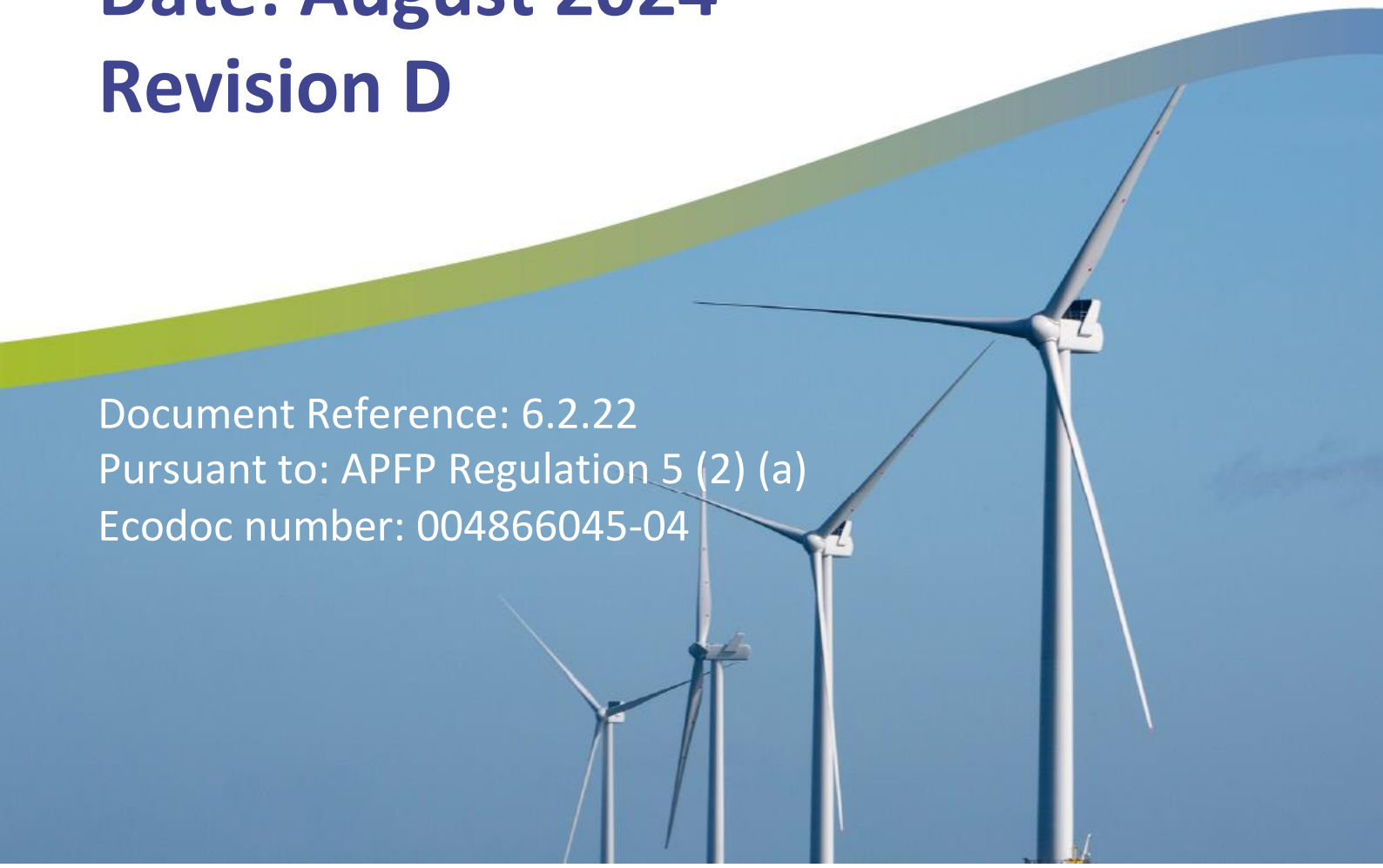
Rampion 2 Wind Farm

Category 6: Environmental Statement

Volume 2, Chapter 22: Terrestrial ecology and nature conservation (clean)

Date: August 2024

Revision D



Document Reference: 6.2.22
Pursuant to: APFP Regulation 5 (2) (a)
Ecodoc number: 004866045-04

Document revisions

Revision	Date	Status/reason for issue	Author	Checked by	Approved by
A	04/08/2023	Final for DCO Application	WSP	RED	RED
B	03/06/2024	Inclusion of new and clarifications regarding Commitments and update of assessment of native hedgerows and treelines, woodland, hazel dormouse, bats and the Arun Valley RAMSAR Site and SPA.	WSP	RED	RED
C	09/07/2024	Update at Deadline 5 to correspond with final Outline Vegetation Retention and Removal Plans and updates to commitments.	WSP	RED	RED
D	01/08/2024	Updates for Deadline 6 to include final commitments.	WSP	RED	RED

Contents

22.	**Terrestrial ecology and nature conservation**	**7**
22.1	Introduction	7
22.2	Relevant legislation, planning policy and other documentation	9
	Introduction	9
	Legislation and national planning policy	10
	Local planning policy	19
	Other relevant information and guidance	20
22.3	Consultation and engagement	20
	Overview	20
	Early engagement	20
	Scoping Opinion	21
	Evidence Plan Process (EPP)	29
	Non-statutory consultation	30
	Non-statutory consultation – January / February 2021	33
	Statutory Consultation	34
22.4	Methodology for baseline data gathering	43
	Overview	43
	Study Area	43
	Desk study	44
	Field surveys	50
	Data limitations	54
22.5	Baseline conditions	57
	Current baseline	57
22.6	Scope of the assessment	80
	Overview	80
	Temporal scope	106
	Future baseline	106
22.7	Basis for ES assessment	107
	Maximum design scenario	107
	Embedded environmental measures	113
	Biodiversity Net Gain (BNG)	140
22.8	Methodology for ES assessment	140
	Introduction	140
22.9	Assessment of effects	143
	The Arun Valley Ramsar site	143
	The Arun Valley SPA	147
	The Mens SAC	148
	Amberley Wild Brooks SSSI / Pulborough Brooks SSSI	151
	Climping Beach SSSI	151
	Littlehampton Golf Course and Atherington Beach LWS	153

Sullington Hill LWS 153
Ancient Woodland 154
Veteran Trees 156
Woodland 158
Coastal and floodplain grazing marsh 163
Neutral semi-improved grassland 165
Native hedgerows (species rich and species poor) and tree lines 167
Streams and permanently wet ditches 183
Badgers 184
Bats 187
Hazel dormouse 191
Great crested newt 195
Reptiles (common species) 196
Breeding birds 197
Wintering birds 200
Water vole 204
22.10 Assessment of cumulative effects 207
Approach 207
Cumulative effects assessment 207
22.11 Transboundary effects 214
22.12 Inter-related effects 214
22.13 Summary of residual effects 215
22.14 Glossary of terms and abbreviations 221
22.16 References 229

List of Tables

Table 22-1 Legislation relevant to terrestrial ecology and nature conservation 10
Table 22-2 National planning policy relevant to terrestrial ecology and nature conservation 13
Table 22-3 Emerging national planning policy relevant to terrestrial ecology and nature conservation 17
Table 22-4 Planning Inspectorate's Scoping Opinion responses – terrestrial ecology and nature conservation 21
Table 22-5 First statutory consultation (July – September 2021) feedback 34
Table 22-6 Second Statutory Consultation (October – November 2022) feedback 38
Table 22-7 Third Statutory Consultation (February – March 2023) feedback 40
Table 22-8 Fourth Statutory Consultation exercise (April – May 2023) feedback 42
Table 22-9 Data gathered during the desk study 44
Table 22-10 Data sources used to inform the terrestrial ecology and nature conservation assessment 47
Table 22-11 Site survey programme summary 50
Table 22-12 Site survey coverage 54
Table 22-13 International/European sites designated for nature conservation 58
Table 22-14 Nationally designated sites for nature conservation 59
Table 22-15 Non-statutory sites designated for nature conservation 62

Table 22-16 HPI and Ancient Woodland identified during the desk study 66
Table 22-17 Defining Importance of Ecological Features 81
Table 22-18 Terrestrial ecology and nature conservation scoping assessment 87
Table 22-19 Maximum assessment assumptions for impacts on terrestrial ecology and nature conservation 110
Table 22-20 Relevant terrestrial ecology and nature conservation embedded environmental measures 115
Table 22-21 Guidelines for the assessment of the scale of magnitude 142
Table 22-22 Ancient Woodland within the proposed DCO Order Limits 154
Table 22-23 Veteran trees within or close to the proposed DCO Order Limits 156
Table 22-24 Broadleaved woodland within the proposed DCO Order Limits 159
Table 22-25 Hedgerows and tree lines within the proposed DCO Order Limits subject to temporary or permanent losses (*denotes feature within the South Downs National Park) 167
Table 22-26 Wintering bird survey results (inside and within 500m of the onshore part of the proposed DCO Order Limits) 201
Table 22-27 Developments considered as part of the terrestrial ecology and nature conservation CEA 209
Table 22-28 Cumulative Project Design Envelope for terrestrial ecology and nature conservation 211
Table 22-29 Cumulative effects assessment for terrestrial ecology and nature conservation 212
Table 22-30 Summary of residual effects 217
Table 22-31 Glossary of terms and abbreviations – terrestrial ecology and nature conservation 221

List of Appendices, Volume 4 — Document Reference

Appendix 22.1	Policy and legislation tables	6.4.22.1
Appendix 22.2	Terrestrial ecology desk study	6.4.22.2
Appendix 22.3	Extended Phase 1 habitat survey report	6.4.22.3
Appendix 22.4	National Vegetation Classification survey report 2021-2022	6.4.22.4
Appendix 22.5	Hedgerows survey report	6.4.22.5
Appendix 22.6	Fisheries habitat survey report	6.4.22.6
Appendix 22.7	Great crested newt environmental DNA survey report 2021-2023	6.4.22.7
Appendix 22.8	Passive and active bat activity report	6.4.22.8
Appendix 22.9	Hazel dormouse report 2020-2022	6.4.22.9
Appendix 22.10	Invertebrate survey report	6.4.22.10
Appendix 22.11	Badger, otter & water vole survey report	6.4.22.11
Appendix 22.12	Reptile survey	6.4.22.12
Appendix 22.13	Breeding bird survey	6.4.22.13
Appendix 22.14	Onshore winter bird report 2020-2022	6.4.22.14
Appendix 22.15	Biodiversity Net Gain information	6.4.22.15
Appendix 22.16	Arboricultural Impact Assessment	6.4.22.16
Appendix 22.17	Bat tree ground level visual assessment survey report	6.4.22.17
Appendix 22.18	Passive and active bat activity report 2023	6.4.22.18
Appendix 22.19	Hazel dormouse report 2023	6.4.22.19

Page Intentionally blank

Executive Summary

This section summarises the assessment findings at this point in the Environmental Impact Assessment (EIA) process for terrestrial ecology and nature conservation, based on **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES (Document Reference: 6.2.22).

How effects on terrestrial ecology and nature conservation have been assessed

The assessment has considered the likely significant effects of the Proposed Development on a range of terrestrial ecological features, including statutory and non-statutory designated sites, habitats (including habitats of principal importance) and species (including those that receive legal protection and species of principal importance). Potential effects that have been assessed include:

- permanent or temporary land take / land cover change (resulting in habitat loss or degradation and/or loss of fauna);
- fragmentation of habitats (resulting in a reduction in connectivity and/or exclusion from suitable habitats);
- increased noise and vibration (resulting in disturbance / displacement);
- increased light levels (resulting in disturbance / displacement);
- changes in hydrology (ground water levels and surface water run-off rates resulting in habitat change);
- pollution events (including the liberation of dust, sediments and chemicals resulting in loss or degradation of fauna and flora);
- introduction of invasive non-native species (resulting in habitat degradation); and
- electromagnetic field (EMF) and heat generation (resulting in habitat change).

The assessment has considered ecological features both within the proposed DCO Order Limits and within Zones of Influence (ZoI) outside of the Proposed Development where likely significant effects could occur. The assessment has focused on the effects that could manifest on each ecological feature during the construction, operation and maintenance and decommissioning phases of the Proposed Development.

Baseline environment

The land within the onshore part (landward of the Mean High Water Springs (MHWS) of the proposed Development Consent Order (DCO) Order Limits is approximately 591ha in extent comprising a range of broad habitat types including farmland (arable land, improved pasture and rough grazing), semi-natural habitats (woodland, semi-improved grassland, scrub, hedgerows and trees), standing water (ponds), rivers (River Arun and River Adur), streams and ditches, quarries and built development (roads, residential and commercial premises). The areas of habitat present form part of larger areas of biodiversity interest namely the Arun Valley, Adur Valley and the South Downs National Park.

The area supports a range of statutory and non-statutory designated sites including European sites (such as the Arun Valley Special Protection Area), Sites of Special Scientific Interest (SSSI) (such as Climping Beach SSSI) and Local Wildlife Sites (LWS) (such as Sullington Hill LWS). There is also a range of legally protected and notable species present including a variety of bats, farmland birds, great crested newt and water vole.

Embedded environmental measures

There are a large number of environmental measures within the **Commitments Register** (Document Reference: 7.22) which relate to terrestrial ecology and nature conservation and are embedded as part of the Rampion 2 design to remove or reduce significant environmental effects as far as possible. These embedded environmental measures generally focus on the following:

- Use of trenchless techniques to cross designated sites and ancient woodland to avoid ground works within these areas;
- The delivery of vegetation retention and removal plans to minimise losses of habitats of principal importance, and others used frequently by species of principal importance;
- Scheduling of construction activity to minimise disturbance to sensitive species such as wintering waterbirds associated with the Arun Valley and Adur Valley; and
- Reinstatement of habitats temporarily lost to construction, habitat creation at the substation site and the delivery of a biodiversity net gain (BNG) of at least ten percent.

Likely significant effects

Overview

Based on the proposed location of the onshore substation and routing of the onshore cable corridor, and the implementation of embedded environmental measures such as the Code of Construction Practice, no Significant Effects have been identified on terrestrial ecology features during the construction, operation and maintenance, and decommissioning phases.

Cumulative effects

No Significant Cumulative Effects have been identified in relation to the Proposed Development on terrestrial ecology features during the construction, operation and maintenance, and decommissioning phases.

Inter-related effects

No Significant Inter-related Effects of greater significance compared to the effects considered alone were identified on terrestrial ecology features during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

Transboundary effects

No Significant Transboundary Effects have been identified in relation to the Proposed Development on terrestrial ecology features during the construction, operation and maintenance, and decommissioning phases.

22. Terrestrial ecology and nature conservation

22.1 Introduction

22.1.1 This chapter of the Environmental Statement (ES) presents the results of the assessment of the likely significant effects of Rampion 2 with respect to terrestrial ecology and nature conservation, including habitats and legally protected and notable species onshore (landward of mean high water springs (MHWS)). It should be read in conjunction with the project description provided in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) and the relevant parts of the following chapters and appendices:

- **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES (Document Reference: 6.2.9) due to the intersections of habitats at MHWS;
- **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference: 6.2.12) due to the presence of bird species that use marine, intertidal and terrestrial habitats;
- **Chapter 19: Air quality, Volume 2** of the ES (Document Reference: 6.2.19) due to the potential for emissions and dust associated with the Proposed Development to negatively affect habitats, flora and fauna;
- **Chapter 20: Soils and agriculture, Volume 2** of the ES (Document Reference: 6.2.20) due to the potential overlap between priority habitats such as calcareous grassland and soil type;
- **Chapter 21: Noise and vibration, Volume 2** of the ES (Document Reference: 6.2.21) due to the potential for fauna to be disturbed or displaced by noise and vibration associated with the Proposed Development;
- **Chapter 24: Ground conditions, Volume 2** of the ES (Document Reference: 6.2.24) due to some designated sites having both ecological and geological aspects to their designation: and
- **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26) due to the close association between ecological features and local hydrology.

22.1.2 This technical chapter describes:

- the legislation, planning policy and other documentation that has informed the assessment (**Section 22.2: Relevant legislation, planning policy, and other documentation**);
- the outcome of consultation and engagement that has been undertaken to date, including how matters relating to terrestrial ecology and nature conservation within the Statutory Consultation have been addressed (**Section 22.3: Consultation and engagement**);

- the methods used for the baseline data gathering (**Section 22.4: Methodology for baseline data gathering**);
- the overall baseline (**Section 22.5: Baseline conditions**);
- the scope of the assessment for terrestrial ecology and nature conservation (**Section 22.6: Scope of the assessment**);
- the relevant maximum design scenario and embedded environmental measures relevant to terrestrial ecology and nature conservation (**Section 22.7: Basis for ES assessment**);
- the assessment methods used for the ES (**Section 22.8: Methodology for ES assessment**);
- the assessment of terrestrial ecology and nature conservation effects (**Section 22.9: Assessment of effects** and **Section 22.10: Assessment of cumulative effects**);
- consideration of transboundary effects (**Section 22.11: Transboundary effects**);
- inter-related effects (**Section 22.12: Inter-related effects**);
- a summary of residual effects for terrestrial ecology and nature conservation (**Section 22.13: Summary of residual effects**);
- a glossary of terms and abbreviations is provided in **Section 22.14: Glossary of terms and abbreviations**; and
- a references list is provided in **Section 22.15: References**.

22.1.3 The chapter is also supported by the following appendices:

- **Appendix 22.1: Policy and legislation tables, Volume 4** of the ES (Document Reference: 6.4.22.1);
- **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2);
- **Appendix 22.3: Extended phase 1 habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.3);
- **Appendix 22.4: National Vegetation Classification survey report 2021-2022, Volume 4** of the ES (Document Reference:6.4.22.4);
- **Appendix 22.5: Hedgerows survey report, Volume 4** of the ES (Application Document Reference: 6.4.22.5);
- **Appendix 22.6: Fisheries habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.6);
- **Appendix 22.7: Great crested newt environmental DNA survey report 2021-2023, Volume 4** of the ES (Document Reference: 6.4.22.7);
- **Appendix 22.8: Passive and active bat activity report, Volume 4** of the ES (Document Reference: 6.4.22.8);

- **Appendix 22.9: Hazel dormouse report 2020-2022, Volume 4** of the ES (Document Reference: 6.4.22.9);
- **Appendix 22.10: Invertebrate survey report, Volume 4** of the ES (Document Reference: 6.4.22.10);
- **Appendix 22.11: Badger, otter & water vole survey report, Volume 4** of the ES (Document Reference: 6.4.22.11);
- **Appendix 22.12: Reptile survey, Volume 4** of the ES (Application Document Reference: 6.4.22.12);
- **Appendix 22.13: Breeding bird survey, Volume 4** of the ES (Document Reference: 6.4.22.13);
- **Appendix 22.14: Onshore winter bird report 2020-2022, Volume 4** of the ES (Document Reference:6.4.22.14);
- **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference:6.4.22.15);
- **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES (Document Reference: 6.4.22.16);
- **Appendix 22.17: Bat tree ground level visual assessment survey report, Volume 4** of the ES (Document Reference: 6.4.22.17);
- **Appendix 22.18 Passive and active bat activity report 2023, Volume 4** of the ES (Document Reference: 6.4.22.18) **[PEPD-029]**; and
- **Appendix 22.19: Hazel dormouse report 2023, Volume 4** of the ES (Document Reference: 6.4.22.19) **[PEPD-030]**

22.1.4 This technical chapter has a structure that differs from others within this ES to reflect Ecological Impact Assessment (EcIA) guidance provided by the Chartered Institute of Ecology and Environmental Management ((CIEEM), 2018, updated 2022).

22.1.5 A **Report to Inform Appropriate Assessment (RIAA)** (Document Reference: 5.9) has been provided in tandem with this ES to specifically address the potential effects on European sites and their designated features within the framework of the Conservation of Habitats and Species Regulations 2017 (as amended).

22.2 Relevant legislation, planning policy and other documentation

Introduction

22.2.1 This section identifies the relevant legislation, policy and other documentation that has informed the assessment of effects with respect to terrestrial ecology and nature conservation. Further information on policies relevant to the Environmental Impact Assessment (EIA) and their status is provided in **Chapter 2: Policy and legislative context, Volume 2** of the ES (Document Reference: 6.2.2).

Legislation and national planning policy

22.2.2 **Table 22-1** lists the legislation relevant to the assessment of the effects on ecological features[1].

Table 22-1 Legislation relevant to terrestrial ecology and nature conservation

Legislation description	Relevance to assessment
The Environment Act 2021	
The Environment Act 2021 (amongst other matters) amends the duty to conserve biodiversity in the Natural Environment and Rural Communities Act 2006 ('the NERC Act') and deliver a measurable Biodiversity Net Gain ([BNG]; from 2025 for DCO projects).	The Proposed Development will result in potential effects on Habitats of Principal Importance (HPI) and Species of Principal Importance (SPI) in England. This chapter provides information about, and assessment of HPI and SPI. Likely significant effects on HPI and SPI are assessed in **Sections 22.6** and **22.9**. Embedded environmental measures are detailed in **Section 22.7**. The Proposed Development will also deliver a Biodiversity Net Gain which is detailed in **Section 22.7** and **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15).
Invasive Alien Species (Enforcement and Permitting) Order 2019	
The Invasive Alien Species (Enforcement and Permitting) Order 2019 has been adopted to prevent and minimise the impact of the introduction and spread of non-native animals and plants.	The construction and decommissioning of the Proposed Development may result in the unintentional spread of invasive non-native species. This issue is to be controlled through the implementation of the embedded environmental measures detailed in **Section 22.7**.
Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations") as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	
These regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and wild flora and fauna ('the Habitats Directive[2]') into	The Proposed Development will result in potential effects on constituents of the national site network and EPS which requires assessment in line with the

[1] Ecological feature is the term used in this chapter to describe terrestrial ecology and nature conservation receptors. This is to maintain consistency of terms between this assessment and the EcIA guidance provided by CIEEM (CIEEM, 2022)
[2] Habitats Directive as retained by the withdrawal act.

Legislation description	Relevance to assessment
national law. They also transposed elements of Council Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive'). The Habitats Regulations provide the framework for the protection of Natura 2000 sites (now referred to as the national site network following the amendments that came into force on 31 December 2020), and for certain flora and fauna (known as European Protected Species (EPS)). The regulations set out the process with regard to the assessment of development.	Habitats Regulations. Within this chapter, the likely significant effects on these sites and EPS are assessed in **Section 22.9** with embedded environmental measures detailed in **Section 22.7**. A **Report to Inform Appropriate Assessment (RIAA)** (Document Reference: 5.9) has been provided alongside this ES. This assessment identified a number of European sites that were screened in for consideration and others where effects were either absent or did not require mitigation to conclude no Likely Significant Effects. The conclusions drawn within the assessment in **Section 22.9** are consistent with those presented within the **RIAA** (Document Reference: 5.2.9).
The Infrastructure Planning (Decisions) Regulations 2010	
The Infrastructure Planning (Decisions) Regulations direct the Secretary of State to consider United Nations Environmental Programme Convention on Biological Diversity of 1992 when making a decision.	The UK Post-2010 Biodiversity Framework, through which the UK's obligations under the Convention are delivered, provides the strategic aims for delivering parts of the UK Government's strategy with regards to biodiversity. The strategic aims of UK Government policy are addressed with regard to mitigation, compensation and enhancement in **Section 22.8**.
The Natural Environment and Rural Communities Act 2006 as amended by the Environment Act 2021	
The NERC Act (amongst other matters) places a duty to conserve and enhance biodiversity on public authorities in England. This requires local authorities and government departments to have regard to the purposes of conserving biodiversity in a manner that is consistent with the exercise of their normal functions. The NERC Act also places a duty on the Secretary of State to maintain lists of species and habitats which are regarded as being of principal importance for the conservation of biodiversity in England.	The Proposed Development will result in potential effects on HPI and SPI in England. This chapter provides information about, and assessment of HPI and SPI. Likely significant effects on HPI and SPI are assessed in **Sections 22.6** and **22.9**. Embedded environmental measures are detailed in **Section 22.7**. The Proposed Development will also deliver a Biodiversity Net Gain which is detailed in **Section 22.7** and **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15).

Legislation description	Relevance to assessment
These HPI and SPI are used to guide decision makers in implementing their duties to have regard to the conservation of biodiversity in England when carrying out their normal functions.	
Countryside and Rights of Way Act 2000 ('the CRoW Act 2000')	
This CRoW Act 2000, amongst other elements, details further measures for the management and protection of Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.	The Proposed Development will result in potential effects on SSSIs and protected flora and fauna. The protection conferred to these ecological features through legislation is accounted for within the scope of the assessment (see **Section 22.6**), the likely significant effects in **Section 22.9** and the embedded environmental measures are detailed in **Section 22.7**.
The Hedgerows Regulations 1997 ('the Hedgerow Regulations')	
The Hedgerows Regulations 1997 facilitate the protection of hedgerows growing in or adjacent to common land, protected land or land used for agriculture, forestry or the breeding and keeping of horses, ponies or donkeys.	The Proposed Development will result in effects on hedgerows deemed important by the Hedgerows Regulations. The likely significant effects on hedgerows are considered in **Section 22.9** and embedded environmental measures detailed in **Section 22.7**.
Protection of Badgers Act 1992 ("the Protection of Badgers Act")	
The Protection of Badgers Act 1992 consolidated and improved protection for badgers. It specifically makes it an offence to kill, injure or take a badger, or damage or interfere with a sett unless a licence has been obtained from a statutory authority.	The Proposed Development will result in effects on badgers and their setts. The protection conferred to badgers through legislation is accounted for within the scope of the assessment (see **Section 22.6**), the likely significant effects in **Section 22.9** and the embedded environmental measures detailed in **Section 22.7**.
Wildlife and Countryside Act 1981 (as amended) (WCA)	
The WCA consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention') and Council Directive 79/409/EEC on the conservation of wild birds (Birds Directive).	The Proposed Development may result in potential effects on SSSIs and protected flora and fauna. The protection conferred to these ecological features through legislation is accounted for within the scope of the assessment (see **Section 22.6**), the likely significant effects in **Section 22.9**, and the

Legislation description	Relevance to assessment
Amongst other matters it provides protection for wild birds, certain flora and fauna and sets the framework for the protection and management of SSSIs.	embedded environmental measures detailed in **Section 22.7**.

22.2.3 **Table 22-2** lists the national planning policy relevant to the assessment of the effects on terrestrial ecology and nature conservation receptors.

Table 22-2 National planning policy relevant to terrestrial ecology and nature conservation

Policy description	Relevance to assessment
Overarching National Policy Statement (NPS) for Energy (EN-1) (Department for Energy and Climate Change (DECC), 2011a)	
Paragraph 5.3.3 states: "*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, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the IPC consider thoroughly the potential effects of a proposed project*."	Statutorily and non-statutorily designated sites, habitats and species of principal importance, legally protected species and other habitats and species of note are scoped in or out of the assessment in **Section 22.6**. For those terrestrial ecological features where the potential for resulting likely significant effects exist, further assessment is provided in **Section 22.9**, alongside consideration of the embedded environmental measures, detailed in **Section 22.7**. The adherence to the CIEEM guidance (2018, updated 2022) on Ecological Impact Assessment (EcIA) provides the necessary structure to ensure a proportionate assessment is provided.
Paragraph 5.3.4 states: "*The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests*."	Embedded environmental measures are detailed in **Section 22.7**. These include a commitment to providing a Biodiversity Net Gain (BNG) through restoration and enhancement within the proposed DCO Order Limits and the provision of off-site biodiversity units.
Paragraph 5.3.11 states: "*Where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI (either*	The design of the Proposed Development outlined in **Chapter 4: The Proposed Development, Volume 2** of the ES

Policy description	Relevance to assessment
individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect, after mitigation, on the site's notified special interest features is likely, an exception should only be made where the benefits (including need) of the development at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs. The IPC should use requirements and/or planning obligations to mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity or geological interest."	(Document Reference: 6.2.4) has avoided land take within any SSSIs. Potential effects on SSSIs close to the construction site and operational infrastructure are assessed in **Section 22.6** and **Section 22.9**. Embedded environmental measures are detailed in **Section 22.7.**
Paragraph 5.3.13 states: *"Sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature Reserves and Local Sites, have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education. The IPC should give due consideration to such regional or local designations. However, given the need for new infrastructure, these designations should not be used in themselves to refuse development consent."*	Two Local Wildlife Sites (LWS) are crossed by the proposed onshore cable corridor. The likely significant effects resulting on these ecological features are assessed in **Section 22.9**, alongside consideration of the embedded environmental measures described in **Section 22.7**.
Paragraph 5.3.14 states: *"Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost it cannot be recreated. The IPC should not grant development consent for any development that would result in its loss or deterioration unless the benefits (including need) of the development, in that location outweigh the loss of the woodland habitat. Aged or 'veteran' trees found outside ancient woodland are also particularly valuable for biodiversity and their loss*	The Proposed Development outlined in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) has avoided land take within any Ancient Woodland. Potential effects resulting on Ancient Woodland close to the construction site and operational infrastructure are assessed in **Section 22.6** and **Section 22.9**. Embedded environmental measures are detailed in **Section 22.7**.

Policy description	Relevance to assessment
should be avoided. Where such trees would be affected by development proposals the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons why."	Veteran trees have been identified within the onshore part of the proposed DCO Order Limits. All veteran trees will be avoided through design. Embedded environmental measures in **Section 22.7** provide methods for avoidance.
Paragraph 5.3.18 states: *"The applicant should include appropriate mitigation measures as an integral part of the proposed development. In particular, the applicant should demonstrate that:* • *during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works;* • *during construction and operation best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised, including as a consequence of transport access arrangements;* • *habitats will, where practicable, be restored after construction works have finished; and* • *opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals."*	Embedded environmental measures are detailed in **Section 22.7**. These include a commitment to providing a BNG through restoration and enhancement within the proposed DCO Order Limits and the provision the provision of off-site biodiversity units (see **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15)).
National Policy Statement (NPS) for Electricity Networks Infrastructure (EN-5) (DECC, 2011b)	
Paragraph 2.10.12 states: "*Undergrounding of a line would reduce the level of EMFs experienced, but high magnetic field levels may still occur immediately above the cable. It is not the Government's policy that power lines should be undergrounded solely for the purpose of reducing exposure to EMFs. Although there may be circumstances where the costs of undergrounding are justified for a particular*	Consideration of the potential effects of electromagnetic fields (EMF) are provided in **Sections 22.6** with embedded environmental measures described in **Section 22.7**.

Policy description	Relevance to assessment
development, this is unlikely to be on the basis of EMF exposure alone, for which there are likely to be more cost-efficient mitigation measures.“	
National Planning Policy Framework (Ministry of Housing, Communities and Local Government (MHCLG), 2021)	
Paragraph 179 states: “*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.*	The baseline environment is described in **Section 22.5**, with the assessment described in **Sections 22.6** and **22.9**. Embedded environmental measures are described in **Section 22.7**.
Paragraph 180 states: *“When determining planning applications, local planning authorities should apply the following principles:* *a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;* *b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally*	The baseline environment is described in **Section 22.5**, with the assessment described in **Sections 22.6** and **22.9**. Embedded environmental measures are described in **Section 22.7**. The Proposed Development outlined in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) has avoided land take within any SSSIs or Ancient Woodland.

Policy description	Relevance to assessment
be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; *c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and* *d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity."*	

22.2.4 The UK Government published draft NPSs EN1-EN5 (Department for Energy Security & Net Zero (DESNZ), 2023a; 2023b) for consultation in September 2021 and subsequently in March 2023 with further amendments. The 2011 NPSs (DECC 2011a; DECC, 2011b) remain in force until the review is approved (designated) and under proposed transitional arrangements the 2023 amendments will only have effect in relation to applications for development consent accepted for examination after designation. However, the draft emerging NPSs can potentially be relevant planning considerations. Therefore, Rampion 2 has kept abreast of the potential changes to the energy NPSs and incorporated any updates where required in the ES.

22.2.5 **Table 22-3** describes the changes proposed in emerging national planning policy relevant to the assessment of the effects on terrestrial ecology and nature conservation receptors.

Table 22-3 Emerging national planning policy relevant to terrestrial ecology and nature conservation

Policy description	Relevance to assessment
Draft Overarching National Policy Statement (NPS) for Energy (EN-1), March 2023 (Department for Energy Security & Net Zero, 2023a)	

Policy description	Relevance to assessment
Paragraph 4.5.2 states: "Biodiversity net gain is an essential component of environmental net gain. Projects in England should consider and seek to incorporate improvements in natural capital, ecosystem services and the benefits they deliver when planning how to deliver biodiversity net gain"	A commitment to providing a BNG through restoration and enhancement within the proposed DCO Order Limits and the provision of off-site biodiversity units is detailed in **Section 22.7**. The methods of calculation and the results are provided in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15).
Paragraph 4.5.5 states: *"In England applicants for onshore elements of any development are encouraged to use the current version of the Defra biodiversity metric to calculate their biodiversity baseline and present planned biodiversity net gain outcomes. This calculation data should be presented in full as part of their application."*	**Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15) provides Biodiversity Gain Information, including calculations using the latest Defra biodiversity metric (Biodiversity Metric 4.0)
Paragraph 5.4.19 states: "*The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.*	Embedded environmental measures are detailed in **Section 22.7**. These include a commitment to providing a BNG through restoration and enhancement within the proposed DCO Order Limits and the provision of off-site biodiversity units. The methods of calculation of BNG and the results are provided in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15).
Paragraph 5.4.21 states *"As set out in Section 4.6, the design process should embed opportunities for nature inclusive design. Energy **i**nfrastructure projects have the potential to deliver significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains. The scope of potential gains will be dependent on the type of scale, and location of each project."*	Embedded environmental measures are detailed in **Section 22.7**. These include a commitment to providing a BNG through restoration and enhancement within the proposed DCO Order Limits and the provision of off-site biodiversity units. The methods of calculation of BNG and the results are provided in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15).
Paragraph 5.4.36 states: "*Applicants should consider producing and implementing a Biodiversity Management Strategy as part of their development*	An **Outline Code of Construction Practice (CoCP)** (Document Reference: 7.2) and **Outline Landscape and Ecology**

Policy description	Relevance to assessment
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."	**Management Plan (LEMP)** (Document Reference: 7.10) are provided.
Paragraph 5.4.54 states: "*The Secretary of State should not grant development consent for any development that would result in the loss or deterioration of any irreplaceable habitats, including ancient woodland, and ancient or veteran trees unless there are wholly exceptional reasons and a suitable compensation strategy exists*."	The Proposed Development outlined in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) has avoided land take within any Ancient Woodland and ensured that all veteran trees will remain in-situ. Potential effects resulting on Ancient Woodland close to the construction site and operational infrastructure are assessed in **Section 22.6** and **Section 22.9**. Embedded environmental measures are detailed in **Section 22.7**.

