such as Sites of Special Scientific Interest (SSSIs). Detailed assessments of the relevant components which contribute to the East Atlantic Flyway are considered in this ES chapter and in **Application Document 6.6 Habitats Regulations Assessment**.

Breeding birds

2.7.20 The survey is reported in **Application Documents 6.2.3.2.D Appendix 3.2.D Breeding Bird Survey Report 2023** and **Application Document 6.2.3.2.E Appendix 3.2.E Breeding Birds Survey report 2024.**

2.7.21 During the 2023 breeding bird surveys a total of 95 species were recorded across the survey area; this increased to 109 during the 2024 breeding bird surveys. In 2023, 67 of these species were notable (red or amber list) increasing to 73 notable species in 2024. A total of 61 species were recorded as breeding (confirmed, probably or possible) within the survey area in 2023 and this increased to 84 species in 2024. In 2023 two Annex 1 species were recorded flying through the Survey Area (no evidence of nesting within the

Order Limits); these were kingfisher (*Alcedo atthis*) (flying along the River Stour) and marsh harrier (*Circus aeruginosus*). Marsh harrier was also recorded in 2024, foraging over part of the Survey Area, along with little egret (*Egretta garzetta*), sandwich tern (*Thalasseus sandvicensis*) and peregrine falcon (*Falco peregrinus*).

2.7.22 Multiple species on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded in the 2023 or 2024 surveys. These were barn owl (*Tyto alba*), Cetti's warbler (*Cettia cetti*), little ringed plover (*Charadrius dubius*), garganey (*Spatula querquedula*), whimbrel (*Numenius phaeopus*) and bearded tit (*Panurus biarmicus*). However, only Cetti's warbler was recorded breeding within the Order Limits. A further 12 species listed on Section 41 of the NERC Act were recorded during surveys in 2023 which increased to 18 species in 2024.

2.7.23 Generally, the intertidal areas and River Stour canal are of greatest importance, although the arable fields support locally notable numbers of skylark and the drain network through the Survey Area supports good numbers of green sandpiper (*Tringa ochropus*) on passage and watercourse-associated passerines (e.g., Cetti's warbler and sedge warbler (*Acrocephalus schoenobaenus*). In the intertidal area locally notable numbers of oystercatcher (*Haematopus ostralegus*) were present, with limited evidence of breeding of most other species, although the count of spotted redshank (*Tringa erythropus*) represented 1% of national population estimates in 2023. The overall valuation of the breeding bird assemblage recorded within the intertidal zone is **Regional** importance (as no species numbers approach a significant proportion of national breeding estimates but are important at a county breeding season level in terms of numbers).

2.7.24 In the inland areas, recorded numbers of marsh harrier, cuckoo (*Cuculus canorus*) and skylark, ruff (*Calidris pugnax*), green sandpiper, wood sandpiper (*Tringa glareola*), water pipit (*Anthus spinoletta*), mute swan (*Cygnus olor*), and shelduck (*Tadorna tadorna*) were comparable to peak county counts. The inland assemblage overall has been assessed as of **District** importance, noting that the River Stour canal and adjacent areas approach county importance due to the diversity and abundance of species (particularly waterbirds and passage migrants) recorded during the second survey season (2024) as a result of flooding.

Non-breeding birds

2.7.25 The survey is reported in **Application Documents 6.2.3.2.B Appendix 3.2.B Wintering Bird Survey Report 2022-2023** and **Application Document 6.2.3.2.C Appendix 3.2.C Wintering Bird Survey Report 2023-24**. A total of 101 non-breeding bird species were recorded within the entire Survey Area, of which 68 species had notable status. A total of 66 species were recorded within the intertidal areas and 83 within the inland areas.

2.7.26 In both winter survey seasons i.e. 2022-23 and 2023-24, the shoreline and intertidal areas supported a diverse overall wintering waterbird assemblage. Overall, major aggregations of waterbirds were observed utilising all areas of the foreshore and intertidal area; however, the River Stour and its river mouth were one of the areas with the highest concentrations of birds. The lagoon adjacent to the coastal footpath and the tideline were also favoured areas. Dunlin (*Calidris alpina*), cormorant (*Phalacrocorax carbo*), oystercatcher, grey plover (*Pluvialis squatarola*) and sanderling (*Calidris alba*) were recorded in large numbers in 2024 and peak counts equivalent to 0.5% - to 0.7% of Great Britain population estimates.

2.7.27 Sanderling was the only species recorded in numbers that are equivalent to or exceed the 1% of Great Britain population threshold. Golden plover (*Pluvialis apricaria*) and sanderling were recorded in large numbers (within the Survey Area), comprising a large proportion of the most recent SPA/ Ramsar Wetland Bird Survey (WeBS) 5year mean peaks. Since the majority of species recorded occur in numbers of at least county importance and several species approach national 1% thresholds, the coastal bird assemblage as a whole is assessed as being of **National** importance.

2.7.28 With regard to the inland survey area (i.e. west of the golf course) several fields (Parcel 244 in particular) were found to support golden plover. A significant assemblage (370 birds) was recorded on a single survey visit in December 2022, utilising flooded fields north-east of the River Stour. In 2023-24 numbers were lower (peak count of 13) but this still exceeds 1% of the original SPA citation population and recent WeBS data counts. Therefore, it is likely that this area constitutes functionally linked land associated principally with the Thanet Coast and Sandwich Bay SPA, for which golden plover is a named qualifying feature. Counts of inland golden plover were recorded nocturnally on two visits (December and January) and once diurnally (January).

2.7.29 Large inland nocturnal counts (flocks of 100-200 individuals) of curlew (*Numenius arquata*) and teal (*Anas crecca*) were made in the 2023-24 survey season. These were mainly recorded within the flooded fields south of the River Stour canal indicating considerable inland nocturnal use of the Survey Area by species which were otherwise more often recorded during the intertidal surveys. Counts of redshank (*Tringa totanus*), dunlin and golden plover, while not large, do indicate inland nocturnal foraging activity by these species. Snipe, lapwing, green sandpiper, water pipit and skylark were noted to use the inland areas occasionally in numbers comparable to county peak data. Species generally favoured areas in proximity to the River Stour canal (especially flooded fields to the south) or the fields within the western section of Parcel 244 (east of the railway line and noted to hold standing water on occasion). The remaining species numbers and assemblage was generally reflective of the habitats present and were only locally notable.

2.7.30 Overall, the coastal zone is classified as being of **National** importance for non-breeding birds. The inland area is assessed as being of importance as functionally-linked land for golden plover associated with Thanet Coast & Sandwich Bay SPA/Ramsar, and of **Regional** importance for non-breeding birds generally.

Hazel Dormouse

2.7.31 The survey is reported in **Application Document 6.2.3.2.M Appendix 3.2.M Hazel Dormouse Survey Report**. The desk study search of records held by Kent and Medway Biological Records Centre did not return any records of hazel dormouse within 2 km of the Kent Onshore Scheme in the past 10 years. No conclusive evidence of dormouse was found during the surveys of the proposed Kent Onshore Scheme. In 2023 and 2024, five structures identified as possibly being the beginnings of dormouse nests were found but no further records of the nests were observed.

2.7.32 During July 2024, three structures were identified as potential dormouse nests. The majority of the potential dormouse nests were located in the same hedgerow, and it is likely the same individual was making the nests due to their proximity. However, it was not confirmed to be dormouse. Other species recorded during the survey include wood mouse, and vole sp. As well as some food caches and uneaten hazelnuts.

2.7.33 The overall value of the Kent Onshore Scheme for hazel dormouse is of **Negligible** importance. Nonetheless, due to anecdotal evidence from landowners, the possibility of encountering dormice during construction has been assessed in this chapter.

Badger

2.7.34 This survey is reported in **Application Document 6.2.3.2.A Appendix 3.2.A Phase 1 Habitat Survey Report** (including Badgers and Important Hedgerows). Habitat suitable for foraging badger is present throughout the survey area. However, due to the wet nature of much of the Kent Onshore Scheme boundary and the limited number of banks and woodland features, locations for the excavation of setts are limited. A [redacted]. No other evidence was observed within the proposed Kent Onshore Scheme. Overall, the Kent Onshore Scheme is considered to be of **Local** importance for badgers.

Bats

2.7.35 These surveys are reported in **Application Documents 6.2.3.2.K Appendix 3.2.K Bat Tree Surveys Report** and **Application Document 6.2.3.2.L Appendix 3.2.L Nighttime Bat Walkover and Static Detector Report**. The Kent Onshore Scheme was surveyed both or presence of bat roosts and for activity via walked activity surveys supplemented by static detector surveys.

2.7.36 Five trees were identified as having the potential to support roosting bats. Four of these were oaks within hedgerows, with dense ivy cover, while the fifth was a *Eucalyptus*. None were highlighted to be removed during the construction and/or operation of the proposed Kent Onshore Scheme and therefore were not surveyed any further.

2.7.37 Given the size of the Kent Onshore Scheme six bat activity survey transect routes were appropriate, which encompassed suitable habitat within the Kent Onshore Scheme.

2.7.38 The majority of activity recorded during the transects was of soprano pipistrelle bats across the survey area, followed by common pipistrelle (*Pipistrellus pipistrellus*), in line with the relative abundance of these species as well as the relative detectability of their calls. Based on professional judgement, activity levels of all species recorded during the walked transects were considered to generally be low across the Kent Onshore Scheme, but with more activity concentrated in the following locations, as shown on Figure 6 of **Application Document 6.2.3.2.L Appendix 3.2.L Nighttime Bat Walkover and Static Detector Report**:

- along the hedgerow north of Ebbsfleet Lane in the west of Transect 1;
- along the ditch network in the west of Transect 2;
- along the woodland edge of Weather Lees Hill in the south of Transects 2 and 3; and
- along Minster Stream within Transects 3, 4 and 5.

2.7.39 In the majority (15) of the static automated detector monitoring occasions, soprano pipistrelle was the most frequently recorded species; however, on 14 of the occasions common pipistrelle was the most frequently recorded. On two monitoring occasions

Nathusius' pipistrelle was the most frequently recorded species (at Transect 2 in October 2023 and Transect 6 in October 2023). The number of registrations per hour for each surveyed location and month are contained within Annex D of **Application Document 6.2.3.2.L Appendix 3.2.L Nighttime Bat Walkover and Static Detector Report**.

2.7.40 The highest levels of overall bat activity recorded from the automated detector surveys were at Transect 5, followed by Transect 4.

2.7.41 *Myotis* bats were recorded on 14 occasions during the walked transects and registrations were made at all of the automated static bat detector locations at least once throughout the survey period.

2.7.42 Barbastelle (*Barbastella barbastellus*) bat was not recorded during the walked activity transects. Possible barbastelle bat registrations were made at automated static detector locations in Transects 1 to 5. However, due to the quality or length of the calls no calls could be confirmed to be barbastelle bat.

2.7.43 The Kent Onshore Scheme is considered to support an assemblage of at least nine species comprising common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), noctule (*Nyctalus noctula*), Leisler's (*Nyctalus leisleri*), serotine (*Eptesicus serotinus*), brown long-eared bat, and *Myotis* species that could not be identified to species level.

2.7.44 Using a combination of both survey and desk study data for the Kent Onshore Scheme, and in line with the methodology for assessing importance of bat assemblage as set out within the Bat Mitigation Guidelines (Reason & Wray, 2023), a result of National importance is returned for the bat assemblage present.

2.7.45 However, that does not take account of the levels of use by particular species identified. Based on professional judgement, activity levels of all species recorded during the walked transects were considered to generally be low across the Kent Onshore Scheme. Based on the synthesis of survey results, the mosaic of habitats within the Survey Area is considered to be of **Regional** (county) importance for bats.

Reptiles

2.7.46 The survey is reported in **Application Document 6.2.3.2.I Appendix 3.2.I Reptiles Survey Report**. Three species of common reptiles were recorded during the survey visits within the proposed Kent Onshore Scheme: common lizards, slow worms and grass snakes. A peak count of 11 common lizards were recorded, which is considered a good population based on Froglife guidance (Froglife, 1999). Grass snakes reached a peak count of 4 adults, which is considered a low population. Slow worms were the most prevalent species recorded during the survey, with a peak of 38 adults.

2.7.47 This is considered to be an exceptional population of slow worms, but slow worm is a common and widespread species. Survey Area A (as identified in the survey report) was the location with the highest incidences of reptiles within the proposed Kent Onshore Scheme with peak counts of adult slow worms of 27 on 13 May 2024 and 05 June 2024 and a peak of nine common lizards, and three grass snakes, on 20 May 2024. Survey area A is located south of the River Stour and consists of neutral grassland. Habitat adjacent to the existing track on the former hoverport site is also suitable for reptiles. This area was included within the Order Limits too late to be included in reptile survey, but no civil engineering highway works are planned; rather

the existing unvegetated track and hardstanding areas will be used and there will be no vegetation clearance.

2.7.48 Overall, the proposed Kent Onshore Scheme is of **Local** importance for common reptiles.

Riparian Mammals

2.7.49 The survey is reported in **Application Document 6.2.3.2.H Appendix 3.2.H Riparian Mammals Survey Report**. Within the desk study (2024) the closest record for otter was 960 m south of the proposed Kent Onshore Scheme, with water vole 10 m northwest of, and beaver activity recorded within, the proposed Kent Onshore Scheme south of the River Stour. More recent records provided by the Environment Agency in 2024 indicate that an otter was seen at TR3340761157 at Great Stonor. The Environment Agency also has records of water voles in the Ash Levels area.

2.7.50 A total of 27 water courses were surveyed and assessed for the presence of riparian mammals. As shown in the survey appendix, mammal signs that could indicate otters' presence were found at two water courses. However, the evidence could not be confirmed and could have been caused by other mammals and/or large wading birds. Nine water courses showed evidence of the presence of water voles. Evidence of water vole presence identified included burrows, feeding remains, feeding “lawns” and latrines. Evidence of the presence of beavers (gnawing, haul outs and the start of a beaver canal) was identified along the River Stour. Evidence was found in four locations. Mink (*Neovison vison*) has also been observed within the Kent Offshore Scheme boundary.

2.7.51 Overall the Kent Onshore Scheme is considered to be of **Regional** importance to riparian mammals.

Terrestrial Invertebrates

2.7.52 This survey is reported in **Application Document 6.2.3.2.J Appendix 3.2.J Terrestrial Invertebrate Survey Report**. As shown in the survey report, surveys were undertaken of four areas within the Kent Onshore Scheme boundary representative of the best habitat in the area. Two of these were adjacent to the River Stour, one was in the grassland and scrub within the footprint of the Minster Converter Station and Substation, and the fourth was adjacent to the A256. A total of 189 terrestrial invertebrate species were recorded during surveys. Two scarce species were recorded in the emergent vegetation of the River Stour itself: *Acupalpus exiguus* (a nationally scarce beetle) and *Datonychus melanostictus* (a locally scarce weevil).

2.7.53 Seven locally scarce invertebrates were recorded in grassland south of the River Stour (a mixture of beetles, weevils and ground bugs, plus a spider and a bumble bee). In the grassland and scrub within the footprint of the proposed Minster Converter Station and Substation six locally scarce and three nationally notable invertebrates were found. These were a mixture of flies and beetles. On the embankment along the A256, three notable and one locally rare species were found; two ground bugs, a weevil and a hoverfly. One species found in the grassland south of the River Stour (the bee *Bombus muscorum*) is a Kent Biodiversity Strategy priority species. In addition to survey data, records were obtained from other organisations and Kent Wildlife Trust confirmed that the former hoverport site supports rare invertebrates, including fiery clearwing moth and Sussex emerald moth, both of which are legally protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Survey of the hoverport site was not

possible for this ES chapter as it was included in the Order Limits after the terrestrial invertebrate survey season.

2.7.54 It should be noted that the classification of species as being 'nationally notable' can partly reflect under-recording, as invertebrates (other than charismatic species such as butterflies and dragonflies) are frequently under-recorded. The judgment of overall assemblage value has thus been made by a qualified entomologist from a combination of published data books on scarcity, and professional experience of encountering these species on other surveys. Based on this, the four survey areas have a limited selection of interesting species and are collectively ranked as being sites of **Low** to **Medium** invertebrate interest.

2.7.55 The overall value for the Kent Onshore Scheme for terrestrial invertebrates is considered to be of **District** importance, taking account of the relatively low number of notable invertebrates recorded.

Aquatic Macrophyte

2.7.56 This survey is reported in **Application Document 6.2.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**. The River Stour and Minster Stream were surveyed for aquatic macrophytes in July 2024. No notable or protected species were recorded on site. Two non-native species; the INNS water fern (*Azolla filiculoides*) and Canadian waterweed (*Elodea canadensis*) were found on the River Stour and Minster Stream respectively, both of which are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

2.7.57 The EA Catchment Data Explorer (Environment Agency, 2024) macrophyte WFD metrics show Minster Stream as having a High WFD status (see **Application Document 6.9 Water Framework Directive Assessment**) indicating that the site is minimally or un-impacted by eutrophication and/or modification to morphological conditions. In contrast the River Stour had a Poor WFD status suggesting the site is subject to substantial impact by eutrophication and/or modification to morphological conditions.

2.7.58 As no notable or protected species were present the overall value for the Kent Onshore Scheme for aquatic macrophytes is considered to be of **Local** importance.

Aquatic Macroinvertebrates

2.7.59 This survey is reported in **Application Document 6.2.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**. Aquatic macroinvertebrate surveys were undertaken at 19 sites within the Kent Onshore Boundary in autumn 2023 and nine sites in spring 2024. All ditch survey sites were resident to a typical macroinvertebrate community indicative of sedimented/heavily sedimented conditions and with low sensitivity to flow reductions. All ditch locations surveyed indicated good water quality, but three sites; DS14 – near the proposed construction compound (K01 and K02) areas and DS7 and DS9 south of the River Stour suggested there were habitat pressures from poorly managed nutrified ditches. All riverine sites demonstrated that all survey locations possessed a macroinvertebrate community generally adapted towards heavily sedimented habitats and with a low sensitivity to flow reductions.

2.7.60 Although not found in the survey samples taken, the notable species Shining Ram's-horn (*Segmentina nitida*) which is designated under Section 41 of the NERC Act 2006 and the Kent Biodiversity Strategy 2020-2045 Priority Species List was found within the

Kent Onshore Scheme boundary in the desk study, located within the ditch network to the south of the River Stour.

2.7.61 Three non-native non-invasive species were found in the samples takes; New Zealand mud snail, (*Potamopyrgus antipodarum*) the bladder snail (*Physella* sp) and the freshwater amphipod (*C. pseudogracilis/floridanus*)

2.7.62 As the priority species Shining Ram's-horn was found in the desk study the overall value for the Kent Onshore Scheme for aquatic macroinvertebrates is considered to be of **Regional** importance.

Fish

2.7.63 This survey is reported in **Application Document 6.2.3.2.N Appendix 3.2.N Aquatic Ecology Survey Report**. Two fish surveys were undertaken on the Minster Stream and the River Stour in July 2024.

2.7.64 In both the desk study and fish surveys, a single protected species; European eel (*Anguilla Anguilla*) was found. The European eel is listed as Critically Endangered on the International Union for Conservation of Nature Red List of Threatened Species. It is also a Section 41 Species of Principle Importance for the purpose of conserving of biodiversity under the Natural Environment and Rural Communities Act 2006 and on the Bonn Convention Appendix. The species is protected under the Eels (England and Wales) Regulations 2009, as well as the Salmon and Freshwater Fisheries Act 1975 (as amended under the Environment Act 1995) and is a Priority Species in the Kent Biodiversity Strategy 2020-2045.

2.7.65 A further eight species (not of note or protected) were found in the Kent fish surveys; bleack (*Alburnus alburnus*), bream (*Albramis brama*), chub (*Squalius cephalus*) dace (*Leuciscus leuciscus*), perch (*Perca fluviatilis*), roach (*Rutilus rutilus*), nine-spined stickleback (*Pungitius pungitius*) and three-spined stickleback (*Gasterosteus aculeatus*).

2.7.66 Due to the presence of European eel, which is a species of Principal Importance, the overall value for the Kent Onshore Scheme for fish is considered to be of **Regional** importance.

Future Baseline

2.7.67 Relative to the current baseline, the value of ecological features present is not expected to change significantly by the end of the construction in 2031 (subject to gaining development consent, construction works would be expected to start in 2026 and be functionally completed by the end of 2031 with reinstatement potentially continuing into 2032). Management of the habitats is unlikely to change over this period, and consequently no significant degradation or improvement of habitat condition (and therefore its value for fauna) 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.

2.8 Proposed Project Design and Embedded Mitigation

2.8.1 The Proposed Project has been designed following the mitigation hierarchy as defined in NPS EN-1: avoid, reduce, mitigate and compensate. In the first instances the potential to avoid or reduce ecology and biodiversity impacts and effects has been taken through the process of design development, and by embedding measures into the

design of the Proposed Project. Where this is not possible, then mitigation measures have been identified, and if mitigation is not possible then compensation has been explored.