Local planning policy

22.2.6 **Appendix 22.1: Policy and legislation tables, Volume 4** of the ES (Document Reference: 6.4.22.1) provides the local adopted and emerging planning policy relevant to the assessment of the likely significant effects on ecological features. The policies described in **Appendix 22.1: Policy and legislation tables, Volume 4** of the ES (Document Reference: 6.4.22.1) are taken from the following documents:

- Adopted Arun Local Plan 2011 – 2031 (Arun District Council, 2018);
- Adopted South Downs Local Plan 2014 – 2033 (South Downs National Park (SDNP), 2019);
- Draft Horsham District Local Plan 2019 – 2036 (Horsham District Council, 2018)[3];
- Horsham District Planning Framework (excluding SDNP) (2015) (Horsham District Council, 2015);
- Draft Mid-Sussex District Plan 2021 – 2039 (Mid Sussex District Council, 2022); and
- Mid-Sussex District Plan 2014 – 2031 (Mid Sussex District Council, 2018).

[3] It is expected that a finalised Regulation 19 document will be published in late 2024.

Other relevant information and guidance

22.2.7 A summary of other relevant information and guidance relevant to the assessment undertaken for terrestrial ecology and nature conservation is provided here:

- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (CIEEM, 2018).

22.3 Consultation and engagement

Overview

22.3.1 This section describes the stakeholder engagement undertaken for Rampion 2. This consists of early engagement, the outcome of, and response to, the Scoping Opinion (Planning Inspectorate, 2020a) in relation to the terrestrial ecology and nature conservation assessment, the Evidence Plan Process (EPP), non-statutory consultation and Rampion 2's statutory consultation. An overview of consultation and engagement undertaken for Rampion 2 relevant to the EIA is outlined in **Section 5.4** of **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5).

22.3.2 Given the social distancing restrictions which have been in place due to the COVID-19 pandemic from 2020 to 2022 during this period, technical consultation relating to terrestrial ecology and nature conservation has taken place online, primarily in the form of conference calls using Microsoft Teams.

Early engagement

Introduction

22.3.3 Early engagement with Natural England was undertaken in the form of a conference call on 22 April 2020. This meeting was to introduce the scope of the onshore elements of the Proposed Development and discuss the levels of technical engagement and resource capacity. The key themes covered in the meeting were:

- an overview of the Proposed Development, onshore cable corridor optioneering and optimisation process (including consideration of terrestrial ecology and nature conservation constraints) and progress of field surveys undertaken to date (including remote sensing and ground truthing);
- discussion on baseline data collection including the survey types proposed, their extent and scope, and the survey programme;
- approach to EcIA and how mitigation and compensation will be defined for the Proposed Development;
- discussion regarding SACs, SPAs and the approach to the HRA;
- summary of the DCO Application programme including submission of the EIA Scoping Report (RED, 2020), Preliminary Environmental Information Report

(PEIR), and Environmental Statement (ES) supporting the DCO Application; and

- agreement on the frequency and aims of ongoing technical engagement as the Proposed Development progresses to cover the baseline data collection programme, design evolution and embedded environmental measures.

Scoping Opinion

22.3.4 Rampion Extension Development Limited (RED) submitted a Scoping Report (RED, 2020) and request for a Scoping Opinion to the Secretary of State (administered by the Planning Inspectorate) on 2 July 2020. A Scoping Opinion was received on 11 August 2020 (Planning Inspectorate, 2020a). The Scoping Report (RED, 2020) sets out the proposed terrestrial ecology and nature conservation assessment methodologies, outline of the baseline data collected to date and proposed, and the scope of the assessment. **Table 22-4** sets out the comments received in Section 5 of the Planning Inspectorate's Scoping Opinion (Planning Inspectorate, 2020a) 'Aspect based scoping tables – Onshore' and how these have been addressed in this ES. A full list of the Planning Inspectorate's Scoping Opinion comments and responses is provided in **Appendix 5.2: Response to the Scoping Opinion, Volume 4** of the ES (Document Reference: 6.4.5.1). Regard has also been given to other stakeholder comments that were received in relation to the Scoping Report.

Table 22-4 Planning Inspectorate's Scoping Opinion responses – terrestrial ecology and nature conservation

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
5.2.5	Sensitive ecological receptors: "*The ES should set out the relevant ZoIs within which ecological effects from the construction works will be considered (both in terms of the cable route and substation works)*."	Zones of Influence (ZoIs) for all potential effects, including those related to dust are provided in **Section 22.6**. Emissions associated with construction traffic and plant on all statutorily designated sites have been scoped out, in agreement with Planning Inspectorate (Planning Inspectorate, 2020a), and are not considered further within this chapter.
5.2.9	Emissions of dust from construction/decommissioning: "*The Inspectorate is satisfied with the methodology proposed, which*	The assessment presented in **Section 22.6** follows the criteria of the IAQM (2016) regarding dust emissions.

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
	is based on the Institute of Air Quality Management's (IAQM) (2014) Guidance on the assessment of dust from decommissioning and construction. The assessment should include an examination of effects on both human and ecological receptors."	
5.5.1	Land take / land cover change of European sites within the ZoI: "*The Inspectorate agrees that this impact can be scoped out on the basis that no land within a European site(s) will be lost as a result of the Proposed Development. No European sites are within the redline boundary as shown on Figure 6.6.4*."	The location of constituents of the national site network within the context of the onshore part of the proposed DCO Order Limits is provided in **Section 22.6**. No land-take or land cover change within a SAC or SPA is proposed, maintaining the position presented in the Scoping Report (RED, 2020).
5.5.2	Fragmentation of habitat – impacts on Pagham Harbour SPA: "*Pagham Harbour SPA is located over 10km from the proposed landfall point. States that due to distance, it suggests that black bellied Brent geese are not linked to the SPA. The Inspectorate agrees that this matter can based on the distance between the designated sites and the proposed landfall point. Natural England also agree that this matter can be scoped out on the basis of the distance of 10km being an established upper foraging distance for Brent geese*."	Pagham Harbour Ramsar site and SPA is scoped out and is not considered further within this chapter. This is on the basis that the onshore part of the proposed DCO Order Limits is further from Pagham Harbour (11.5km) than that displayed within the Scoping Report (RED, 2020), with no change in potential effects being identified between that report and the assessment within this chapter.
5.5.3	Fragmentation of habitat – effects on shoveler, teal and wigeon features of the Arun valley SPA:	Wintering bird surveys have been completed within the relevant areas of the Arun Valley and Adur Valley. One element of this survey is the recording of species listed

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
	"The paragraph numbers to which the reader is referred (6.6.56 – 6.6.59) appears to be incorrect. Although literature is cited in support of the Applicant's position, the Inspectorate does not agree to scope out habitat fragmentation effects on these features of the SPA. The Inspectorate does not consider that sufficient evidence has been provided to demonstrate that the cable route would not affect or cause deterioration to land that could support these species and be functionally linked to the SPA and as such its loss or deterioration resulting from the Proposed Development's cable route could have an impact on the SPA and should be assessed in the ES."	as designated features on the Arun Valley SPA and Ramsar site. An assessment of the potential effects of fragmentation on features of the Arun Valley SPA and Ramsar site is provided within this chapter (see **Section 22.9**). A summary of the baseline position is provided within **Section 22.5**.
5.5.4	Pollution events on European sites: "*The only European site within 2.5km of the scoping boundary is the Solent and Dorset Coast SPA (designated for tern species). On the basis of the embedded measure C-76, the Inspectorate agrees that this matter can be scoped out*."	Pollution events associated with works above Mean High Water Springs (MHWS) have been considered in **Section 22.6** within which they are scoped out on the basis of the embedded environmental measures described in **Section 22.7**.
5.5.5	Emissions associated with construction traffic and plant on all relevant ecological features (European sites and SSSIs): "*The Inspectorate agrees that this matter can be scoped out based on the temporary and transient nature of the effect, the location of the nearest European sites and SSSI's and the limited amount of traffic likely serving construction at*	Emissions associated with construction traffic and plant on all statutorily designated sites were scoped out following the issue of the Scoping Opinion (Planning Inspectorate, 2020a) and are not considered further within this chapter.

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
	any single location. The Inspectorate also notes that this approach in line with advice from Natural England as cited in paragraph 6.6.68, and Natural England have not expressed concern in their scoping consultation response relating to the Proposed Development."	
5.5.6	Introduction of non-native species to European sites: "*The Scoping Boundary does not overlap with any European sites, so it is agreed that these matters can be scoped out. However, the possibility for the spread of non-native invasive species via watercourses to designated sites which are hydraulically linked should be assessed within the ES where significant effects are likely to occur.*"	The potential for the spread of invasive non-native species is assessed in **Section 22.6**, in light of embedded environmental measures detailed in **Section 22.7**.
5.5.7	Land take / land cover change of SSSIs and LWS outside of the Scoping Boundary: "*The Inspectorate agrees that this matter can be scoped out on the basis that there would be no land take or land cover changes outside of the scoping boundary.*"	Land take / land cover change is considered with regard to one SSSI immediately adjacent to the onshore part of the proposed DCO Order Limits and four LWS within it. The baseline situation is described in **Section 22.5** and the assessment of likely significant effects provided in **Section 22.9**.
5.5.8	Fragmentation of habitats – on SSSIs outside of the Scoping Boundary: "*The Scoping Report is seeking to scope out all SSSIs, which are not located within the Scoping Boundary, features would not be expected to move regularly between the designated sites and the construction area. The*	**Section 22.5** identifies all SSSIs within 5km of the onshore part of the proposed DCO Order Limits (or 12km for SSSIs that cite one or more bat species). **Sections 22.6** and **22.9** assess the likely significant effects on the mobile features of the SSSIs identified from the fragmentation of habitats.

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
	Inspectorate does not agree that this matter can be scoped out as insufficient justification has been provided. The ES should assess this matter where significant effects are likely to occur."	
5.5.9	Increased noise and vibration on SSSIs outside of the Scoping Boundary: "*The Inspectorate does not agree that impacts as a result of noise and vibration should be scoped out for all SSSIs outside of the red line boundary. Some of the SSSIs scoped in by the Applicant have interest features which could be impacted by vibration and noise generated by the proposal some of which have the potential to be transient between areas and SSSI's outside of the redline boundary. The ES should assess this matter where significant effects are likely to occur.*"	**Section 22.5** identifies all SSSIs within 5km of the onshore part of the proposed DCO Order Limits (or 12km for SSSIs that cite one or more bat species). **Sections 22.6** and **22.9** assess the likely significant effects on the mobile features of the SSSIs identified due to noise and vibration.
5.5.10	Increased light impacts on SSSIs: "*No SSSIs within 5km of the Scoping Boundary have been found to support bat species as designated features. The foraging distance of some bats species extends further than 5km and as such the Inspectorate does not agree to scope this out as insufficient justification has been provided. The ES should assess this matter where significant effects are likely to occur.*"	A search for SSSIs within 12km of the onshore part of the proposed DCO Order Limits supporting bats has been undertaken (**Section 22.5**). No SSSIs within this search distance support bats as a designated feature. The potential effects of light on bat species as features of SSSIs is thus discounted and not considered further within this chapter. The effects of light on bats not associated with SSSIs is provided in **Section 22.9**.

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
5.5.11	Changes in hydrology for SSSIs and LWS: "*Impacts on changes to hydrology to SSSIs and LWS outside of the ZoI (deemed as 1km for this matter) are proposed to be scoped out. The Inspectorate does not agree that this matter can be scoped out as insufficient justification has been provided at this time to support this approach. The ES should ensure that hydrological impacts are assessed where significant effects are likely with further justification around the appropriateness and extent of the 1km ZoI.*"	The ZoI used within this chapter is that established within **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26) to assess the potential for changes in hydrology. This is based on the water environment in the area (for example, catchments) and not on a simple measure of distance. **Section 22.6** uses information in **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26) to identify the SSSIs and LWSs that may be at risk of a likely significant effect associated with potential hydrological changes due to the onshore elements of the Proposed Development. Assessment of those effects resulting on designated sites is provided in **Section 22.9**.
5.5.12	Pollution events on SSSIs: "*There are no SSSIs within 500m of the scoping boundary. On the basis of the embedded measure C-76, the Inspectorate agrees that this matter can be scoped out of the ES as significant effects are unlikely to occur.*"	Two SSSIs are located within 500m of the onshore part of the proposed DCO Order Limits (see **Section 22.5**) and likely significant effects on these have been subject to assessment in this document (see **Sections 22.6** and **22.9**). Embedded environmental measures are described within **Section 22.7**.
5.5.13	Introduction of non-native invasive species to SSSIs and LWS which are outside of the Scoping Boundary: "*The possibility for the spread of non-native invasive species via watercourses to designated sites which are hydraulically linked*	The potential for the spread of invasive non-native species, including those by hydrological means, is assessed in **Section 22.6**, in light of embedded environmental measure C-107 detailed in **Section 22.7**.

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
	should be assessed within the ES."	
5.5.14	Fragmentation of habitats – on LWS outside of the Scoping Boundary: "*The Inspectorate agrees that this matter can be scoped out on the basis that there would be no land take or direct effects to habitat outside of the scoping boundary.*"	Four LWSs are located within the onshore part of the proposed DCO Order Limits (see **Section 22.5**). An assessment of the likely significant effects of fragmentation of habitats resulting on these designations is provided in **Section 22.9**, and embedded environmental measures detailed in **Section 22.7**. LWSs outside of the proposed DCO Order Limits are not considered with regards fragmentation of habitats as per the Scoping Opinion (Planning Inspectorate, 2020a).
5.5.15	Increased light levels at LWS: "*The Inspectorate does not agree that this aspect can be scoped out as insufficient justification has been provided at this time to support this approach.*"	The likely significant effects resulting on LWSs from lighting are considered in **Section 22.6** and embedded environmental measures detailed in **Section 22.7**.
5.5.16	Pollution events on LWS outside of the ZoI (500m): "*On the basis of the embedded measure C-76, the Inspectorate agrees that this matter can be scoped out.*"	Pollution events and resulting effects associated with works above MHWS have been considered in **Section 22.6** within which they are scoped out on the basis of the embedded environmental measures detailed in **Section 22.7**.
5.5.17	Breeding birds: "*The Inspectorate considers that insufficient information is provided to support the scoping out of breeding birds from assessment entirely at this stage. The Inspectorate understands the embedded environmental measures in place to maintain*	A breeding bird survey has been completed and is detailed in **Appendix 22.13: Breeding bird survey, Volume 4** of the ES (Document Reference: 6.4.22.13). **Section 22.5** summarises the baseline with assessment provided in **Section 22.9**. Embedded environmental

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
	legal compliance in this regard. However, the proposed working corridor for onshore cable installation (of up to 50m, and wider in respect of special crossings) as well as construction and operation of the onshore substation could require considerable destruction of habitat suitable for breeding birds. The Inspectorate therefore expects the ES to the detail such measures that would be employed and how they would be secured. The ES should assess this matter where significant effects are likely to occur."	measures are described within **Section 22.7**.
5.5.18	Fish species: "*The onshore cable corridor will pass near to or through existing watercourses, where trenched and / or special crossings may be required. The impacts of the Proposed Development upon fish species should be assessed in the ES. This should include impacts on migratory species such as eel, sea lamprey and sea trout. Cross reference should be provided to offshore fish and shellfish*."	The watercourses that will be crossed using an "open cut" methodology have been surveyed, with the results provided in **Appendix 22.6: Fisheries habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.6). **Section 22.6** provides an assessment for fish.
5.5.19	Beneficial effects: "*Where the Applicant concludes beneficial / positive effects which are reliant on successful implementation of biodiversity improvement / enhancement measures, evidence will need to be provided in the ES that the decision maker can be confident in their delivery thorough the DCO and / or other supporting legal mechanisms.*"	Assessment of beneficial/positive effects as a result of the onshore elements of the Proposed Development are addressed within **Section 22.9**.

Planning Inspectorate ID number	Scoping Opinion comment	How this is addressed in this ES
5.5.20	EMF: "*The ES Applicant should also assess any potential for likely significant effects to wildlife through altered thermal and EMF from buried cables, to which no reference is made in the Scoping Report (with cross reference to the Soils and Agriculture aspect chapter).*"	The potential effects of EMF on terrestrial ecology receptors are considered within **Section 22.6**.

Evidence Plan Process (EPP)

22.3.5 The Evidence Plan Process (EPP) has been set up to provide a formal, non-legally binding, independently chaired forum to agree the scope of the EIA and HRA, and the evidence required to support the DCO Application. The EPP commenced in January 2020 and continued throughout the EIA helping to inform the ES.

22.3.6 For terrestrial ecology and nature conservation, further engagement has been undertaken via the EPP Expert Topic Group (ETG) Onshore Ecology, Hydrology and Nature Conservation (onshore) ETG Meeting.

22.3.7 The first conference call on 18 September 2020 was focused on the offshore assessment, but covered elements within the scope of the terrestrial ecology and nature conservation assessment when discussing species that use both intertidal habitats and terrestrial habitats (for example, waders and wildfowl), as well as the habitat transition at MHWS. Attendees included the Marine Management Organisation (MMO), the Centre for Environment, Fisheries and Aquaculture Science (Cefas), Natural England, East Sussex County Council, West Sussex County Council (WSCC), Sussex Wildlife Trust (SWT), the Royal Society for the Protection of Birds (RSPB), Sussex Ornithological Society (SOS), Adur and Worthing Councils and the Wildlife Trust.

22.3.8 The second conference call on 28 October 2020 covered responses to the Scoping Opinion (Planning Inspectorate, 2020a) focused on terrestrial ecology and nature conservation, the baseline assessment and proposed methodology for assessment, an update on the 2020 survey results (remote sensing, Phase 1 habitat, bat activity, hazel dormouse *Muscardinius avellanarius* and wintering bird surveys), and invited specific comments on the onshore cable corridor optioneering, including at specific pinch points where potential impacts on LWSs and Ancient Woodland were considered. Attendees included: Natural England, WSCC, the Environment Agency, SOS, South Downs National Park Authority (SDNPA), SWT, RSPB and the Ouse and Adur Rivers Trust.

22.3.9 The third conference call on 23 March 2021 was focused on terrestrial ecology and provided updates on winter bird survey results and approaches to up-coming field survey, design evolution and optioneering and the approach to assessment described within this chapter. Attendees included: Natural England, WSCC, the Environment Agency, SOS, SDNPA, Mid-Sussex District Council, RSPB, and Adur & Worthing District Council.

22.3.10 The fourth conference call on 26 March 2021 was focused on offshore elements of the Proposed Development, particularly with respect to HRA. However, elements of the terrestrial ecology scope were discussed particularly around birds that use both intertidal and terrestrial areas. Attendees included MMO, Natural England, Cefas, RSPB, SWT, SOS and the Wildlife Trusts.

22.3.11 The fifth conference call on 03 November 2021 focused on the comments received from the first statutory consultation exercise in July 2021, providing an overview of protected species survey results, description of how specific comments had been or would be addressed and discussion of approach to assessment of likely significant effects. Attendees included: Natural England, SDNPA, WSCC, SWT, the Environment Agency, Mid-Sussex District Council, SOS and RSPB.

22.3.12 The sixth conference call on 12 April 2022 was focused on offshore ornithology, but did include discussions of migrating and wintering birds that cross between the marine and terrestrial parts of the Proposed Development area. Attendees included MMO, Natural England, Cefas, RSPB, SOS and SMRU.

22.3.13 The seventh conference call on 08 November 2022 focused on providing an overview of the biodiversity data gathered during field survey and discussed approaches to avoidance, mitigation, compensation and BNG. Attendees included Natural England, SDNPA, WSCC, SWT, the Environment Agency, SOS and RSPB.

22.3.14 The eighth conference call on 07 March 2023 focused on providing feedback to the comments received on terrestrial ecology and nature conservation to the second statutory consultation (see **Table 22-6**). Further detail was given regarding design evolution, approach to mitigation and BNG. Attendees included Natural England, SDNPA, WSCC, SWT, the Environment Agency, SOS and RSPB.

22.3.15 The ninth conference call on 22 June 2023 (with a repeat session for Natural England due to schedule constraints on 27 June 2023) focused on describing the design evolution of the proposed DCO Order Limits and implications for various ecological receptors including woodland, hedgerows and species-rich grasslands. Attendees included Natural England, SDNPA, WSCC, SWT, the Environment Agency and RSPB.

22.3.16 Further information is provided in the **Evidence Plan** (Document Reference: 7.21).

Non-statutory consultation

Overview

22.3.17 Non-statutory consultation captures all consultation and engagement outside of statutory consultation exercises and has been ongoing with a number of prescribed and non-prescribed consultation bodies and local authorities in relation

to terrestrial ecology and nature conservation. A summary of the non-statutory consultation undertaken since completion of the Scoping Report (RED, 2020) is outlined in this section.

Natural England

22.3.18 Independent of the EPP, further terrestrial ecology and nature conservation engagement with Natural England has taken place twice with both meetings held on 26 July 2022. The first meeting was focused on the interpretation of restrictions around Ancient Woodland and included discussions of avoidance and mitigation (notably trenchless crossings). The second meeting focused on the Peppering Project (see **paragraph 22.3.27**) the current status of birds, invertebrates and arable flora in the Study Area, the planned expansion and the potential for mitigation.

Forestry Commission

22.3.19 Independent of the EPP, terrestrial ecology and nature conservation engagement with Forestry Commission took place on 29 April 2022. The meeting was focused on the interpretation of restrictions around Ancient Woodland and included discussions of avoidance and mitigation (notably trenchless crossings). The Forestry Commission recommended that all Ancient Woodland should be avoided wherever possible, with any proposed losses needing detailed justification (in line with National Planning Policy).

South Downs National Park Authority (SDNPA)

22.3.20 Independent of the EPP, further terrestrial ecology and nature conservation engagement with the SDNPA, has taken place on four conference calls on 31 July 2020, 18 November 2020, 18 August 2021 and 02 August 2022. The topics covered included an introduction to the Proposed Development, the scope, timing and extent of the field survey programme, and a discussion around the SDNPA interest along the proposed onshore cable corridor (namely Ancient Woodland, farmland areas where efforts to improve biodiversity have been undertaken, river corridors, escarpment grassland, the invertebrate assemblage and bats). Specific discussion regarding the routeing of the proposed onshore temporary construction corridor in the vicinity of Warningcamp to New Down LWS and Sullington Hill LWS was also held due to the evolving options involving intersection with either Ancient Woodland or LWS.

West Sussex County Council (WSCC)

22.3.21 Independent of the EPP, further terrestrial ecology engagement with WSCC took place on 25 August 2020, 18 August 2021 and 02 August 2022. The topics covered included an introduction to the Proposed Development, the scope, timing and extent of the field survey programme and a discussion around WSCC conservation priorities for the area. Specific discussion was also held around the draft Sussex SAC Bat protocol (SDNPA and Natural England, 2018).

Sussex Wildlife Trust (SWT)

22.3.22 Independent of the EPP, further terrestrial ecology and nature conservation engagement with SWT took place on 12 August 2020. The topics covered included an introduction to the Proposed Development, the scope, timing and extent of the field survey programme and a discussion around SWT conservation priorities for the area. Specific discussion was also held around valuable sources of desk study data to further contextualise the baseline.

Sussex Ornithological Society (SOS)

22.3.23 Correspondence with SOS, following the EPP meeting in October 2020, was undertaken to clarify approaches to assessment and survey regarding birds using coastal habitats, in particular sanderling and Brent goose. Further correspondence was undertaken in January and April 2021 focused on Bewick's swan and barn owl.

Sussex Local Nature Partnership (SLNP)

22.3.24 Correspondence with SLNP highlighted that it was content to not directly engage with the Rampion 2 project as several of their members (for example, SWT) were already being consulted. Their general position was, however, provided, which was to ensure that Rampion 2 seeks to recognise and enhance natural capital.

Game Conservation and Wildlife Trust (GCWT)

22.3.25 Engagement with the GCWT was held on 28 October 2021. Discussions included the results of the Sussex Study (a long term monitoring of environmental measures in the South Downs) which included discussions of the enhancement measures implemented (hedgerows, beetle banks, conservation headlands) and key local receptors (for example, locations of diverse arable flora). Potential opportunities for delivering BNG were also discussed, noting the GCWT's linkages to a number of landowners and other organisations within the area.

Weald to Waves Project

22.3.26 Weald to Waves is a project seeking to leverage different funding opportunities across the landholdings of a variety of interested owners to deliver biodiversity enhancements (including BNG) between the Knepp Estate and the coast at Climping. The aim is to create connected and diverse habitats across the area that are in keeping with the area's character. Discussions (held on 28 February 2022) focused on the likely extent of the opportunities for the Weald to Waves project to deliver BNG on behalf of the Proposed Development.

The Peppering Project

22.3.27 The Peppering Project is a higher tier countryside stewardship scheme that is large in scale and has been in operation for ~20 years that covers a large area between Warningcamp and Sullington. Discussions with the land owner focusing on the background of the project, the species it supports, potential mitigation and

alternative solutions were held on 1 March 2022, 26 July 2022 and 09 August 2022.

Environment Agency and landowners at the landfall

22.3.28 Engagement was held with the Environment Agency and the local landowners at the location of the landfall on 7 December 2021 to discuss plans to deliver an inland flood defence and wildlife lagoon. Relevant to biodiversity was discussion of the land use by dark-bellied brent geese. The landowner provided insight into where the dark-bellied brent geese gather with the higher areas of the field close to the landfall being favoured when under cereal crop, with land to the west of Climping Street (outside of the proposed DCO Order Limits) also frequently used. Further, discussion with the landowner covering BNG and ecological mitigation was held with the landowner on 09 May 2022.

West Sussex County Council and Horsham District Council

22.3.29 Engagement was held with WSCC and Horsham District Council on 7 July 2023 to discuss the approach to arboriculture survey, the classification of notable, veteran and ancient trees and the approach to the arboricultural impact assessment (AIA) (see **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES (Document Reference: 6.4.22.16). The method for the classification of notable, veteran and ancient trees was agreed and information was provided on how the AIA was to be completed.

Non-statutory consultation – January / February 2021

22.3.30 RED carried out a non-statutory consultation exercise for a period of four weeks from 14 January 2021 to 11 February 2021. This non-statutory consultation exercise aimed to engage with a range of stakeholders including the prescribed and non-prescribed consultation bodies, local authorities, Parish Councils and general public with a view to introducing the Proposed Development and seeking early feedback on the emerging designs.

22.3.31 The key themes emerging from the non-statutory consultation exercise in January 2021 relating to terrestrial ecology are:

- concerns over the use of the Wineham Lane North and Wineham Lane South onshore substation search areas including the presence of Ancient Woodland;
- concerns over impacts on sensitive sites including ancient hedgerows, Ancient Woodland, trees, SSSIs and areas of high biodiversity value; and
- onshore substation design and potential screening.

22.3.32 The design of the onshore elements of the Proposed Development (**Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4)) that forms the basis of the assessment in **Sections 22.6** and **22.9** has accounted for sensitive ecological features.

22.3.33 Further detail about the results of the non-statutory consultation exercise can be found in the **Consultation Report** (Document Reference: 5.1).

Statutory Consultation

First Statutory Consultation exercise – July to September 2021

22.3.34 Rampion 2's first Statutory Consultation exercise ran from 14 July to 16 September 2021, a period of nine weeks. The PEIR (RED, 2021) was published as part of Rampion 2's first consultation exercise which provided preliminary information on terrestrial ecology and nature conservation within Chapter 23: Terrestrial ecology.

22.3.35 **Table 22-5** provides a summary of the key themes of the feedback received in the first statutory exercise in 2021 in relation to terrestrial ecology and nature conservation and outlines how the feedback has been considered in this ES chapter. A full list of all comments received during the first statutory consultation exercise in 2021 and the responses to those comments is provided in the **Consultation Report** of the ES (Document Reference: 5.1).

Table 22-5 First statutory consultation (July – September 2021) feedback

Stakeholder	Theme	How this is addressed in this ES
Multiple stakeholders including (but not restricted to) Natural England, WSCC, SDNPA and SWT	Baseline habitat survey information was incomplete and no survey data on the type, distribution or number of legally protected or notable species was presented. Lack of a complete dataset restricted commentary to a high-level only.	Detailed survey information that was not available at the time of first statutory consultation is summarised in **Section 22.9**, with further detail provided in **Appendices 22.2: Terrestrial ecology desk study** to **22.17: Bat tree ground level visual assessment survey report, Volume 4** of the ES (Document References: 6.4.22.2 to 6.4.22.17).
Multiple stakeholders including (but not restricted to) Natural England, WSCC, SDNPA and SWT	The Proposed Development should deliver a BNG, measured with Natural England's Biodiversity Metric and delivered in line with the system currently being devised for the upcoming mandatory system. The BNG should be delivered within the area affected by the development.	The Proposed Development will deliver a BNG with regard to terrestrial habitats, measured with the Biodiversity Metric 4.0 (Natural England and Other Parties, 2023). Further detail is provided in **Section 22.7** and in the Biodiversity Gain Information at **Appendix 22.15: Biodiversity Net Gain information, Volume**

Stakeholder	Theme	How this is addressed in this ES
		4 of the ES (Document Reference: 6.4.22.15).
Multiple stakeholders including (but not restricted to) Natural England, WSCC, SDNPA, SWT and SOS	The design of the Proposed Development should first seek to avoid, and then minimise, mitigate and finally compensate for effects on conservation notable habitats, flora and fauna.	The design of the Proposed Development has evolved to avoid, as far as possible, effects on designated sites, HPI and habitats used frequently by SPI. Within the proposed DCO Order Limits this can be seen in the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) . Embedded environmental measures are described in **Section 22.7**, with further detail in the **Outline CoCP** (Document Reference: 7.2) and the **Outline LEMP** (Document Reference: 7.10).
Multiple stakeholders including (but not restricted to) Natural England, South Downs National Park Authority, West Sussex County Council and the Sussex Wildlife Trust	Assessment of hedgerow / woodland severance has not been conducted. The assessment of the functionality of these habitats is required.	An assessment of the effects of fragmentation of hedgerows (and other habitats) is provided in **Section 22.9**, the proposed mitigation developed since the publication of the original PEIR (RED, 2021) is provided in **Section 22.7**.
Multiple stakeholders including (but not restricted to) Natural England and SDNPA and WSCC	Impacts on designated sites crossed by trenchless techniques should not be scoped out until the feasibility of the construction method has been established. Further, details on any associated surface works should be described.	The proposed trenchless crossings of Climping Beach SSSI, Littlehampton Golf Course and Atherington Beach LWS, Sullington Hill LWS and all ancient woodland sites have been visited by a 'no dig' specialist to determine feasibility and the activity within these designated sites confirmed. See **Section 22.6** for details.

Stakeholder	Theme	How this is addressed in this ES
Multiple stakeholders including (but not restricted to) Natural England and SDNPA, WSCC and SWT	Details on the timing of restoration and description of the maintenance, management and monitoring are required to provide reassurance that lessons have been learned from habitat establishment issues associated with the delivery of Rampion 1.	Details on habitat restoration, establishment and monitoring are provided in the **Outline CoCP** (Document Reference: 7.2) and **Outline LEMP** (Document Reference: 7.10).
Multiple stakeholders including (but not restricted to) Forestry Commission, WSCC, MSDC and SWT	A stand-off of ground works to Ancient Woodland and veteran trees should be implemented to ensure indirect effects on these habitats are avoided.	No Ancient Woodland or veteran trees will be lost to the Proposed Development and buffer zones will be implemented for both ground works and trenchless crossings (see **Section 22.7**).
Multiple stakeholders including (but not restricted to) SWT and SOS	The potential for effects on migratory birds moving through the onshore construction area should be considered.	Migratory birds are considered in **Section 22.9.**
Natural England	"*Natural England note that all impacts to Amberley Mount to Sullington Hill SSSI have been scoped out. As two access tracks run directly adjacent to the SSSI, Natural England have concerns that the SSSI may be impacted by dust deposition*."	The need for assessment has been negated through the design evolution as there is no longer a temporary construction access track adjacent to Amberley Mount Sullington Hill SSSI. See **Section 22.6**.
Natural England	"*The definition of Priority Habitats (HPI) and protected species have been incorrectly assessed. The level of importance has been assessed on geographical terms which Natural England disagree with. These habitats are of national importance*."	The approach to assessment laid out in the original PEIR (RED, 2021) is in keeping with the Scoping Report (RED, 2020), CIEEM Guidelines for EcIA (CIEEM, 2018) and a wide range of other Environmental Statements (accompanying DCO applications and Town & Country Planning Act

Stakeholder	Theme	How this is addressed in this ES
		1990 (TCPA) applications) that have been consented. However, to ensure clarity the terms used have been altered in **Section 22.6** from "Importance – legislation and policy" and "Importance – project level" to "Importance" (reflecting legislation and policy status) and "Scale" (reflecting the geographical basis for the assessment of each ecological feature).

22.3.36 Following feedback to the first Statutory Consultation exercise in 2021 and after further analysis, it was identified that some coastal residents did not receive consultation leaflets as intended. Therefore, the first Statutory Consultation was reopened between 7 February 2022 to 11 April 2022 for a further nine weeks. No feedback or comments were received from the reopened first Statutory Consultation in relation to terrestrial ecology and nature conservation.

Second Statutory Consultation Exercise – October to November 2022

22.3.37 The second Statutory Consultation exercise was undertaken from 18 October 2022 to 29 November 2022. This was a targeted consultation which focused on updates to the onshore cable route proposals which were being considered following feedback from consultation and further engineering and environmental works. As part of this second Statutory Consultation Exercise, RED sought feedback on the potential changes to the onshore cable route proposals to inform the onshore design taken forward to DCO Application.

22.3.38 **Table 22-6** provides a summary of the key themes of the feedback received in the second Statutory Consultation exercise in 2022 in relation to terrestrial ecology and nature conservation and outlines how the feedback has been considered in this ES chapter. A full list of all comments received during the second Statutory Consultation exercise in 2022 and the responses to those comments is provided in the **Consultation Report** (Document Reference: 5.1).

Table 22-6 Second Statutory Consultation (October – November 2022) feedback

Stakeholder	Theme	How this is addressed in this ES
Multiple stakeholders including (but not restricted to) Natural England, WSCC and SDNPA	Baseline survey information has not been provided in its entirety for consideration by stakeholders. Lack of a complete dataset restricted commentary to a high-level only.	Detailed survey information was gathered across time with availability varying at different points during the consultation process. Baseline reports were provided to the ETG in advance of application. The baseline is summarised in **Section 22.9**, with further detail provided in **Appendices 22.2: Terrestrial ecology desk study** to **22.17: Bat tree ground level visual assessment survey report, Volume 4** of the ES (Document References: 6.4.22.2 to 6.4.22.17).
Multiple stakeholders including (but not restricted to) Natural England and SDNPA and WSCC	Impacts on designated sites crossed by trenchless techniques should not be scoped out until the feasibility of the construction method has been established. Further, details on any associated surface works should be described.	The proposed trenchless crossings of Climping Beach SSSI, Littlehampton Golf Course and Atherington Beach LWS, Sullington Hill LWS and all ancient woodland sites have been visited by a 'no dig' specialist to determine feasibility and the activity within these designated sites confirmed. Further, it has been confirmed that works between the launch and retrieval sites will require walking access only, with a commitment made to ensure wheeled and tracked vehicles are excluded (other than in an emergency). See **Section 22.6** for details. **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) notes that the DCO does not consent open trenching methods in areas where HDD is being proposed (should HDD fail additional consent would be required to deliver an alternative solution).
Multiple stakeholders including (but not restricted to) Natural England and SDNPA, WSCC and SOS	The updated approach to hedgerow crossings aimed at minimising habitat loss was welcomed, but its applicability in all situations was questioned.	The approach to hedgerow crossings has been updated to reflect comments and is described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2). Further, the assessment of hedgerows in **Section 22.8** does not rely on the approach to restoration described, rather it uses the realistic worst-case scenario of all gaps being reinstated through the planting of whips.