2.8.2 As set out in **Application Document 6.2.1.5 Part 1 Introduction Chapter 5 EIA Approach and Methodology**, mitigation and compensation measures typically fall into one of three categories: embedded measures; control and management measures; and mitigation measures. Embedded, and control and management measures (including compensation measures where required) are set out below. Additional mitigation measures are discussed in Section 2.10.

2.8.3 In this ecology chapter the proposed landscape planting around the Minster Converter Station and Substation is considered embedded measures, the extent and location of which has been developed in response to the design of the Proposed Project and determined by the visual screening and land drainage requirements.

2.8.4 In this ecology assessment, 'additional mitigation' has been considered to be measures that are not built into the design and/or construction methodology (the latter including culvert design or landscape planting around the converter station) or are not standard mitigation measures (standard mitigation includes avoiding vegetation clearance in nesting season where possible and using noise fencing), or are not required by law (those required by law include the exclusion season for water voles or measures to avoid disturbance of Cetti's warbler). Additional mitigation includes compensation measures (i.e. habitat creation specifically required to address habitat losses).

Embedded Measures

2.8.5 Embedded measures have been integral in reducing, and where possible avoiding, the ecology and biodiversity effects of the Proposed Project. Measures that that have been incorporated are:

- Sensitive routeing and siting of infrastructure and temporary works;
- Commitments made within **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**. These are:
  - Creation of 6.5 ha of woodland, 5 ha species rich neutral grassland, 1 km native hedgerow, 2 ha of balancing pond, and swales along the permanent access road (B41) as set out in **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**. The final habitat creation proposals will be developed through the final Landscape and Ecological Management Plan so may deviate from areas/habitats presented here.
  - HVDC cables would be installed using a trenchless technique at the landfall to avoid direct impacts on Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC (B42).
  - Measures to avoid the trenchless drilling equipment getting stuck (B43).
  - Noise fencing or similar effective noise reduction methods around works areas where required to avoid significant disturbance on noise sensitive receptors, particularly the SSSI and birds. Noise monitoring would be included adjacent to the SSSI to confirm the mitigation measures met the required noise thresholds (B44).
- Seasonal restrictions on some works:

- Installation of overhead line pylons either side of Sandwich Bay to Hacklinge Marshes SSSI will not cover the entire breeding season but will either take place outside the bird breeding season or will only occupy approximately two months of the breeding season (B45).
- It is assumed that water voles could be present on any ditch section to be traversed and a watching brief will therefore be introduced during any vegetation clearance in these ditches. Displacement of water voles if any are encountered would be undertaken under the supervision of a licenced ecologist under Class Licence CL31[6]. This would restrict clearance of any locations where water voles are present to either 15 February to 15 April or 15 September to 31 October (B46).
- In order to avoid the nesting bird season and the water vole active season, vegetation clearance of sections of ditch will need to take place during 15 September to 31 October (this being one of the two legally permissible windows for excluding water voles by displacement). However, if pre-construction surveys undertaken immediately prior to the clearance works taking place confirm the absence of nesting birds, vegetation removal may also occur between 15 February to 15 April (this being the other legally permissible window for excluding water voles by displacement), provided that pre-construction surveys have been undertaken to ensure there is no suitable habitat for hibernating reptiles. If pre-construction surveys identify no water vole burrows or nesting birds are present within the area to be cleared, then vegetation clearance could also take place outside these windows. The actual culverts will then be installed at the appropriate time as the haul road progresses across the site (B47).

- Ensure disturbing works commence in an area prior to the start of the Cetti warbler nesting season where possible. A 20 m buffer will be implemented during construction around any Cetti's warbler nests that do establish within the construction area in each nesting season. A specific decision will then be undertaken in discussion with the ecological clerk of works over the construction activities that can take place in that area while the nest is active (B48).
- Minimising the width of the cable corridor at ditch and hedgerow crossings to 20 m where possible (B11).
- Mature vegetation removed from hedgerows and ditches will be retained as close to the area of removal as possible, retaining intact root balls, where feasible and desirable, such that it can be re-used (B12). See **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**.
- Hedgerow gaps will be planted once works are complete with 'light standards' or feathered trees, while gaps in ditch marginal vegetation will either be planted with mature emergent vegetation purchased from nurseries or left to recolonise naturally from the adjacent ditch vegetation (B13). See **Application Document 7.5.7.2 Outline Landscape and Ecological Management Plan – Kent**.
- A precautionary method will be followed when undertaking vegetation clearance potentially suitable for dormice which will be undertaken in two stages under supervision of a suitably qualified ecologist (B14).

[6] Water voles: licence to displace them (CL31) - GOV.UK

- While the haul road will be fenced this fence will not go entirely to ground level so mammals such as badger will be able to pass (B15).
- If the culverts mentioned in Commitment W03 (see control and management measures below) can avoid specific vole burrow locations through micro-siting while still meeting the needs of the Proposed Project, this will be implemented (B16).
- The culverts will also avoid narrowing of natural channel width. Where bank material cannot be preserved within the culvert (due to the weight or levels) they will also include a minimum 150 mm wide mammal ledge (with 600 mm headroom where ditch depth allows) to ensure continued accessibility by water voles (B17).
- Drainage outfalls would be designed to exclude eels from accessing Sustainable Drainage Systems (SuDS), for example by having outfall pipes situated above the receiving water level (B18).
- There will be no lighting near any badger setts or any significant sources of noise that would affect badgers during construction (B49).
- There will be no lighting directed towards any of the four trees with bat roost potential identified in the surveys for the Kent Onshore Scheme (B57).
- In line with best practice guidance from the Bat Conservation Trust and Institute of Lighting Professionals (ILP) operational lighting would be the minimum required for the safe working of the proposed Minster Converter Station. Lighting would be directed to the interior of the Converter Station, and on as low a column height as possible, with measures such as hoods or cowls implemented where required to minimise light spill onto immediately surrounding habitat (B58).

Control and Management Measures

2.8.6 Measures relevant to the control and management of impacts during construction have been included within **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**. The following measures have been taken into account in assessing the ecology and biodiversity effects of the Proposed Project:

- Biodiversity protection through CoCP measures B01 to B10:
  - 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 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 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: As far as possible, trenches and excavations should not be left open overnight. Where there will be a risk of animal entrapment, a means of escape (such as a plank that can be used as a ladder) will be installed into all excavations that are 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 and Himalayan balsam, 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 works could commence immediately after completion of the second stage. Reptile hibernacula will be retained and protected during construction 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 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. 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.
- B08: During culvert installation there would be a watching brief and fish rescue where required. Where over pumping is required, pumps would be fitted with 2mm screens to prevent injury to fish or eels.
- B09: Measures to manage risk of frac out: Ensuring sufficient surveys have been undertaken to understand the ground conditions to inform the final design; Design a profile sufficiently deep for the methodology and conditions, with hydrofracture modelling used to check that there is sufficient factor of safety; Use of a drilling fluids engineer to design and monitor the fluid properties; Ensure that the trenchless bore is sufficiently clean of cuttings during drilling; Monitoring fluid pressures in the bore, and returns to the entry pit during drilling; The use of “spotters”, personnel stationed above the onshore drill line to look for any frac out or break out; and if drilling fluid losses occur, lost circulation material (LCM) may be added to seal the ground. As a last resort, cementitious grout may be used to seal fractures.
- B10: The foundations of the bridge across the River Stour would use soft-start non-percussive piling techniques to limit disturbance, which would assist in

allowing sounds to increase gradually allowing fish in the immediate vicinity to swim away.

- Control of dust generation through CoCP measures GG17, GG18, GG19, GG20, AQ02, AQ03, AQ05 and AQ08;
- Water quality controls through CoCP measures W02, GH05, GG14, GG15, GG16, W06, W11; and
- Riverbank and in-channel vegetation will be retained where not directly affected by installation works. Where ditches retaining seasonal flows are crossed, culverts in waterbodies will either preserve the natural bed or be box culverts with inverts sunk a minimum of 300 mm below the hard bed of the watercourse and natural / existing bed material placed across the inside of the culvert, to maintain existing channel gradients and habitat for aquatic invertebrates, as well as to ensure continued passage for in channel species (W03).

2.9 Assessment of Impacts and Likely Significant Effects

2.9.1 The assessment of the effects of the Proposed Project on ecology and biodiversity receptors described in this section considers the embedded, control and management measures described in Section 2.8 as well as additional mitigation measures described in Section 2.10. Where additional mitigation measures are required, the effect prior to additional mitigation is stated, followed by the 'residual' effect after additional mitigation. In all other cases, where no additional mitigation is required, the original effect and residual effect are identical.

2.9.2 None of the Public Right of Way (PROW) diversions proposed as part of the Kent Onshore Scheme will impact protected sites or protected species compared to the original PROW routes. Therefore, these are not discussed further in this Chapter.

2.9.3 Pegwell Bay part of Sandwich Bay to Hacklinge Marshes SSSI, Thanet Coast & Sandwich Bay SPA and Sandwich Bay SAC is also a Kent Wildlife Trust Reserve. Since it is already covered by three statutory designations the Wildlife Trust Reserve is not separately discussed in this chapter as an ecological receptor in itself.

2.9.4 There is no linking impact pathway between the Kent Onshore Scheme and the reefs and sea caves of Thanet Coast SAC, Princes Beachlands LNR or Pegwell Bay Infilled Dry Valley local wildlife site. Therefore, those sites are not discussed further. Stodmarsh SAC/SPA/Ramsar is considered further but due to distance from the Kent Onshore Scheme is only considered regarding collision risk for birds during operation.

2.9.5 There is no discussion below of great crested newts because it has been agreed with Natural England that the Proposed Project will use the Kent District Licensing Scheme for this species. As such there has been no need to undertake surveys, impact assessment or delivery of specific mitigation. District level licensing is an alternative approach to mitigation licensing for planning applications to develop sites which could affect great crested newts. District level licensing aims to increase the number of great crested newts by providing new or better habitats in targeted areas to benefit their wider population. It’s a simpler, quicker process than mitigation licensing because planning applications do not need to include surveys of great crested newts or plans to carry out mitigation work to move newts to safety. The financial contribution to the licensing scheme ensures delivery of measures as a strategic level to support a conclusion of no likely significant effect.

Construction Phase

2.9.6 The impact pathways scoped into the assessment of the construction phase are habitat loss, disturbance (noise and lighting), pollution (spillages and frac out), pollution (dust), air quality, disruption of connectivity, shading of riparian habitats, and inadvertent killing and injury.

Designated Sites

Habitat loss

Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC

2.9.7 There would be no terrestrial habitat loss from any internationally or nationally important wildlife sites. Thanet Coast and Sandwich Bay SPA/Ramsar site and Sandwich Bay SAC would be traversed by the Proposed Project. However, this would be undertaken using trenchless technique from a compound (K05) approximately 470 m west of the SPA/SAC/Ramsar site. As such there would be no surface works within the terrestrial or saltmarsh parts of the SPA/SAC/Ramsar site. The drill would be approximately 15-18 m below the surface at the saltmarsh as identified in **Appendix A of Application Document 7.3 Design Development Report**. Impacts on intertidal mudflat are covered in the Offshore Scheme ecology assessment, specifically Section 2.9, **Application Document 6.2.4.2 Part 4 Marine Chapter 2 Benthic Ecology**.

2.9.8 Stuck drilling equipment is a very low risk and there would thus be no requirement for surface works in the saltmarsh. If drilling equipment becomes stuck it would be freed by additional tooling and works at the entry or exit (B43). The drill within the SPA/Ramsar/SAC is too deep to consider excavating down to the equipment, other than the last 45 m (intertidal mudflats beyond the saltmarsh). The chance of needing to excavate in the last 45 m is estimated at 1 in 200 (i.e. very low) based on professional judgement and experience from other projects.

2.9.9 Retrieval of stuck equipment, in the very unlikely event it arises, will depend on the location of the equipment and the cause of the sticking. The most common retrieval method is to use a second drilling string to follow the stuck string and clean the bore with a "donut" until frictional forces along the stuck drilling string are lowered sufficiently to allow the drilling equipment to be pulled out by the HDD rig. In the extremely unlikely event that a drilling string cannot be recovered it will be left in situ, having no ecological implications given the depth below ground and thus lack of connection to surface features, and a new HDD will be drilled on a parallel alignment within the consenting boundary.

2.9.10 Sandwich Bay SAC is partly designated for dune slack habitats. Dune slacks are low lying areas within dune systems that are seasonally flooded and fed mainly by rainwater. The stiff clay and silt layers of the Thanet Beds act as an aquitard, confining the Chalk aquifer. The landfall trenchless installation will be drilled within chalk bedrock, only passing through the Thanet Beds and overlying superficial deposits at the drill entry (onshore) and exit (intertidal) locations. Groundwater at the drill entry pit is approximately 6 m below ground level, which is 4 m below maximum depth of the entry pit. Dewatering of the trenchless drill is therefore not required.

2.9.11 At the trenchless exit pit in the intertidal area, artesian groundwater may be present. As standard practice, measures to counter the artesian pressures to prevent changes in

the chalk groundwater piezometric level will be installed. Moreover, the duct installed into the drill will be sealed at entry and exit to prevent any groundwater pathways changing the groundwater regimes in the long term. The groundwater at the open trenches is generally below the base of the excavations (1.5 to 2 m below ground level). Therefore, no dewatering is required. Where Tidal Flat Deposits overlie the Thanet Formation and groundwater is anticipated to be encountered, simple sump pump drainage is likely to be all that is needed. This does not noticeably lower groundwater levels.

2.9.12 The SAC sand dunes (and thus dune slacks) are approximately 600 m from the trenchless exit pit in the intertidal zone, over 1 km from landfall (onshore) trenchless drill drive pit, and approximately 1.2 km from the nearest open trenches. Given there is no need for trenchless dewatering and need for only localised sump-pump drainage of open trenches that will not noticeably lower groundwater levels, there is no potential for impacts on groundwater levels at the dune slacks. Therefore, no likely significant effect will arise on Sandwich Bay SAC due to absence of connectivity to the dune slacks.

2.9.13 Since the potential for habitat loss is so low, this is considered a negligible impact on a receptor of international importance. Since the impact is negligible the effect would also be **negligible** and thus not significant.

Sandwich Bay to Hacklinge Marshes SSSI

2.9.14 During construction, there will be no requirement for tree height reduction Management Unit 11 of Sandwich Bay to Hacklinge Marshes SSSI, where it runs parallel to the railway line, even though the new section of overhead line traverses this area. These trees are 6m height, and vegetation can reach almost 10m before it requires pruning to avoid interference with the overhead line.

2.9.15 Sandwich Bay to Hacklinge Marshes SSSI overlaps with Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC. Therefore, the impact assessment described above for that European site would also apply to the intertidal parts of the SSSI.

2.9.16 Since there would be no habitat loss, this is considered a negligible impact on a receptor of national importance. Since the impact is negligible the effect would also be **negligible** and thus not significant.

Ash Level and South Richborough Pasture Local Wildlife Site

2.9.17 There would be no loss of pools and scrapes in the Local Wildlife Site as these would be avoided by the works, with the nearest new pylon being located approximately 50 m away from the nearest pool/scrape. However, during construction of the new section of overhead line, and the connection of the new overhead line to the existing Richborough to Canterbury overhead line, there would be temporary loss of 30 ha of land from the Local Wildlife Site due to works areas and the haul road necessary to reach the pylon construction areas. This is approximately 4 % of the LWS, leaving more than 95% unaffected. Approximately half of this would be from arable land, with the remainder from floodplain grazing marsh and small sections of ditch. The evidence from the works associated with the existing Richborough to Canterbury overhead line, which also undertook construction works in this area (completed by 2021), shows that the habitat can recover in a relatively short period (1-2 years). On balance, the extent of loss but its reversible nature leads to this being a moderate adverse impact on a receptor of Regional importance. Without additional mitigation this would therefore be a **moderate adverse** effect that is **significant**.

2.9.18 In order to provide enhancement to the Local Wildlife Site as a result of the Kent Onshore Scheme, opportunities for habitat improvement along the River Stour have been considered. During Modular River Physical (MoRPH) surveys of the River Stour undertaken to inform the Biodiversity Net Gain assessment, bank top water related features were identified to have an indicator score of 0, since none were recorded in the surveyed sections. Creating scrapes or ponds on both banks and associated wetland areas with short non-woody vegetation, tall non woody vegetation, and shrubs and trees would help to increase this indicator. This would also improve the bank top tree feature richness indicator score, which is 0 due to the lack of trees.

2.9.19 It is therefore proposed as part of the Kent Onshore Scheme to deliver a series of small shallow riverside scrapes with riparian planting (B52), and some alder and willow planting, along the stretch of the River Stour within the Order Limits and (on the south side of the River Stour) within the Local Wildlife Site, before the end of construction.

2.9.20 In addition, invasive water fern (*Azolla filiculoides*) has been recorded in the ditches on site. This can be managed by introducing the Azolla weevil[7] into the watercourses. This weevil consumes the fern but then dies and is consumed by fish. Therefore, as part of the Kent Onshore Scheme the Azolla weevil would be released into the watercourses to control the invasive fern; this would be targeted to locations where the infestation is greatest and control therefore most beneficial (B52). This is set out in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**.

2.9.21 With the above additional mitigation included, there would be a moderate adverse impact on a receptor of Regional importance in the short-term (lasting for 1-2 seasons as the works are completed and vegetation recovers) but this is reversible and there would be a minor beneficial impact in the long-term due to habitat creation. This is considered a long-term **minor beneficial** residual effect which is not significant.

Non-statutory Site TH12 (Woods & Grassland, Minster Marshes)

2.9.22 Woods & Grassland, Minster Marshes (non-statutory site TH12) partly includes the rail corridor which traverses the proposed Kent Onshore Scheme. There would need to be small scale localized vegetation removal (approximately 200 m^2, only some of which is within the non-statutory site) around the current level crossing to upgrade it for construction traffic, although this would still leave the band of vegetation along the railway corridor which is the reason for site designation.

2.9.23 Since the impact is limited in extent and reversible following construction, it is considered a minor adverse impact on a receptor of Regional importance, which is a **minor adverse** effect and not significant.

Disturbance

2.9.24 During discussions with Natural England in June and July 2024, the following assumptions were agreed that have informed the assessment of noise impacts on ecological receptors:

- Birds generally give no reaction to noise levels of 55 dB or below (Cutts & Allan, 1999);
- A change above 3 dB is required for the difference to be perceptible.

[7] https://www.cabi.org/what-we-do/cabi-centres/azolla-control/

2.9.25 It was also agreed that there is a difference between being perceptible as a change and being disturbing. Therefore, while a 3 dB change is a suitable threshold for HRA screening (for example) a greater change would likely be needed to actually cause disturbance.

2.9.26 If the threshold for no reaction is 55 dB, and any noise would need to be at least 58 dB to be perceptibly louder (i.e. 3 dB greater than 55 dB), then it was agreed with Natural England that a reasonable precautionary threshold for significant disturbance would be 60 dB (i.e. 5 dB above 55 dB). The use of a 60 dB threshold has also been agreed with RSPB as part of the Proposed Project's ongoing engagement

2.9.27 With this in mind 60 dB LAmax contours, were calculated after allowing for use of noise mitigation such as close-boarded fencing, for all phases of construction. For the purposes of this modelling and in line with guidance, a 10 dB reduction has been allowed due to best practicable noise reduction means. In some cases close-board noise fencing will be the most appropriate method to achieve this 10 dB reduction, but there is potentially a 10 dB to 20 dB reduction available through the use of quieter plant, alternative methods and suitable handling techniques. The overall contour is presented in **Figure 5 Map of 60dB average LAmax contour at Kent** within **Application Document 6.6 Habitat Regulations Assessment Report**. The use of best practicable methods to reduce noise is commitment B44 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Note that LAmax represents the maximum noise level experienced during an activity. The average or typical noise level (LAeq) is much lower.

Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC

2.9.28 Noise modelling undertaken for all elements of construction (such as the overhead line installation, the haul road construction and the converter station platform creation) of the Kent Onshore Scheme has identified that the 60 dB contour would not reach Thanet Coast & Sandwich Bay SPA/Ramsar site. There would thus be no disturbance of breeding or non-breeding birds for which the SPA/Ramsar site is designated.

2.9.29 This is therefore a negligible impact on a receptor of international importance, resulting in a **negligible** effect that is not significant.

Sandwich Bay to Hacklinge Marshes SSSI

2.9.30 During site preparation, earthworks and foundation creation for the proposed Minster Converter Station and Substation, including associated piling, the 60 dB LAmax noise contour would at times extend up to 120 m into Management Unit 11 (Weather Lees Hill) of the SSSI, and thus cover 5.8 ha of the SSSI (0.3 % of the SSSI or 20.5 % of the Management Unit). This is the predicted noise level even after the implementation of standard mitigation such as 2 m high close-board noise fencing around the works area (related to commitment B44 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**). The construction of the permanent access road north of the SSSI would also raise noise levels in the SSSI above 60 dB LAmax up to 40 m into the adjacent part of the SSSI, thus affecting 1 ha or 0.06 % of the SSSI or 3.5 % of Unit 11. It is anticipated this section of permanent access road construction would be completed in approximately 4-6 weeks. During other construction activities associated with the construction of the proposed Minster Converter Station and Substation, best practicable noise mitigation would keep noise levels in the SSSI below 60 dB LAmax.