Stakeholder	Theme	How this is addressed in this ES
Multiple stakeholders including (but not restricted to) Natural England and SDNPA, WSCC and Forestry Commission	Ancient woodland and veteran trees were highlighted as sensitive features, with emphasis on the need to avoid, unless the benefits of the development in that location clearly outweigh the loss.	No ancient woodland or veteran trees would be lost to development through design. The approach to avoidance and mitigation of effects are described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2).
Multiple stakeholders including (but not restricted to) Natural England and SDNPA, WSCC and SOS	The importance of the Peppering project was highlighted with avoidance or comprehensive mitigation recommended to safeguard important bird populations	The design avoids the long-established area of the Peppering Project, but the boundary does interact in a single, highly restricted location to an area where expansion may occur in the future (may interact at a single hedgerow which is not yet in existence). The approach to avoidance and mitigation of effects are described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2). The Peppering Project is addressed directly in **Section 22.9**.
Multiple stakeholders including (but not restricted to) Natural England and SDNPA, WSCC and SOS	The importance of the curlew release project focused on two National Grid References TQ 083115 and TQ 052111 was highlighted with avoidance or comprehensive mitigation recommended to safeguard any breeding population that becomes established.	The cable route is more than 500m of the release sites. The approach to mitigation of effects is described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2). The Curlew Release Project is addressed directly in **Section 22.9**.
WSCC	The presence of water vole is noted on the Black Ditch	The cable route crosses and runs parallel to the Black Ditch and some of its tributaries. The approach to mitigation of effects is described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2).
WSCC	The area around Michelgrove Park is wide and includes an	Optionality for trenchless crossing is maintained in this area due to the potential presence of karst features and to allow for the

Stakeholder	Theme	How this is addressed in this ES
	Ancient & Semi Natural Woodland known as Beech Copse. Exclusion of this woodland from the boundary is desirable.	presence of slopes. Geotechnical survey during the detailed design phase will result in a single option being identified. There is no surface work proposed within Beech Copse and based on layout it is unlikely that cables would be drilled underneath it. Existing hardcore access tracks that run along its boundary (currently used for forestry operations) could however be utilised dependent on detailed design. Protection for ancient woodland is described in **Section 22.7**and the **Outline CoCP** (Document Reference: 7.2).
WSCC	WSCC raise concerns around the crossing of a woodland belt linking areas of ancient woodland north of Kitpease Copse.	The onshore cable route crosses the woodland belt. The approach to mitigation of effects is described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2).

Third Statutory Consultation Exercise – February to March 2023

22.3.39 The third Statutory Consultation Exercise was undertaken from 24 February 2023 to 27 March 2023. This was a targeted consultation which focused on a further single onshore cable route alternative being considered following feedback from consultation and further engineering and environmental works. As part of this third Statutory Consultation Exercise, RED sought feedback on the potential changes to the onshore cable route proposals to inform the onshore design taken forward to DCO Application.

22.3.40 **Table 22-7** provides a summary of the key themes of the feedback received in the third Statutory Consultation Exercise in 2023 in relation to terrestrial ecology and nature conservation and outlines how the feedback has been considered in this ES chapter. A full list of all comments received during the third Statutory Consultation Exercise in 2023 and the responses to those comments is provided in the **Consultation Report** (Document Reference: 5.1).

Table 22-7 Third Statutory Consultation (February – March 2023) feedback

Stakeholder	Theme	How this is addressed in this ES
Multiple stakeholders including (but not restricted to)	Baseline survey information has not been provided in its entirety for consideration by stakeholders. Lack of a	Detailed survey information was gathered across time with availability varying at different points during the consultation process. Individual survey reports were shared prior to application with members of

Stakeholder	Theme	How this is addressed in this ES
Natural England, WSCC and SDNPA	complete dataset restricted commentary to a high-level only.	the ETG. The baseline is summarised in **Section 22.9**, with further detail provided in **Appendices 22.2: Terrestrial ecology desk study** to **22.17: Bat tree ground level assessment survey report, Volume 4** of the ES (Document References: 6.4.22.2 to 6.4.22.17).
Multiple stakeholders including (but not restricted to) Natural England and SDNPA and WSCC	The updated approach to hedgerow crossings aimed at minimising habitat loss was welcomed, but its applicability in all situations was questioned.	The approach to hedgerow crossings has been updated to reflect comments and is described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2). Further, the assessment of hedgerows in **Section 22.8** does not rely on the approach to restoration described, rather it uses the realistic worst-case scenario of all gaps being reinstated through the planting of whips.
Norfolk Estate	The importance of the Peppering project was highlighted with acknowledgement of avoidance but highlighting potential indirect effects.	The design avoids the long-established area of the Peppering Project, but the boundary does interact in a single, highly restricted location to an area where expansion may occur in the future (may interact at a single hedgerow which is not yet in existence). The approach to mitigation of indirect effects is described in **Section 22.7** and the **Outline CoCP** (Document Reference: 7.2).
Multiple stakeholders including (but not restricted to) Natural England Norfolk Estate, and RSPB	The importance of the curlew release project focused on Harrow Hill was highlighted with avoidance or comprehensive mitigation recommended to safeguard any breeding population that becomes established.	The onshore cable route is more than 500m from Harrow Hill. The approach to mitigation of effects is described in **Section 22.7**and the **Outline CoCP** (Document Reference: 7.2). The Curlew Release Project is addressed directly in **Section 22.9**.

Fourth Statutory Consultation exercise – April to May 2023

22.3.41 The fourth Statutory Consultation exercise was undertaken from 28 April 2023 to 30 May 2023. This was a targeted consultation which focused on the proposed extension works to the existing National Grid Bolney substation to facilitate the connection of the Rampion 2 onshore cable route into the national grid electricity

infrastructure. As part of this fourth Statutory Consultation exercise, RED sought feedback on the proposed substation extension works to inform the onshore design taken forward to the DCO Application.

22.3.42 West Sussex County Council and Sussex Wildlife Trust were the only respondents that provided views with regards terrestrial ecology and nature conservation during the non-statutory consultation exercise in April 2023.

22.3.43 Further detail about the results of the non-statutory consultation exercise can be found in the **Consultation Report** (Document Reference: 5.1).

22.3.44 **Table 22-8** provides a summary of the key themes of the feedback received in the fourth Statutory Consultation exercise in 2023 in relation to terrestrial ecology and nature conservation and outlines how the feedback has been considered in this ES chapter. A full list of all comments received during the fourth Statutory Consultation exercise in 2023 and the responses to those comments is provided in the **Consultation Report** (Document Reference: 5.1).

Table 22-8 Fourth Statutory Consultation exercise (April – May 2023) feedback

Stakeholder	Theme	How this is addressed in this ES
WSCC and SWT	The need to ensure that existing woodland, trees and hedgerows are retained where possible, with fragmentation of habitat minimised and strengthening connectivity considered in landscaping plans	Losses of woodland and hedgerows are quantified and assessed in **Section 22.9**. The **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) provides a visualisation of losses in and around the existing National Grid Bolney substation. An indicative landscape plan of the area is provided in the **Outline LEMP** (Document Reference: 7.10).
WSCC and SWT	Potential effects on legally protected and notable species are highlighted specifically with regards great crested newts, hazel dormice, reptiles and badger	Effects on all of the legally protected species are assessed within **Section 22.9**, with technical appendices providing relevant baseline information.
SWT	Water neutrality issues should be addressed	Water neutrality issues are addressed within **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26).

22.4 Methodology for baseline data gathering

Overview

22.4.1 Baseline data collection has been undertaken to obtain information over the Study Area as described in **paragraph 22.4.2.** The baseline conditions are presented in **Section 22.5**.

Study Area

22.4.2 The Study Area encompasses the area over which all desk-based and field data was gathered to inform the terrestrial ecology and nature conservation assessment presented in this chapter. Due to the presence of multiple ecological features[4] and many potential effects, the level and type of data collection varies across the Study Area. The Study Area comprises:

- land within the onshore part of the proposed DCO Order limits[5], (as shown on **Figure 1.1, Volume 3** of the ES (Document Reference: 6.3.1));
- the desk study areas (known as 'areas of search') for sites designated for their nature conservation interest at the international, European, national and local levels;
- the area of search for legally protected and notable ecological features;
- the area of search for any legally controlled species; and
- the field survey area[6].

22.4.3 The extent of the areas of search and field survey area (see **Table 22-12**) were determined based on best practice guidance and a high-level overview of the types of ecological features present, and the potential effects that could occur. The Study Area was defined on a precautionary basis to ensure that the ZoI relevant to all ecological features were covered during baseline data collection activities. ZoIs are the areas within which a potentially significant effect associated with the Proposed Development may be identified for a particular ecological feature.

22.4.4 The Study Area was reviewed and amended during the pre-application period in response to such matters as refinement of the onshore elements of the Proposed Development, the identification of additional impact pathways and response to feedback from consultation. This was to ensure that there is sufficient data on

[4]'Ecological feature' is used within EcIA published by CIEEM (2022) in place of the term 'terrestrial ecology receptor'. The term ecological feature is used throughout this chapter.
[5] The term proposed DCO Order Limits in this chapter refers to the onshore part of the Proposed Development only. Onshore is defined as all habitats landward of MHWS.
[6] The field survey area has developed over time as part of the design evolution. Data gathered is reported in **Appendices 22.3: Extended Phase 1 habitat survey report** to **22.17: Bat tree ground level visual assessment survey report, Volume 4** of the ES (Document References: 6.4.22.3 to 6.4.22.17).

which to conduct the assessment. The Study Area has reduced over time as the extent of the Proposed Development has become more defined.

Desk study

22.4.5 A data-gathering exercise was undertaken to obtain existing information relating to relevant statutory and non-statutory biodiversity sites, habitats and species of principal importance, legally protected and controlled species and other conservation notable species[7] that have been recorded over the previous 10 years (2013 to 2023). The desk-study has been updated from that published in the first statutory consultation exercise in July 2021 (RED, 2021). lists the data compiled within the Study Area. **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2). **Table 22-9** provides further details.

Table 22-9 Data gathered during the desk study

Ecological feature	Example / definition	Coverage of Study Area[8]
Statutory sites designated under international conventions or the Habitats Regulations[9]	SAC, proposed SAC (pSAC), SPA, potential SPA (pSPA), Ramsar sites, proposed Ramsar sites and sites identified, or required, as compensatory measures for adverse effects on other HRA sites[10].	SACs and pSACs were searched for inside and within 12km of the onshore part of the proposed DCO Order Limits to reflect recommendations in the *Draft Sussex Bat Special Area of Conservation: Planning and Landscape Enhancement Protocol* (also known as the Draft Sussex Bat SAC Protocol) (SDNPA and Natural England, 2018). SPAs, pSPAs, Ramsar sites and proposed Ramsar sites were searched for inside and within 10km of the onshore part of the proposed DCO Order Limits reflecting the upper foraging distances of dark-bellied brent geese *Branta bernicla* (Summers & Critchley, 1990) and Bewick's swan *Cygnus columbianus bewickii* (Robinson *et al*. 2004) from

[7] A conservation notable species is one that has some form of conservation designation (for example it is present on a red list) but has no specific legal protection.
[8] Coverage is based on technical guidance as referenced in **Section 22.4**.
[9] These sites are typically referred to as European sites and are constituents of the national site network reflecting the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.
[10] Definition is reproduced from the draft "*Overarching National Policy Statement for Energy (EN-1)* (DESNZ, 2023a)"

Ecological feature	Example / definition	Coverage of Study Area[8]
		roost locations. These species were identified as the species with the largest foraging distances for terrestrial habitats for any SPA features within the wider area.
Statutory sites designated under national legislation	SSSIs, National Nature Reserves (NNRs) and Local Nature Reserves (LNRs).	SSSIs with bats listed on the citation were searched for inside and within 12km of the onshore part of the proposed DCO Order Limits. NNRs and all other SSSIs were searched for inside and within 5km of the onshore part of the proposed DCO Order Limits following precedent for other large infrastructure projects. LNRs were searched for within 1km reflecting the purpose of their designation.
Locally designated sites	In Sussex, these are termed as LWS[11] or notable road verges.	LWS and notable road verges were searched for inside and within 5km of the onshore part of the proposed DCO Order Limits.
HPI and SPI, Red listed species and legally protected species	HPIs and SPIs, species recorded on The International Union for Conservation of Nature (IUCN) Red List of Threatened Species and/or local Red Lists for the UK or relevant sub-units (for example,. regions or counties) and legally protected habitats and species include those listed on Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended), those included on	HPI and SPI, Red listed species and Legally protected species were searched for inside and within 5km of the onshore part of the proposed DCO Order Limits, unless otherwise specified. Ornithological data provided by SOS is supplied by tetrad (a square containing four Ordnance Survey 1km grid squares). Data for all tetrads that are within or overlap with the onshore part of the proposed DCO Order Limits have been obtained (see **Appendix 22.2: Terrestrial ecology desk study,**

[11] Note that other local designations are considered within other sections of this report. Marine Sites of Nature Conservation Importance (mSNCI) are considered in **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES (Document Reference: 6.2.9) and Local Geological Sites (LGS) are considered in **Chapter 24: Ground conditions, Volume 2** of the ES (Document Reference: 6.2.24).

Ecological feature	Example / definition	Coverage of Study Area[8]
	Schedules 2 and 5 of the Habitats Regulations. Badger and Hedgerows are provided protection under the Protection of Badgers Act 1992 and the Hedgerows Regulations 1997 respectively.	**Volume 4** of the ES (Document Reference: 6.4.22.2)). Data on stone curlew *Burhinus oedicnemus* and lapwing *Vanellus vanellus* nesting locations and habitat creation measures (for example, stone curlew plots) supplied by the RSPB inside the onshore part of the proposed DCO Order Limits and within 500m of it. Summary Wetland Bird Survey (WeBS) data available from the British Trust for Ornithology (BTO) was obtained for all count sectors inside the onshore part of the proposed DCO Order Limits or within 1km of it.
Legally controlled species	Legally controlled species include those listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)	Legally controlled species searched for inside the onshore part of the proposed DCO Order Limits and within 5km of it.
Bat roosting locations	Bat roost locations are considered separately from other species records in accordance with guidance.	Bat roosting locations were searched for inside and within 5km of the onshore part of the proposed DCO Order Limits.
Water body locations	Water bodies may support species within the groups listed above (for example legally protected great crested newts *Triturus cristatus*).	Water body locations were searched for inside the onshore part of the proposed DCO Order Limits and within 250m of it, also within 500m of the onshore substation site.

22.4.6 **Table 22-10** lists the organisations and other sources that have supplied desk study data, together with the nature of that data.

Table 22-10 Data sources used to inform the terrestrial ecology and nature conservation assessment

Source	Date	Summary	Coverage of Study Area
A27 Bypass Environmental Assessment Report (Highways England, 2019)	November 2020 (reviewed May 2023)	Data on legally protected and notable flora and fauna	Inside the onshore part of the proposed DCO Order Limits and within 5km of it. 2022 Consultation papers were reviewed in 2023 but provided no further ecological information.
BTO WeBS reports (Frost *et al*., 2020)	May 2023	Core count data (yearly peaks) for five WeBS count sites between winter 2014/15 and 2020/21. Search period limited by data availability.	Inside the onshore part of the proposed DCO Order Limits and within 1km of it.
Magic.defra.gov.uk	May 2023	Data on the location of statutorily designated sites, data from the Ancient Woodland and Priority Habitat Inventories, granted European Protected Species Licence locations (2013 to 2023) and great crested newt eDNA survey outcomes from 2017-2019 effort by Natural England for district licensing purposes.	SACs, pSACs and SSSIs designated for bats: inside the onshore part of the proposed DCO Order Limits and within 12km of it. SPAs, pSPAs, Ramsar sites and proposed Ramsar sites: inside the onshore part of the proposed DCO Order Limits and within 10km of it. SSSIs and NNRs: inside the onshore part of the proposed DCO Order Limits and within 5km of it (up to 12km for SSSIs designated for bats). LNRs: inside the onshore part of the proposed DCO Order Limits and within 1km of it.

Source	Date	Summary	Coverage of Study Area
			Ancient Woodland and Priority Habitats: inside the onshore part of the proposed DCO Order Limits and within 5km of it. European Protected Species Licenses (EPSLs): inside the onshore part of the proposed DCO Order Limits and within 100m of it. Great crested newt eDNA survey: inside the onshore part of the proposed DCO Order Limits and within 250m of it; and within 500m of the boundary of the onshore substation site.
Mid-Arun Valley Environmental Survey Reports (MAVES)[12]	May 2023	Information on legally protected and notable flora and fauna.	Inside the onshore part of the proposed DCO Order Limits and within 5km of it.
National Biodiversity Network (NBN) Gateway	May 2023	Information on legally protected and notable flora and fauna.	Inside the onshore part of the proposed DCO Order Limits and within 500m of it.
RSPB	May 2020	Data on stone curlew and lapwing breeding and location of habitat creation (for example, stone curlew plots).	Inside the onshore part of the proposed DCO Order Limits and within 500m of it.
SDNPA	July 2020	Data on legally protected and notable fauna in the South Downs National Park, and information on the	Inside the onshore part of the proposed DCO Order Limits and within 5km of it.

[12] MAVES reports published in 2015 through 2018

Source	Date	Summary	Coverage of Study Area
		Sussex Study Area monitoring project on impacts of farming on flora and fauna of arable land.	
Sussex Biodiversity Records Centre (SxBRC)	April 2023	Data on sites designated for nature conservation, priority habitats and legally protected and notable flora and fauna.	Inside the onshore part of the proposed DCO Order Limits and within 5km of it.
SOS	May 2020 / May 2021	Data on species listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and notable bird species Additional information requested on lapwing nesting habitat and Bewick's swan foraging habitat locations.	Inside tetrads that overlap with the onshore part of the Scoping Boundary[13]. Data on Bewick's swan distribution and local population size for the winter of 2020/2021.
SOS	March 2021	Data on Bewick's swan distribution and local population size for the winter of 2020/2021.	Data selected as local to the Proposed Development by SOS.
The Norfolk Estate	September 2022	Monitoring reports for the Peppering Project area.	Data selected as local to the Proposed Development.
Resident in the vicinity of Cowfold and Shermanbury[14]	August 2021	Survey data and observations made over a number of years in the general vicinity of the onshore substation site (particularly the corridor of the Cowfold Stream).	Data local to the Cowfold Stream corridor north of Shermanbury and south of A272.

[13] Due to the way in which the data is gathered and was requested (at EIA Scoping stage in 2020) the extent of the coverage is wider than if based on the proposed DCO Order Limits.
[14] The name and address of the resident are not reproduced for data protection reasons

Field surveys

22.4.7 Field surveys commenced in July 2020 and continued throughout 2021, 2022 and until June 2023. The field survey programme is summarised in **Table 22-11** with full details provided within **Appendices 22.3: Extended Phase 1 habitat survey report** to **22.17: Bat tree ground level visual assessment survey report, Volume 4** of the ES (Document References: 6.4.22.3 to 6.4.22.17). The field survey programme was based on the results of the desk study (produced to accompany the Scoping Report (RED, 2020)), remote sensing, industry guidance, discussions with Natural England, comments received in the Scoping Opinion (Planning Inspectorate, 2020a) and discussions with other stakeholders.

Table 22-11 Site survey programme summary

Survey type	Scope of survey	Survey status
Phase 1 habitat survey	Phase 1 habitat survey was used to classify and map habitats inside the onshore part of the proposed DCO Order Limits and within 50m of it. The survey was 'extended' to identify the presence or potential presence of species of importance for biodiversity conservation and/or species that are afforded legal protection. Surveys followed the methods described in the JNCC Handbook for Phase 1 habitat survey (2016).	Surveys completed in April 2023.
National Vegetation Classification (NVC) survey	NVC surveys were undertaken within habitats identified by the Phase 1 habitat survey that may qualify as HPI and could be subject to loss or degradation due to the Proposed Development. Surveys followed the National Vegetation Classification: User's Handbook (Rodwell, 2006).	Surveys completed in 2022 (April and June for woodland and late May/June for grassland).
Hedgerow Regulations Assessment survey	The aim of the survey was to identify Important hedgerows under the Regulations, focussing on hedgerows within the onshore part of the proposed DCO Order Limits and within 25m of it that are crossed by the onshore temporary construction corridor or at the location of the onshore substation.	Surveys completed in April 2023.

Survey type	Scope of survey	Survey status
	Surveys followed the guidance appended to the Hedgerows Regulations 1997.	
Bats – foraging and commuting	A suite of monthly bat activity surveys, comprising manual walked transects and static deployment, were undertaken. Surveys were undertaken in a number of locations to provide a representative sample of bat activity across the proposed DCO Order Limits. These surveys were based on the Bat Conservation Trust Good Practice Guidelines (2016).	Surveys completed in October 2023.
Bats – roosting	A ground level roost assessment of trees within the proposed DCO Order Limits and within 25m of it was undertaken to identify those with high, moderate, low or negligible potential to support roosting bats. These surveys were based on the Bat Conservation Trust Good Practice Guidelines (2016).	Surveys completed in April 2023.
Badger	Badger surveys identifying signs of activity and places of shelter (setts) inside took place within the proposed DCO Order Limits and within 50m of it. Surveys followed standing advice published by Natural England and Defra (2015a) and good practice guidelines by Scottish Badgers (2018).	Surveys completed in May 2023.
Birds – breeding	Breeding bird surveys were undertaken following a territory mapping methodology akin to the BTO's common bird census (CBC).	Surveys undertaken between late March and June 2021 and April and June 2023.
Birds – wintering	Wintering bird surveys were focused on the distribution of waders and wildfowl in two forms. The first was to record birds (monthly) in terrestrial habitats within the Arun	Surveys completed between September 2020 to March 2021 and November 2021 to February 2022.

Survey type	Scope of survey	Survey status
	and Adur Valleys using a field-by-field count methodology. Secondly the intertidal area[15] and coastal strip landward of MHWS was counted twice monthly (around high tide and low tide) over a period of 6 hours.	
Dormouse	Dormouse nest tubes and/or nest boxes were deployed within habitat features considered to represent suitable dormouse habitat[16] and checked monthly. Surveys focused on a number of areas representative of suitable habitats within the onshore part of the proposed DCO Order Limits and within 15m of it. Surveys were undertaken following Natural England and Defra (2015b) guidelines *Hazel or common dormouse: surveys and mitigation for development projects*.	Surveys completed in November 2023.
Great crested newts	Habitat Suitability Index (HSI) assessment surveys were undertaken on waterbodies inside the onshore part of the proposed DCO Order Limits, and within 250m of it (where any potential effects will be temporary) and within 500m of the onshore substation site. Waterbodies identified as having suitability to support great crested newts were subject to eDNA surveys to determine the presence / likely absence of the species.	Completed in June 2023.

[15] This survey effort is largely to inform **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference: 6.2.12) but is relevant in this chapter due to the number of bird species that will use both intertidal and terrestrial habitats as a matter of course.

[16] Ancient semi-natural woodland, broadleaved deciduous woodland and dense, outgrown hedgerows that support a range of fruit-bearing species and are well-connected to the wider landscape.

Survey type	Scope of survey	Survey status
	The surveys were undertaken in line with Natural England guidelines *Great Crested Newt: surveys and mitigation for development projects* (2015), Oldham *et al*. (2000) *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*, and Biggs *et al*. "Analytical and methodological development for improved surveillance of the Great Crested Newt" (2014).	
Otter	Otter *Lutra lutra* surveys, looking for signs of activity and resting places, were undertaken inside the onshore part of the proposed DCO Order Limits and up to 250m upstream and downstream of it. Surveys followed the techniques described by Chanin and Smith in *Monitoring the Otter* (2003).	Completed in April 2023.
Reptiles	Reptile presence/likely absence surveys, comprising seven visits using artificial refugia, were undertaken. Surveys focused on suitable habitat being permanently lost (for example, onshore substation site). Surveys followed Froglife (1999) *Advice sheet 10 Reptile survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation.*	Surveys completed in October 2021.
Terrestrial invertebrates	Invertebrate surveys were undertaken where calcareous grassland could be affected by the Proposed Development. Surveys were undertaken in line with Natural England Research Report *NERR005 Surveying terrestrial and freshwater invertebrates for conservation evaluation* (2007).	Surveys completed in September 2021.
Water vole	Water vole surveys were undertaken to search for signs of activity and burrows	Completed in April 2023.

Survey type	Scope of survey	Survey status
	inside the onshore part of the proposed DCO Order Limits and up to 250m upstream and downstream of it. Surveys followed techniques described in the "*Water Vole Mitigation Handbook*" (Dean *et al*. 2016).	
Fish	A walk-over survey to identify watercourses that may be subject to crossing using open cut techniques to assess their importance for supporting fish populations.	Completed April 2023.

Data limitations

22.4.8 The key limitation with regards to the baseline data is the extent of private land where access has either been refused or agreed after certain seasonally constrained surveys have finished. **Table 22-12** gives the level of coverage of each survey type.

Table 22-12 Site survey coverage

Survey type	Coverage	Notes
Phase 1 habitat survey	90.75 percent within the proposed DCO Order Limits (see **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.3)).	For the purposes of assessment areas not accessed have been assumed based on satellite imagery and findings from immediately adjacent areas.
NVC survey	12 areas were identified for NVC survey. All were accessed for survey.	All areas were covered at the appropriate time of year.
Hedgerows Regulations Assessment survey	239 hedgerows identified as having potential to be "*important*"[17]. Of these 30 were not accessible for survey. Coverage of 87.5 percent.	
Bats – foraging and commuting	Fourteen areas were targeted to sample the levels of bat activity in	Static detectors were only deployed on land where

[17] Hedgerows considered having the potential to qualify as "important" under the Hedgerows Regulations Assessment criteria (*The Hedgerow Regulations 1997)*.

Survey type	Coverage	Notes
	the area. All fourteen areas were subject to activity surveys between April and October. Static detector deployment was attempted in all areas (further details in **Appendix 22.8: Passive and active bat activity report, Volume 4** of the ES (Document Reference: 6.4.22.8) and **Appendix 22.8: Passive and active bat activity report 2023, Volume 4** of the ES (Document Reference: 6.4.22.8) **[PEPD-029]**.	landowner permission had been received (for instance, not deployed on Public Right of Way (PRoW) etc.). A number of static detectors were vandalised (microphone wires cut) or removed.
Bats – roosting	In excess of 90 percent coverage of trees within survey area.	
Badger	90.75 percent coverage (commensurate with Phase 1 survey coverage).	
Birds – breeding	75.84 percent coverage.	Adequate coverage (four or more breeding bird surveys undertaken) across approximately 74 percent of the onshore cable corridor, temporary construction compounds, onshore substation, existing National Grid Bolney substation extension, trenchless crossing compounds and the landfall was achieved. This coverage, sampling all habitat types present within the proposed DCO Order Limits, enables a robust assessment.
Birds – wintering	100 percent coverage of the coastal strip was available. 90 percent of the relevant locations in the Arun and Adur Valleys was available for survey.	100 percent coverage was available within 500m of the proposed DCO Order Limits within the Arun Valley. Access and viewshed restrictions within the Adur Valley restricted the coverage within the Adur Valley to 80 percent, however the lower lying wet fields close to the Adur were viewable. The area of restricted access is not

Survey type	Coverage	Notes
		thought to constitute a constraint to the assessment.
Dormouse	Nine areas were targeted for dormouse survey. All of these were accessed.	All areas subject to survey were completed.
Great crested newts	13 of 17 ponds within the proposed DCO Order Limits were surveyed. 199 of 264 within 250m of the proposed DCO Order Limits were surveyed.	
Otter	90.75 percent coverage (commensurate with Phase 1 survey coverage).	
Reptiles	Surveys were undertaken at the proposed location of the substation and around the existing National Grid Bolney substation (the connection point).	All areas targeted for survey were accessible.
Terrestrial invertebrates	Terrestrial invertebrate surveys were undertaken within the Warningcamp Hill and New Down LWS[18] and Sullington Hill LWS.	
Water vole	90.75 percent coverage (commensurate with Phase 1 survey coverage).	
Fish	19 of 41 rivers, streams and ditches were subject to fisheries habitat assessment. With others covered during the Phase 1 habitat survey.	

22.4.9 Where the baseline is incomplete (with regard to surveys for legally protected and notable species) a precautionary approach has been taken to the assessments provided in **Sections 22.6** and **22.9**.

[18] Warningcamp Hill to New Down LWS is not within the Proposed DCO Order Limits

22.5 Baseline conditions

Current baseline

Site context and surrounding habitats

22.5.1 The land within the onshore part of the proposed DCO Order Limits (above MHWS) is approximately 662ha in extent comprising a range of broad habitat types including farmland (arable land, improved pasture and rough grazing), semi-natural habitats (woodland, semi-improved grassland, scrub, hedgerows and trees), standing water (ponds), rivers (River Arun and River Adur), streams and ditches, quarries and built development (roads, residential and commercial premises) (see **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.3) for habitat mapping). Habitats are generally well connected for wildlife (for example via hedgerows, tree lines, rivers, streams and ditches), with minor fragmentation where major roads (for example the A27) are present. The areas of habitat present form part of larger areas of biodiversity interest namely the Arun Valley, Adur Valley and the SDNP. There are a number of landowners within the general area that have invested positively in habitat management for biodiversity including through the implementation of agri-environment schemes (for example, hedgerow establishment, arable margin creation), woodland planting and woodland re-structuring), with other areas being much more intensively managed for food production.

22.5.2 Within the onshore part of the proposed DCO Order Limits and surrounding areas, land management practices are dominated by arable production and sheep, cattle and horse grazing. Many of the woodlands, particularly along the southern sections of the onshore part of the proposed DCO Order Limits between Crossbush and Ashurst, form parts of shooting estates and have game bird enclosures present within the woodland; the woodland being fenced to prevent livestock from entering. Much of the woodland within the area is also managed for the commercial production of timber (including hazel coppice and beech plantation).

Statutory nature conservation sites (International / European)

22.5.3 One Ramsar site, two SPAs and three SACs were identified through the desk study, none of which fall within the onshore part of the proposed DCO Order Limits. **Figure 22.2.2** of **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2) illustrates the locations of the six statutory nature conservation sites designated under international conventions or making up the national site network, whilst **Table 22-13** provides information on the designations.

Table 22-13 International/European sites designated for nature conservation

Site name	Designation	Designated features	Approximate distance (km) / direction from the proposed DCO Order Limits
Arun Valley	Ramsar	• Wetland invertebrate and plant species, assemblage of wintering waterfowl.	4.8km north-west
Arun Valley	SAC	• Ramshorn snail *Anisus vorticulus.*	4.8km north-west
Arun Valley	SPA	• Bewick's swan (non-breeding). • Waterfowl assemblage (non-breeding): including shoveler *Anas clypeata*, teal *Anas crecca*, wigeon *Anas Penelope* and Bewick's swan.	4.8km north-west
Duncton to Bignor Escarpment	SAC	• *Asperulo-Fagetum* beech forests.	8.3km north-west
Solent and Dorset Coast	SPA	• Sandwich tern *Sterna sandvicensis* (breeding). • Common tern. • Little tern.	1.0km south-west
The Mens	SAC	• Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrub layer (*Quercion robori-petraeae* or *Ilici-Fagenion*). • Barbastelle *Barbastella barbastellus*[19]*.*	11.2km north-west

[19] It should be noted that the Mens SSSI is not identified in **Table 22-14** as it does not have barbastelle or any other bat species described within the citation documents.

Statutory nature conservation sites (national)

22.5.4 A total of 13 SSSIs and one LNR were identified through the desk study. All 13 SSSIs are within 5km of the proposed DCO Order Limits. Following a further search up to 12km from the proposed DCO Order Limits, no SSSIs cited for one or more bat species were found, (as requested within the Scoping Opinion (Planning Inspectorate, 2020a) – see **Section 22.3**).

22.5.5 **Figure 22.2.2** of **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2) illustrates the locations of the statutory nature conservation sites designated under national legislation, whilst **Table 22-14** provides information on the designated sites.

Table 22-14 Nationally designated sites for nature conservation

Site name	Designation	Designated features	Approximate distance (km) / direction from the proposed DCO Order Limits
Amberley Mount to Sullington Hill[20]	SSSI	• Calcareous grassland. • Juniper *Juniperus communis.* • Fly honeysuckle *Lonicera xylosteum.* • Adonis blue butterfly *Polyommatus bellargus.*	Adjacent to proposed DCO Order Limits.
Amberley Wild Brooks	SSSI	• Redshank *Tringa tetanus* (breeding). • Bewick's swan (non-breeding). • Shoveler (non-breeding). • Teal (non-breeding). • Breeding bird assemblage. • Invertebrate assemblage.	4.8km north-west

[20] Amberley Mount to Sullington Hill SSSI and Arundel Park SSSI are also identified as groundwater dependent terrestrial ecosystems in **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26).

Site name	Designation	Designated features	Approximate distance (km) / direction from the proposed DCO Order Limits
		• Lowland ditch system. • Dragonfly assemblage. • True fox-sedge *Carex vulpine.* • Cut-grass *Leersia oryzoides*. • Swamp habitats. • Variety of wintering bird species. • Vascular plant assemblage.	
Arun Banks	SSSI	• Woodland habitats, *Schoenoplectus lacustris* sub-species *tabernaemontani x triqueter.*	2.8km north-west
Arundel Park	SSSI	• Breeding bird assemblage. • Calcareous grassland. • Invertebrate assemblage. • Field cricket *Gryllus campestris.* • Cut-grass.	2.3km north-west
Chanctonbury Hill	SSSI	• Breeding bird assemblage. • Calcareous grassland. • Woodland. • Great crested newt.	0.7km south-east

Site name	Designation	Designated features	Approximate distance (km) / direction from the proposed DCO Order Limits
Chantry Mill[21]	SSSI	• EA – Aptian – Albian.	0.7km north-west
Cissbury Ring	SSSI	• Breeding bird assemblage. • Calcareous grassland. • Adonis blue butterfly.	2.4km south-east
Climping Beach	SSSI	• Sanderling *Calidris alb*a. • Shingle and dune communities.	Within proposed DCO Order Limits
Fairmile Bottom	SSSI	• Silver-washed fritillary *Argynnis paphia.* • Calcareous grassland. • Woodland.	4.5km north-west
Horton Clay Pit[21]	SSSI	• ED – Aptian – Albian.	4.2km south-east
Hurston Warren	SSSI	• Dry heath, wet heath and bog pool habitats.	4.0km north-west
Parham Park	SSSI	• Lichens. • Invertebrate assemblage. • Woodland.	2.6km north-west
Sullington Warren	SSSI	• Breeding bird assemblage. • Dry heath habitat.	0.7km north-west

[21] These SSSI are not considered further in this assessment as they are cited for geological interest. See **Chapter 24: Ground conditions, Volume 2** of the ES (Document Reference: 6.2.24).