2.9.31 In addition, the establishment of the two pairs of new pylons (PC 54A, PC 54B, PC 53C and PC 53D) either side of the 1.5 ha SSSI strip along the railway line (totaling 5% of Unit 11 or 0.08 % of the SSSI) would elevate noise in that strip above 60 dB LAmax even after incorporation of noise mitigation, particularly during the tower foundation works (including associated piling). These pylons are scheduled to be installed during early March to early May 2028, with the foundation creation occupying approximately the first six weeks of that period. They would thus leave the later part of the bird nesting season unaffected. This is commitment B45 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments** which states '*Installation of overhead line pylons either side of Sandwich Bay to Hacklinge Marshes SSSI will not cover the entire breeding season but will either take place outside the bird breeding season or will only occupy approximately two months of the breeding season'*.

2.9.32 Natural England has identified that Unit 11 of the SSSI supports the 'Assemblages of breeding birds- Lowland open waters and their margins' feature of the SSSI. These birds would nest in water features present within the Unit and roost elsewhere in the Unit. Therefore, potential for noise disturbance of parts of this SSSI Unit would exist during the identified phases of work even with the use of standard noise mitigation such as 2 m high close-boarded fencing around the works area.

2.9.33 The construction of the platform for the Minster Converter Station and Substation, and the two pairs of pylons either side of the SSSI strip along the railway, would occur in different years, and would each affect different parts of the SSSI Unit. Therefore, in any nesting season only a proportion of the Management Unit (and a very small proportion of the SSSI) would be affected, and the greatest extent of impact would occur in a single nesting season. It is also important to note that the 60 dB LAmax contour is the maximum noise level experienced during an activity, not the typical or average noise level, which is much lower. Levels above 60 dB would therefore not be experienced continuously. Farm machinery used in routine operations such as ploughing, seeding and pesticide application routinely produced LAmax levels above 60 dB.

2.9.34 Nonetheless, as a precaution it is concluded that disturbance resulting from site preparation, earthworks and foundation creation for the Minster Converter Station and Substation, construction of the section of permanent access road immediately north of the SSSI, and installation of the pairs of pylons either side of the SSSI, would result in a moderate adverse impact on the SSSI (national value) which would be a **moderate** adverse effect and thus significant. Therefore, additional mitigation is required.

2.9.35 In order to minimise the area of SSSI subject to noise disturbance in any season, the site preparation, earthworks, and foundation creation for the Minster Converter Station and Substation, and the section of permanent access north of the SSSI (the most potentially disturbing activities, affecting the greatest part of the SSSI) are programmed to avoid the March to June period and thus avoid the nesting season. This is commitment B50 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.36 This would reduce the overall noise impact to a minor adverse impact on a receptor of national importance, which given the temporary and thus reversible nature and the fact it would only last for 1-2 nesting seasons, is considered to be a **minor adverse** residual effect which is not significant.

Pollution (Spillages and frac out)

Thanet Coast & Sandwich Bay SPA/Ramsar, Sandwich Bay SAC and Stodmarsh SAC/SPA/Ramsar

2.9.37 There is a direct potential pathway for pollution of Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC via Minster Stream and other watercourses that drain into the SPA/Ramsar and SAC, as well as via the trenchless installation receiving area which would be situated in the subtidal part of the SPA/Ramsar/SAC. There is also an indirect pathway to Stodmarsh SAC/SPA/Ramsar on a rising tide, due to the Proposed Project crossing the River Stour and the SAC/SPA/Ramsar being downstream of the tidal limit on that river.

2.9.38 Under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 it is an offence to pollute watercourses, irrespective of whether they are designated European Sites or connect to designated European Sites.

2.9.39 Therefore, the construction period on every project must have 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. This is usually undertaken in the form of a Construction Environment Management Plan (CEMP) which includes measures for the protection of ground and surface waters, pollution prevention measures and an emergency response plan for pollution events.

2.9.40 **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** forms an appendix to **Application Document 7.5.3 Outline Onshore Construction Environmental Management Plan (CEMP)**. **The Onshore CEMP** is secured through Requirement 6 of the draft DCO (**Application Document 3.1**). **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** sets out a number of control and management measures to be implemented for the protection of water quality that are relevant to this assessment, including:

- W02: Have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident.
- W02: The use of all static plant such as pumps in appropriately sized spill trays.
- W02: Prevent refuelling of any plant or vehicle within 15 m of a watercourse.
- W02: Prevent storing of soil stockpiles within 15 m of a main river (16m where river is tidal).
- W02: Inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids.
- GH05: All materials that could be hazardous to water quality will be stored in suitable areas, more than 8 m away from a watercourse, away from site traffic and in containers which are fit for purpose, meeting the requirements of the Control of Pollution (Oil Storage) Regulations.
- GG14: Fuels, oils and chemicals will be clearly marked as to their contents and stored responsibly, in a secure, bunded area with an impervious base, away from sensitive water receptors.
- GG14: All refuelling, oiling and greasing of construction plant and equipment will take place in an appropriate bunded area that includes an impervious base and

where possible interceptor drains. All pumps, generators and similarly fuelled equipment are to be placed on drip trays or in a bunded area and all valves, hoses and associated re-fuelling equipment will be regularly inspected and turned off and securely locked when not in use. Vehicles and plant will not be left unattended during refuelling. Appropriate spill kits will be made easily accessible for these activities. Potentially hazardous materials used during construction will be safely and securely stored including use of secondary containment where appropriate. Stored flammable liquids such as diesel will be protected either by double walled tanks or stored in a bunded area with a capacity of 110% of the maximum stored volume. Spill kits will be located nearby.

- GG15: Runoff across the site would be controlled through various methods, including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There would 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).
- GG16: Where required, washdown of vehicles and equipment would take place in designated areas within construction compounds. Wash water would be prevented from passing untreated into watercourses and groundwater. Appropriate measures would include the use of sediment traps.
- GG16: Ensure there is an adequate area of hard-surfaced road between the wash facility and the site exit, wherever site size and layout permits.
- W06: Where new or additional impermeable surfacing is required on any access tracks, bellmouths and in compound areas e.g. for parking provision, site offices, SuDS would be incorporated, appropriate to the existing ground conditions.
- W11: Surface water drainage from permanent above ground infrastructure would be managed using SuDS in accordance with policy and guidance requirements of the relevant Lead Local Flood Authorities.

2.9.41 As such, it is considered that the proposed Kent Onshore Scheme can be constructed in a way that would prevent pollution to the water environment. Since the risk of pollution with these measures in place is very low, this is considered a negligible impact resulting in a negligible effect that is not significant.

2.9.42 The risk of frac out, where drilling fluids may reach the surface due to fissures in the geology, while undertaking trenchless installation of the HVDC cable beneath Pegwell Bay has been considered. The measures to minimise and address risk of surface frac out or break out are contained in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)** in measure B09.

2.9.43 Given the above measures, frac out is considered low risk. Pollution is, therefore, considered a negligible impact on a receptor of international importance, resulting in a **negligible** effect that is not significant.

Sandwich Bay to Hacklinge Marshes SSSI, Ash Level and South Richborough Pasture Local Wildlife Site and Non-statutory Site TH12 (Woods & Grassland, Minster Marshes)

2.9.44 The same water quality control and management measures that apply to the protection of European sites discussed above, would also apply to the protection of other designated sites, ensuring no significant effect is likely to arise. Pollution is therefore

considered a negligible impact on receptors of National (the SSSI) and Regional (the local wildlife sites) importance, leading to a **negligible** effect that is not significant.

Pollution (Dust)

2.9.45 Guidance from the Institute of Air Quality Management (Institute of Air Quality Management, 2024) identifies that significant dust soiling can arise on ecological receptors located within 50 m of construction sites. Natural England feedback during statutory consultation on the Habitats Regulations Assessment (HRA) suggested that a more precautionary zone of 200 m should be used for HRA purposes. However, feedback from Natural England in relation to the air quality assessment recommended a similar distance to that used for human health impacts (i.e. 250 m). Therefore, in this chapter 250 m is used for dust impacts as a worst-case.

Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC

2.9.46 There would be no surface dust-generating activities within 250 m of any European sites as part of the construction of the Kent Onshore Scheme. Dust deposition is therefore a negligible impact on a receptor of international importance, leading to a **negligible** effect that is not significant.

Sandwich Bay to Hacklinge Marshes SSSI, Ash Level and South Richborough Pasture Local Wildlife Site and Non-statutory Site TH12 (Woods & Grassland, Minster Marshes)

2.9.47 There would be potentially dust generating activities within 250 m of Sandwich Bay to Hacklinge Marshes SSSI, Ash Level & South Richborough Pasture Local Wildlife Site and Non-statutory Site TH12 (Woods & Grassland, Minster Marshes). It is not feasible to quantify the degree of dust that might deposit on vegetation in the absence of mitigation as a wide range of factors affect the amount of dust that may arise; these are not readily quantified and there are no calculation tools available to do this. However, it can be stated that for any deposited dust to have an adverse effect it would need to be sufficiently thick in depth of layer coating leaves, and long in duration (i.e. not being washed off by rainfall) to materially interfere with photosynthesis.

2.9.48 It is considered necessary to implement dust control measures, as are implemented as standard on construction sites, in order to ensure dust deposition is sufficiently insignificant no material dust build up would occur. **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** forms an appendix to **Application Document 7.5.3 Outline Onshore Construction Environmental Management Plan (CEMP)**. The Onshore CEMP is secured through Requirement 6 of the draft DCO (Application Document 3.1). The standard dust control measures included in **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** are:

- GG17: Where required, wheel washing would be provided at each main construction works compound access point on to the highway. An adequate water supply would always be made available at these locations. Road sweepers would be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- GG18: Use water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site. Avoid dry sweeping of large areas.

- GG19: Earthworks and stockpiled soil would be protected by covering, seeding or using water suppression where appropriate.
- GG20: Bonfires and the burning of waste material would be prohibited.
- AQ02: Carry out regular site inspections to monitor compliance with the Air Quality Management Plan (AQMP), record inspection results, and make an inspection log available to the local authority when asked.
- AQ02: Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- AQ03: Erect solid screens or barriers around dusty activities or the site boundary so that they are at least as high as any stockpiles on site, or fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- AQ03: Keep site fencing, barriers and scaffolding clean using wet methods.
- AQ03: Remove materials that have a potential to produce dust from the site as soon as possible unless they are being reused on site.
- AQ04: Impose and signpost a maximum speed limit on unsurfaced haul roads and work areas.
- AQ05: Use enclosed chutes and conveyors and covered skips.
- AQ05: Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment, and use fine water sprays on such equipment wherever appropriate.
- AQ08: Inspect on-site haul routes for integrity and investigate necessary repairs to the surface as soon as reasonably practicable.
- AQ08: Record all inspections of haul routes and any subsequent action in a site logbook.
- AQ08: Ensure vehicles entering and leaving sites are covered to prevent the escape of materials during transport.

2.9.49 With these measures in place dust deposition is considered a negligible impact on receptors of National (the SSSI) and Regional (the non-statutory sites) importance, resulting in a **negligible** effect that is not significant.

Air quality

2.9.50 All designated sites discussed in this chapter are potentially vulnerable to vehicle exhaust emissions and other combustion emissions such as from non-road mobile machinery. Traffic exhaust emissions contribute oxides of nitrogen and (from petrol exhausts) ammonia. These are pollutants but also contribute to nitrogen deposition (and thus acid deposition). Nitrogen deposition is a form of fertilization that can change vegetation structure and species composition. Guidance from the Institute of Air Quality Management (Institute of Air Quality Management, 2017) and Natural England (Natural England, 2018) identify that traffic exhaust emissions can affect ecological sites within 200 m of the source. These emissions are relevant where they materially affect the annual average pollution levels or deposition rates.

Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC

2.9.51 According to modelling undertaken to inform **Application Document 6.2.3.7 Part 3 Kent Chapter 7 Traffic and Transport**, construction traffic would result in a net increase of approximately 280 AADT on the section of the road that passes within 200 m of the Thanet Coast & Sandwich Bay SPA/Ramsar on the A256 Richborough Way (between the Sevenscore and Ebbsfleet Roundabouts). The impact has been modelled. Worst-case changes in NOx concentrations at the SPA/Ramsar due to the Kent Onshore Scheme are forecast to be 0.04µgm^{-3} or 0.1% of the critical level for NOx. The contribution of the Kent Onshore Scheme to nitrogen deposition rates are an order of magnitude less than NOx and therefore would not show in the modelling, being effectively zero (i.e. less than 0.00 kgN/ha/yr). Ammonia emissions will also be imperceptible since the majority of vehicles will be Heavy Good Vehicles or other diesel vehicles which do not emit ammonia.

2.9.52 Moreover, this would be a temporary increase in traffic flows rather than a permanent increase. The critical load system for acid and nitrogen deposition assumes decades of continuous exposure (World Health Organisation, 2000)[8]. (Caporn, et al., 2016)specifically addresses this point in Sections 2.2.1 and 5.1 stating that '*The current rate of N deposition is primarily a proxy for long-term cumulative N deposition. Thus we would not expect that a change in N deposition, either increasing or decreasing, would immediately change species richness or composition, but instead these would be gradually influenced by longer-term changes in N deposition'.* It is considered that the contributions of the Proposed Project would not materially influence long-term nitrogen deposition and thus acid deposition. While Sandwich Bay SAC also lies within 200 m of the A256, which would be a route for construction vehicles to access the site, there are no sand dunes (the SAC qualifying habitat) within 200 m of the road.

2.9.53 Atmospheric pollution is therefore considered a negligible impact on a receptor of international importance, leading to a **negligible** effect that is not significant.

Sandwich Bay to Hacklinge Marshes SSSI

2.9.54 The Minster Converter Station and Substation construction site is 20m from Unit 11 of Sandwich Bay to Hacklinge Marshes SSSI. While there would be vehicles and non-road motorized machinery (NRMM) operating on site, only small numbers would be operating at one time, the locations of these sources would vary around the site, and the duration of emission would be brief at a given time, as vehicles and NRMM would not be sitting with their engines running unnecessarily. A construction site is therefore a much smaller source of emissions than a main road, which has a constant flow of traffic. No material impact on annual average pollution levels would therefore arise.

2.9.55 Atmospheric pollution is therefore considered a negligible impact on a receptor of national importance, leading to a **negligible** effect that is not significant.

Ash Level and South Richborough Pasture Local Wildlife Site and Non-statutory Site TH12 (Woods & Grassland, Minster Marshes)

2.9.56 The haul road across the railway line (and thus Non-statutory Site TH12 (Woods & Grassland, Minster Marshes)) and that south of the river to install the new overhead line

[8] '*Typically, critical loads relate to the potential effects over periods of decades… critical loads provide the long-term deposition* [emphasis added] *below which we are sure that adverse ecosystem effects will not occur'*, source: page 220, World Health Organization. 2000. Air Quality Guidelines for Europe. WHO Regional Publications, European Series, No. 91. Second Edition

would both traverse Ash Level and South Richborough Pasture Local Wildlife Site. However, this is not a through route and would only be used by construction traffic with an AADT much lower than that already reported for the A256. No significant elevation of annual pollution concentrations or deposition rates would arise.

2.9.57 Atmospheric pollution is therefore considered a negligible impact on a receptor of Regional importance, leading to a **negligible** effect that is not significant.

Habitats

2.9.58 Note that this section considers habitats for their intrinsic botanical value. The role of habitats in supporting particular faunal groups is discussed under each faunal group below.

Habitat loss

2.9.59

2.9.60 It is proposed for some construction plant to access the trenchless exit pits and trenched construction in Pegwell Bay through the former hoverport site. The hoverport site is known to support rare invertebrates, including fiery clearwing moth and Sussex emerald moth, both of which are legally protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It also contains habitat suitable for reptiles and supports populations of man orchid and lizard orchid. However, the hoverport retains extensive areas of hardstanding that remain unvegetated. For the first stretch the existing track will be used (the habitat of interest being either side of that track) then for the final stretch construction plant will drive across the open unvegetated areas of hardstanding, thus avoiding habitat suitable for orchids, rare invertebrates or reptiles. There will thus be no vegetation clearance, although some pruning back of shrub branches may be needed depending on extent of growth prior to works commencing.

2.9.61 In addition, a precautionary method of working will be adopted through a commitment (B66) in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC) [APP-341]**. It will be as follows: a) pre-construction botanical survey will be undertaken to map vegetation stands of particular significance to protect, such as orchids or dense stands of dock or wild carrot (the larval foodplants of the two rarest invertebrates on site). b) An access route will subsequently be marked out which avoids these stands, along with dense stands of other vegetation. c) A suitable qualified ecologist will be on site to supervise and guide the marking out of the access route. Due to the nature of the site with large areas of unvegetated hardstanding, supplemented by the precautionary method of working identified above, no habitat loss will arise within the former hoverport.be marked out which avoids these stands, along with dense stands of other vegetation. c) A suitably qualified ecologist will be on site to supervise and guide the marking out of the access route. Due to the nature of the site with large areas of unvegetated hardstanding, supplemented by the precautionary method of working identified above, no habitat loss will arise within the former hoverport.

2.9.62 Elsewhere there would be temporary (though not necessarily short-term) habitat loss to facilitate construction. While the construction compounds (K01-K06) are all situated in arable fields with little botanical interest, the haul routes and buried cable route would need to cut through several sections of dense scrub, woodland belt (both semi-natural and broadleaved plantation) and hedgerow either side of the A256 and traverse a series

of field ditches to the site of the proposed Minster Converter Station and Substation. The cable route would traverse three ditches (see **Application Document 6.3.1.4.A Appendix 1.4.A Crossings Schedules**), but the various haul road elements would traverse ditches in 10 locations north of the River Stour and a further eight locations south of the River Stour. There would also be several utilities diversions that would involve some removal of approximately 0.1 ha of broadleaved plantation east of the A256, where a small area of immature plantation would need temporary removal, created in approximately 2016 when the road was expanded.

2.9.63 There would also be burial of an existing section of UKPN overhead line partly within a wayleave under the existing overhead line in woodland west of the A256 and north of the SEN School. This will take approximately one week and to protect roots of adjacent trees **Application Document 6.10 Arboricultural Impact Assessment** requires a fit for purpose ground protection, specified for the highest expected load (such as Cellweb or ArboRaft or equivalent).

2.9.64 The haul route for the DCO works would be 7 m wide (10 m including drainage), while the culverts at each ditch crossing would be 13 m in length to allow for headwalls either side of the haul road. Due to the number of ditches to be crossed, there would be 27 temporary culverts on watercourses, though none on the River Stour. The High Voltage Direct Current (HVDC) cable working area would be 40 m in width (allowing for soil stockpiles as well as the cable trenches at an appropriate spacing), narrowing to 20 m at key pinch points such as ditches, hedgerows, and the woodland belt either side of the A256. There would also be 16 temporary outfalls into ditches to discharge surface runoff from the haul road/construction sites. Each outfall would have a diameter of approximately 2 m.

2.9.65 There would therefore be a temporary (construction period only), though not necessarily short-term, loss of approximately 300 m of ditch habitat and 140 m of species-poor hedgerow (some defunct) and linear roadside woodland and plantation along the A256. There would also be loss of the habitats in Table 2.11. South of the River Stour there would also (as already mentioned in relation to Ash Level and South Richborough Pasture) be approximately 15 ha of temporary loss of floodplain grazing marsh. Based on the Phase 1 Habitat Survey categorization this habitat is included within the classification of ‘neutral grassland semi-improved’, ‘improved grassland’, ‘species-poor semi-improved grassland’ and ‘marshy grassland’ in the table below, as floodplain grazing marsh is not a Phase 1 Habitat classification. The areas defined as grazing marsh in this chapter are shown as an inset on **Application Document 6.4.3.2.A ES Appendix 3.2.A Extended Phase 1 Habitat Survey Report [APP-147]**.

Table 2.11 Habitat areas subject to construction period temporary landtake

Habitat	Approximate Area (ha)
B2.2 - Neutral grassland - semi-improved	2.4
B4 – Improved grassland	6.2
B5 – Marsh/marshy grassland	1.3
B6 - Poor semi-improved grassland	8.9
C3.1 - Other tall herb and fern - ruderal	0.7
J1.1 - Cultivated/disturbed land - arable	245

2.9.66 The temporary bridge over the River Stour would be clear span and would retain bankside vegetation beneath. Abutments would be 8 m back from the bank top and the soffit height would be 4 m above mean high water springs. The bridge would be in place for approximately 2.5 years. A photograph of a similar bridge is included below.

Plate 1. Example of temporary bridge across the River Stour

2.9.67 The abutments/footings of the structure would be located in habitat classified as 'neutral grassland: semi improved' north of the river and 'improved grassland' (with evidence of regular flooding) south of the river.

2.9.68 The option to lay the HVDC cables across ditches using a method other than open cut trenching, such as horizontal directional drilling under ditches, has been explored as part of the design development. However, this is considered impractical due to the high-water table in the area, the need for large construction compounds at either side of any ditch to send and receive the drill, and the fact that such crossing methods would take significantly longer (given the number of ditches to be traversed) than the open cut trenching method and therefore extend the overall construction programme and duration of disruption.

2.9.69 All of these temporary habitat losses would ultimately be reinstated as set out in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** and in GG07 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**. Most can be reinstated in the winter following cable installation in a given section, although a 10 m gap for the haul road (increasing to 13 m at ditch culverts) would have to be retained until the end of the construction programme. While it is not possible to plant trees over the cable route it is possible to plant shrubs, and to plant riparian vegetation in areas where the cable route or construction access has traversed ditches.

2.9.70 Although temporary gaps in hedgerows and woodland belts would be closed, the new planting would not be immediately mature, with shrub and tree growth potentially taking 10 years or longer to reach that state. Mature vegetation removed from hedgerows and ditches would be retained as close to the area of removal as possible, retaining intact root balls, where feasible and desirable, such that it can be re-used, as set out in

commitment B12 of the REAC and **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**. Even if hedgerow material dies during this process, it can still be of value in quickly establishing a natural structure in the gap. Hedgerow gaps would be planted once works are complete with 'light standards' or feathered trees, while gaps in ditch marginal vegetation would either be planted with mature emergent vegetation purchased from nurseries or left to recolonize naturally from the adjacent ditch vegetation. Note that because of the linear nature of the vast majority of the temporary landtake outside arable land, the vast majority of the lengths or areas of hedges, woodland, grazing marsh and ditches that would be traversed by the Kent Onshore Scheme would be retained during the construction period.

2.9.71 As a result there would be a moderate adverse impact and thus **moderate adverse** effect on a receptor of up to Regional importance (hedgerow, ditches, woodland and the grazing marsh south of the river) in the short to medium term, lasting for between 1-2 seasons (for easily restored habitats such as ditches) to 5-10 years or longer for sections of hedgerow and woodland, as the works are completed and vegetation recovers. This would be a significant residual effect in the short to medium term.

2.9.72 However, the losses documented above are not permanent losses. This is because there would be extensive habitat creation as part of the Proposed Project, around the Minster Converter Station and Substation, along the permanent access road, for reasons of landscape design and to facilitate drainage, and along the River Stour. This includes 6.5 ha of woodland, 5 ha species rich neutral grassland, 1 km native hedgerow, and 2 ha of balancing pond around the Minster Converter Station and Substation resulting in an increase in riparian perimeter of 1.38 km, and a series of small shallow riverside scrapes with riparian planting, and some alder and willow planting, along the River Stour within the Order Limits before the end of construction (amounting to approximately 600 m^2). See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for planting details. As a result there would be a long-term overall increase in woody and wetland habitats due to the Kent Onshore Scheme, increasing the ecological value of what is currently (north of the River Stour) a predominantly arable landscape of relatively low botanical value or diversity, or diversity of habitat structure.

2.9.73 Since the losses described earlier in this section are therefore temporary, there would be a moderate beneficial impact in the long-term due to habitat creation. This is a long-term **moderate beneficial** residual effect which is significant.

Pollution (Spillages)

2.9.74 The assessment of pollution applied to designated sites in paragraph 2.9.74 also applies to habitats. A conclusion of no likely significant effect can be drawn.

Pollution (Dust)

2.9.75 The assessment of pollution applied to designated sites in paragraph 2.9.75 also applies to habitats. A conclusion of no likely significant effect can be drawn.

Ornithology

Habitat loss

2.9.76 There would be temporary loss of sections of ditch, hedgerow, grassland and woodland for breeding birds including Cetti's warbler and amber list birds such as yellow wagtail, yellowhammer, and reed bunting, although for the size of the survey area relatively few nesting territories have been found away from the River Stour corridor. There would also be temporary loss of arable land (used mainly by red list ground nesting skylark) due to construction compounds K01 and K02 in particular.

2.9.77 Areas of temporary habitat loss other than at construction compounds (which is mainly loss of arable field habitat) and along the haul routes would be typically for one growing season (for example, cable installation by trenching can move at 100-300 m per week on average based on the construction programme presented in **Application Document 6.2.1.4 Part 1 Introduction Description of the Proposed Project**).

2.9.78 As a result there would be a moderate adverse impact and thus **moderate adverse** effect on a receptor of district importance (inland nesting birds) and regional importance (inland non-breeding birds) in the short to medium term, lasting for between 1-2 seasons (for easily restored habitats such as grazing marsh or ditches) to 5-10 years or longer for sections of hedgerow and woodland, as the works are completed and vegetation recovers. This is a significant residual adverse effect in the short to medium term.

2.9.79 Although there would be an overall reduction in arable land for skylark nesting during the construction phase due to the presence of construction compounds in particular (a total of seven skylark territories were recorded across the Order Limits north of the River Stour during 2024 surveys), fields would be returned to arable farming as soon as works in those areas cease, so the impact would be temporary. In addition 10 ha of habitat enhancement to address permanent arable habitat losses for farmland birds (wintering golden plover and nesting skylark) would be delivered before construction (see below in operational impacts for more detail; this would be secured by commitment B54 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments** and **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**), providing some alternative nesting locations for displaced pairs and reducing the temporary impact.

2.9.80 The habitat creation proposals already described in this chapter would also ensure a long-term large overall increase in woody and wetland habitats for nesting, offsetting shorter term habitat losses. Therefore, this temporary short-medium term habitat loss is reversible and there would be a moderate beneficial impact in the long-term to a receptor of district importance (inland nesting birds) and regional importance (inland non-breeding birds) due to habitat creation. This is a long-term **moderate beneficial** effect which is significant.

Disturbance

2.9.81 In order to avoid direct disturbance to nesting birds, and to comply with the requirements of the Wildlife & Countryside Act 1981 (as amended), which makes it an offence to destroy active bird nests, vegetation removal has been programmed to take place during September to February inclusive and thus outside the nesting season. If any works become necessary during the breeding bird season, works will be supervised by an Environmental Clerk of Works. 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 Environmental Clerk of Works (B02).

2.9.82 In terms of indirect noise disturbance and displacement of nesting birds outside the Order Limits, a 60 dB LAmax noise disturbance zone (calculated to be after implementation of best practicable noise reduction methods such as standard close-boarded noise fencing around the site perimeter) has been identified for each phase as discussed above in paragraphs 2.9.24 to 2.9.36 for designated sites. The overall contour is presented in **Figure 5 Map of 60dB average LAmax contour at Kent** within **Application Document 6.6 Habitat Regulations Assessment Report**. The 60 dB LAmax threshold has been agreed with Natural England as the zone in which disturbance may arise as a general rule. There would inevitably be some disturbance and displacement of nesting birds beyond the Order Limits. This would take place for at least one nesting season in each affected location.

2.9.83 However, disturbing works would not take place simultaneously across the entire Kent Onshore Scheme. Most works would move across the site fairly quickly (cable/haul route/culvert installation can occur at a rate of approximately 100-300 m per week on average based on programme). As such it is only around the HDD compound (K05), the Minster Converter Station and Substation site, construction compounds, installation of the temporary bridge across the River Stour, and the new pylons where a lengthy period of continued exposure to a fixed noise source would arise.

2.9.84 The largest medium-term area of displacement would be around the Minster Converter Station and Substation construction site, and the construction compound fields to the north (K01 and K02). The 60 dB LAmax contour in this area would typically extend approximately 40m beyond the boundaries of the fields within which construction would occur (though as noted above in the section on designated sites it would extend further than this distance into the SSSI to the south). Note that this is the LAmax contour (i.e. the maximum noise level), which would only be reached periodically. The average noise level (LAeq) 60 dB contour is much closer to the area of construction and is the noise level to which birds would generally be exposed throughout construction in those areas. It should be noted that standard arable farming activities (e.g. ploughing, seeding, and harvesting) would all also result in noise levels exceeding 60 dB LAmax. Therefore, while the 60 dB contour indicates the zone within which disturbance may arise, it does not mean disturbance would arise, and some birds would habituate.

2.9.85 Nonetheless, it has been assumed for the purposes of this impact assessment that some displacement of nesting birds would occur. In the primarily arable landscape north of the river/railway, the affected habitats (other than Unit 11 of the SSSI already discussed in the section on designated sites) are ditches, open arable fields and some hedgerows and are abundant in the wider local landscape. As such, there is thus no shortage of habitat for displaced birds to temporarily move into.

2.9.86 Moreover, the effects of any temporary displacement of nesting birds during construction would be offset in the long term through the woody and wetland habitat creation around the Minster Converter Station and Substation, the wetland enhancement along the River Stour (See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for planting details), and the 10 ha of off-site arable land enhancement to be created for permanent loss of habitat for non-breeding golden plover (see paragraphs 2.9.224 to 2.9.227 on operational effects)[9]. For example,

[9] (See Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent for details

the 10 ha of off-site arable land enhancement is to be designed to include skylark nesting plots at a rate of at least 4 plots per hectare (twice the density required by Countryside Stewardship), and this favourable farming regime would occur throughout the operational life of the Minster Converter Station and Substation.

2.9.87 In Abbey Farm Wetlands and south of the river, where wetland habitats or floodplain grazing marsh are concentrated, disturbance and displacement would result solely from the installation of the new section of overhead line, and connection to the existing Richborough to Canterbury overhead line, including the creation of the access haul route and the installation of the bridge across the River Stour. The 60 dB LAmax contour in this area is primarily influenced by the creation of the pylon foundations, which would typically take approximately one month for each new pair of pylons. However, these pylon construction works would move around the area rather than being in one area continually. Following vegetation removal, the pair of new pylons north of the river (PC 53C and PC 54B, in the field north east of Abbey Farm Wetland) are programmed to be installed from early March to early May 2028, the pair south of the river (PC 53B and PC 54C, set within floodplain grazing marsh) would be installed late May to late July 2028, and the pair in arable land north of the existing Richborough to Canterbury line (PC 53A and PC 54D) would be installed in mid-June to mid-August 2028. Even if some of the timing changes, the pairs of pylons will not be constructed simultaneously.

2.9.88 The construction of these three pairs of new pylons would not only be spaced in time but would also be physically separated (as would their noise impact zones) being at least 200 m from one another. Therefore, there would be disturbance and displacement of nesting birds in this area during the 2028 breeding season, but the zone of impact at a given time would be localized and all disturbance due to installation of the new overhead line close to the River Stour (the most sensitive part of the Kent Onshore Scheme) would take place entirely within one season. Moreover, there would be a long-term overall increase in wetland habitat as already discussed.

2.9.89 With regard to wintering birds, the assessment is similar to that for nesting birds. 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. However, for birds wintering in and around the wetlands and floodplain grazing marsh at Abbey Farm Wetland and south of the River Stour, the main source of potential disturbance (the creation of the foundations for the new pylons to support the overhead line connection to the Richborough to Canterbury overhead line and that for the temporary bridge across the Stour). In the absence of additional mitigation, impacts on wintering birds south of the River Stour due to the most disturbing part of overhead line construction (the pylon bases) is considered to be a moderate adverse impact on a receptor of Regional importance, resulting in a **moderate adverse** effect that is significant. Therefore, additional mitigation has been introduced by programming the overhead line pylon base installation to avoid the core wintering period of October to February, thus considerably reducing the extent of disturbance and displacement of wintering birds. This is commitment B51 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.90 Following application of the additional mitigation identified above there would be a minor adverse residual disturbance impact on receptors of up to District (breeding birds) or Regional (non-breeding birds) importance in the short term, lasting for between 1-2 seasons depending on location. However, the effect is reversible as soon as works cease in an area. Disturbance is therefore considered a minor adverse impact leading to a **minor adverse** effect which is not significant.

Disturbance (nesting Schedule 1 birds)

2.9.91 Under the Wildlife & Countryside Act 1981 (as amended) it is an offence to disturb those bird species listed on Schedule 1 of the Act, while they are nesting. While several Schedule 1 bird species have been recorded flying and foraging over the Kent Onshore Scheme area, the only Schedule 1 bird which nests within or adjacent to the Kent Onshore Scheme is Cetti's warbler. [redacted]

2.9.92 As already discussed in the section on designated sites, the most potentially disturbing works on the Minster Converter Station and Substation site (i.e. the site preparation, earthworks, and foundation creation) are programmed to avoid March to June 2028 and would thus avoid the core of the Cetti warbler nesting season (which runs from April to August). Moreover, the less disturbing (with noise fencing or similarly effective noise reduction methods) civil engineering and building works for the Minster Converter Station and Substation would run from late February 2029 to late April 2030 and would therefore be ongoing prior to commencement of the Cetti warbler nesting season. If Cetti warbler choose to nest in ditches adjacent to the works during spring 2029 or 2030, it can be assumed they are not disturbed by the ongoing works.

2.9.93 The new pylon installation would be ongoing during the Cetti warbler nesting season, although works would have commenced prior to the start of that season in April; for example, the pair of towers north of the river in the field adjacent to Abbey Farm Wetland are currently programmed to be installed early March to early May, while the enabling works (e.g. haul road installation and culvert installation) south of the River Stour are programmed to commence in February 2027 and run through to July 2028. If any birds choose to nest while these works are ongoing it can be concluded they are not disturbed by the works.

2.9.94 As a further precaution a minimum 20 m buffer would be implemented during construction around any Cetti's warbler nests that do establish in each nesting season. A specific decision would then be undertaken in discussion with the ecological clerk of works over what construction activities can take place in that area while the nest is active.

2.9.95 The temporary bridge over the River Stour that would be used to gain construction access south of the river to create the new section of overhead line is a modular structure but would have piled foundations. Its creation would therefore generate localized noise. These foundations are programmed for March 2028, with the deck added in April 2028. A [redacted]. However, the Cettis warbler nesting season commences in April. Therefore, disturbing works (foundation creation) would have already been undertaken in this location prior to the start of the Cetti warbler nesting season. If Cetti warbler choose to nest while the bridge is in place, it can be concluded they do not find its presence disturbing. There is ample other ditch habitat in the wider landscape, or other parts of Abbey Farm Wetlands more distant from the bridge, for Cetti's warbler and other breeding wetland birds to displace to during construction of the bridge. Vehicle movements across the haul route will not generate extensive noise as vehicle movements will be slow, relatively few in number and not at

night, and the bridge will not be illuminated. Moreover, there is a public footpath past Abbey Farm Wetlands on the north bank of the River Stour such that some exposure to human presence is part of the background for this area.

2.9.96 Commitments to protect nesting Cetti warbler from disturbance in line with legislation are captured in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments** where commitment B48 states '*Ensure disturbing works commence in an area prior to the start of the Cetti warbler nesting season where possible. A 20 m buffer will be implemented during construction around any Cetti's warbler nests that do establish within the construction area in each nesting season. A specific decision will then be undertaken in discussion with the ecological clerk of works over the construction activities that can take place in that area while the nest is active'.*

2.9.97 As a result there would be a negligible disturbance impact on a receptor of Regional importance in the short term. Disturbance is therefore considered a **negligible** effect which is not significant.

Dormouse

Habitat loss

2.9.98 Based on the dormouse survey undertaken for the Kent Onshore Scheme, dormice are assumed to be likely absent from the Order Limits, since no confirmed records of dormouse were identified from the nest tubes placed on site. However, due to some records of 'possible' dormouse nests (some of which were later confirmed to be other species i.e. wood mouse) and anecdotal information from landowners regarding possible dormouse presence, a precautionary approach to the removal of vegetation suitable for dormouse would be followed.

2.9.99 Vegetation clearance would be undertaken in two stages. The first stage would comprise an initial cut to 150-300 mm, with a second cut at least 24 hours later to ground level. Prior to each stage of clearance commencing, the Suitably Qualified Ecologist (SQE) would carry out a fingertip search of the area. The SQE would hold (or be accredited to work under) a WML-CL10a Natural England hazel dormouse class license (Class 1 survey license). They would check the area for signs of hazel dormice, including nests. Clearance would only proceed if hazel dormice are confirmed to be absent. The SQE would remain on site until the vegetation suitable for hazel dormouse is cleared. All clearance works of vegetation that is suitable for dormouse must be undertaken using hand-held tools such as strimmers and chainsaws. In the unlikely event that a hazel dormouse or signs of hazel dormice are encountered during the search it would be left in situ, works would cease, and a European Protected Species Mitigation License obtained from Natural England.

2.9.100 Since dormice are assumed absent based on survey data for the Kent Onshore Scheme, and there would be a considerable overall increase in suitable habitat for dormice as a result of the Kent Onshore Scheme due to the proposed landscape planting around the Minster Converter Station and Substation, habitat loss is considered a negligible impact leading to a **negligible** effect that is not significant.

Badger

Habitat loss

2.9.101 [redacted]. Therefore, no particular precautions or mitigation measures are required.

2.9.102 There were small amounts of evidence of badger activity (latrines) scattered across Order Limits, although due to the flat landscape and generally high-water table this environment is not particularly suitable for badger. The only temporary habitat loss would be from arable fields and (south of the River Stour) from floodplain grazing marsh. Arable land is not of high value for badgers and there is an abundance of both this and grazing marsh in the area even allowing for the construction compounds. Grazing marsh is not of high value for badgers as they generally avoid wet habitats.

2.9.103 Therefore, temporary landtake is considered a negligible impact on a receptor of local importance, leading to a **negligible** effect that is not significant.

Connectivity

2.9.104 Passage of badgers around the Order Limits would not be negatively affected because they would be able to cross the haul road freely with low risk of killing and injury due to the low number and speed of vehicles and the general absence of vehicles at night. While the haul road would be fenced this fence would not go entirely to ground level so mammals such as badger would be able to pass. There would be no lighting near any badger setts or any significant sources of noise that would affect badgers. To comply with Wild Mammals Protection Act (1996) regarding protection of mammals generally, open trenches would need to be covered at night or ‘mammal ladders’ (e.g. planks of wood) placed in them to enable any badgers that fall in to escape. This is not only a requirement of the Protection of Badgers Act but also the Animal Welfare Act 2006.

2.9.105 Therefore, disruption of connectivity is considered a negligible impact on a receptor of local importance, leading to a **negligible** effect that is not significant.

Bats

Habitat loss

2.9.106 Due to the generally exposed and open nature of the landscape, features suitable for bat roosting and foraging are limited, with the Kent Onshore Scheme considered to be of Regional importance for bats. No bat roosts, or trees with roost potential, are to be removed due to the works. Four trees with PRF-I are along proposed access routes and may be affected by road widening (root damage) or by heavy machinery as it passes (foliage or root damage). However, road widening is not proposed in these locations and since these are farm accesses no impact that would affect the ability of these trees to support roosting bats is expected.

2.9.107 There would be no lighting directed towards any of the four trees with bat roost potential identified in the surveys for the Kent Onshore Scheme. This is secured through

commitment B57 within **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.108 Key areas for bat activity (in relative terms as amounts of bat activity across the survey area was generally low) are:

- Along the hedgerow north of Ebbfleet Lane in west of Transect 1.
- Along the watercourse and hedgerow bordering St Augustine's golf course.
- Along the ditch network in the rest of Transect 2.
- Along the woodland edge south of Transects 2 and 3.
- Along the Minster Stream within Transects 3, 4 and 5.

2.9.109 In other words, the key areas are around the golf course, the ditch network in the east of the Kent Onshore Scheme west of the A256, the Minster Stream and the northern boundary with the Sandwich Bay to Hacklinge Marshes SSSI. Most of these areas would not be directly affected by works but several of the ditch features and the Minster Stream would be traversed by the haul route and HVDC cable corridor.

2.9.110 At these locations gaps in hedges (of which there are relatively few) and ditches during construction would be narrowed from 40 m (the typical working corridor for the HVDC cable) to 20 m as part of general good practice and in line with commitment B11 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.111 Gaps in the few hedgerows and woodland strips (mainly around the A256) that would be traversed by the haul route or construction corridor would be closed as soon as possible following cable installation by replacing existing mature material and 'light standards' or feathered trees (details provided in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**), although the gap for the 7 m haul road (10 m including drainage) would last throughout the construction phase.

2.9.112 Nonetheless, since gaps of more than 10 m in hedgerows and ditches would be created without further mitigation this could still be a barrier to connectivity and movement and thus effective habitat loss, while construction compound lighting could also affect habitats for bats. This would be a moderate adverse impact on a receptor of Regional importance, resulting in a **moderate adverse** effect that is significant.