Site name	Designation	Designated features	Approximate distance (km) / direction from the proposed DCO Order Limits
West Beach	LNR	• Sand flats, tide line, shingle, sand dunes and related fauna (part of Climping Beach SSSI).	Within proposed DCO Order Limits

Non-statutory nature conservation sites

22.5.6 The desk study identified 50 non-statutory nature conservation sites within 5km of the onshore part of the proposed DCO Order Limits, of which four are located fully or partially within the onshore part of the proposed DCO Order Limits. **Figure 22.2.4** of **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.4) illustrates the locations of the non-statutory nature conservation sites (such as LWS), whilst **Table 22-15** provides information on the designations that are within the onshore part of the proposed DCO Order Limits or within 1km of it. The 37 remaining LWSs located outside the onshore part of the proposed DCO Order Limits are detailed in **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2).

Table 22-15 Non-statutory sites designated for nature conservation

Site name	Designation	Description	Approximate distance (km) / direction from the proposed DCO Order Limits
Littlehampton Golf course and Atherington beach	LWS	Littlehampton Golf Course is of outstanding importance botanically. Although much of its grassland has been improved there are patches of species-rich turf. The southern edge of the golf links includes an area of dry dune grassland, adjacent to the sand dune system of Climping Beach SSSI. The site also includes an area of vegetated shingle beach, a nationally uncommon habitat.	Within proposed DCO Order Limits
Elmer Rocks LWS	LWS	Elmer beach is a fine example of vegetated shingle, an internationally rare habitat. The	Within proposed DCO Order

Site name	Designation	Description	Approximate distance (km) / direction from the proposed DCO Order Limits
		intertidal area supports a diverse community including intertidal sand and eight 'rock islands' constructed in the early 1990s in the mid-tide zone to form a coastal defence against the eroding coastline. The rock islands have provided a habitat type that is very rare, If not unique, in West Sussex. The rock pools are probably the best in the county.	Limits (below mean low water springs)
Sullington Hill LWS	LWS	This stretch of the South Downs escarpment supports moderately species-rich chalk grassland on north and east-facing slopes. Some areas are maintained by grazing while others are no longer grazed and have become heavily scrub-invaded. The site includes small areas of semi-natural woodland.	Within proposed DCO Order Limits
Bines Green LWS	LWS	Bines Green is an area of common land that straddles the B2135 road. It is damp, unimproved, neutral grassland of considerable botanical interest with a small, overgrown pond to the west of the road.	Within proposed DCO Order Limits (approx. 10m^2 of an existing surfaced track only)
Warningcamp Hill and New Down LWS	LWS	The steep, north-west facing slope of New Down supports herb-rich chalk grassland with extensive patches of burnet rose *Rosa pimpinellifolia*, an uncommon plant in West Sussex. Warningcamp Hill supports a very large population of the rare small-flowered buttercup *Ranunculus parviflorus*. The site also includes an old chalk pit and a small area of ancient, semi-natural woodland.	Adjacent to proposed DCO Order Limits

Site name	Designation	Description	Approximate distance (km) / direction from the proposed DCO Order Limits
Long Furlong and Church Hill LWS	LWS	Long Furlong is a steep north and west-facing slope between the A280 and Clapham Woods, supporting rich chalk grassland and scrub. Church Hill is a complex mosaic of chalk grassland, species-rich scrub and woodland. Long Furlong and Church Hill form a large piece of contiguous habitat, so have been included as one site.	Adjacent to proposed DCO Order Limits
Clapham Wood LWS	LWS	Clapham Wood is an extensive, ancient semi-natural woodland on the undulating dip slope of the South Downs. The ground flora is rich and includes a number of interesting species. The wood was moderately affected by the storm of October 1987 and unfortunately several large blocks of woodland were subsequently cleared for pasture. Much of the wood is not managed but some areas are still coppiced. Clapham Woods is an ancient woodland of County-wide importance.	0.4km south-east
Heath Common LWS	LWS	This site has moderately rich remnants of wet and dry heath, several ponds and some relics of ancient base-rich woodland rich in lichens and ferns. In recent years, the Sandgate Conservation Society has done excellent work in the management of this area as a nature reserve.	0.5km north
Poling Copse LWS	LWS	Poling Copse is a large block of ancient, semi-natural woodland on the Coastal Plain south of the South Downs, just to the east of Arundel. It consists predominantly of Oak-Hazel woodland, a type	0.5km north

Site name	Designation	Description	Approximate distance (km) / direction from the proposed DCO Order Limits
		typical of base-poor soils in the area. Sycamore woodland dominates on South Fields – a section which has probably regenerated on an old field.	
Kithurst Hill LWS	LWS	This site lies on the steep, north-facing escarpment of the South Downs. Most of it is wooded. The lower slopes consist of ancient semi-natural woodland, mostly of ash and hazel. It is of interest for its epiphytic bryophytes. There are small areas of open grassland with species-rich swards.	0.6km north-west
Washington Chalk Quarry LWS	LWS	This area of open downland and scattered scrub lies at the western end of Chanctonbury Hill. It includes a collection of disused chalk pits which now support species-rich grassland. The flora and butterflies are both of great interest. Part of the site has recently been fenced and sheep grazing reinstated. The South Downs Way runs through the site.	0.7km south
Conyers Bank LWS	LWS	Conyers Bank is a small, isolated field of unimproved chalk grassland on a steep, north-facing hillside. Situated above the floodplain of the River Arun, it is surrounded by semi-natural woodland and improved water meadows. The site has a rich flora.	0.9km north-west
River Adur Water Meadows & Wyckham Wood LWS	LWS	Wyckham Wood, one of the few woodlands on the floodplain of the River Adur is of particular importance on account of its heronry. The water meadows have mostly been improved but some of	0.9km south-east

Site name	Designation	Description	Approximate distance (km) / direction from the proposed DCO Order Limits
		the ditches are of great botanical interest. This wetland area is also of importance to birds and dragonflies.	

22.5.7 SxBRC also returned 34 records of notable road verges within 5km of the proposed DCO Order Limits. **Figure 22.2.3** of **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2) shows the location of the notable road verges identified.

Habitats

22.5.8 Sixteen HPI were identified during the desk study from the Priority Habitat Inventory (MAGIC (Defra, 2022), Natural England), with nine of these being within the onshore part of the proposed DCO Order Limits (see **Figure 22.2.4** of **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2))[22]. Ancient semi-natural and ancient replanted woodlands listed on the Ancient Woodland Inventory were also identified (see **Figure 22.2.5** of **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)). A breakdown and extent of the habitat types identified within the proposed DCO Order Limits is given in **Table 22-16**.

Table 22-16 HPI and Ancient Woodland identified during the desk study

Habitat type	Listing	Area within proposed DCO Order Limits (ha)
Coastal and floodplain grazing marsh	Priority habitat inventory	17.19
Coastal vegetated shingle	Priority habitat inventory	2.17
Deciduous woodland	Priority habitat inventory	27.81
Lowland calcareous grassland	Priority habitat inventory	4.67

[22] See **paragraph 22.5.10** for other HPI known to be present in or close to the proposed DCO Order Limits that are not within the Priority Habitats Inventory dataset.

Habitat type	Listing	Area within proposed DCO Order Limits (ha)
Good quality Semi-improved grassland	Priority habitat inventory	37.29
Maritime cliff and slope	Priority habitat inventory	0.31
No main habitat but additional habitats present	Priority habitat inventory	0.07
Ancient semi-natural woodland	Ancient Woodland inventory	7.19
Ancient replanted Woodland	Ancient Woodland inventory	4.83

22.5.9 It should be recognised that the Priority Habitat Inventory is not an accurate depiction of whether or not the habitats identified meet the criteria to be classed as HPI. This is because it is based on a range of data sources, the majority of which are not based on site survey. The data is also a number of years old in many instances and therefore may not reflect contemporary land uses. For example, a number of areas highlighted as floodplain grazing marsh are now being used as arable fields within the Arun Valley, and therefore no longer fit the priority habitat criteria for this habitat type. Within the assessment in **Section 22.9**, priority habitats are considered individually, and as part of a larger resource (for example, woodland identified as meeting the criteria is considered alone and alongside other woodland) to ensure the functionality of a habitat type (for example, woodland) is adequately described.

22.5.10 In addition to the habitats recorded on the Priority Habitat Inventory, several other habitat types recorded during the field survey qualify as HPI in England. These include rivers, ponds, reedbeds and hedgerows (these are not shown on the MAGIC Website (Defra, 2022)).

22.5.11 The habitats identified through field survey or desk-based consideration (see **Table 22-16**) are shown on **Figure 22.3.1** of **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.3)). The broad habitat types identified included**:**

- woodland (broadleaved semi-natural, broadleaved plantation, mixed semi-natural, mixed plantation and coniferous plantation);
- grassland (amenity, improved, poor semi-improved, neutral - semi-improved and unimproved, calcareous - semi-improved and unimproved, coastal grassland, and marshy grassland);
- scrub (dense / continuous and scattered);
- hedgerows;

- parkland and scattered trees (broadleaved and mixed);
- ditches;
- standing water (ponds / permanently wet ditches);
- running water (rivers and streams);
- tall ruderal vegetation;
- ephemeral / short perennial;
- arable: and
- man-made habitats such as hardstanding and buildings, and 'other' habitats including spoil, brick/stone walls and fences.

Woodland

22.5.12 A variety of woodland types have been identified during the Phase 1 habitat survey including broadleaved semi-natural woodland and plantation woodland. Broadleaved semi-natural woodland was recorded most frequently.

22.5.13 The semi-natural woodland recorded is mainly broadleaved woodland, with some mixed stands. It is typically dominated by pedunculate oak *Quercus robur*, ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*, with a varying understory of hazel *Corylus avellana*, field maple *Acer campestre*, hawthorn *Crataegus monogyna* and bramble *Rubus fruxticosus* agg. Ground flora is most commonly common nettle *Urtica dioica*, bracken *Pteridium aquilinum* or bare ground. The size of these woodland areas ranges from small, isolated stands at field margins and along roads to larger blocks connected to other woodland stands.

22.5.14 Plantation woodland is present throughout the Study Area, including broadleaved, mixed plantation and coniferous stands. Broadleaved plantation woodland is generally similar in species composition to semi-natural areas, with mixed woodland blocks typically including ash, oak and pine *Pinus* sp., with a limited understory and ground flora. The areas range in size as described for semi-natural woodland. In areas where timber is commercially produced beech is the dominant species, with hazel and Douglas fir also common.

22.5.15 Each woodland that may be affected by the Proposed Development has been given a unique identifier and is listed in **Appendix 22.3: Extended Phase 1 Habitat Survey report, Volume 4** of the ES (Document Reference: 6.4.22.3). **Table 22-24** describes which woodland blocks would be directly affected by construction.

22.5.16 Veteran trees have been identified through the desk study and arboriculture survey (see **Table 22-23** and **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES (Document Reference: 6.4.22.16)). These are few in number and are found mainly towards the northern extent of the proposed DCO Order Limits. Of the veteran trees identified, all apart from two, lie along the boundary or outside of the proposed DCO Order Limits.

22.5.17 It is noted that small areas identified as woodland using the Phase 1 habitat survey methodology are mostly identified as 'groups of trees' within **Appendix**

22.16: Arboricultural Impact Assessment, Volume 4 of the ES (Document Reference: 6.4.22.16)). This difference is solely down to the methodology followed and does not alter the approach to the assessment as described in **Section 22.9**.

Grassland

22.5.18 Grassland types identified during the Phase 1 habitat survey include unimproved and semi-improved calcareous grassland, semi-improved and unimproved neutral grassland, poor semi-improved grassland, improved grassland, marshy grassland and amenity grassland.

22.5.19 The majority of grasslands subject to Phase 1 habitat survey were species-poor (poor semi-improved, improved and amenity grasslands), typically being dominated by perennial rye-grass *Lolium perenne,* with *Y*orkshire-fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, rough meadow-grass *Poa trivialis*, broad-leaved dock *Rumex obtusifolius*, common ragwort *Senecio jacobaea*, creeping thistle *Cirsium arvense*, bristly oxtongue *Picris echioides*, dandelions *Taraxacum* species and white clover *Trifolium repens*. Most areas of poor semi-improved and improved grasslands were heavily grazed with a short sward. There were also areas of more species-rich semi-improved grassland.

22.5.20 There are areas of unimproved and semi-improved calcareous grassland which qualify as HPI. These occur infrequently and are largely located at the edges of the escarpments of the South Downs National Park. The areas identified by field survey are located at Warningcamp (outside of the proposed DCO Order Limits) and Sullington Hill, set on a steep gradient with evidence of cattle and sheep grazing. Species composition is typically dominated by red fescue *Festuca rubra* agg., with crested dog's-tail *Cynosurus cristatus*, Yorkshire-fog, perennial rye-grass, red clover *Trifolium pratense*, bird's-foot trefoil *Lotus corniculatus* and selfheal *Prunella vulgaris*. Cowslip *Primula veris*, lady's bedstraw *Galium verum*, black knapweed C*entaurea nigra* and greater knapweed *Centaurea scabiosa*.

22.5.21 The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)) identified the presence of the HPI coastal and floodplain grazing marsh in the Arun and Adur Valleys via the Priority Habitats Inventory. As is typical of this habitat type, it was dominated by cattle and sheep grazed pastures with a network of wet ditches. The other dominant habitat present within the area was arable fields.

Scrub – dense / continuous and scattered

22.5.22 Dense / continuous scrub and scattered scrub were identified within the onshore part of the proposed DCO Order Limits during the Phase 1 habitat survey. These habitats were largely recorded at the edges of woodland blocks, grassland and arable fields, and bounding ponds and ditches. Areas of scrub typically included bramble, hawthorn, blackthorn *Prunus spinosa* and hazel *Corylus avellana*. In a number of areas scrub was identified in locations where hedgerows had been left to grow out (for instance, making them too wide to be classified as hedgerows).

Hedgerows

22.5.23 Hedgerows were recorded within the onshore part of the proposed DCO Order Limits during the Phase 1 habitat surveys, becoming more frequent on the northern half of the Proposed Development. Hedgerows recorded include examples of native, species-rich and species-poor hedges with trees which were either intact or defunct. In total 239 hedgerows were recorded inside or intersecting the proposed DCO Order Limits. **Appendix 22.5: Hedgerow survey report, Volume 4** of the ES (Document Reference: 6.4.22.5) provides details of the hedgerows present in greater detail, including their potential to qualify as important under the Hedgerow Regulations 1997. **Figure 22.5.3** of **Appendix 22.5: Hedgerow survey report, Volume 4** of the ES (Document Reference: 6.4.22.5) shows the locations of the hedgerows.

22.5.24 Hedgerows were classed as native and species-rich where they were recorded to comprise greater than 80 percent native species and at least five native woody species in any 30m section. Species composition typically included hawthorn, blackthorn, field maple *Acer campestre*, hazel, ash *Fraxinus excelsior*, oak, dog-rose *Rosa canina* and elder *Sambucus nigra*.

22.5.25 Species-poor hedgerows comprise one or two native woody species (for example being dominated by typical hedging species such as hawthorn and blackthorn). All native hedgerows over 20m in length, both species-rich and species-poor, are defined as HPI. **Table 22-25** describes the hedgerows identified that could be subject to direct effects from construction activity.

Dry ditches

22.5.26 Dry ditches were identified within the onshore part of the proposed DCO Order Limits during the Phase 1 habitat survey. Dry ditches were generally associated with field boundaries and hedgerows. Dry ditches were recorded to support similar species to those in adjacent habitats (for example semi-improved grassland) or were dominated by common reed *Phragmites australis*.

Standing water (ditches)

22.5.27 A total of 38 wet ditches were identified during the Phase 1 habitat survey, with the majority present either within the southern section of the onshore part of the proposed DCO Order Limits between Climping Beach and the A27 or in the vicinity of the River Adur, forming networks around the boundaries of arable and pasture fields (often as part of the coastal and floodplain grazing marsh complexes).

22.5.28 The wet ditches were generally recorded to hold less than 30cm of water and have mostly steep and densely vegetated banks dominated by common reed, with hogweed *Heracleum sphondylium*, willowherb *Epilobium spp*. and scattered scrub. These ditches either supported limited in-channel vegetation or were completely covered by duckweed.

Standing water (ponds)

22.5.29 A total of 264 ponds were identified inside or within 250m of the onshore part of the proposed DCO Order Limits during the desk study; of these 17 are inside the

onshore part of the proposed DCO Order Limits (see **Appendix 22.7: Great Crested Newt environmental DNA survey report 2021-2023, Volume 4** of the ES (Document Reference: 6.4.22.7)). These vary in shape and size, but there are no particularly large waterbodies (for example, large drinking water reservoirs) with the vast majority being less than a hectare in extent. For the purposes of this assessment, all these ponds are considered to fulfil the criteria as HPI[23].

Running water (rivers and streams)

22.5.30 Two main rivers run through the onshore part of the proposed DCO Order Limits; the River Arun to the south of the A27, and the River Adur, which lies to the east of Bines Green and Ashurst. In addition, there are a number of streams that cross the area, many of these having been modified to run along field boundaries. These tend to be heavily shaded by over-hanging trees and hedgerows. **Appendix 22.6: Fisheries habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.6) provides details of each watercourse and how it would be affected by the Proposed Development.

Arable

22.5.31 Arable land inside the onshore part of the proposed DCO Order Limits is the most common habitat type recorded. At the time of survey arable fields included those in crop (for example, oats, maize and wheat), those that were ploughed ready for drilling or those left fallow. The fields overlapping the onshore part of the proposed DCO Order Limits are generally larger to the south and east of Washington, West Sussex, with more numerous smaller fields present towards Bolney. A small number of the fields included conservation headlands, tussocky grass strips or areas sown with pollinator or wild bird cover seed mixes.

Other habitats

22.5.32 The remainder of the areas within the onshore part of the proposed DCO Order Limits largely support habitats such as tall ruderal vegetation, ephemeral / short perennial vegetation and areas of hardstanding and buildings (including roads, commercial and residential development).

Notable plant species

22.5.33 A total of 1,360 records of vascular plants of 194 species that are legally protected or notable (some at a county level only) were identified within 5km of the proposed DCO Order Limits. Of these, 15 records of eight species were from within the Order Limits, comprising:

- One record of strawberry clover *Trifolium fragiferum* (GB Red List (2004); vulnerable, England Red List (2014); vulnerable, at Atherington, grid reference TQ00A;

[23] Ponds are all considered to be HPI as the criteria governing qualifications requires extensive data on the flora and fauna that inhabit them. This information is not available and hence a precautionary view has been taken.

- Two records of hound's-tongue *Cynoglossum officinale* (Red List GB (2004); Near Threatened). One record within Angmering Park at grid reference TQ00T and one at TQ 0929 1199;
- One record of common valerian *Valeriana officinalis* (Red List England (2014): Near threatened) at grid reference TQ 119131;
- Six records of yellow horned-poppy *Glaucium flavum* (Red List England (2014); near threatened). All records were from Climping Beach, with two records within Climping Beach SSSI;
- Two records of dune fescue *Vulpia fasciculata* (Nationally Scarce (Joint Nature Conservation Committee, 2018), Sussex Rare). Both records were from Climping Beach, one within the SSSI at TQ 01374 01008, one outside, at TQ 01293 00987;
- One record of stiff saltmarsh-grass *Puccinellia rupestris* (Nationally Scarce, Sussex Rare), recorded at grid reference TQ 0102 0094;
- One record of bulbous Meadow-grass *Poa bulbosa* (Nationally Scarce, Sussex Rare) recorded at grid reference TQ 0119 0096; and
- One record of musk stork's-bill *Erodium moschatum*: (Sussex Rare) at grid reference TQ 01440 01026.

22.5.34 Records of vascular plants within 5km of the proposed DCO Order Limits include[24]:

- Six species listed on WCA Sch.8 (as amended). These were: Alpine catchfly, bluebell, cut-grass, holly-leaved naiad, Jersey cudweed and monkey orchid.
- 23 species listed as SPI; basil thyme *Clinopodium acinos,* chalk eyebright *Euphurasia pseudokerneri*, chamomile *Chamaemelum nobile*, common juniper *Juniperus communis subsp. Communis*, corn buttercup *Ranunculus arvensis,* cornflower *Centaurea cyanus*, cut-grass *Leersia oryzoides*, divided sedge *Carex* divisia, English sticky eyebright *Euphrasia officinalis subsp. Anglica,* field fleawort *Tephroseris integrifolia subsp. Integrifolia*, fly orchid *Ophrys insectifera*, frog orchid *Dactylorhiza viridis*, grape-hyacinth *Muscari neglectum*, greater water-parsnip *Sium latifolium*, holly-leaved naiad *Najas marina*, lesser butterfly-orchid *Platanthera bifolia*, marsh stitchwort *Stellaria palustris*, monkey orchid *Orchis simia*, musk orchid *Herminium monorchris*, purple milk-vetch *Astragalus danicus*, sharp-leaved pondweed *Potamogeton acutifolius,* tubular water-dropwort *Oenanthe fistulosa* and white helleborine *Cephalanthera damasonium*.
- 64 threatened species (Critically Endangered, Endangered and Vulnerable) in England and/or Great Britain (Stroh et al., 2014; Cheffings et al., 2005);
- 11 nationally rare species;

[24] Vascular plants are grouped according to the highest level of legislative or conservation status afforded to each species, however, may be listed under multiple criteria (for example, Cornflower is listed as an SPI and as a Sussex rare species).

- 44 nationally scarce species; and
- 109 Sussex rare species.

22.5.35 During the Phase 1 habitat surveys undertaken the following legally protected or notable plant species have been recorded:

- bluebell (Schedule 8 of the Wildlife and Countryside Act 1981);
- black poplar (Sussex BAP Species);
- small-flowered buttercup (locally common); and
- rough poppy (locally common).

Invasive non-native flora

22.5.36 A total of 24 invasive plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended)* were identified from the desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES) (Document Reference: 6.4.22.2) (inside the onshore part of the proposed DCO Order Limits or within 5km of it), with 219 individual records. These include three records from within the onshore part of the proposed DCO Order Limits of giant hogweed *Heracleum mantegazzianum,* Japanese rose *Rosa rugosa* and New Zealand pygmyweed *Crassula helmsii.*

22.5.37 During the Phase 1 habitat surveys undertaken the following invasive plant species were recorded:

- single stands of Himalayan balsam *Impatiens glandulifera* and cotoneaster[25] (*Cotoneaster* species) were both recorded within the proposed DCO Order Limits, located to the south of Wiston within hedgerow H208;
- a small stand of Japanese knotweed *Reynoutria japonica* was recorded within the proposed DCO Order Limits to the east of Water Lane, east of Washington within a strip of improved grassland (G1306);
- Rhododendron *Rhododendron ponticum* was recorded within the proposed DCO Order Limits – to the west of Wineham Lane near the junction with Bob Lane, within broadleaved plantation woodland (W561): and
- Snowberry *Symphoricarpos albus* was recorded within the proposed DCO Order Limits along the northern and southern verges of King's Lane near the junction with Kent Street within hedgerows H481 and H484.

Badgers

22.5.38 The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES) (Document Reference: 6.4.22.2) returned records of badgers inside and within 5km of the onshore part of the proposed DCO Order Limits. Specific locations are not provided due to confidentiality.

[25] It was not possible to confirm the species of the Cotoneaster due to the absence of flowers, but it is considered possible that this was an invasive cultivar.

22.5.39 Badger surveys were undertaken in conjunction with the Phase 1 habitat survey, with much of the land within the onshore part of the proposed DCO Order Limits assessed as providing suitable habitats for sett creation, foraging and/or commuting. During the field surveys sixteen setts were located including one main sett, two annexe setts, four subsidiary setts, six outlier setts and three not classified (due to access restrictions to neighbouring property). Of these setts two are located on or just within the proposed DCO Order Limits. The two active subsidiary setts lie within the same block of woodland east of Partridge Green. The other setts identified are well distributed across the cable route, although most are more than 30m from the proposed DCO Order Limits. Those that are within 30m of the proposed DCO Order Limits are located south of Calcot Wood (two disused entrances, unknown classification) and close to Daisy Lane (seven active entrances, unknown classification).

22.5.40 Badger activity was recorded in many locations in the form of latrines, dung pits, snuffle holes, pathways and foraging signs. Further details on badger survey results are provided in **Appendix 22.11: Badger, otter and water vole survey report, Volume 4** of the ES (Document Reference: 6.4.22.11) however mapping of badger setts is not provided due to the sensitive nature of this information.

Bats

22.5.41 The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES) (Document Reference: 6.4.22.2) returned a total of 1,227 records of at least 13 species of bats inside and within 5km of the onshore part of the proposed DCO Order Limits, with the most frequent records being for common pipistrelle. Of these, 303 records relate to bat roosts including of barbastelle, Bechstein's bat *Myotis bechsteinii*, brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, *Myotis* sp., Natterer's bat *Myotis nattereri*, Noctule *Nyctalus* noctule, *plecotus* sp., *pipistrellus* sp., serotine, soprano pipistrelle *Pipistrellus pygmaeus*, whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandti* and unidentified bat species. A single record of an unspecified *plecotus* roost was returned from within the onshore part of the proposed DCO Order Limits.

22.5.42 During the ground level visual assessment survey 393 trees with bat roosting potential were identified within the proposed DCO Order Limits (low potential 122, moderate potential 189 and high potential 82), with an additional 756 trees (low potential 206, moderate potential 308, high potential 241 and 1 confirmed roost) within 50m of it.

22.5.43 Habitats crossing the onshore part of the proposed DCO Order Limits were assessed for their suitability to be used as commuting routes for bats. A combination of Phase 1 habitat survey data, remote sensing data and aerial imagery was used for the assessment and focused on the habitat types present and connectivity with the wider landscape.

22.5.44 Bat activity surveys (comprising walked transects and static detectors) commenced in September and October 2020 and ended in October 2023 across fourteen survey areas (see **Appendix 22.8: Passive and active bat activity report, Volume 4** of the ES) (Document Reference: 6.4.22.8) and **Appendix 22.18: Passive and active bat activity report 2023** (Document Reference:

6.4.22.18) **[PEPD-029]**. The surveys confirmed at least eight bat species or genus utilising habitats within the onshore part of the proposed DCO Order Limits including barbastelle, brown long-eared bat, common pipistrelle, Leisler's bat, *Myotis* sp., Nathusius' pipistrelle, noctule, serotine and soprano pipistrelle (see distribution of bats in **Figure 22.8.16** of **Appendix 22.8: Passive and active bat activity report, Volume 4** of the ES) (Document Reference: 6.4.22.8). Some bat calls recorded during the survey programme were unable to be identified to species level and records of bats from the *Myotis* genus (for example Daubenton's bat and Natterer's bat) were grouped together because of the difficulty in separating these species from their calls alone.

Birds

22.5.45 SOS returned records of 38 SPI and breeding records for 13 species listed on Schedule 1 of the *Wildlife & Countryside Act 1981 (as amended)* in tetrads that overlap fully or partially with the Scoping Boundary. These include a wide-range of species including wildfowl (for example, Bewick's swan, dark-bellied brent goose), waders (for example lapwing curlew *Numensis arquata*), raptors (for example,, red kite *Milvus milvus*, peregrine *Falco peregrinus*) and passerines (for example, Cetti's warbler *Cettia cetti*, firecrest *Regulus ignica*). Many of the species use both intertidal and terrestrial habitats in the area, with a number also focused on the pasture, arable and woodland habitats.

22.5.46 There are several locations where large aggregations of over-wintering birds are regularly recorded during the BTO's regularly undertaken Wetland Bird Survey. These are associated with the flood plain and linked habitats of the River Arun and River Adur and include species such as wigeon *Anas penelope*, gadwall *Anas strepera*, shoveler *Anas clypeata* and black-tailed godwit *Limosa limosa*.

22.5.47 The field surveys completed during the winter periods (September 2020 through March 2021 and November 2021 through February 2022) have identified a range of waterbirds (defined here simply as birds that frequent water). The winter bird surveys (see **Appendix 22.14: Onshore winter bird report 2020-2022, Volume 4** of the ES (Document Reference: 6.4.22.14)) focused on terrestrial habitats within the floodplains of the river Arun and River Adur and the area behind the flood defences close to the landfall point[26]. The surveys focused on recording waterbirds within the proposed DCO Order Limits in these general areas and within 500m of it.

22.5.48 Within the floodplain of the River Arun (and adjacent areas) 13 species were recorded (a further 4 species were recorded at distances in excess of 500m from the proposed DCO Order Limits). Peak counts of a single bird only were recorded for little grebe, snipe and tufted duck. Waterfowl present in greater numbers were coot (peak count of 4), gadwall (4), mallard (90), moorhen (3), mute swan (6) and wigeon (80). Other species noted were little egret (4), grey heron (4), lapwing (32) and Mediterranean gull (2).

[26] Birds frequenting the intertidal area are assessed in **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference: 6.2.12).

22.5.49 Within the River Arun Valley the majority of sightings were from a complex of waterbodies to the north of St Mary Magdalene's church, Lyminster, in fields adjacent to the river near Tortington and a waterbody close to the western edge of residential development at Wick.

22.5.50 Within the floodplain of the River Adur (and adjacent areas) 16 species were recorded. Peak counts of a single bird only were recorded for little egret, grey heron and water rail. Waterfowl present in greater numbers were Canada goose (152), gadwall (2), greylag goose (300), mallard (15), moorhen (2), mute swan (23), shoveler (10), snipe (4), teal (151), white-fronted goose (30) and wigeon (600). Other species noted were cormorant (3), lapwing (51) and snipe (4).

22.5.51 Within the floodplain of the River Adur the aggregations of birds recorded were all associated with flooded fields to the west and north-west of Henfield.

22.5.52 Wildfowl and waders using the terrestrial habitat close to the landfall site were dark-bellied brent goose (650), barnacle goose *Branta leucopsis*, dunlin *Calidris alpina* (48), grey plover *Pluvialis squatarola* (63), knot (1), lapwing (16), oystercatcher *Haematopus ostralegus* (11), purple sandpiper *Calidris maritima* (1), ringed plover *Charadrius hiaticula* (27), snipe (1), sanderling (31), turnstone (90) and wigeon (13). Other notable species were Mediterranean gull (56) and kingfisher (1).

22.5.53 Activity at the landfall was confined to a narrow strip of land close to the location of the existing flood defence. There was interchange between the intertidal and the terrestrial habitats that was often driven by the presence of dog walkers and/or construction activity associated with the Environment Agency works on the sea wall.

22.5.54 Thirty nine species were recorded holding territories within the proposed DCO Order Limits. Breeding densities increased in more structured habitats such as woodland and hedgerows and to the northern end of the proposed DCO Order Limits. As would be expected, the densities of birds nesting with arable fields and on improved pasture was low.

22.5.55 The 39 species recorded included a number of notable species:

- Two species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Cetti's Warbler and firecrest;
- Nine species listed as SPI: Corn bunting, dunnock, lapwing, linnet, reed bunting, skylark, song thrush, starling and yellowhammer.
- Eight species recorded as BoCC red-listed species: Corn bunting, greenfinch, lapwing, linnet, nightingale, skylark, starling and yellowhammer.

22.5.56 Further detail on the results of the breeding bird survey can be found in **Appendix 22.13: Breeding bird survey, Volume 4** of the ES (Document Reference: 6.4.22.13).

Fish

22.5.57 The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)) returned 64 records of seven species of fish outside but within 5km of the onshore part of the proposed DCO Order Limits.

Records were returned for brook lamprey *Lampetra planeri*, sea lamprey *Petromyzon marinus*, brown trout *Salmo trutta subsp. Fario*, brown/sea trout *Salmo trutta*, bullhead *Cottus gobio*, European eel *Anguilla Anguilla* and sea trout *Salmo trutta subsp. Trutta*.

22.5.58 A walkover of watercourse crossings that would be subject to cable crossings using open trenching techniques was carried out between 2021 and 2023 (see **Appendix 22.6: Fisheries habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.6)).

Amphibians

22.5.59 Data returned by SxBRC included 156 records of great crested newts and 117 records of common toad *Bufo bufo* (SPI) inside and within 5km of the onshore part of the proposed DCO Order Limits. Of these, four records of great crested newts are from inside the onshore part of the proposed DCO Order Limits. There are no records of common toad within the proposed DCO Order Limits. **Figure 22.12.3** of **Appendix 22.12: Reptile survey report, Volume 4** of the ES (Document Reference: 6.4.22.12) shows the distribution of these records. A search of granted European Protected Species licences (EPSL) within 100m of the proposed DCO Order Limits returned four Natural England granted mitigation licences, with one licence granted within the proposed DCO Order Limits (see **Table 4.5**, **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)).

22.5.60 Ordnance Survey (OS) mapping identified a total of 264 waterbodies inside and within 250m of the onshore part of the proposed DCO Order Limits, with the majority located in areas north and east of Washington, West Sussex.

22.5.61 Great crested newts were identified in 36 waterbodies (see **Appendix 22.7: Great Crested Newt environmental DNA survey report 2021-2023, Volume 4** of the ES (Document Reference: 6.4.22.7) for details). These records showed widespread occurrence of this species across the area. Of the 17 ponds within the proposed DCO Order Limits 4 supported great crested newts. It is assumed that of the 65 of 264 ponds not available for survey great crested newts are likely to be present in a reasonable proportion.

Hazel dormouse

22.5.62 Data returned by SxBRC included 255 records of hazel dormouse outside but within 5km of the onshore part of the proposed DCO Order Limits. None relate to land inside the onshore part of the proposed DCO Order Limits. **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2) shows the distribution of these records.

22.5.63 Suitable habitats for dormouse are present within the onshore part of the proposed DCO Order Limits in the form of woodland, scrub and hedgerows that form a well-connected network with the wider landscape.

22.5.64 Dormouse presence/likely absence surveys took place between 2020 and 2022 across eight areas (see **Appendix 22.9: Hazel dormouse report 2020-2022, Volume 4** of the ES (Document Reference: 6.4.22.9)), comprising ancient semi-natural woodland, scrub and hedgerows. Evidence of dormouse was only

recorded at the onshore substation site in October 2022 with a single juvenile located in a nest tube.

Otter

22.5.65 The data returned by SxBRC did not include records of otter, however there was one record identified by the NBN Gateway within 5km of the onshore part of the proposed DCO Order Limits. The record was not made from within the onshore part of the proposed DCO Order Limits. Otters are not yet thought to be resident in West Sussex, although populations are expanding in number and distribution across England relatively rapidly.

22.5.66 Two main rivers (River Arun and River Adur) cross the onshore part of the proposed DCO Order Limits. Where the River Arun crosses the onshore part of the proposed DCO Order Limits, the habitat is suitable for otter activity (commuting and feeding) but is sub-optimal for the establishment of resting places or breeding holts due to the area being quite exposed with banks being man-made and with little vegetation. The sections of the River Adur in the vicinity of the onshore elements of the Proposed Development, between Ashurst and Partridge Green, and the Cowfold Stream have been identified as being highly suitable for foraging and commuting otters, as well as for resting places.