2.9.113 To address this, larger gaps would be reduced to 10 m maximum during the night by hurdles or similar. A 10 m gap is considered sufficiently narrow that no negative effect on connectivity for bats would arise. These hurdles could be interwoven with creeping vegetation to provide a more natural appearance. Details of this and other similar methods are provided in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**. Around construction compounds, direct illumination of boundary features would be avoided. Lighting would be designed to comply with published guidelines (Bat Conservation Trust and Institute of Lighting Professionals, 2018). These are both secured by commitment B53 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.114 Given these measures, temporary habitat loss or disturbance while using foraging and commuting corridors is a minor adverse reversible impact on a receptor of Regional importance, leading to an effect that is **minor adverse** and not significant.

Disturbance

2.9.115 Woodland and hedgerows are of particular value to commuting and foraging bats, although in the Kent Onshore Scheme Order Limits these features only have a localized presence. Artificial lighting at night can increase the chances of predation by avian predators, such as owls and hawks. It has been shown that bats in lit areas modify their usual behaviour, potentially in response to this threat. Several slower-flying, broad-winged species have been shown to avoid commuting and foraging in areas which are lit at night by artificial lights, including long-eared bats and *Myotis* bats, which have been recorded within the Kent Onshore Scheme.

2.9.116 This puts these species at a competitive disadvantage as they are less able to forage successfully and efficiently (Bat Conservation Trust and Institute of Lighting Professionals, 2023). This would constitute a moderate adverse impact on a receptor of Regional importance, which in the absence of additional mitigation would be a **moderate adverse** effect which is significant.

2.9.117 Therefore, to ensure bat foraging, and commuting routes are not disturbed, nighttime lighting will be limited to the minimum needed for safety at only the construction compounds and the HDD compound. This will be targeted directional lighting with cowling and other lighting controls to manage (and, in the case of the HDD compound, avoid) incidental illumination. Around construction compounds, direct illumination of boundary features (e.g. hedgerows, ditches, and woodland blocks) will be avoided with a view to keeping lighting at those features at or below 1 lux where that level is not already exceeded by baseline light levels. Lighting will be designed to comply with published guidelines such as that from Bat Conservation Trust referenced above. There will also be no lighting required for the haul road, and no direct lighting of features of value for commuting bats during construction. These measures are secured by **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. The construction compounds would not be utilised before 07.00 hours or after 19.00 hours Monday to Friday, and before 07.00 hours or after 17.00 hours on Saturdays, Sundays and Bank Holidays, and lighting would only be used during construction hours as limited by Requirement 7 of the DCO.

2.9.118 With the additional mitigation, disturbance is considered a residual **negligible** impact on a receptor of Regional importance, resulting in a negligible effect on bats that is not significant.

Reptiles

Habitat loss

2.9.119 The reptile population on site, including the exceptional population of slow worm, is concentrated west of the railway line around Abbey Farm Wetlands and the grazing marsh south of the River Stour. While there would be approximately 15 ha of temporary landtake from the grazing marsh south of the River Stour due to the haul route for the installation of the new section of overhead line, most of the affected land is structurally poor and landtake would consist of relatively narrow (10 m wide) strips rather than entire field areas. Since it is spread over such a large area the vast majority of habitat south the River Stour suitable for reptiles would remain available.

2.9.120 Given this temporary habitat loss is a minor adverse reversible impact on a receptor of local importance, leading to an effect that is **minor adverse** and not significant.

Connectivity

2.9.121 The haul route would only be used by a low number of vehicles travelling at low speed and would therefore not constitute a barrier to reptile movement. There would therefore be negligible disruption of connectivity for reptiles leading to an effect that is **negligible** and not significant.

Killing and injury

2.9.122 To avoid killing and injury a two-phase strimming displacement technique would be used in key areas that may harbour reptiles, as they would not be evenly present across the grazing marsh but are likely to be concentrated around ditch and wetland edges. This would be done in consultation with the Suitably Qualified Ecologist or Ecological Clerk of Works. The clearance would involve first reducing vegetation height to 150mm using hand tools such as strimmers, before being finally cleared to ground level after reptiles have had the opportunity to leave. This clearance would be undertaken in either September or March of a given year. This is secured by law and also through commitment B05 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.123 Given these measures there would be no harm caused to any reptiles on site.

Riparian Mammals

Habitat loss

2.9.124 As discussed for habitats, there would be losses from ditches due to the haul route culverts (each 13 m in length). Due to the number of ditches to be crossed, there would be 27 temporary culverts although none on the River Stour. The High Voltage Direct Current (HVDC) cable working area would be 40 m in width (allowing for soil stockpiles as well as the cable trenches at an appropriate spacing), reducing to 20 m at pinch points such as ditches. There would also be 16 temporary outfalls into ditches to discharge surface runoff from the haul road/ construction sites, each of which would have a diameter of approximately 2m.

2.9.125 There would therefore be a temporary (construction period only), though not necessarily short-term, loss of approximately 300 m of ditch habitat. Although this is a relatively large area, given the large number of ditches in this environment and the fact that the loss is generally in stretches of 20 m or less, the vast majority of ditch habitat in the landscape would be preserved intact.

2.9.126 Most of this habitat has not been confirmed to have water vole burrows present during survey, and in many cases the banks are too steep and lack the berms at the water line to be most suitable for water voles. There is a greater amount of water vole activity evidence south of the River Stour in Ash Level than north of the River Stour where most of the construction would occur. There are some specific locations where water voles have been recorded:

- Two outfalls are proposed for delivery west of St Augustine's golf course – there are burrows throughout this ditch, so wherever the outfalls are located may result in loss of burrows, although the project would seek to avoid this by micro-siting the outfall under ecological watching brief;

- The culvert, cable corridor and outfall in the ditch south of the fishing lakes. The culvert would go through a location where water vole burrows have been identified.

2.9.127 Several streams with water vole burrows south of the River Stour are traversed by the haul route but actual identified latrine or burrow locations could be avoided. In total there would be a temporary loss of approximately 230 m of ditch habitat in Kent on which water voles have been recorded (though not necessarily in the location where the loss would occur), due to the temporary culverts and outfalls and the cable corridor.

2.9.128 However, many of the watercourses on site are very densely vegetated with very steep banks. It is therefore generally difficult to survey these watercourses both in terms of physical penetration (even with a boat) and in terms of avoiding damaging habitat. As a precaution therefore it is assumed that water voles could be present on any ditch section to be traversed, and a watching brief would therefore be introduced during any vegetation clearance in these ditches. If any water voles are encountered they will be moved from the affected area using the recognized 'displacement' technique under a Class Licence. This would restrict clearance of any locations where water voles are present to either 15 February to 15 April or 15 September to 31 October.

2.9.129 No otter or beaver signs have been recorded on watercourses to be traversed by the Kent Onshore Scheme, except the River Stour itself which would be crossed by a clear span temporary bridge as already discussed.

2.9.130 The option to lay the HVDC cables across ditches using a method other than open cut trenching has been explored, such as through using horizontal direct drilling under ditches. However, this is considered impractical due to the high water table, the large compounds required either side of any ditch to send and receive the drill, and the fact that such crossing methods would take significantly longer (given the number of ditches to be traversed) than a quicker open cut trenching method and therefore extend the overall duration of disruption.

2.9.131 All of these temporary habitat losses would ultimately be reinstated and most can be reinstated in the winter following cable installation in that section, although a 7 m gap for the haul road (10 m including drainage) would have to be retained until the end of the construction programme. Gaps in ditch marginal vegetation would either be planted with mature emergent vegetation purchased from nurseries or left to recolonize naturally from the adjacent ditch vegetation.

2.9.132 Moreover, the losses documented above are not permanent losses. This is because there would be extensive habitat creation as part of the Proposed Project, including balancing ponds around the Minster Converter Station and Substation, swales along the permanent access road and the aforementioned creation of scrapes in various locations along the River Stour (See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details). As a result there would be a long-term overall increase in wetland habitats due to the Kent Onshore Scheme. For example, there would be an overall increase in wetland perimeter of 2.42 km due to the temporary attenuation ponds (which would be removed at the end of construction) and an increase of 1.38 km due to the permanent attenuation ponds.

2.9.133 These ponds will be designed to be of value for riparian mammals by retaining an earth ledge and sloping bank above a shallow permanent water level. The ledge would be planted with emergent riparian vegetation. While the water voles on site are using linear ditches, there are many examples in Kent and elsewhere of water voles using pond and wetland margins, and even nesting in reedbeds with no standing water.

2.9.134 Overall, therefore, the temporary loss of ditch habitat is considered a minor adverse short-term impact on a receptor of Regional importance, and in the long-term due to habitat creation there would be a moderate beneficial impact. This is a long-term **moderate beneficial** effect which is significant.

Killing and injury

2.9.135 Measures described within **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** will be implemented during the construction of the Kent Onshore Scheme to ensure that ecological constraints such as killing and injury of riparian mammals are accounted for. Appropriate mitigation, such as precautionary working methods around sequential vegetation clearance as well as covering of trenches or providing suitable escape routes, would be undertaken during the construction to ensure no riparian mammals are killed or injured.

2.9.136 In order to avoid both the nesting bird season and the water vole active season, vegetation clearance of sections of ditch will need to take place during 15th September to 31st October (this being one of the two legally permissible windows for excluding water voles by displacement). However, if pre-construction surveys undertaken immediately prior to the clearance works taking place confirm the absence of nesting birds, vegetation removal may also occur between 15 February to 15 April (this being the other legally permissible window for excluding water voles by displacement), provided that pre-construction surveys have been undertaken to ensure there is no suitable habitat for hibernating reptiles.

2.9.137 Killing or injury is considered a negligible impact leading to a **negligible** effect on a receptor of Regional importance, and thus not significant.

Passage

2.9.138 Numerous culverts are required because there are few existing farm-crossings of the numerous ditches around the Kent Onshore Scheme and existing farm bridges and culverts are insufficiently structurally sound for the purposes of construction traffic. For the purposes of this impact assessment, culverts would follow recommended design guidelines for wildlife[10] and would either preserve the natural bed of the ditch, or have the inverts sunk below the bed level of the watercourse with natural/existing bed material then placed across the inside of the culvert to lift the level up to meet that of the existing. This is secured in commitment W03 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.139 The culverts would also avoid narrowing of natural channel width. This is to ensure maximum passability for eels (see later for an assessment of impacts on fish). Where bank material cannot be preserved within the culvert (due to the weight or levels) they would also include a minimum 150 mm wide mammal ledge (with 600 mm headroom) to ensure continued passability by water voles.

2.9.140 In order to avoid both the nesting bird season and the water vole active season, vegetation clearance of sections of ditch will need to take place during 15th September to 31st October (this being one of the two legally permissible windows for excluding water voles by displacement). However, if pre-construction surveys undertaken immediately prior to the clearance works taking place confirm the absence of nesting

[10] Culvert Guidance - Flood Risk Management (devon.gov.uk)

birds, vegetation removal may also occur between 15 February to 15 April (this being the other legally permissible window for excluding water voles by displacement), provided that pre-construction surveys have been undertaken to ensure there is no suitable habitat for hibernating reptiles. If pre-construction surveys identify no water vole burrows or nesting birds are present within the area to be cleared, then vegetation clearance could also take place outside these windows. The actual culverts will then be installed at the appropriate time as the haul road progresses across the site.

2.9.141 Given these measures there would be no disruption of water vole passage and connectivity. This is therefore a negligible impact on a receptor of Regional importance, resulting in a **negligible** effect that is not significant.

Terrestrial Invertebrates

Habitat loss

2.9.142 In general, individual terrestrial and riparian invertebrates are less important for conservation than the population as a whole, and in particular ensuring that sufficient habitat persists for those species in connectivity to areas in which they are already found. This is due to the short lifespan and rapid generation time of most invertebrate species. As already discussed there would be temporary losses of habitat suitable for terrestrial invertebrates due to construction works. This would arise from the cable corridor and haul road traversing areas of hedgerow and woodland belt along the A256 and the various ditch crossings across the Kent Onshore Scheme.

2.9.143 However, these losses would amount to small sections in larger features and would therefore not materially affect the ability of the invertebrate populations on site to persist. Moreover, in the long-term there would be a substantial overall increase in woodland planting, and riparian margin, as a result of the habitat creation associated with the Minster Converter Station and Substation.

2.9.144 Therefore, this is concluded to be a minor adverse medium-term impact on a receptor of District importance, leading to a moderate beneficial impact in the long-term due to habitat creation. This is a long-term **moderate beneficial** effect which is significant.

Invasive species

Spreading of invasive non-native species

2.9.145 It is an offence to allow invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (HM Government, 1981) to spread and therefore **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** will be utilized during the construction of the Kent Onshore Scheme to ensure that ecological constraints such as the spread of invasive non-native species is controlled.

2.9.146 Moreover, as already discussed under the section on designated sites, the *Azolla* weevil would be introduced into the watercourses within the Kent Onshore Scheme to control the invasive fern; this would be targeted to locations where the infestation is greatest and control therefore most beneficial.

2.9.147 Therefore this would be a negligible risk of spread of invasive species, and a minor beneficial impact from control of *Azolla* fern in the long-term, resulting in a **minor beneficial** effect that is not significant.

Aquatic Macrophyte

Shading

2.9.148 Due to the number of ditches to be crossed, there would be 27 temporary culverts located within the Kent Onshore Scheme Boundary (see **Application Document 6.4.1.4.4 Watercourse Crossings**). This would provide an increase in the amount of shading on the watercourses in these areas which are currently unshaded. This shading may reduce the macrophyte cover and species directly in line with the bridge and culverts whilst they are in place but would not be detrimental to the species within the area and the overall WFD status (see **Application Document 6.9 Water Framework Directive Assessment**). The bridge across the Stour would have a soffit height of 4 m above mean high water springs, and experience from the bridge used for the existing Richborough to Canterbury overhead line indicates no significant reduction in vegetation due to shading or other impacts would arise.

2.9.149 Overall, the proposed watercourse crossings are considered a negligible impact on a receptor of local importance resulting in a **negligible** effect that is not significant.

Habitat loss

2.9.150 There would likely be temporary aquatic macrophyte loss along the proposed haul road, culverts and the temporary bridge across the River Stour where there would be some vegetation clearance. The haul route would be 7 m wide (10 m including drainage), while the culverts at each ditch crossing would be 13 m in length. Due to the number of ditches to be crossed, there would be 27 temporary culverts located within the Kent Onshore Scheme Boundary.

2.9.151 Overall, the temporary loss of ditch habitat is considered a minor adverse short-term impact on a receptor of local importance. This is a short-term **minor adverse** effect which is not significant.

Aquatic Macroinvertebrates

Habitat loss

2.9.152 There would be some limited loss of habitat for macroinvertebrates at locations of the 24 temporary culverts located on the ditch network south of the River Stour and ditches around the proposed construction compounds K01 and K02, and permanent access route on Minster Stream (see **Application Document 6.4.1.4.4 Watercourse Crossings** and **Application Document 6.2.1.4.A Appendix 1.4.A Crossings Schedules**). Surveys showed there may be some habitat pressures at some of these sites already but notable species such as the Nationally Scare beetle *Hydaticus seminiger* (Foster, 2010) were found on Minster Stream near to the permanent access road (**Application Document 6.2.3.2.I Appendix 3.2.I Aquatic Ecology Survey Report)**. With embedded mitigation and a culvert design that preserves the natural bed of the ditch or consists of a box culvert where the invert of the culvert is sunk below the bed level of the water course and natural / existing bed material placed across the inside of the culvert to lift the level up to meet that of the existing, then any potential impacts on macroinvertebrate populations would be minimal. This is secured in commitment W03 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.153 Therefore, any pressures from temporary culverts are understood to be a minor adverse impact on a receptor of Regional importance resulting in an overall **minor adverse** effect that is not significant.

Pollution

2.9.154 24 temporary outfalls are proposed within the Kent Onshore Scheme Boundary. High rainfall events could cause a large number of pollutants from runoff to enter into the watercourse system which may affect macroinvertebrate communities downstream, which may include the nationally Scarce water boatman *Corixa affinis* the Nationally Scarce beetle *Hydaticus seminiger* and the IUCN Near Threatened beetle *Limnoxenus niger* which are likely to occur within the area where suitable habitat is present (**Application Document 6.2.3.2.I Appendix 3.2.I Aquatic Ecology Survey Report)**.

2.9.155 This is addressed in the design of the Kent Onshore Scheme by the implementation of a variety of methods to control runoff (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) which would help ensure pollutants would not flood the river and reduce flooding of the area.

2.9.156 All outfalls have an attenuation pond associated with them which will help to reduce pollutants entering the watercourse. Therefore, as the pollutants are likely to be diluted in high rainfall events or filtered out in the attenuation ponds, pollution from temporary outfalls would result in a negligible impact on a receptor of Regional importance resulting in an overall **Negligible** effect and thus not significant.

Fish

Passage

2.9.157 Under The Eels Regulations 2009, it is an offense to impede the passage of eels. Therefore, it is proposed that culverts would either preserve the natural bed of the ditch or consist of a box culvert where the inverts are sunk below the bed level of the water course and natural / existing bed material placed across the inside of the culvert to lift the level up to meet that of the existing. This is secured in commitment W03 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Due to the number of ditches to be crossed, there would be 27 temporary culverts within the Kent Onshore Scheme Boundary.

2.9.158 Given the relative short duration of the culvert installation at the start of the enabling works, this is unlikely to impact migratory species.

2.9.159 Culverts are considered a minor adverse impact on a receptor of Regional importance due to culvert design, construction period and number of temporary culverts resulting in a **minor adverse** effect on fish that is not significant.

Pollution

2.9.160 24 temporary outfalls proposed on the Minster Stream and tributaries and ditches south of the River Stour pose a risk to fish species in the area during a high rainfall event. High rainfall events could cause a large number of pollutants from runoff to enter into the watercourse system which may affect fish species downstream.

2.9.161 All outfalls have an attenuation pond associated with them which will help to reduce pollutants entering the watercourse. Therefore, as the pollutants are likely to be diluted

in high rainfall events or filtered out in the attenuation ponds, pollution from temporary outfalls would result in a negligible impact on a receptor of Regional importance resulting in a an overall **Negligible** effect and thus not significant.

Noise & Vibration

2.9.162 Eight species of fish were found on the Minster Stream (confluence with the River Stour) and River Stour of which one species; the European eel, is protected. The impact of piling on fish is linked to their ability to hear, which is determined by the physiology of the fish particularly the presence of a swim bladder and its use in hearing. European eel are medium hearing sensitivity fish (Popper, et al., 2014) suggesting there is a moderate risk in the near and immediate distance from the sound source (approximately 10s-100s metre). Piling can also cause concern around behavioural responses such as disrupted feeding, changes in swimming patterns and orientation. However, the type of pilling, how close the piling is to the bank and also how the piling regime is implemented will determine the impact to fish. The risk of Injury or mortality from piling is deemed low for moderate sensitivity fish, but there can be moderate behavioural changes (AECOM, 2021).

2.9.163 With regard to the potential for piling noise to impact fish, determining factors include the fact that there will be no piling (or any other construction work) undertaken within the watercourse and that the piling will be 8 m back from the bank edge at its closest. This setback distance means the sound and pressure waves will likely dissipate through the geology of the bank, reducing their potential to impact fish. In addition there is a commitment to vibro-piling and the use of a soft start method (as detailed in commitment B10 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**). Vibro-piling is non-percussive, meaning it generates continuous, non-impulsive sound, which will further reduce the potential for propagation of noise within the watercourse. The soft start piling method will ensure that in the unlikely event that sound were to propagate into the watercourse, it will increase gradually allowing fish in the immediate vicinity to swim away. Therefore, it is unlikely that noise and vibration as a result of pilling for the proposed temporary bridge over the River Stour would affect fish species present (including migratory species such as European eel and salmonids).

2.9.164 Therefore, impacts are considered to be minor adverse at most, on a receptor of Regional importance, which would be a **minor adverse** effect that is not significant.

Light

2.9.165 The proposed construction compounds are surrounded by watercourses including the Minster Stream and its tributaries. Light is known to affect species movement, particularly eels which will move away from light. Where compound lights are near watercourses they are considered a moderate adverse impact on a receptor of Regional importance resulting in a moderate adverse effect on fish that could be significant.

2.9.166 However, lights will not pointed towards the watercourses at any time when in use, particularly during eel migratory peak periods (May – July and October-November) and lights will not be used outside of construction working hours. This is to reduce diurnal and migratory issues as a result of the light intrusion. This is included within commitment GG21 of the **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**.

2.9.167 Once the mitigation measures described above are taken into account, lighting from construction compounds are considered a minor adverse impact on a receptor of Regional importance resulting in a **minor adverse** effect on fish that is not significant.

Operation and Maintenance Phase

2.9.168 The impact pathways scoped into the assessment of the operation and maintenance phase are collision risk, habitat loss, disturbance, pollution (spillages), air quality, predation risk, passage, and shading of riparian habitats.

Designated Sites

Collision risk

Thanet Coast and Sandwich Bay SPA/Ramsar, Stodmarsh SPA/Ramsar, Sandwich Bay to Hacklinge Marshes SSSI

2.9.169 Part of the Kent Onshore Scheme would include a HVAC connection across the River Stour by overhead line, between the existing Richborough to Canterbury 400 kV overhead line and the proposed Minster 400 kV Substation. This would run perpendicular to the existing overhead line. The main sources of potential risk to birds from the presence of transmission overhead lines are:

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

2.9.170 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).

2.9.171 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. The key birds perching would be peregrine and corvids. However, the line spacing is sufficient that even for a large wingspan bird they would not be touching two wires. Although there will be a temporary overhead line diversion with temporary pylons, this will essentially consist of shifting the existing overhead line slightly north and is on a similar alignment to the existing pylons.

2.9.172 Based on vantage point and nocturnal bird surveys undertaken during winter 2022-23 and 2023-24 the only bird associated with Thanet Coast & Sandwich Bay SPA likely to be present in the broad proximity of the proposed overhead powerlines would be golden plover. A significant assemblage (370 birds) was recorded on a single survey visit in December 2022, utilising flooded fields north-east of the River Stour, with notably

smaller flocks on subsequent nocturnal survey visits. Golden plovers are at inherently low risk of colliding with overhead powerlines as they are small and maneuverable. There are few, if any, records of collision mortality for this species.

2.9.173 However, the River Stour may also be a migration corridor for non-breeding birds travelling to and from Stodmarsh SPA/Ramsar (which would also augment the East Atlantic Flyway), approximately 8.4 km to the west of the location of the proposed new powerlines crossing the river. Bittern, shoveler, gadwall, hen harrier, mallard, wigeon, pochard, tufted duck, snipe, water rail 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; the potential for a second set of powerlines to potentially increase collision risk for vulnerable species requires consideration. There have been news reports in 2024 of whooper swans being killed on collision with overhead powerlines in Cambridgeshire. It should be noted that the 33kV/11kV lines overhead line in question had a narrower spacing than the high voltage structure proposed as part of the Proposed Project, thus posing a higher risk of collision.

2.9.174 A series of vantage point surveys were undertaken between February 2023 and January 2024, to identify birds flying at potential collision height through the space which would be occupied by the new overhead line section. This is reported in **Application Document 6.2.3.2.F Appendix 3.2.F Vantage Point Survey Report** incorporating Collision Risk Assessment. A three-month bird corpse search was also undertaken across areas located in direct proximity to the existing Richborough to Canterbury overhead line south of the River Stour Canal in early 2024. This is reported in **Application Document 6.2.3.2.F Appendix 3.2.F Overhead Line Mortality Monitoring Survey Report**. Using these data, a collision risk assessment has been undertaken and it is also presented in Appendix 6.2.3.2.F. The results of the collision risk assessment have been discussed with Natural England and their feedback incorporated within the final assessment.

2.9.175 The assessment of avian collision risk concludes that the species predicted to be transiting through an ‘at-risk zone’ in the greatest numbers are cormorant, greylag goose and mallard. None of these are species for which either Thanet Coast & Sandwich Bay SPA or Stodmarsh SPA/Ramsar are designated. For the majority of the species considered, when applying a standard avoidance rate of 99.9%, which is supported by the results of corpse searches along the existing overhead line, this results in fewer than one individual potentially colliding with the proposed overhead line annually. Even for species where the extrapolated number of transits through the at-risk zone generates a potential collision event that exceeds one individual per year, such as cormorant, greylag goose and mallard, these annual figures are low in comparison to regional populations.

2.9.176 It is therefore considered that even without any mitigation there would be a minor adverse impact which on Internationally and Nationally important sites would result in a **minor adverse** effect that is not significant. The provision of bird deflectors would further minimise any risk during adverse weather or low light conditions. Fitting power lines with devices to make them more visible to flying birds is widely used to mitigate bird collisions. A wide range of wire marking devices are available, generally falling into three basic designs: spiral devices which wrap around the wire (and may act to reduce line vibration as well as making power lines more visible to birds), hanging devices which are suspended from the wire with fixed or swinging plates or flappers; and spheres (also known as aviation balls).

2.9.177 On other overhead powerlines around sensitive wetlands (an example being the Wildfowl and Wetland Trust reserve at Welney[11]) the bird diverters have spinning reflectors, with glow-in-the-dark panels, which makes them more visible for a time after dusk. Hanging deflectors are also used. It is considered that in the context of the proposed Kent Onshore Scheme and species involved hanging deflectors, especially those with fluorescent markings, offer the best solution to making the lines visible in adverse weather or low light conditions. These are different from the passive spiral ring diverters used on the existing Richborough to Canterbury overhead line, where that line has diverters. The diverters are commitment B55 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

2.9.178 There are numerous examples of powerlines crossing wetland sites that are of national or international importance for birds and where that national or international importance is not compromised by the presence of the overhead line, such as Ouse Washes SPA, Nene Washes SPA, Upper Nene Valley Gravel Pits SPA, Thames Estuary & Marshes SPA, The Swale SPA, and Medway Estuary & Marshes SPA. Moreover, the existing Richborough to Canterbury overhead line runs through wet grassland west of the Kent Onshore Scheme. Aside from showing a low risk of bird strike this also shows that wintering birds are not displaced from fields just because of the presence of overhead lines.

2.9.179 It is therefore concluded that collision with the proposed overhead line is a negligible impact on a receptor of up to International importance, resulting in a **negligible** effect which is not significant.

Habitat loss

Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC

Loss of SPA/Ramsar

2.9.180 There is a permanent access route off Sandwich Road and into the saltmarsh through the former hoverport site. However, this is for inspection and maintenance via light vehicles and a few qualified personnel with very minor access needs at a regular interval, and involves using the existing track and hardstanding to access the saltmarsh area.

2.9.181 Although the marine HDVC cable would run through the intertidal section of the SPA/Ramsar/SAC at Pegwell Bay, it would be entirely buried. Four ducts would be installed as part of the trenchless installation; 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 requiring a repair to the existing duct or needing to reinstall ducts.

2.9.182 Therefore no habitat loss is expected to arise within the Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC during operation or maintenance of the Proposed Project. This is therefore a negligible impact on a receptor of international importance, resulting in a **negligible** effect that is not significant.

Loss of functionally linked habitat

[11] Partnership works to keep swans in the air | WWT

2.9.183 Golden plover is the only species for which Thanet Coast & Sandwich Bay SPA/Ramsar site is designated that makes significant use of farmland for roosting and foraging. Unpublished guidance from Natural England ('Impact Risk Zones Guidance Summary: Sites of Special Scientific Interest Notified for Birds. Version 1.1') indicates that 'pylons and overhead cables' could significantly affect wintering golden plover up to 5 km from the sites for which they are designated.

2.9.184 The first season (2022-23) of wintering bird surveys undertaken for the Proposed Project recorded a flock of 370 golden plover (more than 1% of both the SPA population and the latest WeBS counts) flying over the railway line between the proposed Minster Convertor Station and fields to the west, on a single survey visit in December 2022. No repeat of this level of activity was recorded in other months or during the 2023-24 non-breeding bird survey, including during nocturnal surveys which would have detected any greater activity at night than during the day. Smaller flocks of golden plover (maximum of 13 individuals) were recorded in December 2023 and January 2024 in the fields north of the proposed Minster Converter Station and Substation, where the construction compounds (K01 and K02) would be situated and this marginally exceeds 1% of the SPA/Ramsar population of the species.

2.9.185 It is therefore assumed for the purposes of this assessment that the proposed Minster Converter Station and Substation field, which would be entirely lost to wintering waterfowl and waders, and the construction compound field to the north (K01 and K02) that would be temporarily lost, constitute functionally-linked land for golden plover associated with Thanet Coast & Sandwich Bay SPA/Ramsar, albeit not functionally-linked land of highest importance, and significant flocks were not recorded in both fields at the same time. Without mitigation this would be a moderate adverse impact on a receptor of International importance, resulting in a **moderate adverse** effect that is significant.

2.9.186 Two methods of addressing this loss were discussed with Natural England during pre-application engagement:

- delivering wet grassland habitat elsewhere within an area likely to be used by golden plover from the SPA/Ramsar; or
- managing an area of arable land closer to the SPA/Ramsar than the proposed Minster Converter Station and Substation in such a way that it enhances the value of the land for golden plover for the forty year lifetime of the Converter Station and Substation.

2.9.187 Natural England advised (email via Discretionary Advice Service 09/08/24) that: '…*the hydrology and surrounding land use means that wet grassland is unlikely to be successful in this location… it may be worth exploring options to secure arable land closer to the coast* [than the field being lost] *and ensure it is farmed so that there is bare ground in winter. If this option is taken forward, we would expect no pesticides to be used on this land to ensure greater populations of soil invertebrates.'*

2.9.188 Ultimately, it was determined following hydrological investigation that creating an area of wet grassland in Minster Marshes or Ash Level would require manipulation of the water levels in the ditch system using the existing Internal Drainage Board control structures which may have effects on other farmland in the area. In addition, Natural England in correspondence over these proposals expressed uncertainty over whether such an area of wet grassland could be kept sufficiently wet. It was therefore decided that more certainty of delivery and efficacy existed over the second proposal of securing favourable long-term management of arable land for golden plover, which Natural

England stated in the email of 09/08/24 that they would accept as mitigation if wet grassland were not deliverable at the locations proposed.

2.9.189 In order to confirm the area of habitat mitigation required, a calculation to determine the carrying capacity of arable land for golden plover has been utilized. The initial calculation based on the winter 2022-23 survey identified the following requirement:

- Assume the seasonal period for non-breeding golden plover is October to March = 183 days (seasonal presence).
- Golden plover survey data for the Proposed Project shows the only record of numbers exceeding 1% of the SPA population was a count of 370 birds in December 2022. Therefore, the monthly peak across the survey period (Oct-Mar) is 0, 0, 370, 0, 0, 0. Therefore, the annual peak mean is (370 / 6) = 61.67 individuals.
- Expressed as bird-days = 183 days x 61.67 individuals = 11,285.61 bird-days.
- According to published data (Gillings, Fuller, & Sutherland, 2007) the golden plover carrying capacity of arable land (bird-day per ha) is 1,560 bird-days per ha (in mixed arable farmland).
- 11,285.61 / 1,560 = 7.23 ha habitat creation requirement .

2.9.190 This calculation has been updated to take account of the full two seasons of wintering bird survey undertaken for the Kent Onshore Scheme. Since such a large flock was never recorded again (even with nocturnal surveys included in winter 2023-24) the calculated amount of land required is reduced:

- 61.67 (2022/23) + 3.17 (2023/24) = summed annual peak mean of 64.84 individuals / 2 = annual peak mean of 32.42 individuals.
- Expressed as bird-days = 183 days x 32.42 individuals = 5,932.86 bird-days.
- 5,932.86 / 1,560 = 3.80 ha habitat creation requirement .

2.9.191 However, to allow for the fact that some areas of a given land parcel may not be suitable (due for example to proximity to field hedgerow and tree boundaries or illumination of the field boundaries by artificial lighting), the need to avoid leaving ‘orphaned’ fragments of land, any existing use by birds, the fact that golden plover prefer large open areas, and the fact that a larger parcel would also offset any temporary habitat losses due to construction, a 10 ha minimum parcel size was identified as being necessary.

2.9.192 A series of rules were set to identify suitable parcels of land for golden plover mitigation:

- The mitigation land must be 10 ha in area. This could be as a single field, or as a complex of adjacent fields provided there is minimum interruption of flightlines and sightlines between parcels (i.e. absence of tall, dense hedgerows).
- The field(s) must be as close or closer to the SPA/Ramsar than the proposed Minster Converter Station and Substation field. This effectively means it must be within approximately 1 km of the SPA/Ramsar.
- The field(s) must be in arable production (preferred) or capable of being converted to arable production.
- In the majority of years of a crop rotation (for example, two years out of a three year roatation) bare cultivated ground (created either by ploughing or minimum tillage

methods such as tines, cultivators or light discs[12]) will be maintained for as long as possible between October and December.

- The management will minimise pesticide (herbicide and insecticide) use as much as possible. An absolute prohibition on pesticide use is being investigated, but to ensure that continued farming viability is not compromised, a specific ban on soil applied insecticides (including seed treatments) is considered to be sufficient, as this will ensure no harm to the soil biota. Insecticides will not be applied to the Spring cereal crop after around mid-March, until it is harvested. Insecticides that affect soil invertebrates will not be applied.
- No public recreational access will be permitted to the area.
- There will be no topping, grazing, or application of any fertilisers, manure, or lime.
- There will be no application of herbicides to the area, apart from those containing the following permitted active ingredients:
    - amidosulfuron;
    - clodinafop-propargyl;
    - fenoxaprop-P-ethyl;
    - pinoxaden; and
    - tri-allate.
- Where the ground is bare some recultivation during the extended bare ground period may be useful to bring soil invertebrates to the surface.
- The field(s) must be available for the alternative cropping regime prior to the loss of the Minster Converter Station field (i.e., from winter 2026).
- The field(s) must be secured for the lifetime of the scheme or 'in perpetuity' (typically defined as 80 years), whichever is sooner. **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project** for the DCO identifies that the design life for the Minster Converter Station and Substation is 40 years but that it is likely refurbishment would extend the life (given future electricity needs) rather than it being subject to decommissioning. If it was decommissioned it would likely be restored to agricultural use. Given the potential for the Converter Station to not be decommissioned, 80 years is an appropriate period to secure the mitigation.

2.9.193 These criteria identified a series of potential clusters of land that were discussed with Natural England and the Kent planning authorities. Following that discussion and further consideration by National Grid, including hydrological assessment, agriculture advice and landowner discussions, a parcel of land has been identified and included within the Order Limits in order to secure its delivery, the location of this land in relation to the SPA is shown in the **General Arrangement Plans (Sheet Six)** for the Kent Onshore Scheme and also in the Landscape and Ecology Management Plan, **Application Document 7.5.7.2.4 Minster Converter and Substation Enhancement Areas**. No individual field in this group meets the necessary requirement to be a minimum of 10 ha in size. However, there are no visual barriers between the fields in this cluster (with the

[12] Ploughing is good because it brings the most soil invertebrates to the surface, but excessive ploughing could exhaust the soil invertebrate resource. Therefore, the preference would be for one pass with a plough per autumn/winter followed by minimum tillage methods for subsequent cultivations in that season.

boundaries being ditches rather than tall dense hedgerows) such bringing all three fields forward together would meet the necessary requirements.

2.9.194 No conflicting development proposals on this land have been identified. The fields are within 500 m of the Thanet Coast & Sandwich Bay SPA/Ramsar site (the tidal River Stour) and approximately 2.5 km upstream of the confluence with Pegwell Bay. Non-breeding golden plover are known to congregate in the tidal reaches of the River Stour, particularly around the river mouth. This places it well within the 5 km zone of influence around the SPA identified for golden plover and electricity infrastructure development in Natural England guidance. Moreover, wintering bird surveys being undertaken since December 2024 have identified non-breeding golden plovers on and around the site in small numbers, indicating the species is present in the area.

2.9.195 The fields are also well placed being adjacent to South Richborough Pasture Local Wildlife Site. The fields are 60 m from Discovery Park at their closest and 440 m at their most distant, but there are dense tree belts screening the fields from the business park. Moreover, the large size of the parcel (10 ha) compared to the area of land actually needed for mitigation (3.8 ha) enables considerable room to buffer proximity to the business park and dual carriageway to the east and River Stour Canal to the west. Observation during nocturnal surveys indicates that only the tree belt along the A256 is materially affected by lighting. Although the A256 generates noise, it is a continuous sound and is therefore much less likely to be disturbing to golden plover using the fields than percussive or discontinuous noise. Moreover, the fields are undisturbed by recreational activity, in contrast to the SPA which is used heavily for recreation. There are many instances of wintering waders using farmland adjacent to dual carriageways and motorways.

2.9.196 The soils present within this cluster comprise predominantly one Soil Association: Newchurch 2 1. These soils are described as seasonally wet deep clay soils developed in marine alluvium, often used for winter cereals. According to **Application Document 6.2.3.6 Part 3 Kent Chapter 6 Agriculture and Soils** agricultural land is mapped as predominantly Grade 2 land on the Provisional Agricultural Land Classification (ALC) mapping (no detailed mapping is available).

2.9.197 Based on the characteristics of the soils and the predominance of high-grade land across this cluster, it is assumed that all fields are capable of supporting arable production on an on-going basis (all are currently under arable cultivation). The soils are relatively heavy (clay-rich) and thus would be susceptible to compaction as a result of agricultural operations. As part of implementation of the mitigation the fields would be assessed for compaction and any subsoiling requirements identified to maximize the number of soil invertebrates present (in particular earthworms).

2.9.198 Detailed information on maintenance and monitoring of the mitigation land, including responsibilities is set out within **Application Document 7.5.7.2 Outline Landscape and Ecology Management Plan - Kent**. With this land included in the Kent Onshore Scheme and secured through inclusion in the Register of Environmental Commitments and the outline Landscape and Ecology Management Plan, it can be concluded that loss of functionally-linked habitat for Thanet Coast & Sandwich Bay SPA/Ramsar is a negligible impact on a receptor of international importance, resulting in a **negligible** effect that is not significant.

Sandwich Bay to Hacklinge Marshes SSSI

2.9.199 During operation, there is likely to need to be some tree height maintenance within a 100m stretch of Management Unit 11 of Sandwich Bay to Hacklinge Marshes SSSI, where it runs parallel to the railway line, to ensure no interference with the new section of overhead line. These trees are 6 m height at time of writing, and vegetation can reach almost 10 m before it requires pruning to avoid interference with the overhead line. Therefore it is likely to be many years before any pruning is required. This need will be monitored on an annual basis with a helicopter or drone. Any pruning that was required, would not result in any loss of woodland habitat. While some ground level scrub opening for foot access may be required, this section of woodland is extremely dense and overgrown and would ecologically benefit from some opening up.

2.9.200 Although the marine HDVC cable would run through the intertidal section of the SSSI at Pegwell Bay, it would be entirely buried. Four ducts would be installed as part of the trenchless installation, 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 re install ducts. Therefore, no habitat loss is expected to arise.

2.9.201 This is therefore a negligible impact on a receptor of national importance, resulting in a **negligible** effect that is not significant.

Ash Level and South Richborough Pasture Local Wildlife Site

2.9.202 There would be a small permanent overall loss of 300 m^2 of floodplain grazing marsh from Ash Level and South Richborough Pasture local wildlife site (site DO21) due to the bases of two new pylons (PC 53B and PC 54C) associated with the new section of overhead line (there is an overall increase of four pylons in the local wildlife site but two are in arable land).

2.9.203 However, this loss would be offset by the aforementioned wetland habitat creation along the River Stour.

2.9.204 As a result there would be a minor beneficial (positive) impact in the long-term on a receptor of Regional importance. This is a long-term **minor beneficial** effect which is not significant.

Disturbance

2.9.205 Once the Proposed Project is operational there would be little requirement for day-to-day presence of people (typically two individuals at any time). Operational noise has been modelled and is presented in **Figure 5 Map of 60dB average LAmax contour at Kent** within **Application Document 6.6 Habitat Regulations Assessment Report**. The disturbance threshold of 60 dB LAmax referenced earlier would only be exceeded 10 m from the Minster Converter Station and Substation. This does not intersect with any designated sites.

2.9.206 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 Kent Onshore Scheme, or how often, although there would be a three-year maintenance cycle, and visual checks would be undertaken on a monthly inspection visit to the site. However, maintenance and monitoring visits are likely to be infrequent

and for short periods and would be much smaller in scale than construction works. 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.

2.9.207 Four ducts would be installed for the marine HVDC cable as part of the trenchless installation, 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.

2.9.208 No impact or likely significant effect would therefore arise on designated sites.

Pollution (Spillages)

2.9.209 The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 make it an offence to pollute watercourses, irrespective of whether they are European Sites or connect to European Sites.

2.9.210 Therefore, during operation, 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. This is usually undertaken in the form of an Environmental Management Plan which includes measures for the protection of ground and surface waters, pollution prevention measures and an emergency response plan for pollution events. A Construction Environmental Management Plan (CEMP) will be produced to cover all these aspects as committed in measure GG02 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments.**

2.9.211 As such, it is considered that maintenance of the new infrastructure (where required), and the discharges from the permanent outfalls will be designed in a way to prevent pollution to the water environment to ensure no adverse effects from water pollution on any European site.

2.9.212 No impact or likely significant effect would therefore arise on designated sites.

Air quality

2.9.213 During the operational and maintenance phase, the Proposed Project will be staffed by a limited number of operatives across the site, with additional infrequent trips associated with maintenance/ inspections or repairs when required. This is likely to include up to four daily car/LGV trips associated with two staff members who will be on-site or on-call at all times for the proposed Minster Converter Station. There will be occasional maintenance and inspection visits but as these will be occasional, they will not affect the Annual Average Daily Traffic.