22.5.67 Surrounding terrestrial habitats that are suitable for otter are dominated by grassland fields, with smaller areas of woodland and scrub and grassland. The only sign of otter recorded during field survey was adjacent to a stocked fish pond close to the onshore substation site (see **Figure 22.11.7** of **Appendix 22.11: Badger, otter and water vole survey, Volume 4** of the ES (Document Reference: 6.4.22.1)).

Reptiles

22.5.68 The desk study returned 775 records of five species of reptiles, comprising 62 records of adder *vipera berus*, 203 records of common lizard *Zootoca vivipara*, 125 records of grass snake *Natrix natrix*, four records of sand lizard *Lacerta agilis*, and 381 records of slow worm *Anguis fragilis* within 5km of the onshore part of the proposed DCO Order Limits (see **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)). None of the records are from within the onshore part of the proposed DCO Order Limits. A local resident has also reported that both grass snake and adder are commonly seen within the vicinity of the Cowfold Stream and surrounding farmland.

22.5.69 Suitable habitats for basking, foraging, commuting and hibernating reptiles are present throughout the onshore part of the proposed DCO Order Limits in the form of grassland, tall ruderal, scrub, ponds and ditches (for grass snake), woodland edge and hedgerows. Grass snake and slow worm were identified in low numbers during the reptile surveys at the location of the proposed substation and in the surrounds of the existing National Grid Bolney substation (see **Appendix 22.12: Reptile survey, Volume 4** of the ES (Document Reference: 6.4.22.12)).

Terrestrial invertebrates

22.5.70 The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)) returned 8,513 records of 524 species of invertebrates inside and within 5km of the onshore part of the proposed DCO Order Limits. Of these, 16 records of 12 species were identified from within the onshore part of the proposed DCO Order Limits including: four records of brown hairstreak *Thecla betulae* (SPI), and single records of the beetles *Pilemostoma fastuosa* (notable A[27]), and *Anobium inexspectatum* (notable B[27]), chalk hill blue *Polyommatus coridon* (Red List GB (2001): Nationally Threatened), long-winged cone-head *Conocephalus fuscus* (Sussex rare), Roesel's bush-cricket *Metrioptera roeselii* (Sussex rare), small heath *Coenonympha pamphilus* (SPI), a spider *Ballus chalybeius* (nationally scarce), the true bugs *Lygus pratensis* (Red List GB (pre-1994): Rare), *Corizus hyoscyami* (Sussex rare) and *Stictopleurus punctatonervosus* (Sussex rare), and white admiral *Limenitis Camilla* (SPI). The majority of records provided are for lepidoptera and coleoptera.

22.5.71 During invertebrate surveys undertaken at Sullington Hill LWS (inside of the proposed DCO Order Limits), 18 species of importance were recorded (see **Appendix 22.10: Invertebrate survey report, Volume 4** of the ES (Document Reference: 6.4.22.10)).

Water vole

22.5.72 The desk study returned 229 records of water vole inside and within 5km of the onshore part of the proposed DCO Order Limits, of which four are from within the onshore part of the proposed DCO Order Limits (see **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2) for details).

22.5.73 Sections of the River Adur that pass to the east of the onshore elements of the Proposed Development, between Ashurst and Partridge Green, were identified as being highly suitable for water voles, in addition to the ditch network to south of the River Arun at Climping. Further ditch networks are present between Crossbush and the River Arun which are likely to provide opportunities for water voles, although no access has been available for survey at this time.

22.5.74 Water vole were recorded in six general locations during the field survey along the Ryebank Rife, the Black Ditch and linked tributaries, ditches at Knucker Hole, Buncton Stream and on two unnamed tributaries of the Cowfold Stream. Signs of activity included burrows, latrines, feeding remains and footprints (see **Figure 22.11.6** of **Appendix 22.11: Badger, otter and water vole survey report, Volume 4** of the ES (Document Reference: 6.4.22.11)).

[27] Nationally Scarce species estimated to occur within the range of 16 to 100 ten-kilometre squares in Great Britain. This includes: species categorised into two Nationally Notable groups pre-1994: Notable A and Notable B (with some species not categorised and listed as Notable); and species categorised into two Nationally Scarce groups post-1994: Nationally Scarce A and Nationally Scarce B (with some species not categorised and listed as Nationally Scarce).

22.6 Scope of the assessment

Overview

22.6.1 This section sets out the scope of the assessment for terrestrial ecology and nature conservation. This scope has been refined as the design of the Proposed Development has evolved and responds to feedback received as set out in **Section 22.3**.

22.6.2 The project-wide approach to the assessment methodology is set out in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5). However, whilst this has informed the approach that has been used in this terrestrial ecology and nature conservation chapter, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the terrestrial ecology and nature conservation assessment.

22.6.3 The starting point for defining the scope of the terrestrial ecology and nature conservation assessment was to use the baseline data that were collected through the desk study and field survey (see **Section 22.5**) to determine which of the identified ecological features are 'important'. Following CIEEM guidance (2018), the importance of each ecological feature was determined using a geographic scale[28] (see **Table 22-17**). The importance of the ecological features has been described in relation to UK legislation and policy, with a secondary geographic scale stated with regard to the extent of habitat or size of population that may be significantly affected by the Proposed Development.

22.6.4 The scale over which ecological features can be affected can therefore differ from the importance conferred solely by legislative protection or identification as a conservation notable species. For example, house sparrow is important at a national level because it is a SPI[29] and features on the Birds of Conservation Concern red list[30]. However, a small population that could be affected by a development might be assessed as only being affected at the local scale due to the large UK population (in excess of five million pairs). Similarly, a small length of hedgerow (an HPI), even if deemed to be 'important[31]' with regard to the *Hedgerow Regulations 1997*, is unlikely to be considered to be affected at more than a local scale due to the extent of this habitat type across a given county.

---

[28] Where this was not possible due to the level of baseline information currently available the highest relevant level of importance is assumed to ensure no ecological features are scoped out of future assessment when not appropriate.
[29] SPI covered under Section 41 of the NERC Act 2006.
[30] The IUCN red list provides taxonomic, conservation status and distribution information on taxa that have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction, and the main purpose of the IUCN Red List is to catalogue and highlight those taxa that are facing a higher risk of global extinction - those listed as Critically Endangered, Endangered and Vulnerable.
[31] This refers to the legal definition of 'important' within the Hedgerow Regulations 1997 – this is different from how the same term is used within the CIEEM EcIA guidelines (2022).

22.6.5 Wherever possible, information regarding the extent and population size, population trends and distribution of the ecological features has been used to inform their categorisation and determine the scale of effect at the project level. Where detailed criteria or contextual data were not available at this stage of the Proposed Development, professional judgement was used to determine scale of effect.

Table 22-17 Defining Importance of Ecological Features

Geographic context of importance	Description
International or European	• National site network constituents including SPAs, SACs and pSACs, pSPAs; Ramsar sites and proposed Ramsar sites. Sites provided, or required as compensatory measures for adverse effects on other European sites. • Areas of habitat or populations of species which meet the published selection criteria based on discussions with Natural England and field data collected to inform the EcIA for designation as a constituent of the national site network, but which are not currently designated at this level.
National (UK context)	• A nationally designated site including SSSIs and NNRs. • Areas (and the populations of species which inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs but which are not themselves designated based on field data collected to inform the EcIA, and in agreement with Natural England. • SPIs and HPIs, red listed and legally protected species (other than those protected for welfare reasons only). • Areas of Ancient Woodland, for example woodland listed within the Ancient Woodland Inventory and ancient and veteran trees.
Regional (south-east England)	• The South East Plan[32] provides information on habitats at a regional scale. In respect of the Proposed Development, habitats of regional importance will be determined based on the targets set in this chapter.
County (West Sussex)	• LNRs and Non-Statutory Designated sites including: LWSs and notable roadside verges.

[32] The South East Plan was archived in 2009. However, targets were set for habitats for delivery in 2015 (see information supporting Policy NRM5 Conservation and Improvement of Biodiversity). This strategy provides an overview of habitat types and extents that is not replicated elsewhere.

Geographic context of importance	Description
	• Areas which, based on field data collected to inform the EcIA, meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant Local Biodiversity Action Plans) but which are not themselves designated.
Local	• Common and widespread semi-natural habitats occurring within the onshore part of the proposed DCO Order Limits in proportions greater than may be expected in the local context. • Common and widespread native species occurring within the onshore part of the proposed DCO Order Limits in numbers greater than may be expected in the local context.
Negligible	• Common and widespread semi-natural habitats and species that do not occur in levels elevated above those surrounding the onshore part of the proposed DCO Order Limits. • Areas of heavily modified or managed land uses (for example, hard standing used for car parking, as roads etc.)

22.6.6 Where protected species are present and there is the potential for a breach of legislation due to the Proposed Development, those species are considered to be 'important' features regardless of extent of occurrence. With the exception of such species receiving specific legal protection, or those subject to legal control (for example, invasive species), all ecological features determined to be important at negligible level are scoped out of the assessment. This approach is consistent with that described in CIEEM (2018).

22.6.7 Legally protected species and ecological features that are of sufficient importance that effects upon them arising from the Proposed Development could be significant (at the relevant scale), were then taken through to the next stage of the scoping assessment. Through an understanding of the activities associated with the Proposed Development and the resulting environmental changes, it is possible to identify ecological features that may be subject to potentially significant effects. To identify such ecological features, all the activities and consequent environmental changes associated with the construction, operation and maintenance, and decommissioning of the Proposed Development have been considered. Wherever there is uncertainty as to the potential level of effect or the occurrence of a particular ecological feature, a precautionary approach has been taken.

Spatial scope

22.6.8 Key to establishing a potentially significant effect is the determination of a ZoI for each ecological feature (in other words the area within which a significant effect on an ecological feature may occur as a result of the Proposed Development). ZoIs

differ depending on the type of environmental change (in other words the change from the existing baseline) as a result of the Proposed Development, and the ecological feature being considered.

22.6.9 The construction, operation and maintenance, and decommissioning phases of the Proposed Development may result in the following broad environmental changes:

- permanent or temporary land take / land cover change (resulting in habitat loss or degradation and/or loss of fauna);
- fragmentation of habitats (resulting in a reduction in connectivity and/or exclusion from suitable habitats);
- increased noise and vibration (resulting in disturbance / displacement);
- increased light levels (resulting in disturbance / displacement);
- changes in hydrology (ground water levels and surface water run-off rates resulting in habitat change);
- pollution events (including the liberation of dust, sediments and chemicals resulting in loss or degradation of fauna and flora);
- introduction of invasive non-native species (resulting in habitat degradation); and
- EMF and heat generation (resulting in habitat change).

22.6.10 The most straightforward ZoI to define is the area affected by land-take and direct land-cover changes associated with the Proposed Development. This ZoI is the same for all affected ecological features. By contrast, for each environmental change that can extend beyond the area affected by land-take and land-cover change (for example noise created by construction), the ZoI may vary between ecological features, dependent upon their sensitivity to the change and the precise nature of the change. For example, a dormouse might only be disturbed by noise generated very close to its nest, whilst nesting lapwing might be disturbed by noise generated at a much greater distance; other species (for example many invertebrates) may be unaffected by changes in noise. In view of these complexities, the definition of the ZoI that extends beyond the land-take area was based upon professional judgement informed, as far as possible, by a review of published evidence (for example disturbance criteria for various species).

22.6.11 The ZoIs for each broad environmental change are specified below:

- permanent or temporary land take / land cover change – ZoI within the onshore part of the proposed DCO Order Limits for habitats and sedentary species; mobile species may be affected beyond that if the onshore part of the proposed DCO Order Limits lies within their typical home-ranges;
- fragmentation of habitats – ZoI within the onshore part of the proposed DCO Order Limits for habitats and sedentary species; mobile species may be affected beyond that if the onshore part of the proposed DCO Order Limits lies within their typical home-ranges;
- increased noise and vibration – ZoI for sensitive species is up to 500m from the temporary construction works, noting that for mobile features of designated

sites this is related to the species land use, as opposed to designation boundary;

- increased light levels – ZoI for sensitive species up to 450m of temporary construction works, noting that for mobile features of designated sites this is related to the species land use, as opposed to designation boundary;
- changes in hydrology – ZoI for sensitive species is within the sensitive surface and ground water features described within **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26), noting that for mobile features of designated sites this is related to the species land use, as opposed to designation boundary;
- pollution events – ZoI for habitats and species is up to 500m from the onshore part of the proposed DCO Order Limits, or further if the source and the ecological feature are directly linked via the river system;
- introduction of invasive non-native species – ZoI for habitats and species is up to 500m from the onshore part of the proposed DCO Order Limits, or further if the source and the ecological feature are directly linked via the river system; and
- EMF and heat generation – ZoI for habitats and species is up to 20m from the proposed DCO Order Limits (although will be focused on the onshore cable corridor); mobile species may be affected beyond that if the onshore part of the proposed DCO Order Limits lies within their typical home-ranges.

22.6.12 It should be noted that the avoidance of potential effects through design are implicitly taken into account through the consideration of each ZoI. Furthermore, when scoping in or out ecological features from further assessment, embedded environmental measures (see **Section 22.7**) associated with good practice have been taken into account[33] (for example dust suppression, appropriately scheduled vegetation removal etc.).

22.6.13 Ecological features that are scoped in or out of the assessment (in other words, those of sufficient importance occurring within a relevant ZoI), for the environmental changes and resultant effects listed in **paragraph 22.6.9** are outlined in **Table 22-17**.

22.6.14 The following environmental changes are scoped out for all ecological features:

- Changes in hydrology – **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26) does not identify any likely significant effects on the hydrological regimes across designated sites or ground water dependent terrestrial ecosystems due to the construction, operation and maintenance, or decommissioning of the Proposed Development. Therefore, the ecological

[33] Mitigation is not taken into account in the **Habitats Regulations Assessment (Without Prejudice) Derogation Case** (Document Reference: 5.10) in line with legislation and case law associated with European sites. It should be noted that the final outcomes for European sites within the EcIA and the **Report to Inform the Appropriate Assessment (RIAA)** (Document Reference: 5.9) are consistent.

features that these designated sites and habitats support will also not be subject to likely significant effects.

- The risk of pollution from the construction site, the operational assets or decommissioning activity will be controlled via the implementation of embedded environmental measure C-76 and the related implementation of the CoCP (see **Table 22-20** in **Section 22.7** and **Outline CoCP** (Document Reference: 7.2). These measures follow typical practice and will be effective in negating the risk to ecological features[34].
- The risk of spreading non-native invasive species across and beyond the construction site or via operational management / decommissioning activities will be controlled via the implementation of embedded environmental measure C-107 and the production and implementation post-consent of the detailed CoCP (see **Table 22-20** in **Section 22.7**). These measures will be effective in negating the risk to ecological features.
- EMF and heat generation result in environmental changes that dissipate rapidly with distance from the cables. Changes in EMF are unlikely to be detectable within a few metres (likely under 1 to 1.5m) from each cable. The EMF created will be no greater than for those utility assets already common in the wider area, that seemingly have no effect on ecological features. EMF are also unlikely to be detectable above background in the channels that are most likely to be supporting species most sensitive to EMF (such as migratory fish). This is because embedded environmental measure C-5 (**Table 22-20**) will see all main rivers crossed via trenchless crossing where the onshore temporary cable corridor will be at a distance considerably greater than 1m below bed level. Thermal effects of underground electrical cables are known to extend over short distance 1 to 1.5m. At this range the extent of ground heating will be small, and highly unlikely to alter the make-up of habitats established above the cables.

[34] Pollution and the risk of spreading invasive species are screened into the assessment described in the **Report to Inform the Appropriate Assessment (RIAA)** (Document Reference: 5.9) for European sites (in accordance with case law). However, with regards to EcIA it is scoped out of detailed assessment as embedded environmental measures can be relied upon.

Page intentionally blank

Table 22-18 Terrestrial ecology and nature conservation scoping assessment

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
Arun Valley Ramsar site	International	International	Land take / land cover change	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Fragmentation	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Increased noise and vibration	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Increased light levels	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
Arun Valley SPA	International	International	Land take / land cover change	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (functionally linked

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				land may lie within the onshore part of the proposed DCO Order Limits).
			Fragmentation	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Increased noise and vibration	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Increased light levels	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
Arun Valley SAC	International	International	Land take / land cover change	Out – this SAC is 4.7km from the onshore part of the proposed DCO Order Limits.
			Fragmentation	Out – this SAC supports a single sedentary species 4.7km from the onshore part of the proposed DCO Order Limits.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
			Increased noise and vibration	Out – this SAC supports a single sedentary species that is not sensitive to disturbance by noise.
			Increased light levels	Out – this SAC supports a single sedentary species that is not sensitive to disturbance via light.
Duncton to Bignor Escarpment SAC	International	International	All environmental changes	Out – this SAC is designated for woodland habitats and is over 9.7km from the onshore part of the proposed DCO Order Limits. There is no connectivity via river systems to the onshore part of the proposed DCO Order Limits.
Solent and Dorset Coast SPA	International	International	All environmental changes	Out – as a designation below MHWS all features are considered within **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference 6.2.12).
The Mens SAC	International	International	Land take / land cover change	In – SAC lies within the foraging distances of the barbastelle bats listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Fragmentation	In – this SAC lies within the foraging distances of the barbastelle bats listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
			Increased noise and vibration	In – this SAC lies within the foraging distances of the barbastelle bats listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Increased light levels	In – this SAC lies within the foraging distances of the barbastelle bats listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
Amberley Mount to Sullington Hill SSSI	National	National	Land take / land cover change	Out – this SSSI lies immediately on the boundary of the onshore part of the proposed DCO Order Limits. However, the area of Sullington Hill crossed by the onshore cable corridor will be subject to a trenchless crossing. Temporary construction access routes or any construction activity will be in excess of 250m from the SSSI at the closest point, with only operational access (for example, occasional use of a 4 x 4 vehicle) using existing tracks adjacent to the SSSI boundary[35].
			Fragmentation	Out – this SSSI lies adjacent to Sullington Hill LWS that supports habitat that could be used by the Adonis blue butterfly. However, the onshore cable

[35] A 4x4 or light van using the track usually once per year, in the same way as it currently used by the landowner

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				corridor will cross Sullington Hill at this location using a trenchless crossing technique thereby not altering the connecting pathways between calcareous grassland habitats.
			Increased noise and vibration	Out – this SSSI is not cited for species sensitive to disturbance via noise and vibration.
			Increased light levels	Out – this SSSI is not cited for species sensitive to disturbance via light.
Amberley Wild Brooks SSSI, Pulborough Brooks SSSI[36]	National	National	Land take / land cover change	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Fragmentation	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).

[36] Note single table entries have been used for designated sites of the same type, where the features cited and the pathways of effect do not differ.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
			Increased noise and vibration	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
			Increased light levels	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (functionally linked land may lie within the onshore part of the proposed DCO Order Limits).
Arun Banks SSSI, Arundel Park SSSI, Chanctonbury Hill SSSI, Cissbury Ring SSSI, Fairmile Bottom SSSI, Hurston Warren SSSI, Parham Park SSSI, Sullington Warren SSSI	National	National	All environmental changes	Out – these SSSIs support a range of species and habitats. However, the distance between them and the onshore part of the proposed DCO Order Limits (all in excess of 600m), the type of cited features and the lack of connectivity via the river system mean that potential significant effects can be discounted.
Climping Beach SSSI	National	National	Land take / land cover change	In – this SSSI will be crossed trenchlessly avoiding any terrestrial habitats (note: features below MHWS are considered within **Chapter 9: Benthic, subtidal**

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				and intertidal ecology, Volume 2 of the ES (Document Reference: 6.2.9) and **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES) (Application Document Reference: 6.2.12) although the risk of accidental loss of drilling fluid is considered.
			All other environmental changes	Out – all works are set back from the SSSI and timing of works (C-117) of the trenchless crossing are confined to periods when wintering birds are largely absent.
West Beach LNR	County	County	All environmental changes	Out – features are considered within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES (Document Reference: 6.2.9).
Bines Green LWS	County	County	All environmental changes	Out – a very small area (less than 10m^2) of this LWS lies within the onshore part of the proposed DCO Order Limits but is not crossed by the onshore cable corridor. The overlap is associated with an existing surfaced access track that runs parallel to the southern boundary of the LWS. This existing access does not require widening and therefore loss of semi-natural habitat within the LWS will not be necessary. It is an LWS designated for habitats and not for species that would be considered sensitive to disturbance via noise, vibration or light.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
Elmer Rocks LWS	County	County	All environmental changes	Out – LWS is below mean low water springs (when within the proposed DCO Order Limits. See **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES (Document Reference: 6.2.9)
Littlehampton Golf Course & Atherington Beach LWS	County	County	Land take / land cover change	In – this LWS will be crossed by trenchless crossing avoiding any terrestrial habitats (note: features below MHWS are considered within **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES (Document Reference: 6.2.9) and **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference: 6.2.12)) although the risk of accidental loss of drilling fluid is considered.
			All other environmental changes	Out – this LWS is not designated primarily for species sensitive to disturbance.
Sullington Hill LWS	County	County	Land take / land cover change	In – this LWS will be crossed by trenchless crossing avoiding any terrestrial habitats. However, the risk of accidental loss of drilling fluid is considered.
			All other environmental changes	Out – this LWS is not designated primarily for species sensitive to disturbance.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
All other LWS as noted in Appendix 22.2: Terrestrial ecology desk study, Volume 4 of the ES (Document Reference: 6.4.22.2)	County	County	All environmental changes	Out – these LWS are over 500m from the onshore part of the proposed DCO Order Limits and are not identified as being of importance to mobile species, or those sensitive to disturbance from noise or light.
Ancient Woodland	National	National	Land take / land cover change[37]	In – Ancient Woodlands are present within and close to the proposed DCO Order Limits.
			Fragmentation	In – Ancient Woodlands are present within and close to the proposed DCO Order Limits.
Veteran trees	National	National	Land take / land cover change	In – veteran trees are present within and close to the proposed DCO Order Limits.
			Fragmentation	Out – veteran trees are present in the landscape as point features that become established over long periods. They do not occur within or close to the

[37] For all habitats only land take / land cover change and fragmentation are considered in **Table 22-18** as consideration of disturbance via noise, vibration or light are not relevant.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				proposed DCO Order Limits in groups and are isolated from each other. Therefore, fragmentation is not considered as veteran trees by their nature are individual assets.
Woodland (Semi-natural broad-leaved woodland; plantation woodland – broadleaved; plantation woodland – coniferous; plantation woodland – mixed)	National to Local	County to Local	Land take / land cover change	In – woodland is widespread in the area and lies within and adjacent to the onshore part of the proposed DCO Order Limits. Areas of semi-natural broadleaved woodland qualify as HPI.
			Fragmentation	In – woodland is widespread in the area and lies within and adjacent to the onshore part of the proposed DCO Order Limits. Areas of semi-natural broadleaved woodland qualify as HPI.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
Coastal and floodplain grazing marsh (this includes areas identified as marshy grassland and semi-improved grassland)	National	County	Land take / land cover change	In – this HPI is present within the onshore part of the proposed DCO Order Limits (in the River Arun and River Adur Valleys)[38].
			Fragmentation	In – this HPI is present within the onshore part of the proposed DCO Order Limits (in the River Arun and River Adur Valleys).
Neutral semi-improved grassland	National	Local	All environmental changes	In – this HPI is present within the onshore part of the proposed DCO Order Limits. A further area of 0.8ha identified by stakeholders at Crateman's Farm may also be represented by this habitat type (subject to pre-construction survey results).
Calcareous grassland	National	County	All environmental changes	Out – this HPI is present within the onshore part of the proposed DCO Order Limits within Sullington Hill

[38] As floodplain and coastal grazing marsh (FCGM) can include improved, semi-improved and unimproved grasslands (as categorised by Phase 1 habitat survey) all grassland present within areas shown on the Priority Habitat Inventory as FCGM will be considered to qualify (with area adjustments made to other grassland categories as necessary).

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				LWS or alongside operational access routes only. Sullington Hill LWS is assessed as a single designation containing calcareous grassland in **Section 22.9**.
Native, species-rich hedgerows / native species poor hedgerows / tree lines	National	County	Land take / land cover change	In – there are a number of crossings of this HPI in the onshore part of the proposed DCO Order Limits.
			Fragmentation	In – there are a number of crossings of this HPI in the onshore part of the proposed DCO Order Limits.
Ponds	National	County	Land take / land cover change	Out – there are 13 ponds within the proposed DCO Order Limits. All of these ponds have been highlighted for retention within Figure 7.3.4 Vegetation Retention and Removal Plans – Ponds, within the **Outline Vegetation Retention and Removal Plan (**Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) (see C-220 in **Section 22.7**)
			Fragmentation	Out – the ponds within the proposed DCO Order Limits and in adjacent areas are within areas where

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				construction work will be temporary and connecting habitats will be reinstated.
Rivers (main rivers)	National	National	All environmental changes	Out – although the River Arun and River Adur (amongst others) are crossed by the proposed onshore cable corridor, the environmental measure C-5 (see **Table 22-21** in **Section 22.7**) will avoid negative effects on this ecological feature via the use of trenchless crossing techniques (for example,. HDD). A 'no dig' specialist has appraised the landfall and determined the trenchless crossing technique to be used as suitable, with risks of a fluid breakout being very low and manageable as described in the **Outline CoCP** (Document Reference: 7.2). Further assessment is provided in **Chapter 26: Water environment, Volume 2** of the ES (Application Document Reference: 6.2.26).
Streams and permanently wet ditches	County	County	Land take / land cover change	In – There are up to 39 stream/ditch crossings of this potential HPI that will be crossed by the onshore cable corridor.
			Fragmentation	In – There are up to 39 stream/ditch crossings of this potential HPI that will be crossed by the onshore cable corridor.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
Common and widespread habitats **Improved grassland, amenity grassland, poor semi-improved grassland, tall ruderal, arable, ephemeral / short perennial, dry ditches.**	Local	Local	All environmental changes	Out – these are common and widespread habitats in the vicinity of the onshore elements of the Proposed Development, across West Sussex and England. Embedded environmental measure C-103 (see **Table 22-20** in **Section 22.7**) ensures that these habitats will be reinstated across the majority of the construction area (where assets are underground). All of these habitats would be expected to be reinstated successfully given the make-up of the habitat and the techniques available to achieve this.
Badgers	Local	Local	Land take / land cover change	In – due to legislative protection. This species is protected due to welfare issues. Its population in West Sussex is large and well distributed and includes areas within the onshore part of the proposed DCO Order Limits.
			Fragmentation	In – due to legislative protection. This species is protected due to welfare issues. Its population in West Sussex is large and well distributed and includes areas within the onshore part of the proposed DCO Order Limits.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
			Increased noise and vibration	In – due to legislative protection. This species may be disturbed by noise and vibration particularly when occupying places of shelter.
			Increased light levels	In – due to legislative protection. This species may be disturbed by light when foraging / commuting.
Bats	International	County	Land take / land cover change	In – a wide variety of bat species are known to be present within West Sussex, and in the general area of the Proposed Development including rarer species such as barbastelle.
			Fragmentation	In – habitats used by bats will be crossed by the Proposed Development.
			Increased noise and vibration	In – there is the potential for bat roosts (mostly in trees) to be within or close to the onshore part of the proposed DCO Order Limits.
			Increased light levels	In – there is the potential for bat roosts and foraging and commuting bats to be within or close to the onshore part of the proposed DCO Order Limits.
Hazel Dormouse	International	County	All environmental changes	In –Dormouse have been identified as present at the onshore substation site location.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
Great crested newts	International	County	Land take / land cover change	In – great crested newts are known to be widespread across this area of West Sussex, including within the proposed DCO Order Limits.
			Fragmentation	In – great crested newts are known to be widespread across this area of West Sussex, including within the proposed DCO Order Limits.
			Increased noise and vibration	Out – great crested newts are not considered to be susceptible to significant disturbance by noise and vibration.
			Increased light levels	Out – great crested newts are not considered to be susceptible to significant disturbance by light.
Common toad	National	County	All environmental changes	Out – although toads are known to be widespread across this area of West Sussex, Rampion 2 will not result in the loss of any ponds and installation of cables will be rapid (150m per day) and Ecological Clerk of Works (EcoW) present minimising the effects of any potential fragmentation of migration routes. Commitments C-295 and C-296 (see **Table 22-20** in **Section 22.7**) are in place to ensure welfare of individual animals.
Reptiles (common species)	National	Local	Land take / land cover change	In – due to legislative protection. These species are likely to be distributed across suitable habitat

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				throughout the onshore part of the proposed DCO Order Limits.
			Fragmentation	Out – cable installation will progress rapidly ensuring that reptiles will not be prevented from moving across the cable corridor for more than a few days in any given location. At the substation north / south and east / west connectivity is maintained at all times.
			Increased noise and vibration	Out – reptiles are not considered to be susceptible to significant disturbance by noise and vibration.
			Increased light levels	Out – reptiles are not considered to be susceptible to significant disturbance by light.
Sand lizard	International	County	All environmental change	Out – Sand lizard records are discounted, as all habitats that they may occupy in the area (for example, sand dune complexes) will be crossed via HDD and therefore there will be no points of interaction.
Breeding birds	International to Local	International to Local	All environmental change	In – the area is known to support a range of species including those of Schedule 1 of the WCA, those that qualify as SPI and those listed on the Birds of Conservation Concern (BoCC) red and amber lists.

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
Migratory birds	International to Local	International to Local	All environmental change	Out – habitats within the coastal strip (other than arable field) are to be retained.
Wintering birds	International to Local	International to Local	All environmental change	In – the area is known to support a range of species including those that are designated features of nearby SPAs, those that qualify as SPI and those listed on the BoCC red and amber lists.
Otter	International	Local	All environmental change	Out – this species is not considered to be resident in West Sussex, or present in small numbers only. Although it may occur occasionally (as evidenced by field survey) the mobility of this species will allow it to bypass any works ongoing (noting that works are locationally restricted at any point of time) easily. As a precaution embedded environmental measures C-135 and C-210 (see **Section 22.7**) ensure that this species will be considered during the implementation of the Ecological Clerk of Works role.
Water voles	National	County	All environmental change	In – the area is known to support water voles. The potential effects will depend on whether the watercourses crossed by open trenching methods support this species.
Fish	International to Local	International to Local	All environmental change	Out –Channels considered to represent good habitat or fish are all crossed by trenchless crossing. Where open trenching is to occur allowance has been made

Ecological Feature	Importance – legislation and policy	Scale at which effect may be realised	Environmental change	Scoped in / out
				for fish protection via commitments C-64, C-205, C-209 and within the **Outline CoCP** (Document Reference: 7.2).
Invertebrates (terrestrial)	International to Local	International to Local	All environmental change	Out – key habitats for terrestrial invertebrates (for example, South Downs Escarpment) are avoided or are crossed by trenchless crossing.

Temporal scope

22.6.15 The temporal scope of the assessment of terrestrial ecology and nature conservation assessment is consistent with the period over which Rampion 2 will be carried out and therefore covers the construction, operation and maintenance, and decommissioning phases. Further details regarding each phase of the Proposed Development are provided within **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) with a summary relevant to terrestrial ecology and nature conservation provided below:

- construction: years 1 to 4, this includes restoration of habitats temporarily lost to development;
- operation and maintenance: years 10+[39]; and
- decommissioning: within 4 years of operation and maintenance phase concluding.

22.6.16 Within this assessment the majority of likely significant effects are associated with the construction phase, and even though they may have longer term consequences are only considered at one point of time (for example, land take). The assessment in **Section 22.10** describes the effects on the ecological features scoped in (see **Table 22-18**) and highlights the importance of the temporal scope as necessary; however, there is not a separate consideration (with a separate conclusion) of the same likely significant effect on each feature in different phases.

Future baseline

22.6.17 The future baseline is likely to remain relatively constant within the onshore part of the proposed DCO Order Limits through the lifetime of the Proposed Development in the majority of locations. This is because most land crossed is in agricultural usage and is likely to remain a farmed landscape. Across some of the agricultural land, changes in farming policy and efforts by third parties such as the SDNPA have seen changes over time to secure benefits for biodiversity and natural capital (for example, hedgerow establishment, tree planting, natural flood resilience measures etc.). The Environmental Land Management scheme (Elms) and Countryside Stewardship schemes will result in greater areas being managed in part for biodiversity. Where schemes that have received funding, are being or will be implemented and information has been provided these have been incorporated into the future baseline.

22.6.18 In the longer-term, climate change may alter the type of habitats present by favouring certain species over others. This could alter the species make-up of the woodland or grassland present, although is considered unlikely to change habitat types within the lifetime of the Proposed Development. Therefore, the baseline for the assessment will be that represented by the desk study and field survey results (**Appendix 22.3: Extended Phase 1 habitat survey report** to **Appendix 22.17:**

[39] **Section 4.6** of **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4) identifies the expected operational lifetime of the Proposed Development to be around 30 years.

Bat tree ground level visual assessment survey report, Volume 4 of the ES (Document References: 6.4.22.3 to 6.4.22.17)).

22.7 Basis for ES assessment

Maximum design scenario

22.7.1 Assessing using a parameter-based design envelope approach means that the assessment considers a maximum design scenario whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the DCO Application. The assessment of the maximum adverse scenario for each ecological feature establishes the maximum potential adverse impact and as a result impacts of greater adverse significance would not arise should any other development scenario (as described in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4)) to that assessed within this Chapter be taken forward in the final design of the Proposed Development.

22.7.2 A change request **[AS-046]** to the DCO Application was accepted by the Examining Authority on 24 July 2024 **[PD-018]**. These changes included minor reductions to the proposed DCO Order Limits (onshore only) where adjacent to areas of Ancient Woodland to provide a 25m buffer from these features. Further localised reductions to the extent of Works 9 and 19 were also made, assigning these areas to a class of work with lower impacts from those previously assessed as cable installation. The changes made result in no new or different effects from those reported in this chapter of the ES. The figures supporting this chapter of the ES have not been updated due to the minor nature of these changes, the final proposed DCO Order Limits and Works areas should be viewed on the **Onshore Works Plans** (Document Reference: 2.2.2 and **[AS-026]**.

22.7.3 For the purposes of this assessment the footprint of physical activity (areas in which temporary construction activity will take place) has been defined as a realistic worst-case scenario (RWCS). This is because an assessment based on an assumption that all areas within the onshore part of the proposed DCO Order Limits will be temporarily or permanently lost to development would be an over-estimate of the level of effect likely due to the final design. Therefore, the physical footprint has been defined as follows:

- Land take has been based on the indicative onshore cable corridor, indicative trenchless crossing compounds, temporary construction compounds, the onshore substation footprint, temporary construction access tracks and access visibility splays. This represents a RWCS when considered in tandem with the vegetation retention and removal plans (see **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 [REP5-125])) (updated at Deadline 6)) which shows the individual habitat features that are to be retained within the proposed DCO Order Limits. Operational access tracks are not included as these require access by light van or 4x4 a small number of times per year. Access would be using farm tracks and field edges as per current usage by landowners and managers.