2.9.214 The forecast number of operational vehicle movements during the operation of the Kent Onshore Scheme is therefore very low and well below the threshold at which it would materially affect annual average air quality. No impact or likely significant effect would therefore arise on designated sites.

2.9.215 It is understood that the Minster Substation and Minster Converter Station site will be connected to the existing Distribution Network Operator system to provide an electricity

supply to the sites, both temporarily during construction and permanently for operation. However, as described in **Application Document 6.2.1.4 Part 1 Introduction Chapter 4 Description of the Proposed Project**, ~~a~~ back-up diesel ~~generator is~~generators are proposed at each of Minster Substation and Converter Station during the operational phase. For the purposes of the assessment in **Application Document 6.2.3.8 Part 3 Kent Chapter 8 Air Quality** a study area of up to 200 m from the Minster Converter Station and Substation boundary is considered appropriate for exhaust emissions. Beyond this distance it is judged that the effect of any emissions on local air quality would have no potential to be significant.

2.9.216 ~~The generators will be operated during routine maintenance activities, which is likely to be every 1 - 3 months. They may also be required during emergency scenarios. These backup generators are rarely used and have less than a 1% chance of operating per year. As the back-up generators are likely to run just 1% of the time and emissions are likely to be lower, the maximum annual PC is likely to be in the order of 0.05 µg/m³ from each generator, at the nearest sensitive ecological receptor (the Weather Lees Hill woodland component Sandwich Bay to Hacklinge Marshes SSSI), which is well below 1% of the critical level. This would not be visible in modelling when translated to nitrogen deposition.~~ ~~Therefore~~Emissions from the back-up generators would occur during maintenance and testing and in the rare event of a loss of power. The updated air quality modelling for the backup generators in Appendix A of **Application Document 9.86 (A) Applicant's Comments on Other Submissions Received at Deadlines 3 and 3A [REP4-082]** , shows that potential significant effects (notably where the nitrogen deposition from the generators exceeds the 1% critical load) are confined to within approximately 100 m of the generators, based on worst case parameters. A minimum 120 m setback from the Sandwich Bay to Hacklinge Marshes SSSI has been committed to and is secured through the Register of Environmental Actions and Commitments. On this basis, likely significant effects on designated ecological sites from back-up generator emissions are not anticipated... Therefore, likely significant effects will not arise.

2.9.217 Given the distance of these generators from Thanet Coast & Sandwich Bay SPA/Ramsar and Sandwich Bay SAC (at least 1 km) NOx and nitrogen deposition within the European sites will not be elevated at all. Therefore, likely significant effects will not arise.

Habitats

Habitat loss

2.9.218 There is a proposed permanent access route via the hoverport and across the mudflat to enable checking of the trenchless route beneath the saltmarsh at Pegwell Bay off Sandwich Road . The hoverport site is known to support rare invertebrates, including fiery clearwing moth and Sussex emerald moth, both of which are legally protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). It also contains habitat suitable for reptiles and supports populations of man orchid and lizard orchid. However, this route is for inspection and maintenance via light vehicles and a few qualified personnel with very minor access needs at a regular interval. Access will use the existing track and hardstanding to reach the saltmarsh and as such there will be no habitat loss.

2.9.219 There would be the following permanent habitat loss due to the presence of the Minster Converter Station and Substation and associated planting, the permanent access road, visibility splays, and the overhead line:

- Approximately 650 m (the entirety) of two parallel hedgerows with 0.5 ha of species poor neutral grassland between, which lie entirely within converter station footprint;
- 365 m of ditch that would be permanently lost under the converter station footprint;
- 40 m length of the narrow plantation and semi-natural woodland belt either side of the A256 (since it is not possible to plant trees over the cables);
- 20.6 ha of arable land due in particular to the 11 ha footprints of the Minster Converter Station and Substation and balancing ponds (though also including the bases of some of the new pylons), and the permanent access and associated swales;
- 4 permanent culverts on ditches for permanent access, as well as 7 permanent outfalls; and
- A small amount (300 m^2) of floodplain grazing marsh south of the River Stour to two of the new overhead tower bases south of the river (PC 53B and PC 54C), as already discussed in the section on designated sites.

2.9.220 As a result there would be a moderate adverse impact and thus **moderate adverse** effect on a receptor of up to Regional importance in the short to medium term, lasting for between 1-2 seasons (for easily maturing habitats such as balancing ponds and grassland) to 5-10 years or longer for sections of hedgerow and woodland, as the works are completed and new planting matures. This would be a significant adverse residual effect in the short to medium term.

2.9.221 However, these losses are not overall losses. This is because there would also be extensive habitat creation as part of the Proposed Project for reasons of landscaping and drainage, around the Minster Converter Station and Substation, along the permanent access road and in various locations including along the River Stour. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details. **Application Document 7.5.7.2.3 Timing of Planting** illustrates how planting will be phased. As a result there would be a long-term overall increase in woody and wetland habitats due to the Kent Onshore Scheme, increasing the ecological value of what is currently (north of the River Stour) a predominantly arable landscape of relatively low botanical value or diversity, or diversity of habitat structure.

2.9.222 There would thus be a moderate beneficial impact in the long-term on receptors of up to Regional importance due to habitat creation. This is a long-term **moderate beneficial** effect which is significant.

Pollution (Spillages)

2.9.223 The assessment of pollution is identical to that provided for designated sites.

Ornithology

Habitat loss

2.9.224 As identified above for habitats, there would be some permanent loss of woody and riparian nesting habitat for breeding birds, and arable habitat for breeding birds (particularly skylark) and wintering birds (particularly flocks of golden plover and lapwing). As a result there would be a moderate adverse impact and thus **moderate adverse** effect on a receptor of up to Regional importance in the short to medium term, lasting for between 1-2 seasons (for easily maturing habitats such as balancing ponds and grassland) to 5-10 years or longer for sections of hedgerow and woodland, as the works are completed and new planting matures. This would be a significant residual effect in the short to medium term.

2.9.225 However, as already discussed under the habitats section above, this does not constitute an overall permanent loss of habitat. This is because there would be extensive habitat creation as part of the Proposed Project, around the Minster Converter Station and Substation, along the permanent access road and along the River Stour. As a result there would be a long-term overall increase in woody and wetland habitats due to the Kent Onshore Scheme, increasing the ecological value of what is currently (north of the River Stour) a predominantly arable landscape. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details.

2.9.226 Moreover, as already discussed for designated sites, there would also be 10 ha of off-site arable land enhancement for ornithology mitigation, targeted to wintering farmland birds (particularly golden plover) but which would also be managed favourably for nesting farmland birds, through inclusion of skylark nesting plots at a rate of at least 4 plots per hectare (twice the density required by Countryside Stewardship). This favourable farming regime would occur throughout the operational life of the Minster Converter Station and Substation. This is set out in commitment B54 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments** and in **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**.

2.9.227 There would be a moderate beneficial impact in the long-term on a receptor of up to District (for nesting birds) and Regional (for non-breeding birds) due to habitat creation. This is a long-term **moderate beneficial** effect which is significant.

Disturbance and displacement

2.9.228 Operational disturbance would be negligible. Operational noise levels have been modelled to inform this Environmental Statement and are mapped in **Figure 5 Map of 60dB average LAmax contour at Kent** within **Application Document 6.6 Habitat Regulations Assessment Report**. These have identified that the 60 dB LAmax contour already introduced in the assessment of construction effects would only extend approximately 10 m from the Minster Converter Station and Substation boundaries. There would also be little need for operational lighting at the proposed Minster Converter Station and Substation, with lighting limited to security lighting and task lighting as needed during any maintenance works. Lighting contour plans indicate that light levels at the Minster Converter Station and Substation would fall below 1 lux within approximately 13-15 m of the lighting fixtures. This is a sufficiently low light level that bird foraging and roosting around vegetation beyond the fenced areas will not be affected.

2.9.229 Displacement of breeding and wintering birds is unlikely from Ash Levels south of the River Stour, or Abbey Farm Wetlands north of the River Stour, during the presence of a new overhead line during the operational phase. There are numerous examples of powerlines crossing wetland sites that are nonetheless of national or international importance for birds e.g. Ouse Washes SPA, Nene Washes SPA, Upper Nene Valley Gravel Pits SPA, Thames Estuary & Marshes SPA, The Swale SPA, Medway Estuary & Marshes SPA. This shows that wintering birds are not displaced from fields just because of presence of overhead powerlines. Moreover, the existing Richborough to Canterbury overhead line west of the proposed new section of overhead line already traverses similar areas of wet grassland and scrapes in Ash Levels.

2.9.230 There is therefore no disturbance (noise and light) impact on birds anticipated during operation leading to a negligible effect which is not significant.

Collision risk

2.9.231 The collision risk assessment described for designated sites above is also applicable to ornithology generally. It is therefore considered that even without any mitigation there would be a minor adverse impact which on the District (breeding) and Regional (non-breeding) bird populations would result in a minor adverse effect that is not significant. The provision of bird deflectors would further minimise any risk during adverse weather or low light conditions, rendering the effect **negligible**.

Predation risk

2.9.232 Extensive ornithology surveys have been undertaken for the Kent Onshore Scheme: two seasons of wintering bird survey including nocturnal visits, two seasons of breeding bird survey, 12 months of vantage point survey focused on the area for the proposed overhead line, and a bird carcass search of the existing overhead line to inform the collision risk assessment. These surveys have not identified evidence of significant amounts of peregrine or corvid perching on the existing pylons.

2.9.233 While the risk of predation would be greater if there was a nesting colony of lapwing or other species vulnerable to this sort of predation (because of their tendency to nest on the ground in relatively open vegetation) under the new section of overhead line, such colonies have not been identified. While the scrapes under the new section of overhead line are extensively used by wintering birds these are less vulnerable than nesting birds to predation by other birds.

2.9.234 Furthermore, an existing pair of peregrines have been recorded nearby associated with Richborough Power Station as well as a population of ravens. Peregrines are highly territorial and are likely to push out other peregrines/raptors hunting in the vicinity; this has been anecdotally observed on other sites. Within this context it is unlikely that an increase in potential perches would result in an increase in predation intensity as it would not result in an increase in predatory birds without territory conflict.

2.9.235 Predation risk is therefore concluded to be a negligible impact on a receptor of up to District (for nesting birds) and Regional (for non-breeding birds) importance, leading to a **negligible** effect that is not significant.

Dormouse

Habitat loss

2.9.236 There is no evidence of dormouse within the operational footprint of the Kent Onshore Scheme. As noted above, there would be a permanent loss of existing woody habitat for potential dormouse colonization due in particular to the removal of the parallel hedgerows that lie within the Minster Converter Station and Substation footprint. However, as for ornithology this would not constitute an overall loss. This is because there would be extensive habitat creation as part of the project around the Minster Converter Station and Substation, including 6.5 ha of woodland and 1 km native hedgerow. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details. As a result there would be a long-term overall increase in woody habitats due to the Kent Onshore Scheme, increasing the value for potential dormouse colonization of what is currently (north of the River Stour) a predominantly open arable landscape with relatively little woody vegetation beyond Weather Lees Hill and the railway line.

2.9.237 There would be a moderate beneficial impact in the long-term due to habitat creation. This is a long-term **moderate beneficial** effect which is significant.

Badger

Habitat loss

2.9.238 As noted above, there would be a permanent loss of existing woody habitat and arable habitat for badger foraging. However, there is no actual evidence of badger activity in these areas, and it would not constitute an overall loss. This is because there would be extensive habitat creation as part of the Proposed Project, around the Minster Converter Station and Substation. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details. As a result there would be a long-term overall increase in woody habitats due to the Kent Onshore Scheme, increasing the value for badger of what is currently (north of the River Stour) a predominantly arable landscape.

2.9.239 There would be a moderate beneficial impact in the long-term on a receptor of local importance due to habitat creation. This is a long-term **moderate beneficial** effect which is significant.

Bats

Habitat loss

2.9.240 There would be a small permanent loss of existing woody habitat for bat foraging, due in particular to the removal of the parallel hedgerows that lie within the Minster Converter Station and Substation footprint. Habitat loss would therefore be a minor adverse impact and thus minor adverse effect on a receptor of up to Regional importance in the short to medium term, lasting up to 5-10 years as the new habitat matures. This is not significant.

2.9.241 Moreover, this would not constitute a long-term overall loss. This is because there would be extensive habitat creation as part of the Proposed Project, around the Minster

Converter Station and Substation. As a result there would be a long-term overall increase in woody habitats due to the Kent Onshore Scheme, increasing the value for bats of what is currently (north of the River Stour) a predominantly arable landscape with limited shelter or linear woody features. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details.

2.9.242 There would be a moderate beneficial impact in the long-term due to habitat creation on a receptor of Regional importance. This is a long-term **moderate beneficial** effect which is significant.

Disturbance

2.9.243 As for ornithology, operational disturbance would be negligible. There would be little need for operational lighting for operational staff, with lighting limited to security lighting and task lighting as needed during any maintenance works. There would also be no lighting along the permanent access road. In line with best practice guidance from the BCT and Institute of Lighting Professionals (ILP) (Bat Conservation Trust and Institute of Lighting Professionals, 2023) lighting would be the minimum required for the safe working of the proposed Minster Converter Station. Lighting would be directed to the interior of the Converter Station, and on as low a column height as possible, with measures such as hoods or cowls implemented where required to minimise light spill onto immediately surrounding habitat. This is commitment B58 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**. Lighting contour plans indicate that light levels at the Minster Converter Station and Substation would fall below 1 lux within approximately 13-15 m of the lighting fixtures. This is a sufficiently low light level that bat foraging around vegetation beyond the fenced areas will not be affected.

2.9.244 There would thus be a negligible impact on a receptor of local importance which is a **negligible** effect which is not significant.

Reptiles

Habitat loss

2.9.245 As noted above, there would be a permanent loss of existing habitat for potential reptiles due in particular to the removal of the parallel hedgerows that lie within the Minster Converter Station and Substation footprint and the associated strip of neutral grassland. At this location a small population of slow worm and common lizard were recorded. Habitat loss would therefore be a minor adverse impact and thus minor adverse effect on a receptor of up to local importance in the short to medium term, lasting up to 5 years as the new habitat matures. This is not significant.

2.9.246 Moreover, this would not constitute a permanent overall loss. This is because there would be extensive habitat creation as part of the Proposed Project, around the Minster Converter Station and Substation, along the permanent access road and along the River Stour. As a result there would be a long-term overall increase in woodland margin and wetland habitats due to the Kent Onshore Scheme, increasing the value for reptiles of what is currently (north of the River Stour) a predominantly arable landscape. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details.

2.9.247 There would be a moderate beneficial impact in the long-term due to habitat creation on a receptor of local importance. This is a long-term **moderate beneficial** effect which is significant.

Riparian Mammals

Habitat loss

2.9.248 There would be some permanent loss of habitat for riparian mammals due to the presence of 4 permanent culverts on ditches for permanent access (essentially culverts that are permanently retained following construction), as well as 7 permanent outfalls. This would include permanent loss of approximately 30 m of habitat within a ditch on which water voles have been recorded. There is a further 365 m of ditch that would be permanently loss under the proposed Minster Converter Station footprint, although there is no evidence of riparian mammal occupation of this feature. Given the very large amount of ditch habitat available in the area even after development, this is considered to be a minor adverse impact and thus **minor adverse** effect on a receptor of up to Regional importance in the short term, lasting 1-2 years as the new habitat matures. This would not be significant.

2.9.249 Moreover, these are not permanent overall losses. This is because there would be extensive habitat creation as part of the Proposed Project, including 2 ha of balancing ponds around the Minster Converter Station and Substation, over 1 km of swales along the permanent access road and 600 m^2 of new scrapes along the River Stour. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details. As a result there would be a long-term overall increase in wetland habitats due to the Kent Onshore Scheme.

2.9.250 For example, there would be an overall increase in wetland perimeter of 1.38 km due to the permanent attenuation ponds. These will be designed to be of value for riparian mammals by retaining an earth ledge and sloping bank above a permanent shallow water level. The ledge would be planted with emergent riparian vegetation. While the water voles on site are using linear ditches, there are many examples in Kent and elsewhere of water voles using pond and wetland margins and even nesting in reedbeds with no standing water.

2.9.251 There would be a moderate beneficial impact in the long-term due to habitat creation, on a receptor of Regional importance. This is a long-term **moderate beneficial** effect which is significant.

Passage

2.9.252 For the purposes of this impact assessment, the culverts required for the permanent access would follow recommended design guidelines for wildlife[13] and would either preserve the natural bed of the ditch, or have the inverts sunk below the bed level of the watercourse with natural/existing bed material then placed across the inside of the culvert to lift the level up to meet that of the existing. This is secured in commitment W03 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments**.

[13] Culvert Guidance - Flood Risk Management (devon.gov.uk)

2.9.253 The culverts would also avoid narrowing of natural channel width. This is to ensure maximum accessibility for eels (see later for an assessment of impacts on fish). Where bank material cannot be preserved within the culvert (due to the weight or levels) they would also include a minimum 150 mm wide mammal ledge (with 600mm headroom) to ensure continued accessibility by water voles.

2.9.254 Given these measures there would be no disruption of water vole passage and connectivity. This is therefore a negligible impact on a receptor of Regional importance, resulting in a **negligible** effect that is not significant.

Terrestrial Invertebrates

2.9.255 As noted above, there would be a permanent loss of existing habitat for terrestrial and riparian invertebrates due in particular to the removal of the parallel hedgerows that lie within the Minster Converter Station and Substation footprint and the associated strip of neutral grassland. This was one of the key locations where some notable invertebrates were recorded during surveys.

2.9.256 However, this would not constitute an overall permanent loss. This is because there would be extensive habitat creation as part of the Proposed Project, around the Minster Converter Station and Substation, along the permanent access road and in the form of new scrapes along the River Stour. As a result there would be a long-term overall increase in woodland margin and wetland habitats due to the Kent Onshore Scheme. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details. Moreover, material that is worth keeping from those hedgerows would be transplanted south and used to strengthen the existing hedgerow and boundary with Weather Lees Hill.

2.9.257 There would be a moderate beneficial impact in the long-term due to habitat creation on a receptor of District importance. This is a long-term **moderate beneficial** effect which is significant.

Aquatic Macrophyte

Shading

2.9.258 There would likely be some aquatic macrophyte loss as a result of he proposed permanent culverts. There would be four permanent culverts located on the Minster Stream and surrounding tributaries. This would provide an increase in the amount of shading on the watercourses in these areas which are currently largely unshaded (although there are some existing farm crossing structures that are not suitable to bear construction traffic). This shading may slightly reduce the channel macrophyte cover but should not be detrimental to the number of species present within the area or the overall WFD status (see **Application Document 6.9 Water Framework Directive Assessment**).

2.9.259 Overall, the proposed culverts are considered a negligible impact on a receptor of District importance resulting in a **negligible** effect on aquatic macrophytes that is not significant.

Habitat loss

2.9.260 There would be some limited permanent loss of habitat for macrophytes due to the presence of some permanent culverts and outfalls through shading and removal of macrophytes present.

2.9.261 There is a community of aquatic macrophytes present in these areas, however, due to the vastness of the watercourse catchment areas and the regularity of the species found here any impacts are deemed negligible. This is therefore a negligible impact on a receptor of District importance, resulting in a **negligible** effect that is not significant.

2.9.262 There will also be a significant loss of habitat of almost 300 m where an existing watercourse will be infilled (K/WA/0037) at the location of the proposed Minster Converter Station and Substation. As described in 2.9.100 extensive wetland habitat is set to be created around the Minster Converter Station which include balancing ponds (See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent**). These ponds will provide excellent alternative habitat for macrophyte species that like the ditch and slow-flowing ravine habitat which is found here. Therefore, it is advised that translocation of macrophytes (into nearby watercourses or the balancing/attenuation ponds) happens in advance of infill (commitment B56 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**). It is also assumed that based on surveys conducted in the area, macrophytes here are similar to that elsewhere within the ditch network and no protected or notable species are likely to be present.

2.9.263 Before mitigation (translocation) is implemented, the infilling of the ditch will be a major adverse impact on a receptor of District importance resulting in a **major adverse** effect on macrophyte habitats that is significant. Implementing the mitigation will result in a minor adverse impact on a receptor of District importance resulting in a **minor adverse** residual effect on macrophytes that is not significant.

Aquatic Macroinvertebrates

Habitat loss

2.9.264 There would be some limited permanent loss of habitat for macroinvertebrates at locations of permanent box culverts and outfalls particularly on the Minster Stream. With embedded mitigation and culvert design preserving the natural bed of the ditch or consisting of a box culvert; where the invert of the culvert is sunk below the bed level of the water course and natural / existing bed material placed across the inside of the culvert to lift the level up to meet that of the existing, then any potential impacts on macroinvertebrate populations would be minimal. This is secured in commitment W03 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**.

2.9.265 Therefore, any pressures from permanent culverts or outfalls would have a minor adverse impact. Therefore, any pressures in relation to habitat loss on the River Stour and other culvert locations would result in a **minor adverse** effect.

2.9.266 There will also be a significant loss of habitat of almost 300 m where an existing watercourse will be infilled (K/WA/0037) at the location of the proposed Minster Converter Station. As described in 2.9.100 extensive wetland habitat is set to be created around the Minster Converter Station which include balancing ponds (See **Application Document 7.5.7.2 Landscape and Ecological Management Plan –**

Kent). These ponds will provide excellent alternative habitat for macroinvertebrate species that like the ditch habitat and slow-flowing ravine habitat which is found here. Therefore, it is advised that translocation of macroinvertebrate communities (into nearby watercourses or the balancing/attenuation ponds) happens in advance of infill (Commitment B56 in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**).

2.9.267 Before mitigation (translocation) is implemented, the infilling of the ditch will be a major adverse impact on a receptor of regional importance resulting in a **major adverse** effect on macroinvertebrate communities that is significant. Implementing the mitigation will result in a minor adverse impact on a receptor of regional importance resulting in a **minor adverse** residual effect on macroinvertebrates that is not significant.

Pollution

2.9.268 Seven permanent outfalls are proposed within 1 km of each other on the Minster Stream and nearby tributaries. The macroinvertebrate samples taken from this area have provided Community Conservation Index values of High and Moderate Conservation value. With site DS16 (**Application Document 6.2.3.2.I Appendix 3.2.I Aquatic Ecology Survey Report** – **Application Document 6.4.3.2.N Aquatic Ecology Survey Report**) also showing the highest Whalley, Hawkes, Paisley & Trigg (WHPT) Number of scoring taxa (NTAXA) values, across all samples taken which shows the watercourse has high ecological quality.

2.9.269 Care would need to be taken as to how much runoff is likely to occur in high rainfall events so that the macroinvertebrate communities present are not washed out in addition to the control of any potential pollutants.

2.9.270 This is addressed in the design of the Kent Onshore Scheme by the implementation of a variety of methods to control runoff (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) which would help ensure pollutants would not flood the river and reduce flooding of the area.

2.9.271 All permanent outfalls proposed have attenuation ponds associated with them. This would help minimise the effects of runoff from high rainfall events on the watercourses in the area and reduce flooding. Therefore, overall, the permanent outfalls are considered a negligible impact on a receptor of Regional importance resulting in a **negligible** effect on aquatic macroinvertebrates that is not significant.

Fish

Pollution

2.9.272 Seven permanent outfalls are proposed on the Minster Stream and nearby tributaries which pose a risk to fish species in the area during a high rainfall event.

2.9.273 Care would need to be taken as to how much runoff is likely to occur in high rainfall events so that the macroinvertebrate communities present are not washed out in addition to the control of any potential pollutants.

2.9.274 This is addressed in the design of the Kent Onshore Scheme by the implementation of a variety of methods to control runoff (**Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice**) which would help ensure pollutants would not flood the river and reduce flooding of the area.

2.9.275 All permanent outfalls proposed have attenuation ponds associated with them. This would help minimise the effects of runoff from high rainfall events on the watercourses in the area and reduce flooding. Therefore, overall, the permanent outfalls are considered a negligible impact on a receptor of Regional importance resulting in a **negligible** effect on fish that is not significant.

Passage

2.9.276 Under The Eels Regulations 2009, it is an offense to impede the passage of eels which were found to be present in Minster Stream.

2.9.277 Proposed culverts would either preserve the natural bed of the ditch or consist of a box culvert where the inverts are sunk below the bed level of the water course and natural / existing bed material placed across the inside of the culvert to lift the level up to meet that of the existing. This is secured in commitment W03 of **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**. Due to the number of ditches to be crossed, there would be four permanent culverts on the Minster Stream and surrounding tributaries.

2.9.278 During operation the culverts once built are unlikely to pose a risk to migrating fish species. Therefore, culverts are considered a minor adverse impact to a receptor of Regional importance resulting in a **minor adverse** effect on fish which is not significant.

Decommissioning Phase

2.9.279 Decommissioning impacts are considered similar to those identified during the construction phase, except that it is assumed that the permanent access could be used for demolition access to the Minster Converter Station and Substation and that the cable and ducts would not be removed by methods more damaging than their method of installation. For example, it is assumed they would not be removed by open excavation in the saltmarsh of Thanet Coast & Sandwich Bay SPA/Ramsar, Sandwich Bay SAC and Sandwich Bay to Hacklinge Marshes SSSI, since it will be at a depth of approximately 15-18m at this location. Therefore, the decommissioning impacts would be no greater than the construction impacts. Similarly, it is assumed that the pylon bases would not be excavated (beyond an approximately 1 m depth) unless it was considered environmentally preferable to do so. Rather the pylon legs would be cut at the bases, cut into sections in situ and then removed off site. There would be no overall permanent habitat loss as a result of decommissioning because while there would be temporary habitat losses for compounds, the decommissioning would result in an overall increase in habitat by permanently removing above-ground built structures, except possibly pylon bases. This would all be controlled through the written scheme of decommissioning to be produced at the time of decommissioning (GG31).

2.10 Additional Mitigation

2.10.1 Additional topic and site-specific mitigation measures that have been applied to mitigate or offset any likely significant effects are included in **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**.

2.10.2 Mitigation measures included that are relevant to ecology and biodiversity receptors are:

- Seasonal restriction on site preparation, earthworks and foundation creation for the Minster Converter Station and Substation, as well as construction of the section of

permanent access road immediately north of the SSSI, so they occur outside the breeding bird season (March to June) (B50).

- Programming the overhead line pylon base installation to avoid the core wintering bird period of October to February (B51).
- It is proposed to deliver a series of small shallow riverside scrapes with riparian planting, and some alder and willow planting, along the River Stour within the Order Limits before the end of the Proposed Project's construction. This will increase the ecological value of what is currently (north of the River Stour) a predominantly arable landscape. See **Application Document 7.5.7.2 Landscape and Ecological Management Plan – Kent** for details. In addition, there will be localised introduction of Azolla weevil to control invasive Azolla fern in Ash Levels and South Richborough Local Wildlife Site (B52).
- Larger gaps in hedgerows or woodland belts would be reduced to 10 m maximum during the night by hurdles or similar. Around construction compounds, direct illumination of boundary features will be avoided. Lighting will be designed to comply with published guidelines (B53).
- Delivery of 10 ha of off-site arable enhancement land for SPA golden plover and for breeding skylark (B54).
- Bird diverters on new section of overhead line, which are visible in low light conditions. It is considered that in the context of the Kent Onshore Scheme and species involved, that hanging deflectors, especially those with fluorescent markings offer the best solution to making the lines visible in adverse weather or low light conditions (B55).
- Macroinvertebrate and macrophyte communities will be translocated from the ditch to be lost to the Minster Converter Station, into nearby watercourses or the balancing/attenuation ponds, in advance of infill (B56).

2.11 Residual Effects and Conclusions

2.11.1 Table 2.12 to Table 2.13 summarize the residual effects of the Proposed Project on ecology and biodiversity receptors following the implementation of additional mitigation measures outlined in Section 2.10. As discussed in 2.9 above decommissioning effects are considered to be similar to or better than construction effects and therefore a separate table is not presented for decommissioning.

Table 2.12 Summary of residual ecology and biodiversity effects (Construction)

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
Thanet Coast & Sandwich Bay SPA/Ramsar	International	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant
		Disturbance	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Dust)	Negligible	Not Significant	None	Negligible	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant
Sandwich Bay SAC	International	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant
Sandwich Bay to Hacklinge Marshes SSSI	National	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
		Disturbance	Moderate adverse	Significant	Seasonal restriction on site preparation, earthworks and foundation creation for the Minster Converter Station and Substation, as well as construction of the section of permanent access road immediately north of the SSSI, so they occur outside March to June.	**Minor adverse**	Not Significant
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Dust)	Negligible	Not Significant	None	Negligible	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant
Ash Level and South Richborough Pasture Local Wildlife Site	Regional	Habitat loss	Moderate adverse in the short-term	Significant (Adverse)	Enhancement of riparian habitat along River Stour and localised introduction of *Azolla* weevil to control invasive *Azolla* fern	Minor beneficial in the long-term	Not significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
Non-Statutory Site TH12 (Woods & Grassland, Minster Marshes)	Regional	Habitat loss	Minor adverse	Not Significant	None	**Minor adverse**	Not Significant
Habitats	Up to Regional	Habitat loss	Moderate adverse in the short to medium-term. Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Adverse in the short to medium term / Beneficial in the long term)	None	Moderate adverse in the short to medium-term Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Adverse in the short to medium term / Beneficial in the long term)
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Dust)	Negligible	Not Significant	None	Negligible	Not Significant
Ornithology	Regional (non-breeding birds)	Habitat loss	Moderate adverse in the short to medium-term	Significant (Adverse in the short to medium term / Beneficial in the long term)	None	Moderate adverse in the short to medium-term Moderate beneficial in	Significant (Adverse in the short to medium term / Beneficial in the long term)

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
	District (breeding birds)		Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals and taking account of enhancement of 10ha of arable off-site to address permanent losses for farmland birds (see operational table).			the long-term due to habitat creation as part of Minster Converter Station and Substation proposals and taking account of enhancement of 10ha of arable off-site to address permanent losses for farmland birds (see operational table).	
		Disturbance	Moderate adverse	Significant	Seasonal restriction on site preparation, earthworks and foundation creation for the Minster Converter Station and Substation, as well as construction of the section of permanent access road	**Minor adverse**	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
					immediately north of the SSSI, so they occur outside March to June. Programming the overhead line pylon base installation to avoid the core wintering period of October to February.		
		Disturbance (nesting Schedule 1 birds)	Negligible	Not Significant	None	Negligible	Not Significant
Dormouse	N/A (likely absent based on survey, although precautionary working methods will be used)	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant
Badger	Local	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant
		Connectivity	Negligible	Not Significant	None	Negligible	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
Bats	Regional	Habitat loss	Moderate adverse	Significant	Larger gaps in hedgerows/woodland belts would be reduced to 10 m maximum during the night by hurdles or similar. Around construction compounds, direct illumination of boundary features will be avoided. Lighting will be designed to comply with published guidelines.	**Minor adverse**	Not Significant
		Disturbance	Moderate adverse	Significant	Around construction compounds, direct illumination of boundary features will be avoided. Lighting will be designed to comply with published guidelines.	Negligible	Not Significant
Reptiles	Local	Habitat loss	Minor adverse	Not Significant	None	**Minor adverse**	Not Significant
		Connectivity	Negligible	Not Significant	None	Negligible	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
		Killing and injury	Negligible	Not Significant	None	Negligible	Not Significant
Riparian mammals	Regional	Habitat loss	Minor adverse in the short-term Moderate beneficial in the long-term due to wetland habitat creation as part of Minster Converter Station and Substation proposals	Not significant in the short term Significant (Beneficial) in the long term	None	Minor adverse in the short-term Moderate beneficial in the long-term due to wetland habitat creation as part of Minster Converter Station and Substation proposals	Not significant (in the short term) Significant (Beneficial in the long-term))
		Killing and injury	Negligible	Not Significant	None	Negligible	Not Significant
		Passage	Negligible	Not Significant	None	Negligible	Not Significant
Terrestrial invertebrates	District	Habitat loss	Minor adverse in the medium-term Moderate beneficial in the long-term due to habitat	Not significant in the short term	None	Minor adverse in the medium-term. Moderate beneficial in the long-term due to habitat	Not significant (medium term)

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
			creation as part of Minster Converter Station and Substation proposals	Significant (Beneficial) in the long term		creation as part of Minster Converter Station and Substation proposals	Significant (Beneficial in the long-term)
Invasive species	N/A	Spread	Minor beneficial due to control measures	Not Significant (Beneficial)	None	Minor beneficial due to control measures	Not Significant (Beneficial)
Aquatic macrophytes	Local	Habitat loss	Minor adverse in the short-term	Not significant	None	Minor adverse in the medium-term	Not significant (medium-term)
		Shading	Negligible	Not Significant	None	Negligible	Not Significant
Aquatic macroinvertebrates	Regional	Habitat loss	Minor adverse	Not Significant	None	Minor adverse	Not Significant
		Pollution	Negligible	Not Significant	None	Negligible	Not Significant
Fish0	Regional	Light	Moderate adverse	Significant	Around construction compounds, direct illumination of boundary features will be avoided. Lighting will be designed to	Minor adverse	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
					comply with published guidelines.		
		Noise and vibration	Minor adverse	Not Significant	None	Minor adverse	Not Significant
		Passage	Minor adverse	Not Significant	None	Minor adverse	Not Significant

Table 2.13 Summary of residual ecology and biodiversity effects (Operation and Maintenance)

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
Thanet Coast & Sandwich Bay SPA/Ramsar	International	Habitat loss	Negligible (loss of SPA/Ramsar) Moderate adverse (functionally-linked habitat)	Not Significant Significant (adverse)	Delivery of 10ha of off-site arable enhancement for SPA golden plover	Negligible	Not Significant
		Collision risk	Minor adverse	Not Significant	Bird diverters on new section of overhead line, which are visible in low light conditions	Negligible	Not Significant
		Disturbance	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant
Sandwich Bay SAC	International	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
Sandwich Bay to Hacklinge Marshes SSSI	National	Habitat loss	Negligible	Not Significant	None	Negligible	Not Significant
		Disturbance	Negligible	Not Significant		Negligible	Not Significant
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
		Pollution (Dust)	Negligible	Not Significant	None	Negligible	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant
Ash Level and South Richborough Pasture Local Wildlife Site	Regional	Habitat loss	Minor beneficial due to habitat enhancement introduced to address construction effects	Not Significant		Minor beneficial	Not Significant
		Air Quality	Negligible	Not Significant	None	Negligible	Not Significant
Non-Statutory Site TH12 (Woods & Grassland, Minster Marshes)	Regional	Habitat loss	Minor adverse	Not Significant	None	Minor adverse	Not Significant
Habitats	Up to Regional	Habitat loss	Moderate adverse in the short to medium-term due to habitat loss.	Significant (adverse)	None	Moderate adverse in the	Significant (adverse)

Receptor	Sensitivity	Description of Impact	Likely Significant Effect Magnitude	Significance	Additional Mitigation Measures	Residual Effect Magnitude	Significance
			Moderate beneficial in the long term due to habitat creation as part of Minster Converter Station and Substation proposals	in the short to medium term Significant (Positive) in the long term		short to medium-term due to habitat loss. Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	in the short to medium term Significant (Positive) in the long term
		Pollution (Spillages)	Negligible	Not Significant	None	Negligible	Not Significant
Ornithology	Regional (non-breeding birds) District (breeding birds)	Habitat loss	Moderate adverse in the short to medium-term due to nesting and wintering habitat loss. Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals and taking account of enhancement of 10 ha of arable off-site to address permanent losses for farmland birds.	Significant (adverse) in the short to medium term Significant (Positive) in the long-term	None	Significant (adverse) in the short to medium term Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals and	Significant (adverse) in the short to medium term Significant (Positive) in the long term

Receptor	Sensitivity	Description of Impact	Likely Significant Effect Magnitude	Significance	Additional Mitigation Measures	Residual Effect Magnitude	Significance
						taking account of enhancement of 10 ha of arable off-site to address permanent losses for farmland birds (see operational table).	
		Disturbance and displacement	Negligible	Not Significant	None	Negligible	Not Significant
		Predation Risk	Negligible	Not Significant	None	Negligible	Not Significant
		Collision Risk	Minor adverse	Not Significant	Bird diverters on new section of overhead line, which are visible in low light conditions	Negligible	Not Significant
Dormouse	N/A (likely absent based on survey, although	Habitat loss	Moderate beneficial due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Positive)	None	Moderate Beneficial	Significant (Positive)

Receptor	Sensitivity	Description of Impact	Likely Significant Effect Magnitude	Significance	Additional Mitigation Measures	Residual Effect Magnitude	Significance
	precautionary working methods will be used)						
Badger	N/A	Habitat loss	Moderate beneficial due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Positive)	None	Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Positive)
Bats	Regional	Habitat loss	Minor adverse in the short to medium term due to habitat loss. Moderate beneficial in the long term due to habitat creation as part of Minster Converter Station and Substation proposals	Not significant in the short to medium term Significant (Positive) in the long term	None	Minor adverse in the short to medium term due to habitat loss. Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and	Not significant in the short to medium term Significant (Positive) in the long term

Receptor	Sensitivity	Description of Impact	Likely Significant Effect Magnitude	Significance	Additional Mitigation Measures	Residual Effect Magnitude	Significance
						Substation proposals	
		Disturbance	Negligible	Not Significant	None	Negligible	Not Significant
Reptiles	Local	Habitat loss	Minor adverse in the short to medium term due to habitat loss. Moderate beneficial due to habitat creation as part of Minster Converter Station and Substation proposals	Not significant in the short to medium term Significant (Positive) in the long term	None	Minor adverse in the short to medium term due to habitat loss. Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	Not significant in the short to medium term Significant (Positive) in the long term
Riparian mammals	Regional	Habitat loss	Minor adverse in the short term due to habitat loss. Moderate beneficial in the long-term due to wetland habitat creation as part of Minster Converter Station and Substation proposals	Not significant in the short term Significant (Positive) in the long term	None	Minor adverse in the short term due to habitat loss. Moderate beneficial in the long-term due to wetland habitat creation as	Not significant in the short term Significant (Positive) in the long term

Receptor	Sensitivity	Description of Impact	Likely Significant Effect Magnitude	Significance	Additional Mitigation Measures	Residual Effect Magnitude	Significance
						part of Minster Converter Station and Substation proposals	
		Passage	Negligible	Not Significant	None	Negligible	Not Significant
Terrestrial invertebrates	Local	Habitat loss	Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Positive)	None	Moderate beneficial in the long-term due to habitat creation as part of Minster Converter Station and Substation proposals	Significant (Positive)
Aquatic macrophytes	District	Habitat loss	(Culverts and outfalls) Negligible (Infilled ditch) Major adverse	Not Significant Significant (adverse)	None Translocation of macrophytes (into nearby watercourses or balancing/attenuation ponds) in advance of infill	Negligible Minor adverse	Not Significant

Receptor	Sensitivity	Description of Impact	Likely Significant Effect		Additional Mitigation Measures	Residual Effect	
			Magnitude	Significance		Magnitude	Significance
		Shading	Negligible	Not Significant	None	Negligible	Not Significant
Aquatic macroinvertebrates	Regional	Habitat loss	(Culverts and outfalls) Minor adverse	Not Significant	None	Minor adverse	Not Significant
			(Infilled ditch) Major adverse	Significant (adverse)	Translocation of macroinvertebrates (into nearby watercourses or balancing/attenuation ponds) in advance of infill	Minor adverse	
		Pollution	Negligible	Not Significant	None	Negligible	Not Significant
Fish	Regional	Passage	Minor adverse	Not Significant	None	Minor adverse	Not Significant
		Pollution	Negligible	Not Significant	None	Negligible	Not Significant

2.11.2 The assessment of impacts on ecological receptors has considered construction, operational and decommissioning phases including habitat loss, disturbance, collision risk with the proposed new section of overhead line, and water and atmospheric pollution. Embedded measures and those set out in **Application Document 7.5.3.1 CEMP Appendix A Outline Code of Construction Practice** have been considered in the assessment.

2.11.3 These include measures built into the design of the Proposed Project (e.g. culvert design or habitat creation around the converter station), standard mitigation measures (e.g. avoiding vegetation clearance in nesting season and using noise fencing), and those which are required by law (e.g. the appropriate exclusion season for water voles, or measures to avoid disturbance of Cetti's warbler). Due to the time required for planting to mature (between 1-2 seasons for easily restored habitats such as ditches, to 5-10 years for sections of hedgerow and woodland), moderate adverse effects have been identified in the short to medium term for breeding and wintering birds and for habitats of up to regional importance. However, these are considered to be offset by the long-term (10 years and upwards) beneficial effect of the large amounts of landscape planting around the Minster Converter Station and Substation and the River Stour. This will result in a long-term increase in habitat.

2.11.4 Following the assessment taking into account those measures, the need for additional mitigation has been identified in Section 2.10 (see also **Application Document 7.5.3.2 CEMP Appendix B Register of Environmental Actions and Commitments (REAC)**).

2.11.5 With these measures (embedded, control and management habitat planting for landscape purposes, and additional mitigation) taken into consideration, it is concluded that there will be no significant adverse long-term residual effects on ecological and biodiversity receptors as a result of the Proposed Project.

2.11.6 There will be a number of significant positive residual effects in the long-term for receptors such as bats, water voles and birds, due to the habitat creation around the Minster Converter Station and Substation.

2.12 Sensitivity Testing

2.12.1 Under the terms of the DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be in 2026. The effects reported above would not be any different if the works were to commence in any year up to year five, assuming the seasonal restrictions and other mitigation measures identified continued to be applied.

2.13 References

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