- Construction has been assumed to take place throughout the year, with no restrictions considered unless specific embedded environmental measures (**Table 22-20** in **Section 22.7**) have been included.
- Approximately 150m of cable duct has been assumed to be installed (including dressing back of sub-soil and topsoil) each day.
- Habitat reinstatement will begin within 2 years of the loss occurring in all areas other than around the substation, at temporary construction compounds, some construction access routes and haul roads and at the landfall.
- Temporary lighting will be used at trenchless crossing compounds, temporary construction compounds, the landfall and the onshore substation site only.

22.7.4 The maximum assessment assumptions that have been identified to be relevant to terrestrial ecology and nature conservation are outlined in **Table 22-19** and are in line with the Project Design Envelope (**Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4)).

Page intentionally blank

Table 22-19 Maximum assessment assumptions for impacts on terrestrial ecology and nature conservation

Project phase and activity / impact	Maximum assessment assumptions	Justification
Construction		
Land take / land use change **Fragmentation**	Onshore substation Onshore cable corridor Temporary construction compounds Trenchless crossing compounds Temporary construction access routes Temporary construction access visibility splays	• Onshore temporary construction corridor is up to 40m in width for the entire length, with amendments to land take due to narrowing of the onshore cable corridor through sensitive locations. Calculations of loss based on indicative cable route as proposed DCO Order Limits are not representative of losses. Potential losses of important habitats through alteration of the onshore cable route is controlled through the **Outline Vegetation Retention and Removal** Plan (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6). • Onshore temporary construction corridor includes for the cable trenches, haul road, temporary drainage and soil storage. • Additional area is included to enable trenchless crossings. • Cable is installed in sections with less than 150m of cable trench open in a single location at any one time.

Project phase and activity / impact	Maximum assessment assumptions	Justification
		• Construction compounds are temporary. All are assumed to be required. • Onshore substation footprint is based on maximum required footprint. • Access tracks (outside of the indicative corridor) that exist (such as current farm tracks) are assumed to remain although improvement (for example, grading, pothole infilling etc.) assumed.
	Assumed that noise and vibration is restricted to normal working hours (see **Section 22.7**, commitment C-22), except at locations where trenchless crossings are being constructed as drilling cannot be halted during night-time periods. Assumed that noise and vibration is restricted to locations within which active works are being pursued (for example, 150m sections of the onshore temporary construction corridor, onshore substation location, trenchless crossing compounds and temporary construction compounds)	This reflects a RWCS.
Disturbance due to light	Assumed that temporary lighting is restricted to onshore substation location, trenchless crossing compounds and temporary construction compounds).	This reflects a RWCS.

Project phase and activity / impact	Maximum assessment assumptions	Justification
	Assumed permanent lighting is restricted to the onshore substation.	

Embedded environmental measures

22.7.5 As part of the Rampion 2 design process, a number of embedded environmental measures have been adopted to reduce the potential for impacts on terrestrial ecology and nature conservation. These embedded environmental measures have evolved over the development process as the EIA has progressed and in response to consultation.

22.7.6 These embedded environmental measures also include those that have been identified as good or standard practice and include actions that will be undertaken to meet existing legislation requirements. As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of Rampion 2 and are set out in this ES.

22.7.7 **Table 22-20** sets out the relevant embedded environmental measures within the design and how these affect the terrestrial ecology and nature conservation assessment.

Page intentionally blank

Table 22-20 Relevant terrestrial ecology and nature conservation embedded environmental measures

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-5	Trenchless crossings will be provided for features where identified in Appendix A - Crossing Schedule of the Outline Code of Construction Practice.	Scoping	**Draft Development Consent Order (DCO)**, Schedule 1, Part 3, Requirement 6 (4), Cable Parameters **Draft DCO**, Schedule 1, Part 3, Requirement 22, Code of Construction Practice (CoCP) (4) (p)	This measure reduces habitat loss / degradation.
C-8	During both construction and operation, vehicle maintenance and refuelling of machinery will be undertaken within designated areas where spillages can be easily contained, and machinery will be routinely checked to ensure it is in good working condition. These areas at risk of spillage or containing hazardous materials, such as vehicle maintenance areas and hazardous substance stores (including fuel, oils and chemicals) will comply with industry good practice, be bunded, have appropriate containment and segregation and will be risk assessed and carefully sited to minimise the risk of hazardous substances entering the drainage	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 22 **CoCP** (4) (j) **Draft DCO**, Schedule 1, Part 3, Requirement 27 Operation phase maintenance (2) (a)	This measure manages pollution risk.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	system, or the local watercourses or sensitive land-based receptors. Where feasible, such areas will be sited at least 10m from a watercourse and away from areas at risk of flooding. Additionally, the bunded areas will have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage / spillage.			
C-12	During topsoil stripping, machinery with low ground pressure will be used to minimise soil compaction where the soil conditions indicate that compaction is possible. Storage time will be kept to the practicable minimum to prevent the soil deteriorating in quality. Topsoil stripped from different fields will be stored separately, as will soil from hedgerow banks or woodland strips.	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (e)	This measure is to improve success of habitat reinstatement.
C-17	Trenchless crossing of watercourses will be provided in accordance with Appendix A Crossing schedule of the Outline Code of Construction Practice. Where watercourses are shown in the Crossing Schedule to be crossed by open cut techniques (with flows overpumped around the working area). Appropriate environmental permits or land drainage consents will be applied for works from the Environment Agency (for example, for Main Rivers, works on or near sea defences/flood	Scoping – updated at PEIR	The Environmental Permitting (England and Wales) Regulations 2016 **Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (p) Land Drainage Act 1991	This measure manages pollution risk and risk to stream habitats.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	defence structures or in a flood plain) or from the Lead Local Flood Authority (LLFA) (for Ordinary Watercourse crossings) (see C-5).			
C-21	Where vegetation removal is necessary, it will be scheduled over winter to avoid the bird breeding season. If not possible for all areas, any vegetation removal will be undertaken in line with British Standard (BS) 5837:2012 (Trees in relation to design, demolition and construction). This will be carried out under supervision and will be appropriately managed to remove the risk of damaging or destroying active nests, young or eggs. Suitable methods will also be used to ensure vegetation supporting other legally protected species is removed sensitively and in a legally compliant way.	Scoping – updated at PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure reduces habitat loss / degradation and avoids damage / destruction of active nests.
C-22	Core working hours for construction of the onshore components will be 08:00 to 18:00 Monday to Friday, and 08:00 to 13:00 on Saturdays. Apart from specific circumstances that are set out in the Outline CoCP, where extended and continuous periods of construction are required. Prior to and following the core working hours Monday to Friday, a 'shoulder hour' for mobilisation and shut down will be applied (07:00 to 08:00 and	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (n)	This measure reduces the opportunity for disturbance (particularly of nocturnal species).

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	18:00 to 19:00). The activities permitted during the shoulder hours include staff arrivals and departures, briefings and toolbox talks, deliveries to site and unloading, and activities including site and safety inspections and plant maintenance. Such activities shall not include noise generating activity including use of heavy plant or activity resulting in impacts between objects resulting in loud noises, ground breaking or earthworks.			
C-24	Best practice air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) (2024) guidance on the Assessment of Dust from Demolition and Construction 2024, version 2.2	Scoping – updated at PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (h)	This measure reduces potential for habitat degradation.
C-26	Where noisy activities are planned and may cause disturbance, the use of mufflers, acoustic barriers (or shrouds) and other suitable solutions will be applied. For HDD work sites near to noise sensitive receptors where predicted levels may exceed the BS 5228 thresholds of significance, mud pumps that operate overnight will be shrouded and the drill will be fitted with acoustic (high mass) panelling and	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (g)	This measure reduces potential for disturbance at certain locations

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	louvres as well as engine silencers where diesel powered drills are used.			
C-64	For temporary watercourse crossings the works will be designed to enable the free passage of fish and aquatic mammals including continuation of bed material through the culvert. During construction (e.g. placing culverts or installing ducts), sections of the channel will need to be isolated using barriers that span the whole width of the channel. These isolation works will be of short duration and are expected to be completed within 48 hours of the placement of barriers to flow. Screening will take place to prevent fish being drawn into the pump.	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure maintains connectivity.
C-76	In line with good practice, Pollution Prevention Plans (PPPs) will be developed to detail how ground and surface waters will be protected from construction and operation related pollution. These will include information on the use and storage of any fuels, oils and other chemicals (in line with C-8 and C-167), measures for protecting licenced and private groundwater abstractions (in line with commitment C-147) and pollution incidence response planning.	Scoping – updated at PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (i) **Draft DCO**, Schedule 1, Part 3, Requirement 27 and 28 Operations phase maintenance (2) (a)	This measure manages pollution risk.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-103	Areas of temporary habitat loss will be reinstated within 2 years of the loss, other than at the temporary construction compounds, cable joint bays, landfall and substation location where activities may take longer to complete. Habitat restoration will take place at an appropriate time of year dependent on habitat type. In general habitat restoration will seek to deliver the same habitat type as the baseline, unless there is an opportunity to deliver enhancements. Woodland cannot be replaced above the cable ducts and in these situations woodland ride habitats will be delivered.	Scoping – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 **CoCP** **Draft DCO**, Schedule 1, Part 3, Requirement 12 Provision of landscaping (1), Requirement 13 Implementation and maintenance of landscaping (1), (2)	This measure enables habitat restoration.
C-104	RED will deliver a Biodiversity Net Gain (BNG) of at least 10% for the onshore elements of the project, measured using the Statutory Biodiversity Metric. BNG will be delivered in line with the Environmental Statement Appendix 22.15 - Biodiversity Net Gain Information. 70% of the deficit identified in section 5.2 of Appendix 22.15 BNG information will be secured prior to commencement of construction for each stage.	Scoping – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 14 Biodiversity Net Gain (1), (3)	This measure seeks to improve biodiversity.
C-105	A lighting design of all temporary and permanent lighting will be developed once contractors are appointed; however the principles of lighting design will be detailed at the time of Application and adhere	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 8 Detailed design approval onshore substation (1),	This measure reduces potential for disturbance by lighting.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	to the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals (2023). The lighting design will account for the potential effects on people (residents and walkers) biodiversity by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations – this is to decrease the potential displacement effects on light sensitive fauna such as bats.		Requirement 9 Detailed design approval – extension to National Grid substation (1) **Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (m) **Draft DCO**, Schedule 1, Part 3, Control of artificial light emissions during operational phase Requirement 30 (1), (2), Requirement 31 (1), (2)	
C-106	Speed limits will be imposed on all construction haul roads and access tracks to minimise the risk of road traffic collisions with fauna such as badgers, otters, bats and barn owls.	Scoping	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4)	This measure reduces potential for traffic collisions with wildlife.
C-107	Tried and tested invasive species and disease control and biosecurity measures will be used to avoid the spread of infested materials and pathogens.	Scoping – updated at PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (5) (g)	This measure manages the risk of invasive species spread.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-112	No ground-breaking activity or use of wheeled or tracked vehicles will take place within Climping Beach Site of Special Scientific Interest (SSSI). Within Littlehampton Golf Course and Atherington Beach Local Wildlife Site (LWS) vehicular access will be restricted to a low pressure rig for ground investigation purposes only during the site preparation works. Should remedial action be required in the unlikely event of a drilling fluid breakout access would be taken immediately to ensure drilling fluid can be contained and removed. Reinstatement and compensation measures would then be discussed and agreed with Natural England. This approach will be detailed in the Pollution Incident Response Plan secured through Requirement 22(4)(j) that will be agreed with the relevant planning authority in consultation with the Environment Agency and the statutory nature conservation body.	PEIR – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) and (j), Requirement 23 Onshore construction method statement (2) (b)	This measure avoids habitat loss / degradation within an LWS.
C-114	No ground-breaking activity or use of wheeled or tracked vehicles will take place during the construction phase within Sullington Hill LWS unless remedial action is required. Any predicted activity will be restricted to foot access for the purpose of surveying and monitoring of the progress of the horizontal directional drill (HDD). The existing farm	PEIR – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f), Requirement 23 Onshore construction method statement (2) (b)	This measure avoids habitat loss within an LWS.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	tracks through Sullington Hill LWS may be used by light vehicles (e.g., 4 x 4, light van) for access purposes during the operational and maintenance phase.			
C-115	Hedgerows/tree lines crossed by the cable route will be 'notched' to reduce habitat loss and landscape and heritage impacts wherever possible. This is defined as removing one or more short sections (notches) within the same hedgerow/tree line. The removed sections will by default be replanted except where permanently lost on the Vegetation retention and removal plan (see Figure 7.2.1 Vegetation Retention and Removal Plans - Hedgerows and tree lines in the Outline Vegetation retention and removal plans). Where appropriate, hedgerows will be temporarily translocated to maintain diversity and structure and result in more rapid reinstatement. Hedgerow/tree line losses will be kept to approximately 14m total width at each hedgerow crossing point where notching can take place. For hedgerows deemed "important" under the Hedgerows Regulations 1997 (or where there are other considerations), losses will be reduced to a 6m notch for the temporary construction haul roads only, by trenchless installation of the cable ducts under them wherever possible (see Figure 7.2.1	PEIR – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 40 Vegetation Retention and Removal	This measure reduces the amount of habitat and tree loss / degradation.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	Vegetation Retention and Removal Plans - Hedgerows and tree lines in the Outline Vegetation Retention and Removal Plan for the extent of hedgerow losses at each location). Hedgerows subject to temporary translocation will be lifted using a tree spade to maintain diversity and structure and result in more rapid reinstatement. Where chances of success are questionable, notches will be made by removal and reinstatement through planting. The ECoW will justify the approach being taken in line with the responsibilities of implementing the Outline Vegetation retention and removal plan (see C-220). Reinstated hedgerows and tree lines will be monitored over a period of 10 years, and remedial action taken rapidly where signs of failure are identified.			
C-117	Works on areas identified as floodplain (Flood Zones 2 and 3) will be programmed to avoid the period between October and February inclusive to avoid disturbance of waterbirds, and where possible, will be programmed to occur in late	PEIR – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure reduces potential to disturb wintering birds associated with the Arun Valley SPA / Ramsar site.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	summer/ early autumn, to avoid interaction with known flooding periods to minimise the potential for displacement of floodwater.			
C-135	A stand-off distance of at least 3m (with greater distances implemented, based on local biodiversity and pollution control considerations) will be applied from watercourse bank tops (other than for watercourse crossings) to account for potential issues such as water vole burrows, otter holts and pollution control.	PEIR – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure controls pollution risk and reduces disturbance to aquatic mammals.
C-174	Veteran trees are retained through design avoidance. Ground works within a buffer zone of 15 times the diameter of the tree or 5m from the edge of the tree's canopy will be avoided. Should transmission cables go under a veteran tree via a trenchless crossing a depth of at least 6m below ground within the buffer zone will be maintained to avoid root damage.	PEIR – updated at ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (a)	This measure reduces the potential that veteran trees will be lost.
C-182	Any works within 5m of any watercourse in the Internal Drainage Board (IDB) district will be subject to consent from the Environment Agency. Any works within 8m of a non-tidal Main River or 16m for a tidal Main River will be subject to consent from the Environment Agency (the majority of the Main	PEIR – updated at ES	The Environmental Permitting (England and Wales) Regulations 2016	This measure controls pollution risk and reduces disturbance to aquatic mammals.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	Rivers are tidal for the majority of the cable route). Work within banktop of any other watercourse (not main river and outside of IDB) will require consent from the Lead Local Flood Authority (LLFA).		**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (b)	
C-193	Replacement planting will be characteristic of the area and resilient to climate change. Plant species will be selected carefully at detailed design stage with appropriate management and maintenance techniques established to support the development of these species in line with the environmental requirements.	PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 12 Provision of landscaping (1), Requirement 13 Implementation and maintenance of landscaping (1)	This measure ensures habitat creation at the substation is appropriate and reinstatement elsewhere is in keeping.
C-196	Stage specific LEMPs, developed in accordance with the Outline LEMP, will be developed to reinstate landscape elements such as trees, woodland and hedgerows, which have been removed as a result of construction, including construction / HDD compounds and construction access. Attention will also be given to maintaining levels and types of vegetation and landscape patterns within each Landscape Character Area.	PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 12 Provision of landscaping (1), Requirement 13 Implementation and maintenance of landscaping (1)	This measure ensures habitat creation at the substation is appropriate and reinstatement elsewhere is in keeping.
C-199	A stage specific Landscape and Ecology Management Plan will be developed to ensure all reinstated habitats are effectively established. To ensure effective restoration, habitats will be subject	PEIR	**Draft DCO**, Schedule 1, Part 3, Requirement 12 Provision of landscaping (1), Requirement 13	This measure ensures habitat creation at the substation is appropriate

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	to appropriate maintenance, management (including adaptive management) and monitoring for ten years from the completion of planting in the relevant stage.		Implementation and maintenance of landscaping (1)	and reinstatement elsewhere is in keeping.
C-200	Where required, construction lighting will be limited to directional task lighting positioned to minimise impacts to residents and walkers within the South Downs National Park and informed by BS EN 12464-2:2014 Lighting of outdoor workplaces, and guidance provided by the CIBSE Society of Light and Lighting, The Bat Conservation Trust and the Institution of Lighting Professionals and the Dark Skies Technical Advice Note (South Downs National Park Authority, 2021) and complied with as far as reasonably practicable and applicable to construction works.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (m)	This measure ensures directional task lighting will be positioned to minimise impacts on bats.
C-203	Pre-construction checks for ground nesting birds will take place in advance of construction works (including for stone curlew, Eurasian curlew, lapwing and grey partridge) between late February and August. Where breeding birds are located species specific exclusion zones will be implemented within which no works can take place (for example, 500m for stone curlew (Taylor et al., 2007), 100m for	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure ensures active nests of ground nesting species are avoided.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	Lapwing (Liley & Fearnley 2011) and little ringed plover). The exclusion zones to be implemented will be agreed as part of the Outline Code of Construction practice			
C-204	The working corridor within woodland will be narrowed to be no more than 30m to reduce tree loss. Where the working corridor passes close to woodland that is being retained (as shown on the Vegetation retention and removal plans) root protection areas conforming to BS5837:2012 will be demarcated and maintained.	`	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (a) **Draft DCO**, Schedule 1, Part 3, Requirement 40 Vegetation Retention and Removal **Draft DCO**, Schedule 1, Part 3, Requirement 23 Construction method statement (2) (f)	This measure reduces loss and damage of woodland.
C-205	Any open cut watercourse crossing will be undertaken in-line with advice outlined within the fisheries mitigation table within the Outline Code of Construction Practice, C-17, C-64, C-122, C-126, C-138 and C-139 to reduce potential impact to fish within watercourses. C-139 and C-211 should be combined, ensuring low-flow rates coincide with reduced migratory fish risk.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure reduces effects on fish and other aquatic fauna.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-207	An Ecological Clerk of Works will work in conjunction with the contractors to ensure compliance with relevant wildlife legislation, agreed mitigation and best practice.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) Conservation of Habitats and Species Regulations, 2017 (as amended) The Wildlife and Countryside Act 1981 (as amended) The Protection of Badgers Act 1992)	This measure ensures coordinated approach to avoidance and mitigation during construction.
C-208	Pre-construction surveys for reptiles at the location of the substation will be undertaken prior to construction to determine current distribution. Where necessary appropriate mitigation will be implemented to ensure legal compliance. This will include trapping and translocation (within the immediate area). Within the construction area the Ecological Clerk of Works will implement destructive search techniques to avoid the death or injury of individual animals in localised patches of suitable habitat.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) Wildlife and Countryside Act 1981 (as amended)	The measure ensures legal compliance and manages effects on reptiles.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-209	Pre-construction surveys for badger will be undertaken prior to construction. Where badger setts are located within or close to the working area suitable mitigation, under a development licence from Natural England where necessary, will be delivered under supervision from an Ecological Clerk of Works	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) Protection of Badgers Act 1992	This measure ensures legal compliance and manages effects on badgers.
C-210	Pre-construction surveys for water vole and otter will take place at all watercourse crossings prior to construction. Should water vole or otter be present suitable mitigation, under licence from Natural England where necessary, will be delivered under supervision from the Ecological Clerk of Works.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) Conservation of Habitats and Species Regulations, 2017 (as amended) Wildlife and Countryside Act 1981 (as amended)	This measure ensures legal compliance and manages effects on otter and water vole.
C-211	Pre-construction surveys of trees with bat roost potential that require removal or pruning will take place prior to works commencing. Trees and buildings in close proximity to the working area will also be surveyed where potential disturbance could occur. Should bat roosts be identified suitable mitigation, under a European Protected Species	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) Conservation of Habitats and Species	This measure ensures legal compliance and manages effects on bats.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	licence from Natural England, will be delivered under supervision from the Ecological Clerk of Works		Regulations, 2017 (as amended)	
C-214	Pre-construction surveys for great crested newts will be undertaken prior to construction to determine current distribution. Where necessary appropriate mitigation will be implemented to ensure legal compliance. This will include avoidance of ponds through C-23, and removal of vegetation under licence from Natural England where necessary. Along the cable route the Ecological Clerk of Works will implement destructive search techniques to avoid the death or injury of individual animals in localised patches of suitable habitat.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) Conservation of Habitats and Species Regulations, 2017 (as amended)	This measure ensures legal compliance and manages effects on great crested newts.
C-215	Sussex Ornithological Society / Sussex Barn Owl Study Group will be contacted for information on the location of barn owl boxes within 250m of known works. The Ecological Clerk of Works will request any boxes present in the area are closed or relocated for the duration of works in the local area (within 250m) should a risk of abandonment be perceived. A pre-construction survey will also be carried out to check any boxes of other nesting opportunities (e.gsuitable farm buildings) within 250m of works to check for breeding activity. Should	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure ensures legal compliance and manages effects on barn owl.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	breeding sites be identified an exclusion zone of 250m (Ruddock & Whitfield 2007) will be implemented where no works can take place until chicks have fledged or the nest is no longer active.			
C-216	All ancient woodland will be retained. A stand-off of a minimum of 25m from any surface construction works will be maintained in all locations from cable installation works. Construction traffic may operate within 25m of an ancient woodland on existing tracks, with any track maintenance works being restricted to the current width. Works to provide safe access from the highway are required in three locations within 25m of ancient woodland, being accesses A-42, A-56 and A-57. At these locations specific measures including dust control shall be detailed in the stage specific Code of Construction Practice that will manage any potential indirect effects on ancient woodland. Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure avoids direct and indirect effects on Ancient Woodland.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-217	All site preparation and construction works within 150m of the boundary of Climping Beach Site of Special Scientific Interest and Littlehampton Golf Course and Atherington Beach Local Wildlife Site will be programmed to avoid the winter period between October and March inclusive, to avoid disturbance to wintering waterbirds during the coldest period.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure reduces disturbance of wintering birds in coastal strip.
C-220	The Outline Vegetation Retention and Removal Plan shows hedgerows, tree lines, woodland, scrub, calcareous grassland, semi-improved species-rich grassland and ponds which are to be retained or temporarily or permanently lost. Should any of these habitats shown as retained require removal due to unforeseen circumstances at the detailed design phase, they will be highlighted to the relevant competent authority with a reasoned justification provided. The stage specific Vegetation Retention and Removal Plans will require approval of the relevant planning authority via Requirement 40 of the DCO. Any unforeseen, additional losses would be accounted for through commitment C-104 covering the commitment to the provision of biodiversity net gain.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (a) **Draft DCO**, Schedule 1, Part 3, Requirement 40 Vegetation Retention and Removal **Draft DCO**, Schedule 1, Part 3, Requirement 14 Biodiversity net gain	This measure avoids habitat loss.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-224	Where vegetation clearance is required to provide visibility splays at access points for the purposes of safe access and egress any hedgerows that require cutting will be retained, by cutting to a height of 90cm where safe to do so (any hedgerow trees will be considered on an individual basis). These "coppiced" hedgerows will be agreed with the relevant highways authority and displayed on the stage specific Vegetation Retention and Removal Plan that will accompany the stage specific Code of Construction Practice secured by DCO Requirements 22 and 40.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 (4) (a) **Draft DCO**, Schedule 1, Part 3, Requirement 40 Vegetation Retention and Removal	This measure reduces temporary habitat loss.
C-229	Crossings of South Downs National Park Authority (SDNPA) designated Chalk streams will be designed to be less intrusive, for example by using a clear span bridge instead of a culvert to support the haul road or via use of trenchless crossing techniques. Open cut cable crossings will be constructed and reinstated in as short a timeframe as practicable. Details of the cable crossing methodologies at each water course can be found within Appendix A Crossing Schedule of the Outline Code of Construction Practice.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (p)	This measure reduces temporary habitat loss.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-232	Pre-construction checks for dormouse will be undertaken within areas considered to be suitable habitat that require removal, this is to avoid the death or injury of individual animals in localised areas. Where necessary appropriate mitigation will be implemented to ensure legal compliance. Enhancement opportunities to improve habitat connectivity will be sought through C-103, C-104, C-193, C-196 and C-199.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure ensures legal compliance and manages effects on dormouse.
C-255	Where water vole are present on watercourses or ditches to be crossed using open trenching techniques (within the working area or within 25m of it) temporary span structures will be used for access to minimise habitat loss and maintain best possible connectivity.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure is to manage effects on water vole.
C-291	Where hedgerow, tree lines or belts of scrub are temporarily lost to facilitate the installation of cable ducts, suitable material (such as straw bales, dead hedging, willow hurdles etc.) will be placed in the gaps to facilitate bat movement along linear corridors following backfill of cable trenches until such time as reinstatement begins.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure is to minimise the effects of fragmentation on bats.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
C-292	During detailed design the mitigation hierarchy will be applied to avoid losses of key habitats (e.g. woodland, hedgerows, scrub, watercourses and semi-improved grassland) where possible, and where not to minimise losses and mitigate for them. At each crossing of sensitive habitats the Ecological Clerk of Works will provide advice to the design engineers with justification of approach provided. The approach at individual crossings will be detailed in the relevant stage specific Vegetation Retention and Removal Plan.	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f) **Draft DCO**, Schedule 1, Part 3, Requirement 40 Vegetation Retention and Removal	This measure is to ensure that the detailed design process continues to implement the mitigation hierarchy to ensure effects on flora and fauna are minimised as far as possible.
C-294	To inform the detailed design process and biodiversity net gain calculations habitat surveys of areas that may be subject to temporary or permanent loss will be undertaken during the spring and summer period. Surveys will follow UK Habitats Classification methodology with potential Habitats of Principal Importance subject to National Vegetation Classification survey	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP	This measure is to ensure that the detailed design and BNG calculations are informed by up to date habitat information.
C-295	Open excavations left overnight will have a wooden or earth ramp left in place to allow any wildlife accidentally entering a means of escape. In addition, the Ecological Clerk of Works will check open excavations every morning to ensure any	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP	This measure is to secure the welfare of a variety of mobile fauna (including toads)

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	trapped fauna (including migrating toads) can be safely removed and relocated			
C-296	During February and March during hours of darkness that coincide with works, access tracks and the haul road between the A281 and A272 will be searched under the supervision of the Ecological Clerk of Works to ensure risks to migrating toads from traffic collision is managed effectively	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP	This measure is to secure the welfare of common toad
C-299	Where dormouse are shown to be present through pre-construction surveys, vegetation will be removed at an appropriate time of year following either a single (vegetation removed in May) or two-phased approach (vegetation mostly removed between November and March with tree/hedgerow bases removed in May). Suitable methods will also be used to ensure vegetation supporting other legally protected species is removed sensitively and in a legally compliant way	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 22 CoCP (4) (f)	This measure is to secure the welfare of hazel dormouse
C-301	Plans detailing the reinstatement of habitats and landscape elements including hedgerows, tree lines, watercourses, scrub belt and woodland that are lost during construction will be provided as part of the stage specific LEMP. This shall be produced in accordance with the Outline LEMP and include	ES	**Draft DCO**, Schedule 1, Part 3, Requirement 12 Provision of landscaping (1), Requirement 13 Implementation and	This measure is to assure production of detailed information during the detailed design stage.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	planting specifications, plant schedules (detailing number of plants / density / size and species), landscape programme of works (including targeted planting seasons and advance planting opportunities) and a landscape management plan (including maintenance and monitoring).		maintenance of landscaping (1)	

Page intentionally blank

22.7.8 Further detail on the embedded environmental measures in **Table 22-20** are provided in the **Commitments Register** (Document Reference: 7.22), the **Outline CoCP** (Document Reference: 7.2) and **Outline Landscape and Ecology Management Plan** (Document Reference: 7.10) which set out how and where particular environmental measures will be implemented and secured.

Biodiversity Net Gain (BNG)

22.7.9 The Proposed Development will deliver a BNG of at least ten percent. This BNG is instigated to ensure that the environment is left in a better state following development than at present. BNG is calculated using the Statutory Biodiversity Metric (Defra, 2023) with the outputs describing both the number of biodiversity units required to reach 'no net loss' (i.e. a position where residual effects on habitats are compensated for) and net gain (i.e. an increase in the baseline value of at least 10%). It therefore provides some of the compensation necessary to account for the residual effects described in **Section 22.9**. In accordance with guidance from Defra (2023), the delivery of net gain is not used when conclusions are drawn about the significance of effects identified in this assessment.

22.7.10 BNG will be delivered on-site and off-site. On-site delivery will focus on habitat creation at the substation location (this provides compensation for some of the habitat loss and mitigation and compensation for a range of legally protected and notable species), with other habitats on-site being reinstated to current condition only. Off-site delivery will be front-loaded, ensuring that works to create and enhance habitats are being delivered before or during the early stages of construction. The approach to delivering BNG in the local area is described in the Biodiversity Gain Information (see **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15)).

22.7.11 Following completion of construction, the reinstatement of habitats in areas temporarily lost, delivery of habitat creation and enhancement at the substation and the securing of BNG in the local area, the Proposed Development will result in a positive uplift in biodiversity. The majority of new and enhanced habitat delivered as part of the BNG commitment (**Table 22-20**), will be accounting for temporary land take and therefore, overall the extent of habitats managed for biodiversity will increase over the current baseline.

22.8 Methodology for ES assessment

Introduction

22.8.1 The project-wide generic approach to assessment is set out in **Chapter 5: Approach to the EIA, Volume 2 of the ES** (Document Reference: 6.2.5). The assessment methodology for terrestrial ecology and nature conservation for the ES is consistent with that provided in the Scoping Report (RED, 2020). No substantive changes have been made since the scoping phase and the original PEIR (RED, 2021) provided alongside the first statutory consultation exercise (see **Section 22.6**), although changes in wording around the definition of importance of ecological features has been clarified.

22.8.2 The assessment methodology within this chapter is aligned with the standard industry guidance provided by CIEEM (2018), informed by the general approach described in **Section 22.6**. The assessment is based upon the results of the desk study and field surveys (see **Appendices 22.3: Extended Phase 1 habitat survey report** to **22.17: Bat tree ground level visual assessment survey report, Volume 4** of the ES (Document References: 6.4.22.3 to 6.4.22.17)), and relevant published information (for example on the status, distribution, sensitivity to environmental changes and ecology of the features scoped into the assessment, where this information is available), technical engagement with stakeholders (see **Section 22.3**), and professional knowledge of ecological processes and functions.

22.8.3 For each scoped-in ecological feature (see **Table 22-18** in **Section 22.6**), effects are assessed against the baseline conditions for that feature during the construction, operation and maintenance, and decommissioning phases. Throughout the assessment process, findings about likely significant effects have been used to inform the definition of requirements for additional baseline data gathering and the identification of embedded environmental measures (**Table 22-20**) to avoid or reduce adverse effects or to deliver enhancements.

Significance evaluation methodology

22.8.4 CIEEM (2022) defines a significant effect as one '*that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*'.

22.8.5 When considering likely significant effects on ecological features, whether these are negative or positive, the following characteristics of environmental change are taken into account using professional judgement:

- extent – the spatial or geographical area over which the environmental change may occur;
- magnitude – the size, amount, intensity or volume of the environmental change;
- duration – the length of time over which the environmental change may occur[40];
- frequency – the number of times an environmental change may occur;
- timing – the periods of the day / year / season during which an environmental change may occur; and
- reversibility – whether the environmental change can be reversed through restoration actions or regeneration.

22.8.6 Although the characteristics described above are all important in assessing effects, the magnitude of the environmental change is key in understanding the relative scale of change from the baseline position (see **Table 22-21**).

[40] Within the assessment short term is considered to be an effect that will last less than 5 years, medium term 5 to 15 years and long term over 15 years.

Table 22-21 Guidelines for the assessment of the scale of magnitude

Magnitude	Criteria and resultant effect
High	The change permanently (or over the long-term) affects the conservation status of a habitat / species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource / species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the feature in the context of the Proposed Development.
Medium	The change permanently (or over the long term) affects the conservation status of a habitat / species reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource / species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this feature in the context of the Proposed Development.
Low	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species / habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the feature in terms of its importance.
Very Low	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of habitats / species features or the integrity of designated sites.
Negligible	A change, the level of which is so low, that it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a project and result in a neutral position.

Negative effects

22.8.7 A negative effect is assessed as being significant if the favourable conservation status of an ecological feature would be compromised or lost as a result of the Proposed Development. Conservation status is defined in CIEEM (2018) (in paragraph 5.32) as follows:

- "*habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area'*; and
- '*species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area*".

22.8.8 The decision as to whether the conservation status of an ecological feature has been compromised will be made using professional judgement, drawing upon the results of the assessment of how each feature is likely to be affected by the Proposed Development.

22.8.9 A similar procedure is used for designated sites that maybe affected by the Proposed Development, except that the focus is on the effects on the integrity of each site; defined by MHCLG (2019) as: "*the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*."

22.8.10 The assessment of effects on integrity will draw upon the assessment of effects on the conservation status of the features for which the site has been designated.

Positive effects

22.8.11 A development may result in positive effects where there is a resulting change from baseline that improves the quality of the environment (for example increases species diversity, increases the extent of a particular habitat etc.), or halts or slows down an existing decline. For a positive effect to be considered significant, the level of importance of an ecological feature determined at the baseline state would need to increase by one or more geographical levels (for example where an ecological feature of local importance becomes of county importance following delivery of the Proposed Development).

22.8.12 Within this assessment if the magnitude of an effect is very low or negligible then the effect is not concluded as being significant. If the magnitude of an effect is low or medium professional judgement is used alongside consideration of the scale of the effect (see **Table 22-18**), its duration, reversibility etc. to determine whether it is significant. Where the magnitude of effect is high a significant effect is concluded.

22.9 Assessment of effects

The Arun Valley Ramsar site

Detailed baseline

22.9.1 The Arun Valley Ramsar site consists of wet meadows on the floodplain of the River Arun, between Pulborough and Amberley. The neutral wet grassland is subject to regular winter, and occasional summer flooding. It is dissected by a network of ditches, many of which support a rich diversity of flora and invertebrate

fauna. Wintering wildfowl and breeding waders characterise the outstanding ornithological resource present.

22.9.2 The Ramsar site meets qualification criterion two and three for seven threatened wetland invertebrates, four nationally rare and four nationally scarce plants; alongside its generally rich and diverse ditch flora.

22.9.3 Criteria five is met for the internationally important waterfowl assemblage (greater than 20,000 birds. Functionally linked land for northern pintail, wigeon, teal, shoveler and ruff is assumed to cover suitable habitat within the proposed DCO Order Limits within the coastal strip, Arun Valley floodplain and Adur Valley floodplain.

22.9.4 Within the coastal strip pintail, teal and wigeon were recorded with peak counts of 18 (in January 2021) pintail (three records only; September 2020, January 2021 and February 2022), 39 wigeon (in November 2021) with five further records; September and October 2020, January and February 2021 and January 2022) and six teal (in December 2021) with two other records from January and February 2021.

22.9.5 Within the Arun and Adur Valleys within 500m of the proposed DCO Order Limits, wigeon were recorded on 17 occasions, across 11 survey visits. Numbers ranged between 7 and 600 individuals. Wigeon were mainly associated with a waterbody close to St Mary Magdalene Church in Lyminster in the Arun Valley (290 metres north of the proposed DCO Order Limits) and flooded fields between Partridge Green and Henfield (mainly 50 – 150 metres east of proposed DCO Order Limits, though three records were within the proposed DCO Order Limits).

22.9.6 Teal (3 individuals) were recorded on a single occasion in the Arun Valley, but on nine occasions in the Adur Valley. Numbers ranged between 1 and 151, with the distribution of records similar to wigeon. Pintail were recorded on a single occasion, with 4 birds noted south of Partridge Green. There was a single record of 15 shoveler within the Adur Valley (January 2021), 520 meters south-east of the proposed DCO Order Limits. During the winter bird surveys 2021-2022, there were three records of the regular wintering herd of Bewick's swan foraging within the Burpham Water Meadows; >2km outside of the proposed DCO Order Limits and shielded from the cable corridor by an escarpment and blocks of ancient woodland. Ruff were not recorded during any of the winter bird surveys undertaken (see **Section 22.6** and **Appendix 22.14: Onshore winter bird report 2020-2022, Volume 4** of the ES (Document Reference: 6.4.22.14)).

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss)

22.9.7 There is no direct land take within the Arun Valley Ramsar site during the construction phase, with the nearest possible construction activity 4.8km from the designation boundary. Land-take of functionally linked land (arable land at the landfall and floodplain and coastal grazing marsh in the Arun and Adur Valleys – at the closest point approximately 9km from the Arun Valley Ramsar site) used by the waterfowl assemblage for foraging would occur due to the Proposed Development. Losses of functionally linked land will be temporary (during the

construction, and potentially, the decommissioning phases) as they all occur in areas within which no permanent above ground infrastructure is proposed. It is also notable that the identified functionally linked land supports few of the birds for which the Ramsar site is designated (see **Section 22.6** and **Appendix 22.14: Onshore winter bird report 2020-2022, Volume 4** of the ES (Document Reference: 6.4.22.14) and **[APP-192]**) and is at a considerable distance from the designation boundary and outside of the typical foraging ranges of the species in question. Johnson et al. (2014) published foraging distances for Eurasian wigeon (2.5km), shoveler (2.5km) and teal (3.8km) that demonstrate the likelihood of the identified (based on habitat type as opposed to bird survey outcomes) functionally linked land being critical to, or necessary for, the ecological or behavioural functions in a relevant season for these species is negligible. Pintail have a larger foraging distance of 18.5km, however this is an example from the United States and is considerably greater than the only published example from Europe (1.3km recorded in France). Using all the examples published in Johnson et al. (2014) gives a mean of 7.4km or median of 5.0km it can be concluded that the functionally linked land is not critical to, or necessary for, the ecological or behavioural functions in a relevant season for pintail.

22.9.8 As part of the embedded environmental measures (C-103) described in **Table 22-20** in **Section 22.7** the restoration of habitats will be undertaken across the installed cables. The restoration of the arable land would be rapid and straightforward, whilst the grasslands and ditches that make-up the majority of the coastal and floodplain grazing marsh would be reinstated following typical grassland establishment practices (noting that the majority is agriculturally improved grassland). The timing of the works within the Arun and Adur Valley floodplains will also be limited to periods outside of October through February (see C-117 in **Table 22-20**) reducing the overlap of occurrence between wildfowl and areas of bare ground.

22.9.9 It is also notable that the extent of the available functionally linked habitat is vast, with the proposed DCO Order Limits occupying only a small area of this. As birds will typically move between areas to forage as conditions change through the season, the temporary change in status of a narrow corridor of habitat is unlikely to alter food intake rates or increase foraging flight distance. This means that the energy intake and expenditure of individual birds would not alter detectably and therefore the effect of land take / land cover change would not alter fitness.

22.9.10 The conclusions drawn for the Proposed Development are that the magnitude of change is predicted to be **Negligible** (see **Table 22-21**). This is because the temporary land take will be outside the designation and is small in comparison to the functionally linked land within foraging distance of the Arun Valley Ramsar site. There is also very limited use of the functionally linked land that would be temporarily lost to the Proposed Development. Furthermore, the likely timing of the works and the habitat restoration will limit or eliminate interaction between the waterfowl of the Ramsar site and the Proposed Development. Although the effect is considered to be negative in the short-term, it will not result in a detectable change to the fitness of the waterfowl population of the Arun Valley Ramsar site. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

Fragmentation of habitats (reduction of connectivity)

22.9.11 The presence of temporary construction and decommissioning works could result in waterfowl avoiding certain fields (feeding resources) as they may not cross an active work site. This could reduce the effective resource base for the waterfowl of the Arun Valley Ramsar site.

22.9.12 The construction of the proposed onshore temporary construction corridor will progress across relatively short distances (~150m of ducting is expected to be laid per day, with use of haul roads extending beyond this area) at any given point limiting the potential for fragmentation to occur (avoidance of the temporary construction working area will be highly localised). The mobility of the species in question (wigeon, shoveler, teal and pintail) is such that a deviation of a few hundred metres will not result in a level of energy expenditure likely to alter the fitness of individual birds. It should also be noted that to reach the floodplain of the Arun Valley within the vicinity of the Proposed Development these birds will already have passed across or close to Arundel Town and crossed the A27, suggesting that they are already acclimatised to some degree of human activity. Further, the timing of the temporary construction works will also be limited to the period outside of the October to February window (see C-117 in **Table 22-20**) reducing or eliminating the need for designated features to cross active working areas during the winter period (for example, potentially during September or March only when numbers in land are small) when moving between the Arun Valley Ramsar site and functionally linked habitat.

22.9.13 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the extent of the potential barrier to movement being imposed, its temporary nature, its timing to avoid the main winter months and the localised progression of the works. Although the effect is considered to be negative in the short-term, it will not result in a detectable change to the fitness of the waterfowl population of the Arun Valley Ramsar site. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.14 The installation of cable ducting and associated activities during the construction phase (and any activity during the decommissioning phases) will result in the production of noise and vibration. Waterfowl within 300m (Cutts, Phelps and Burdon, 2009) could be susceptible to being displaced or have their energy intake curtailed. This could result in the over-winter survival or subsequent productivity of individual birds being compromised, with consequences for the health of the Arun Valley Ramsar site population. Based on the survey data gathered (see **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.3)), it is wigeon and teal that would be most susceptible to disturbance based on their distribution and regular use of waterbodies north-west of Lyminster and flooded fields near Henfield. The waterbodies at Lyminster are however, screened from the works by the presence of scrub which would lessen or remove some visual disturbance cues (for example, presence of people) and are outside of the temporary construction working area (290m north). The coastal and floodplain grazing marsh within the proposed DCO Order Limits near Henfield could however, be directly disturbed. However, use of these fields have been

observed in times of flood and therefore these periods are unlikely to coincide (it is not possible to install cable ducting when fields are flooded). Regardless of proximity, the greatest influence will be the timing of the temporary construction works that will be programmed to avoid the period between October and February inclusive (see C-117 and C-217 in **Table 22-20**). By reducing or eliminating the temporal overlap of temporary construction works and the timing of presence of wigeon, teal and pintail the potential for disturbance to occur is limited.

The magnitude of change is assessed to be **Negligible** (see **Table 22-21**) as the temporary construction works are localised (therefore so is the disturbance source), will mainly take place at the times of year when the birds are not present (spring / summer), and the extent of available foraging resources is considerable in comparison to the area within the onshore part of the proposed DCO Order limits. Individual birds will easily be able to avoid sources of disturbance and therefore, there is no threat to the fitness of individual birds. Although the effect is considered to be negative in the short-term, it will not result in a detectable change to the fitness of the waterfowl population of the Arun Valley Ramsar site. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

Increased light levels (resulting in disturbance or displacement)

22.9.15 Lighting may be required during the construction phase to ensure security (restricted to temporary construction compounds, trenchless crossing compounds and access points) and to provide a safe working area for temporary construction activities that may take place in hours of darkness. The working area may be lit between 07:00 and 19:00 during the autumn, winter and early spring periods (dependent on sunrise and sunset times) and outside of these times at sites where temporary construction activities are occurring that cannot be ceased over-night (for example, trenchless crossing activities and major concrete pours (only expected at the landfall and onshore substation location)). This light could dissuade birds from feeding in locations where illumination is greater than current baseline conditions.

22.9.16 The magnitude of change is assessed to be **Negligible** (see **Table 22-21**) as the temporary construction works are localised (therefore so is the disturbance source) and will mainly take place outside the period when the designated features (wildfowl) are present (outside of the October through February period – see C-117 and C-217 in **Table 22-20**). Although the effect is considered to be negative in the short-term, it will not result in a detectable change to the fitness of the waterfowl population of the Arun Valley Ramsar site. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

The Arun Valley SPA

Detailed baseline

22.9.17 The Arun Valley SPA is designated for its non-breeding population of Bewick's swan and its non-breeding waterfowl assemblage including teal, wigeon and shoveler. The SPA shares a boundary with the Arun Valley Ramsar site described

above (**paragraphs 22.9.1 to 22.9.6**) and is 4.8km from the onshore part of the proposed DCO Order Limits.

22.9.18 The survey programme has not recorded the presence of Bewick's swan within 500m of the proposed DCO Order Limits. However, Bewick's swan have been recorded regularly by SOS at Burpham Water Meadows, a usual wintering location. All records provided by SOS are at distances greater than 2km from the onshore part of the proposed DCO Order Limits and separated from it by a mixture of habitats including woodland belts, as well as a hilltop escarpment. The occurrence of teal and wigeon is described in **paragraphs 22.9.1 to 22.9.6**. There was a single record of 15 shoveler (January 2021), 520 meters south-east of the proposed DCO Order Limits, in a flooded field near Henfield.

Predicted effects and their significance

22.9.19 All predicted effects and their significance are common with those described for the Arun Valley Ramsar site:

- Land take / land cover change – **paragraphs 22.9.7** to **22.9.10**;
- Fragmentation – **paragraphs 22.9.11** to **22.9.13**;
- Increased noise and vibration – **paragraph 22.9.14**; and
- Increased light levels – **paragraphs 22.9.15** to **22.9.16**.

22.9.20 The effects on the Arun Valley SPA for all environmental changes outlined in the paragraphs listed above are assessed as **Not Significant** on an ecological feature of International importance.

The Mens SAC

Detailed baseline

22.9.21 The Mens SAC is a large extent of Atlantic acidophilous beech forest that is almost 205ha in size. Its structure has developed due to limited silvicultural intervention over the 20th century and natural events, to represent near-natural high forest.

22.9.22 The woodland habitats that characterise The Mens SAC are generally (97.33 percent of the extent) in favourable condition as measured by Natural England between 2008 and 2021 (noting different units were surveyed in different years).

22.9.23 A barbastelle bat maternity colony is present using trees (usually dead stumps) within the SAC. This colony is known to forage up to 12km away from the SAC; the closest point of the onshore part of the proposed DCO Order Limits being approximately 11.2km away. The habitats within the proposed DCO Order Limits that are within 12km of The Mens SAC are largely sub-optimal for commuting barbastelle bat being made up of arable land and improved pasture.

Predicted effects and their significance

Land take / land use change (habitat loss)

22.9.24 The installation of the onshore cable corridor and the temporary works required to deliver temporary construction compounds and temporary construction access routes will result in the loss or change of habitats that could be used by barbastelle from The Mens SAC colony for commuting or foraging. However, the vast majority of the area that will be temporarily lost to development is more than 12km from the SAC boundary. All permanent losses associated with the onshore substation and landfall are in excess of 12km from The Mens SAC.

22.9.25 The extent of the overlap with the onshore part of the proposed DCO Order Limits is approximately 6.3 ha in the Sullington Hill area, which is a small proportion (0.01 percent) of the area within a 12km foraging range (45,239 ha[41] in 12km foraging range). This 6.3ha comprises improved pasture (which dominates) and a small section of an arable field. Neither of these represent the habitats preferred by barbastelle, such as riparian corridors and broad-leaved woodland (Zeale, Davidson-Watts and Jones, 2012).

22.9.26 The magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the extent of the loss being minor in comparison to the extent of habitat available, the lack of habitat usually used by barbastelle bats and the separation between the onshore elements of the Proposed Development and The Mens SAC. Although the effect is still considered to be negative in the short-term, it will not result in a detectable change to the fitness of individual barbastelle or the barbastelle bat population of The Mens SAC. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

Fragmentation of habitats (reduction of connectivity)

22.9.27 Fragmentation of habitats for barbastelle bats of The Mens SAC colony could be caused by the loss of commuting routes across the onshore temporary construction corridor (and potentially decommissioning area) to more distant habitats. However, the area of overlap is within habitats that would not typically be used by barbastelle for commuting purposes.

22.9.28 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the extent of the loss being relatively minor in comparison to the extent of habitat available, the lack of habitat usually used by barbastelle bats and the separation between the onshore elements of the Proposed Development and The Mens SAC. Therefore, although the effect is still considered to be negative in the short-term, it will not result in a detectable change to the fitness of the barbastelle bat population of The Mens SAC. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

[41] This is an underestimate as it is based on a single point location, as opposed to 12km from the SAC boundary.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.29 The potential for barbastelle bats from The Mens SAC to be disturbed or displaced by noise and vibration can be discounted. The majority of the temporary construction activity to be undertaken within the area that is within 12km of The Mens SAC will occur during daylight hours. As the roosting features for barbastelle bats within The Mens SAC are well in excess of 11km from the onshore part of the proposed DCO Order Limits, disturbance at roost is not possible. Barbastelle commuting or foraging in the area could encounter disturbance from the trenchless crossing (that may operate over-night) at Sullington Hill. However, this disturbance will be highly localised (typically within a compound measuring 30 x 30m) and located within improved pasture. Given that barbastelle will cross disturbed areas (such as the A27) and make nightly long distance movements it is likely that individual bats could make minor deviations in flight routes to avoid the disturbance source without resulting in detectable increases in energy expenditure.

22.9.30 The conclusions drawn are that the scale of change is assessed to be **Negligible** (see **Table 22-21**) due to the separation between the onshore elements of the Proposed Development and bat roosting sites in The Mens SAC, and the localised disturbance sources during periods of darkness. Therefore, although the effect is still considered to be negative in the short-term, it will not result in a detectable change to the fitness of the barbastelle bat population of The Mens SAC. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

Increased light levels (resulting in disturbance or displacement)

22.9.31 The areas of the onshore part of the proposed DCO Order Limits most likely usable by barbastelle bats (within 12km) from The Mens SAC are all locations where the infrastructure will be temporary and will therefore not be lit during the operation and maintenance phase. However, temporary and mobile lighting could be used to during 24 hour working associated with the trenchless crossing of Sullington Hill.

22.9.32 All lighting will be temporary and will be designed sensitively to minimise light spill (see C-105) following guidance from the Institution of Lighting Professionals and the Bat Conservation Trust (2018). As the areas lit will be highly localised, within improved pasture and be in operation for a short period of time only the ability for individual bats to make minor deviations in flight routes to avoid the light disturbance without resulting in detectable increases in energy expenditure is high.

22.9.33 The conclusions drawn are that the scale of change is assessed to be **Negligible** (see **Table 22-21**) due to the small extent of habitat within 12km of The Mens SAC that may be lit at any given time, and the sensitive lighting design proposed. Therefore, although the effect is still considered to be negative in the short-term, it will not result in a detectable change to the fitness of the barbastelle bat population of The Mens SAC. The effect is therefore assessed as **Not Significant** on an ecological feature of International importance.

Amberley Wild Brooks SSSI / Pulborough Brooks SSSI

Detailed baseline

22.9.34 The Amberley Wild Brooks SSSI (4.8km from the onshore part of the proposed DCO Order Limits) and Pulborough Brooks SSSI (5km from the onshore part of the proposed DCO Order Limits) are overlapped by the Arun Valley Ramsar site, Arun Valley SAC and Arun Valley SPA. These SSSI sites support the features identified in these internationally important designations, including rich ditch flora and invertebrate fauna and large populations of non-breeding waders and wildfowl.

22.9.35 The Amberley Wild Brooks SSSI specifically references over wintering birds including nationally significant numbers of teal, shoveler and Bewick's swan. The site supports 57 species of breeding bird and is one of the most important wet meadow sites in the country for breeding redshank (*Tringa totanus*). Bewick's swan, teal and shoveler occurrence is described in **paragraphs 22.9.4 – 22.9.6 and 22.9.18**; redshank were noted in the Arun Valley on two occasions, both as single birds (see **Appendix 22.14: Onshore winter bird report 2020-2022, Volume 4** of the ES (Document Reference: 6.4.22.14)).

22.9.36 Pulborough Brooks SSSI has the species listed on its citation that are associated with the Arun Valley Ramsar site and SPA (Bewick's swan, teal, shoveler, wigeon, pintail and ruff). Information on the occurrence of these species is provided in **paragraphs 22.9.1, 22.9.6** and **22.9.18.**

Predicted effects and their significance

22.9.37 All predicted effects and their significance are common with those described for the Arun Valley Ramsar site:

- Land take / land cover change – **paragraphs 22.9.7** to **22.9.10;**
- Fragmentation – **paragraphs 22.9.11**to **22.9.13;**
- Increased noise and vibration – **paragraph 22.9.14**; and
- Increased light levels – **paragraphs 22.9.15** to **22.9.16.**

22.9.38 The effects on the Arun Wild Brooks SSSI and Pulborough Brooks SSSI for all environmental changes outlined in the paragraphs listed above are assessed as **Not Significant** on an ecological feature of National importance. Although redshank is not listed on the designations of the European sites the occurrence of single birds on two occasions only result in the same conclusions being drawn.

Climping Beach SSSI

Detailed baseline

22.9.39 Climping Beach SSSI supports a range of coastal habitats and wintering birds. The citation references vegetated shingle beach, sand dunes, soft mud and sand intertidal sediments and aggregations of non-breeding birds particularly sanderling.

22.9.40 During bird surveys undertaken over the winters of 2020/21 and 2021/22 sanderling were recorded regularly with numbers peaking at 80 individuals in November 2020. The sanderling distribution was to some degree influenced by recreational usage of the beach by members of the public. Grey plover and oystercatcher, the two other species listed on the citation, were also both regularly recorded with a peak of 71 grey plover in November 2020 and a peak of 16 Oystercatcher in October 2020 (see **Appendix 22.14: Onshore winter bird report 2020-2022, Volume 4** of the ES (Document Reference: 6.22.14)).

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.41 The offshore transmission cables come ashore at Climping using a horizontal directional drill. This will see cable ducts installed trenchlessly from below the low water mark to an HDD compound located in an arable field lying landward of the sea wall and at least 200m away from the SSSI boundary.

22.9.42 No ground breaking activity or vehicular access is required within Climping Beach SSSI. However, pedestrian access will be required to monitor the path of the drills using hand-held monitoring equipment (see commitment C-112).

22.9.43 However, the use of HDD includes a risk that drilling fluids (a mix of the inert clay bentonite and water) will escape to the surface (known as frac out). The risk will be managed in two ways, the first being through design (alignment of drills, depth of drill profile (to be a minimum of 5m beneath the surface – see commitment C-278), locations of the launch and retrieval areas etc.), and the second through monitoring and management measures implemented during drilling by the engineers monitoring pressure within the bore and by having a person continuously walking the alignment to see any surface signs (see **Outline CoCP** (Document Reference: 7.2) and **Outline Construction Method Statement** (Document Reference: 7.23).

22.9.44 The risk of frac out increases close to the launch and exit locations (typically considered to be within 30m of the launch and retrieval locations), simply because the amount of substrate above the drill head is limited. At Climping Beach the drilling compounds both on land and at sea are at least 60m from the SSSI boundary (the landward compound being over 200m away). The location for drilling offshore will depend on final design, but it will be at least 60m from the SSSI and maybe set back further.

22.9.45 Typical information for frac outs suggests that the size of area affected is 3m x 3m, with approximately 1.8m^3 of drilling fluid lost (~95 percent water and five percent bentonite) (Royal Haskoning DHV, 2019). Within the marine environment this material would become suspended in the water column and diluted rapidly. Onshore, if a frac out occurs a small sump would be dug and bunded by sandbags or other suitable materials with the fluid then pumped out to a suitable location (for example, a mobile settlement tank). This would result in a localised degradation of habitat within the SSSI.

22.9.46 The risk of frac out occurring in Climping Beach SSSI is very low and is not expected (see **Outline Construction Method Statement** (Document Reference:

7.23). Therefore, the conclusions drawn are that the scale of change is assessed to be **Negligible** (see **Table 22-21**) due to the low risk of an unplanned event occurring. The effect is therefore assessed as **Not Significant** on an ecological feature of national importance.

Littlehampton Golf Course and Atherington Beach LWS

Detailed baseline

22.9.47 Littlehampton Golf Course and Atherington Beach LWS is contiguous with Climping Beach SSSI. It is designated for its botanical importance including dry dune grassland and vegetated shingle. Where the proposed DCO Order Limits overlap with the LWS, the majority of habitat present is made up of shingle beach some of which is vegetated.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.48 The predicted effect and its significance is common with that described for Climping Beach SSSI (see **paragraphs 22.9.7** to **22.9.10**).

Sullington Hill LWS

Detailed baseline

22.9.49 Sullington Hill LWS makes up part of the South Downs escarpment. It supports moderately species-rich chalk grassland on north and east-facing slopes, although it has significant areas of scrub present and some semi-natural woodland. The level of grazing is currently not great enough to prevent further scrub invasion.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.50 The predicted effect and its significance is largely common with that described for Climping Beach SSSI (see **paragraphs 22.9.7** to **22.9.10**) other than noting that for either of the potential trenchless crossing alignments the indicative layout shows the launch of the drill being a minimum of 35m (noting that there is opportunity within the limits of deviations for HDD compound locations to increase this distance to at least 50m if necessary based on geotechnical investigation) from the boundary of the LWS and the relevant commitment controlling activity within the LWS boundary is C-114. However, this does not alter the outcome as frac out risk is still considered to be low.

22.9.51 Dust deposition onto calcareous grassland is also controlled through commitment C-24.

Ancient Woodland

22.9.52 Ancient Woodland is widespread within the general area of the proposed DCO Order Limits with large extents of Plantation on Ancient Woodland Sites (PAWS) and, usually, smaller stands of Ancient Semi-Natural Woodland (ASNW). The majority of ASNW and PAWS lies outside of the proposed DCO Order Limits, although there are exceptions to this as described in **Table 22-22**.

Table 22-22 Ancient Woodland within the proposed DCO Order Limits

Woodland ID	Name	Description
W6, W7, W10, W11, W12, W13, W14, W15, W15, W16, W17, W19, W20, W21, W22, W23, W24, W25, W28, W29, W30, W31[42]	Michelgrove Park (within South Downs National Park)	PAWS – mixed plantation dominated by beech plantation with some Douglas fir.
W1, W2, W3, W9, W32, W33, W34, W35, W36	Upper Wepham Wood / Tenantry Copse (within South Downs National Park)	PAWS – mixed plantation dominated by beech
W591 / W596	Calcot Wood	PAWS – mixed plantation

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.53 The installation of the onshore cable, the construction of the onshore substation and the temporary works required to deliver temporary construction compounds and access routes during the construction phase will not result in the loss or change of any Ancient Woodland, despite this ecological feature being present within and adjacent to the proposed DCO Order Limits.

22.9.54 The design of the cable installation ensures that Ancient Woodland at Michelgrove Park and Calcot Wood will be crossed using a trenchless technique such as HDD. Embedded environmental measure C-216 (see **Table 22-20**) ensures that there will be no construction vehicular access or ground works within these Ancient Woodlands, with pedestrian access only required to use monitoring equipment to trace the path of the drill head. A ‘no dig’ specialist has appraised the trenchless crossing locations and assessed them as suitable, with risks of a fluid breakout being very low and manageable as described in the **Outline CoCP** (Document Reference: 7.2). Further, C-216 ensures that the trenchless technique used will avoid the root zone.

[42] Note a single woodland can be made up of multiple blocks

22.9.55 In addition, all ground works (other than at three temporary construction access points) will be restricted to areas in excess of 25m from the edge of Ancient Woodland (C-216). Thereby avoiding potential damage to root systems, changes in local hydrology and giving ample space to contain any accidental pollutant escapes. This 25m stand-off is in excess of the 15m minimum recommended by Natural England and the Forestry Commission (2022). In three locations works to provide access from the Highway will need to take place within this buffer zone. At Access A-42 (see Sheet 23, **Tree Preservation Order and Hedgerow Plan** (Document Reference: 2.6) **[REP5-003]**) the access route would be created just over 15m from the edge of a block of ancient woodland through a pasture field. This is to ensure that a mature Category B ash tree can be retained, alongside the hedgerow that runs adjacent to the existing track (which would require widening if to be used). Access A-56 is located where Greentree Lane meets the A281. Parkminster Wood has its southern boundary marked by Greentree Lane and its eastern boundary by the A281. To gain access the existing junction at Greentree Lane needs to be altered. To achieve this all works would take place to the south of Greentree Lane outside of the ancient woodland, but within 15m of it. Despite the close distance the working area would be separated from it by an existing tarmac road. Access A-57 is taken from the A281. On the opposite side of the road lies Parkminster Wood approximately 15m from the proposed access works (although separated from them by the A281).

22.9.56 In all instances indirect effects on ancient woodland would be managed through commitments within the **Outline Code of Construction Practice** (Document Reference: 7.2) **[REP5-064]** including commitment C-24 (for dust management), C-73 (for management of run-off), C-105 (for lighting management). Given that Access A-43 continues to maintain the minimum advised stand-off of 15m and the works in question are the creation of a temporary track only there is adequate space to ensure indirect effects can be controlled. At Accesses A-56 and A-57 the presence of tarmacked surfaces between proposed works and ancient woodland provides confidence that indirect effects can be managed appropriately.

22.9.57 There are no works proposed within Upper Wepham Wood / Tenantry Copse through which access A-25 runs. Rather an existing surfaced track will be used for access during the operational phase of the development.

22.9.58 The conclusions drawn are that the scale of change is assessed to be **Negligible** (see **Table 22-21**) as no loss is predicted and change is avoided through the implementation of a 25m stand-off. No change to Ancient Woodland is predicted and therefore, the potential effect is **Not Significant** on an ecological feature of National importance.

22.9.59 Although there is a residual risk of failure of trenchless crossing techniques, with subsequent loss of drilling fluid, the risk of this occurring within Ancient Woodland is very low based on the process described in the **Outline CoCP** (Document Reference: 7.2).

Fragmentation of habitats (reduction of connectivity)

22.9.60 Ancient Woodland could become fragmented through habitat loss or degradation of PAWS or ASNW and through the severance of habitats linking to the wider woodland resource such as hedgerows, scrub and other woodlands. As Ancient

Woodland will not be lost to development or degraded through the development (see **paragraphs 22.9.53 to 22.9.58**) fragmentation would only occur through the temporary or permanent loss of connecting habitats. This fragmentation could result in changes in the woodland as the distribution of flora or fauna integral to its function is curtailed or additional edge effects are realised (through loss of adjacent habitats).

22.9.61 Losses of hedgerows, scrub and woodland have been minimised through avoidance, both outside and within the proposed DCO Order Limits. The vegetation retention and removal plans (C-220, see **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6)) and approach to hedgerow and tree line crossings (C-115) limit the temporary losses and C-103 ensures that the majority of reinstatement occurs within two years of loss occurring. No permanent losses of tree lines or hedgerows within the onshore substation footprint will affect the connectivity of Ancient Woodland in the immediate surrounds.

22.9.62 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) based on the implementation of the embedded environmental measures. Therefore, although the effect is still considered to be negative in the short-term, it will not alter the status of the Ancient Woodland stands present or their ability to persist and function as present. The potential effect is **Not Significant** on an ecological feature of National importance.

Veteran Trees

Detailed baseline

22.9.63 There are seven veteran trees that lie within the proposed DCO Order Limits or are located within 30m of it. These trees are described in **Table 22-23** (listed from south to north). Horsham District Council identified two further trees within the proposed DCO Order Limits as veterans. The arboriculture survey undertaken has identified these as being mature trees with some veteran characteristics, as opposed to applying veteran status (as per methodology discussed with Horsham District Council and West Sussex County Council in July 2023 – see **Section 22.3**).

Table 22-23 Veteran trees within or close to the proposed DCO Order Limits

Tree ID	Type	Description
T1199*	Common ash	Stands in woodland (W6) at Michelgrove Park, within 20m of the proposed DCO Order Limits.
T1208*	Pedunculate oak	Stands in woodland (W17) at Michelgrove Park, within the proposed DCO Order Limits. Area to be crossed trenchlessly.

Tree ID	Type	Description
T1423*	Whitebeam	Stands in a small woodland block approximately 50m from the proposed DCO Order Limits below Blackpatch Hill.
T795*	Horse chestnut	Stands in small woodland block west of Washington within the proposed DCO Order Limits, to the south of the indicative cable corridor.
T367	Pedunculate oak	Tree stands within a field boundary within the proposed DCO Order Limits.
T319	Pedunculate oak	Tree stands within a field boundary 20m from proposed DCO Order Limits.
T308	Pedunculate oak	Tree stands within a field boundary 45m from onshore cable corridor.

*denotes veteran trees within the proposed DCO Order Limits when within the South Downs National Park

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.64 All trees listed within **Table 22-23** will be retained through the implementation of embedded environmental measure C-174 which ensures either a buffer zone of 15 times the diameter of the tree or 5m from the edge of the tree's canopy will be maintained (as per Natural England and Forestry Commission guidelines) or a trenchless crossing with a depth of at least 6m below ground will be used. Further, embedded environmental measure C-220 includes the identified veteran trees in the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6).

22.9.65 The arboriculture survey (see **Appendix 22.16: Arboricultural Impact Assessment, Volume 4** of the ES (Document Reference: 6.4.22.16)) recorded all individual and groups of trees within the Study Area. Approximately 10% of these were not surveyed in detail due to land access restrictions, therefore there is the potential for additional veteran trees to be identified. To ensure that any additional veteran trees are identified, protected from construction and retained the **Outline CoCP** (Document Reference: 7.2) ensures that additional arboriculture survey is undertaken in areas which currently lack coverage before the removal of any trees. Once identified these will be subject to the same embedded environmental measures (C-174 and C-220) as those identified in **Table 22-23**.

22.9.66 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) based on the implementation of the embedded environmental measures. The effect is considered to be neutral as installation and operation of the transmission cables will not alter the status of any veteran trees present in or adjacent to the working areas. The potential effect is **Not Significant** on an ecological feature of National importance.

Woodland

Detailed baseline

22.9.67 Woodland occupies 29.38ha of the area inside of the proposed DCO Order Limits. A total of 118 blocks[43] of woodland were mapped within or close to the proposed DCO Order Limits. There are several types of woodland represented:

- Broadleaved woodland – semi-natural;
- Broadleaved woodland – plantation;
- Mixed woodland – semi-natural;
- Mixed woodland – plantation; and
- Coniferous woodland – plantation.

22.9.68 Semi-natural broadleaved woodland habitat (40.73ha within the proposed DCO Order Limits) is typically oak dominated and supports an understorey of hazel, field maple, hawthorn and bramble. The patches of semi-natural broadleaved woodland range in size but are often aggregated around the escarpments of the South Downs National Park or the more historic field patterns near the north-eastern end of the onshore temporary construction corridor. This habitat type is often connected within the landscape by hedgerow systems and other types of woodland. Broad-leaved plantations (51.66ha within the proposed DCO Order Limits) in the area include those that are managed commercially and include beech stands and hazel coppice with oak standards and those providing habitat / landscape functions supporting similar species to the semi-natural broadleaved woodland. The semi-natural mixed woodland blocks (0.43ha within the proposed DCO Order Limits) typically include ash, oak and pine with a limited understory and ground flora; with mixed plantations (0.32ha). There are limited areas of coniferous plantations present (1.31ha within the proposed DCO Order Limits), these growing commercial crops. Many woodland blocks are linear and bound roads or mark landholding boundaries, whilst others are small copses or make up parts of larger woodlands.

22.9.69 **Appendix 22.3: Extended Phase 1 habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.3) describes all of the woodland blocks present within the proposed DCO Order Limits, whilst **Table 22-24** lists those that will be affected by the works only (also see the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6). The majority of woodland blocks present will be retained through design (for instance, they lie within trenchless crossing areas, are adjacent to existing access tracks and so on.).

[43] It should be noted that a single woodland can be comprised of multiple blocks due to how field data is recorded.

Table 22-24 Broadleaved woodland within the proposed DCO Order Limits

Woodland ID	Type	Proposed loss	Area lost (ha)
W38 / W39 / W40	Semi-natural broadleaved woodland Blocks in same woodland to south of A27 and east of vinery	Cleared for haul road (cable crossing trenchlessly)	0.01ha (haul road clearance of 6m across approximately 17m of woodland)
W50	Semi-natural broadleaved woodland Blocks in same woodland to south of A-27, adjacent to Decoy Lane	Cleared for haul road (cable crossing trenchlessly)	0.01ha (haul road clearance of 6m across approximately woodland with a width of 17m)
W46 / W49	Semi-natural broadleaved woodland Blocks in same woodland to south of A27, adjacent to Decoy Lane	Cleared for haul road (cable crossing trenchlessly)	0.01ha (haul road clearance of 6m across approximately 17m of woodland)[44]
W4 / W5 (within South Downs National Park)	Semi-natural broadleaved woodland Woodland bounding either side of bridleway linking Kitpease Copse and Oliver's Copse (both areas of PAWS)	23m width cleared for cable corridor and haul road	0.0.05ha (based on worst case scenario within indicative cable corridor)
W503	Semi-natural broadleaved woodland Woodland bounds Greentree Lane and is on opposite side of lane to Parkminster Wood which is listed on the Ancient Woodland Inventory	10m width cleared along lane for access of cable drums	0.02ha (based on worst-case scenario of largest potential low loader – no works on north side of Greentree Lane to avoid impacts of Parkminster Wood)

[44] It should be noted that the crossing of W46 / W49 is unlikely to be necessary as an existing field entrance is available and will be used in preference to tree loss. However, due to unknowns such as the type of HDD equipment and delivery vehicle a worst case scenario has been maintained.

Woodland ID	Type	Proposed loss	Area lost (ha)
W1364 (within South Downs National Park)	Semi-natural broadleaved woodland Woodland stand located south of Storrington Road and west of the A24 near Washington	30m width cleared for cable corridor and haul road	0.07 ha (based on worst case scenario within indicative cable corridor)
W5792	Semi-natural broadleaved woodland Woodland bounding either side of bridleway (Daisy Lane) linking Upper Buncton Farm to the Old School House (south of Wiston)	30m width cleared for cable corridor and haul road	0.07ha (based on worst case scenario within indicative cable corridor)
W736	Semi-natural broadleaved woodland Small stand of woodland between Cowfold and Bolney, west of Wineham Lane	20m width cleared for cable corridor and haul road	0.03ha (based on worst case scenario within indicative cable corridor)
W479	Semi-natural broadleaved woodland Small stand of woodland located between Partridge Green and Shermanbury	30m width cleared for cable corridor and haul road	0.03ha (based on worst case scenario within indicative cable corridor)
W387	Semi-natural broadleaved woodland Small woodland strip north of Bolney Substation	20m width cleared for cable corridor and haul road	0.02ha (based on worst case scenario within indicative cable corridor)
W3712	Semi-natural broadleaved woodland Adjacent to eastern boundary of Bolney Substation	Small area to be cleared for connection works	0.12ha
W1002	Broadleaved woodland – plantation	4m width lost to enable Public Right of Way diversion	0.006ha (clearance of 4m across approximately

Woodland ID	Type	Proposed loss	Area lost (ha)
	Woodland strip located along an access track/PRoW east of B2135 (Bines Road) north of Bines Green and west of the River Adur.		14m of woodland)
W505	Mixed woodland – semi-natural Strip of woodland located along a field margin to the northeast of Partridge Green and Shermanbury	30m width cleared for cable corridor and haul road	0.04ha

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.70 The installation of the onshore cable during the construction phase will result in the loss or change of woodland over an area of ~0.49ha. Some of the woodland to be temporarily lost (W46) qualifies as a HPI (>0.005ha). Approximately 90 percent of the woodland to be temporarily lost is classified as broadleaved semi-natural woodland.

22.9.71 Areas of semi-natural broadleaved woodland immediately adjacent to the temporary construction activities may also be subject to negative habitat change from edge effects including root damage (resulting in tree loss) and wind throw. However, it is noted that there will not be excavation on the outer edge of the cleared area.

22.9.72 As part of the embedded environmental measures described in **Section 22.7** the working width will be narrowed as the onshore cable corridor passes through woodland (C-204 see **Table 22-20**). This will shrink the onshore temporary construction corridor from a 40m width to 30m (or less) thereby reducing the amount of habitat loss. Further, the design of the crossings of woodland will be focused on protecting the root systems of the adjacent trees. This will see soil storage (commitment C-12) being achieved either side of the woodland (noting they are all thin strips of woodland being crossed using open cut methods) providing adequate room to ensure root systems can be maintained.

22.9.73 Woodland cannot be reinstated on top of the cable ducts due to the potential for the root systems of large trees to damage the cable ducts. This makes woodland the only habitat type that will not be reinstated above the cable ducts. To ensure habitat connectivity and ecological function is maintained scrub will be established within the 20m wayleave through which the cables will run. This scrub will be managed on a rotational basis to avoid later successional stages being reached. This management will be akin to ride management and will provide similar types of benefit. The design of the planting will be delivered through a detailed LEMP

(commitment C-199) that allows for the establishment of coppice (such as hazel coppice) where appropriate (see **Outline LEMP** (Document Reference: 7.10)). Currently it is assumed all woodland temporarily lost will be replaced with scrub, however where loss is for access purposes woodland restoration will be considered based on proximity and depth of cables.

22.9.74 Compensation for the loss of semi-natural broadleaved woodland will be provided through tree planting around the location of the onshore substation. This would see the planting of 2.7 ha of woodland (1.9ha of wet woodland and 0.8ha of broadleaved / mixed woodland) that would be managed in the long term, with the aim of creating a diverse native woodland with defined structure (see **Outline LEMP** (Document Reference: 7.10)).

22.9.75 In addition, the commitment to BNG will result in enhancements or creation of greater areas of woodland in the local area some of which will account for any remaining residual effects and the remainder providing net gains. As described in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15) the habitat units will be sourced based on the following criteria (in order of preference):

- Within the proposed DCO Order Limits or within 2km of it on land held by affected land owners;
- Within the proposed DCO Order Limits or within 2km of it;
- Within the Arun Lower or Adur Upper Operational Catchments;
- Within the National Character Areas (NCAs) of South Coast Plain, South Downs or Low Weald when in West Sussex; and
- Within other NCAs in West Sussex.

22.9.76 Technical engagement (see **Section 22.3**) suggests that delivery of new or enhanced woodland within the proposed DCO Order Limits or within 2km of it should be easily achievable.

22.9.77 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the loss being relatively minor in comparison to the extent of woodland present within the local area. Although more woodland will be created as part of the Proposed Development than is lost, the time taken for this newly created habitat to reach maturity means that the effect is still considered to be long-term and negative. The potential effect is assessed as **Not Significant** on ecological features ranging between National (HPI) and County importance (broadleaved plantation).

Fragmentation of habitats (reduction of connectivity)

22.9.78 Woodland could become fragmented through habitat loss or degradation and through the severance of habitats linking to the wider woodland resource such as hedgerows and scrub. This fragmentation could result in changes in the woodland as the distribution of flora or fauna integral to its function is curtailed or additional edge effects are realised (through loss of adjacent habitats).

22.9.79 Within woodland fragmentation is minimised through a reduction in the working width to 30m (commitment C-204), whilst losses in connecting habitats such as

hedgerows and scrub have been limited through avoidance, both outside and within the proposed DCO Order Limits. The **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) (C-220) and notching of hedgerows and tree lines (C-115) limit the temporary losses and C-103 ensures that the majority of reinstatement occurs within two years of loss occurring (with reinstatement within woodland being scrub that will engender linkage) (see **Table 22-20**). The permanent losses of tree lines or hedgerows within the onshore substation footprint will not affect the connectivity of woodlands in the immediate surrounds due to the layout of the network in the area.

22.9.80 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) based on the implementation of the embedded environmental measures. Therefore, although the effect is still considered to be negative in the short-term, it will not alter the status of the woodland stands present or their ability to persist and function as present. The potential effect is **Not Significant** on an ecological features ranging between National (HPI) and Local importance (coniferous plantation).

22.9.81 The provision of BNG will include the delivery of newly created or enhanced woodland habitats in the local area (see **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15)).

Coastal and floodplain grazing marsh

Detailed baseline

22.9.82 Coastal and floodplain grazing marsh is a feature of both the Arun and Adur Valleys. It comprises of a mixture of pasture fields and wet ditches that are managed through cattle and sheep grazing. The grassland present varies in quality but is largely improved pasture or marshy grassland, with some areas shown as coastal and floodplain grazing marsh on the Priority Habitats Inventory having been converted to arable.

22.9.83 Of the coastal and floodplain grazing marsh (excluding any arable conversion) within the proposed DCO Order Limits 7.65 ha is improved pasture, 0.004 ha is neutral semi-improved grassland and 0.8 ha is marshy grassland (see the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6). There are also ten ditches present, five of which will be crossed by transmission cables and / or temporary construction access routes.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.84 Much of the coastal and floodplain grassland within the proposed DCO Order Limits is avoided through the use of trenchless techniques (for example at the crossing of the River Adur). However, in areas where the indicative cable corridor is proposed for open trenching there is just under 2.5ha of this habitat (noting that this does not include one field shown on the Priority Habitat Inventory that has subsequently been converted to an arable field).

22.9.85 Within the Arun Valley the coastal and floodplain grazing marsh is largely associated with the type of agriculturally improved grasslands that are generally considered to be of local importance only. However, these are associated with a network of wet ditches (including the Black Ditch) that provide opportunities for a range of flora and fauna including waterbirds associated with the Arun Valley SPA and Ramsar site (see **Sections 22.9.1 and 22.9.20**). However, these habitats are extensive and straightforward to reinstate given that they have been previously heavily managed.

22.9.86 Within the Adur Valley the grassland is less intensively managed where it intersects with the indicative cable corridor. Two areas are within an area of the indicative cable corridor that is proposed for open trenching. One of these areas is described as neutral semi-improved grassland which is east of Bines Green and measures approximately 0.23ha within the indicative cable corridor. Time series of satellite imagery show this area, adjacent to a farm and arable fields, has been used mainly for grazing or hay/silage production and may have been re-seeded previously. The other is marshy grassland that lies east of Partridge Green and measures approximately 0.66ha. This area can be seen flooded in previous years on satellite imagery and appears to have been less intensively managed over the last decade where grazing pressure seems to have been reduced.

22.9.87 The coastal and floodplain grazing marsh within the indicative cable corridor includes five wet ditches. Of these three are associated with the Black Ditch (the Black Ditch itself and two of its tributaries), whilst the other two are within the floodplain of the River Adur.

22.9.88 Damage to grasslands will be minimised by timing of the work outside of the winter period (see C-117 **Table 22-20**) that will help maintain soil structure and the sward at the edge of the working areas. The reinstatement of the majority of the habitat will take place within 2 years of construction works occurring (see C-103), however it is expected that these areas will be rapidly returned to grassland to avoid bare soils being washed away during subsequent periods of flood. The improved grassland will be reinstated using a commercial seed mix, whilst the semi-improved and marshy grassland will be allowed to become reinstated from the existing seed bank to maintain species diversity and character (see **Outline LEMP** (Document Reference: 7.10)).

22.9.89 The Black Ditch will be crossed by trenchless crossing, whilst its tributaries and the other two ditches will be open cut. The areas over the ducts will be rapidly reinstated (see Commitment C-103) although culverts will be retained for a longer period prior to reinstatement.

22.9.90 The conclusions drawn are that the magnitude of change is assessed to be **low** (see **Table 22-21**) based on the implementation of the embedded environmental measures (see **Table 22-20**), the temporary nature of the loss and the extent of this habitat in the local area. Therefore, although the effect is still considered to be negative in the short-term, it will not alter the status of the coastal and floodplain grazing marsh present or its ability to persist and function as present. The potential effect is **Not Significant** on an ecological feature of National importance is concluded.

22.9.91 Although there is a residual risk of failure of trenchless crossing techniques, with subsequent loss of drilling fluid, the risk of this occurring within coastal and

floodplain grazing marsh is very low based on the process described in the **Outline CoCP** (Document Reference:7.2).

22.9.92 The provision of BNG will include the delivery of newly created (reversing conversion of arable fields) or enhanced coastal and floodplain grazing marsh habitats in the local area.

Fragmentation of habitats (reduction of connectivity)

22.9.93 Coastal and floodplain grazing marsh could become fragmented through habitat loss or degradation and through the severance of habitats linking to the wider area (for example, wet ditches). This fragmentation could result in changes in the distribution of flora or fauna integral to its function. However, the areas within which ground works will occur are small in comparison to the wider resource and the river (including in flood) and wider ditch network will continue to provide connectivity even during the installation of the cable ducts.

22.9.94 As the areas will be temporary and reinstatement will be relatively rapid across the majority of the area (commitment C-103) the conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) based on the implementation of the embedded environmental measures (commitment C-5). Therefore, although the effect is still considered to be negative in the short-term, it will not alter the status of the Coastal and floodplain grazing marsh present or its ability to persist and function as present. The potential effect is **Not Significant** on an ecological feature of National importance.

22.9.95 The provision of BNG will include the delivery of newly created (reversing conversion of arable fields) or enhanced coastal and floodplain grazing marsh habitats in the local area.

Neutral semi-improved grassland

Detailed baseline

22.9.96 Neutral semi-improved grassland in and around the proposed DCO Order Limits (outside areas of Coastal and Floodplain Grazing Marsh) mainly comprises pasture fields that have reduced levels of agricultural input; other examples of this grassland type occur along road verges, hedgerow bottoms and between fields. There is approximately 2.8ha of this habitat within the proposed DCO Order Limits, with a further 0.8ha identified by a stakeholder in an area described within **Appendix 22.3: Extended Phase 1 habitat survey, Volume 4** of the ES (Document Reference: 6.4.22.3) **[APP-181]** as poor semi-improved grassland. In the wider area (outside but within 2km of the proposed DCO Order Limits) there are many large areas shown on the Priority Habitat Inventory as good quality semi-improved grassland.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.97 Much of the neutral semi-improved grassland within the proposed DCO Order Limits is avoided through the design of the Proposed Development. However, 0.1ha (outside areas of Coastal and Floodplain Grazing Marsh) of this habitat is within the indicative working area where temporary loss may be expected. Of this grassland, the majority is in thin strips at access points, along access routes, bordering hedgerows or in grassland strips separating fields. If the additional habitat identified by the stakeholder at Crateman's Farm is added to this total, then in areas where the indicative onshore cable corridor is proposed for open cut trenching there is approximately 0.9ha of this habitat.

22.9.98 These grassland areas would be subject to reinstatement using the existing seed bank in line with Natural England's Technical Information Note TIN110 (2012) and The Lowland Grassland Management Handbook (Crofts and Jefferson (Eds),1999). This reinstatement with the existing seed bank could include the use of the seed resource that is within the topsoil that would be stripped and replaced, through the use of green hay harvested in the locality (from within the same field and within the proposed DCO Order Limits) and strewn across the reinstated soil or via turf stripping, storage and replacement. These reinstatement methods are described within Section 4.6 of the **Outline Landscape and Ecology Management Plan** (Document Reference: 7.10) **[REP5-072]**. The reinstatement of the majority of the habitat will take place within 2 years of construction works occurring (see commitment C-103).

22.9.99 The conclusions drawn are that the magnitude of change is assessed to be **low** (see **Table 22-21**) based on the implementation of the embedded environmental measures (see **Table 22-20**), the temporary nature of the loss, the ability to restore this type of habitat effectively and the extent of this habitat in the local area. Therefore, although the effect is still considered to be negative in the short-term, it will not alter the status of the neutral semi-improved grassland present or its ability to persist and function as present. The potential effect is **Not Significant** on an ecological feature of National importance.

22.9.100 The provision of BNG will include the delivery of new or enhanced neutral semi-improved grassland in the local area.

Fragmentation of habitats (reduction of connectivity)

22.9.101 Neutral semi-improved grassland could become fragmented through habitat loss or degradation and through the severance of habitats linking to the wider area (for example hedgerow bottoms). This fragmentation could result in changes in the distribution of flora or fauna integral to its function. However, the areas within which ground works will occur are small in comparison to the wider resource and the wider habitat network will continue to provide connectivity even during the installation of the cable ducts.

22.9.102 As the areas will be temporary and reinstatement will be relatively rapid across the majority of the area (commitment C-103) the conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) based on

the implementation of the embedded environmental measures. Therefore, although the effect is still considered to be negative in the short-term, it will not alter the status of the neutral semi-improved grassland present or its ability to persist and function as present. The potential effect is **Not Significant** on an ecological feature of National importance.

22.9.103 The provision of BNG will include the delivery of new or enhanced neutral semi-improved grassland in the local area.

Native hedgerows (species rich and species poor) and tree lines

Detailed baseline

22.9.104 Species-rich hedgerows are a common feature within the onshore part of the proposed DCO Order Limits and wider area. Species composition typically included hawthorn, blackthorn, field maple, hazel, ash, oak, dog-rose and elder in species-rich lengths, with other hedgerows typically comprising of a single dominant species such as hawthorn or blackthorn. Hedgerow trees are common, including high numbers of mature and semi-mature pedunculate oak. Within the proposed DCO Order Limits the length of species rich hedgerow is 3.27km.

22.9.105 Species-poor hedgerows present are dominated by native woody species but typically dominated by a single species (for example being dominated by typical hedging species such as hawthorn and blackthorn). Within the proposed DCO Order Limits the length of species poor hedgerow is 46.91km.

22.9.106 Tree lines are present in a number of location and include avenues of trees, historic hedgerows where only standard trees remain, ornamental planting and those marking boundaries (including at property boundaries and along roadsides).

22.9.107 Both species poor and species rich native hedgerows are HPI. Of the 239 hedgerows that have been identified within the proposed DCO Order Limits, 104 are within locations where losses would occur due to onshore cable installation, access creation or through the construction of the onshore substation. 33 tree lines would also be subject to works when crossed by the onshore cable corridor. **Table 22-25** lists the hedgerows and tree lines subject to temporary or permanent losses.

Table 22-25 Hedgerows and tree lines within the proposed DCO Order Limits subject to temporary or permanent losses (*denotes feature within the South Downs National Park)

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
Hedgerows				
H10	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	20

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H13	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	6
H16	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	14
H22	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	14
H27	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	15
H129*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H135*	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	6
H146a*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H157*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H158*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H161*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	6
H162*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H163*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H165*	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	6
H166*	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	14
H167*	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	12
H168*	J2.1.1: Intact hedge native species-rich	Important	Lost temporarily	6
H172*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	6
H179*	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	14
H181*	J2.2.2: Defunct hedge native species poor	Important (historic hedgerow)	Lost temporarily	6
H185*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	10
H197	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	15
H201a	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	6
H202	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H206a*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	25

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H210	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	6
H211	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H214	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	30
H219	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H220	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H228	J2.2.2: Defunct hedge native species poor	Important (historic hedgerow)	Lost temporarily	14
H229	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H230	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H235	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H237	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H245	J2.1.1: Intact hedge native species-rich	Potentially important	Lost temporarily	14
H246	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H247	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H257	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	28 (two crossings of the same hedgerow)
H263	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H266	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	6
H269	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	20
H271	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H277	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H295	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H297	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H302	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H308	J2.1.2: Intact hedge native species poor	Important (historic hedgerow)	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H309	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	10
H312	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	6
H317	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	6
H349	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	14
H358	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H359	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	14
H363	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H372	J2.1.1: Intact hedge native species-rich	Potentially important	Lost temporarily	14
H373	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	12
H377	J2.1.2: Intact hedge native species rich	Important	Lost temporarily	14
H378	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H380	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	6

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H383	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H384	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	14
H406	J2.1.1: Intact hedge native species-rich	Not Important	Lost temporarily	20
H422	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	6
H424	J2.3.1: Hedge and trees native species-rich	Not Important	Lost temporarily	14
H433	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H456	J2.1.1: Intact hedge native species-rich	Potentially important	Lost temporarily	6
H464b	J2.1.1: Intact hedge native species-rich	Potentially important	Lost temporarily	14
H469	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	14
H474	J2.1.1: Intact hedge native species-rich	Potentially important	Lost temporarily	30
H475	J2.2.2: Defunct hedge native species poor	Not Important	Lost temporarily	14
H476	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H481	J2.3.1: Hedge and trees native species-rich	Important	Lost temporarily	14
H482	J2.3.1: Hedge and trees native species-rich	Not Important	Lost temporarily	14
H497	J2.3.1: Hedge and trees native species-rich	Not Important	Lost temporarily	14
H505	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	20
H507	J2.3.2: Hedge and trees native species poor	Important (historic hedgerow)	Lost temporarily	14
H509	J2.3.1: Hedge and trees native species-rich	Important	Lost temporarily	10
H511	J2.3.2: Hedge and trees native species poor	Not Important	Lost permanently	412
H512	J2.3.2: Hedge and trees native species poor	Not Important	Lost permanently	135
H514	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H515	J2.1.2: Intact hedge native species poor	Important (historic hedgerow)	Lost temporarily	14
H516	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	6
H520b	J2.1.2: Intact hedge native species poor	Not Important	Lost permanently	100

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H521	J2.1.2: Intact hedge native species-poor	Important (historic hedgerow)	Lost temporarily	14
H527	J2.1.1: Intact hedge native species-rich	Important (historic hedgerow)	Lost temporarily	6
H528	J2.1.1: Intact hedge native species-rich	Potentially important	Lost temporarily	6
H531	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H540*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H541*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H545*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H546*	J2.2.2: Defunct hedge native species-poor	Not Important	Lost temporarily	14
H548*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H549*	J2.1.1: Intact hedge native species-rich	Important (historic hedgerow)	Lost temporarily	14
H551*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H553*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	6

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
H589*	J2.1.2: Intact hedge native species poor	Not Important	Lost temporarily	14
H590*	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H600	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H601	J2.1.2: Intact hedge native species-poor	Not Important	Lost temporarily	14
H610	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	5
H612	J2.3.2: Hedge and trees native species poor	Not Important	Lost temporarily	15
H613	J2.3.1: Hedge and trees native species-rich	Not Important	Lost temporarily	5
H488	J2.1.2: Intact hedge native species-poor Recent planting (still at whip stage)	Not Important	Majority lost temporarily A permanent loss due to adding a standard farm gate (3m) for operational purposes is also accounted for.	15
Tree lines				
W4*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
W5*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W6	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W8*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W9	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W10*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W12*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	22
W15*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	6
W16*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	6
W19	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	6
W17	A3.1: Parkland and scattered	N/A	Lost temporarily	20

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
	trees- broad-leaved			
W18	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	20
W52	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W110	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W207	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W367	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	20
W367a	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	6
W388	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W472	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W473	A3.3: Parkland and scattered trees- mixed	N/A	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
W477	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W479	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W489	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	20
W494*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W498*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W505*	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W507*	A3.3: Parkland and scattered trees- mixed	N/A	Lost temporarily	14
W514	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W544	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	20
W557	A3.1: Parkland and scattered	N/A	Lost temporarily	14

Hedgerow ID	Type	Important	Temporarily lost or retained	Length lost (m)
	trees- broad-leaved			
W677	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	20
W678	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14
W679	A3.1: Parkland and scattered trees- broad-leaved	N/A	Lost temporarily	14

22.9.108 **Appendix 22.5: Hedgerows survey report, Volume 4** of the ES (Document Reference: 6.4.22.5) provides a table and figures describing each hedgerow individually, its habitat category, whether it qualifies as 'important' with regards the *Hedgerow Regulations 1997* and what losses may occur due to the Proposed Development (for example, permanent loss of 6m, temporary loss of 14m, retained etc.).

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.109 The installation of the onshore cable, the construction of the onshore substation and the temporary works required to deliver temporary construction compounds and access routes during the construction phase will result in the loss or change of native hedgerow. The length of hedgerow to be temporarily lost is 1,310m (of which 318m is species-rich) and permanently lost is 650m (of which 0m is species-rich). These losses represent a realistic worst-case scenario underpinned by commitments C-220 and C-224 (shown on the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6)).

22.9.110 In total 44m of the hedgerow to be temporarily lost is deemed to be important for ecological reasons under the *Hedgerow Regulations 1997* (with regards importance) with a further 96m deemed important for historical reasons. In addition, a further 84m of hedgerow is considered potentially important for ecological reasons (hedgerows where detailed survey data is not available, and where potential to be important cannot be ruled out). No hedgerows to be lost permanently qualify as important under the *Hedgerow Regulations 1997*. The length of tree line to be temporarily lost is 474m, with no permanent loss expected

(although change in species mix may be necessary as large, deep-rooted species cannot be planted over the cable ducts).

22.9.111 As part of the embedded environmental measures (C-115) described in **Section 22.7** (see **Table 22-20**) an approach to minimise hedgerow loss at locations where hedgerows and tree lines are crossed by the cable route has been devised (see **Outline CoCP** (Document Reference: 7.2)). Wherever possible (for example, adjacent to access tracks etc.), hedgerows and tree lines will be retained (see Figure 7.2.1 Vegetation Retention and Removal Plans – Hedgerows and tree lines of **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6)). Hedgerows and tree lines will therefore either be retained intact (for example, where a trenchless crossing is proposed), coppiced to 0.9m in height to provide adequate visibility for traffic entering the highway, notched at 6m (to allow for haul road only), notched at 14m (made up of separate notches; one of 6m for the haul road and four 2m wide cable trenches) or temporarily lost (lengths of between 10m and 30m cleared). Where appropriate (based on importance, hedgerow type, structure, substrate and likelihood of survival) the hedgerow would be removed temporarily, it would be removed using a tree spade and relocated to a temporary location during the works. This section of hedgerow will then be returned to its original location to give the maximum opportunity of fast regeneration that is in keeping with the retained hedging in the area. This technique has been used previously in the Lake District National Park, with a success rate of approximately 80 percent, and on the Brechfa Forest Connection Project in Wales. Where translocated hedgerow sections fail to thrive, they will be retained in-situ to provide physical connectivity whilst new plantings are made within the matrix. Elsewhere, gaps created in hedgerow and tree lines[45] will be planted with an appropriate species mix (see **Outline LEMP** (Document Reference: 7.10).

22.9.112 All permanent losses are associated with the onshore substation footprint, where permanent above ground infrastructure is to be located. These hedgerows are characterised by species poor hedgerows (mainly blackthorn and hawthorn) with oak standards.

22.9.113 The Proposed Development will lead to a loss of approximately 2,434m of hedgerow / tree line. Although this is a substantial length of hedgerow / tree line it is equivalent to losing the hedgerow from a single field of approximately 25ha and therefore in comparison to an onshore cable corridor of 38.8km it is relatively modest, especially when it is considered that approximately 1,310m will be reinstated.

22.9.114 No additional hedgerow will be planted directly as part of the Proposed Development, although the commitment to BNG (C-104) will result in enhancements or creation of hedgerows in the local area. As described in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15) the hedgerow units will be sourced based on the following criteria (in order of preference):

[45] Reinstatement of tree lines may require different species to be planted above the cable ducts to ensure root damage can be prevented.

- Within the proposed DCO Order Limits or within 2km of it;
- Within the Arun Lower or Adur Upper Operational Catchments;
- Within the National Character Areas (NCAs) of South Coast Plain, South Downs or Low Weald when in West Sussex; or
- Within other NCAs in West Sussex.

22.9.115 Technical engagement (see **Section 22.3**) suggests that delivery of new or enhanced hedgerows within the proposed DCO Order Limits or within 2km of it should be easily achievable.

22.9.116 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the loss in comparison to the resource in West Sussex, the restricted lengths associated with individual hedgerow crossings and the approach to reinstatement. The permanent and temporary loss of this habitat to the Proposed Development ensures that the effect will be negative in the short to medium term at the County scale and is therefore assessed as **Not Significant** on an ecological feature of National importance. In the medium to long term (within 10 years) the effect will be negated as reinstatement will be suitably established.

22.9.117 The provision of BNG will include the delivery of newly created or enhanced hedgerows and tree lines in the local area.

Fragmentation of habitats (reduction of connectivity)

22.9.118 Hedgerows and tree lines provide a network of habitats that provide connectivity for a variety of flora and fauna. Within the proposed DCO Order Limits the hedgerow network is extensive and links with a range of other habitats including scrub and woodland. Fragmentation of the hedgerow network could result in changes to the distribution of flora or fauna integral to its function.

22.9.119 Losses of hedgerows, scrub and woodland have been minimised through avoidance, both outside and within the proposed DCO Order Limits. The **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) (C-220 and C-224) and notching of hedgerows and tree lines (C-115) limit the temporary losses and C-103 ensures that reinstatement occurs within 2 years at the majority of locations (see **Table 22-20**). The permanent losses of tree lines or hedgerows within the substation footprint will be compensated for through the landscape design (through woodland, scrub and parkland tree planting in the area around the substation (see **Outline LEMP** (Document Reference: 7.10)). As the majority of losses are temporary and are very limited in extent in any given hedgerow (between 6 and 14m) the potential for fragmentation to alter the movement of fauna and flora (including that intrinsic to the functioning of hedgerows and tree lines) is small.

22.9.120 The conclusions drawn are that the magnitude of change is assessed to be **Very low** (see **Table 22-21**) based on the implementation of the embedded environmental measures. The permanent and temporary fragmentation of hedgerows and tree lines to the Proposed Development ensures that the effect will be negative at the County scale, but **Not Significant** on an ecological feature of

National importance. In the medium to long term (within 10 years) the effect will be negated as reinstatement and habitat creation will be suitably established.

22.9.121 The provision of BNG will include the delivery of newly created or enhanced hedgerows and tree lines in the local area.

Streams and permanently wet ditches

Detailed baseline

22.9.122 The Crossing Matrix **Appendix 4.1: Crossing schedule, Volume 4** of the ES (Application Document Reference: 6.4.4.1)) identifies 41 crossings of rivers, streams and ditches. Of these crossings two are rivers (River Arun and River Adur), 19 are streams and 20 are ditches (including wet and dry ditches). The distribution of the streams and wet ditches are clustered within the southern and northern portion of the proposed DCO Order Limits, with relatively few within the South Downs National Park due to topography. To the south of the A27 the streams and wet ditches are associated with the Ryebank Rife, Black Ditch and the ditch system within the coastal and floodplain grazing marsh associated with the River Arun. To the north of the South Downs National Park the majority of crossings are associated with the Wiston Stream, tributaries and ditches within the flood plain of the River Adur and the Cowfold Stream catchment.

22.9.123 Most of the streams and ditches are narrow, shallow with many being encroached by riparian vegetation. There was also a number of man-made structures up and downstream on many of the watercourses and wet ditches noted during survey (see **Appendix 22.6: Fisheries habitat survey report, Volume 4** of the ES (Document Reference: 6.4.22.6) that are suggestive of modified functioning.

22.9.124 Of the 39 crossings of streams or ditches, 22 are proposed for crossing by cable ducts and haul road using open trenching techniques, with others retained through use of trenchless crossing techniques.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.125 The installation of the onshore cable during the construction phase will result in the open trench crossing of up to 22 streams and wet ditches. Where streams are crossed by cable ducts, installation will be done rapidly using a duct block. This enables each cable duct (up to four required) to be put in place rapidly with the bed material then redressed. Water will be kept away from the excavations (unless the crossing is dry or has minimal water present at the time of installation) through the placement of a temporary dam with trapped water over-pumped. The trenches to receive the cable ducts will be dug and the duct blocks put in place. These blocks will then be buried using the existing material, and the bank sides returned to the original shape. Estimates are that the ducts will all be put in place within a 48 hour period. In addition to the cable ducts, a temporary construction haul road will be required in a number of locations. This temporary construction haul road will be placed on top of a temporary culvert (see commitments C-64 in **Table 22-20**) or a clear span bridge (see commitments C-229 and C-255 in **Table 22-20**)

and designed to ensure passage of aquatic fauna could continue during the time it is place.

22.9.126 Each open cut crossing will require the removal of 30m of bankside vegetation to facilitate access by plant, although only bed material within the footprint of the cable trench or culvert will be excavated. The bed material will be stored separately and replaced following installation. Where banks require to be reprofiled, geotextile will be used where necessary to ensure bank stability. The riparian vegetation will be reinstated using planting, sowing or natural regeneration dependent on the area in question (see commitment C-103 and C-199 in **Table 22-20** and **Outline LEMP** (Document Reference: 7.10). The approach to each crossing will also be subject to further assessment at the detailed design phase during the application process for permits or land drainage consents to enable the works to take place (see commitment C-17 in **Table 22-20**). Allowing for riparian vegetation the temporary habitat loss of watercourses and wet ditches measures 660m, with loss of bed habitat expected to be less than half of this total.

22.9.127 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the temporary loss (660m) of stream and wet ditch in comparison to the extent of available habitat in the immediate area and the rapid proposed reinstatement. The streams / wet ditches will also remain functional for fauna and flora (other than for a very short period measured in hours during which temporary dams will be in place) throughout the construction phase. Although the temporary loss of stream and wet ditch habitat will be negative, it will be **Not Significant** on an ecological feature of County importance.

Fragmentation of habitats (reduction of connectivity)

22.9.128 Streams and wet ditches will only be temporarily fragmented (during the installation of duct blocks), with water, bed habitat available throughout the vast majority of the construction period (other than during the installation of duct blocks and culverts across a period of approximately 48 hours per feature). This will ensure that the flow of water, vegetative material and various fauna (for example, aquatic invertebrates, fish etc.) can continue to move through the system as previously. Although bankside vegetation will be unavailable for a longer period due to the time it will take for riparian habitat to be reinstated, the width of removal (30m) will still enable flora and fauna to continue to use the corridor with minimal disruption.

22.9.129 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-20**) due to the duration of fragmentation of bed habitat and the relatively small stretch of bankside habitat lost at each crossing point. The effect of fragmentation is considered to be negative but is assessed as **Not Significant** on an ecological feature of County importance.

Badgers

Detailed baseline

22.9.130 Badgers are known to be present across the area within the onshore part of the proposed DCO Order Limits. This species is widespread and common in West

Sussex and signs of activity are well distributed within and close to the proposed DCO Order Limits. These occur within the woodlands, hedgerow bottoms and field edges that characterise much of the onshore cable corridor and onshore substation site. A number of main (3), annex (2), subsidiary (4), outlier (8) and unclassified (7) setts have been identified during the survey programme. Of these two subsidiaries are within the proposed DCO Order Limits. A further disused unclassified sett with two entrances lies within 30m of the proposed DCO Order Limits.

22.9.131 Badger activity signs and potential habitat that could be used by badger was widespread across the proposed DCO Order Limits, reflecting the status of this species within West Sussex. Further details on the findings of the badger survey can be found in **Appendix 22.11: Badger, otter and water vole survey report, Volume 3** of the ES (Document Reference: 6.4.22.11).

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.132 The construction works will result in the temporary and permanent loss of habitat that badgers may use for commuting and foraging. No setts currently identified will need to be destroyed or damaged by the construction activity due to their location. The majority of temporary and permanent habitat loss will take place within arable fields and pasture, both habitats used by badger for foraging. In addition, hedgerows, scrub and woodland will also be subject to losses. Other than at the landfall, temporary construction compounds and substation location, the works will progress rapidly (~150m of cable ducts installed per day) meaning that losses will be temporally restricted (noting that badgers will forage in areas of disturbed soil).

22.9.133 Badger home ranges occupy large areas, with a typical clan using approximately 50ha within a farmed landscape. Temporary habitat loss will occupy only a small area of any badger clan home range given its linear nature and relatively narrow width (40m). In some locations more area could be lost to a home range (for example, to allow for temporary compounds). Temporary loss of habitat (noting that once construction activity ceases, any bare ground remaining ahead of reinstatement will still be available for foraging to badgers) covering a small percentage of any clan territory is not expected to make a home range unviable. However, the distribution and density of badgers may change between the DCO application and commencement of construction. Therefore, further pre-construction survey will be carried out (C-209), with an Ecological Clerk of Works (C-207) then ensuring that any necessary mitigation (avoidance, scheduling, supplementary feeding) and licensing (under the Protection of Badgers Act 1992) is implemented.

22.9.134 The conclusions drawn are that the magnitude of change is assessed to be **Very Low** (see **Table 22-21**) due to the extent of the loss in comparison to the size of home ranges and the temporary nature of the works. Although the effect will be negative, it will be **Not Significant** on an ecological feature of Local importance.

Fragmentation of habitats (reduction of connectivity)

22.9.135 The onshore elements of the Proposed Development will lead to the temporary fragmentation of home ranges for this species. However, as the cable installation is covers approximately 150m per day, the opportunity for badgers to find ways around the current working area is high. There is also an abundance of suitable foraging habitat for this species across the area, and therefore even if works prevented badgers from using parts of their home range for a short period (likely measured in days) an effect on the fitness of individual animals will not be expected.

22.9.136 However, further pre-construction survey will be carried out (C-209), with an Ecological Clerk of Works (C-207) then ensuring that any necessary mitigation (for example, avoidance, scheduling, supplementary feeding) and licensing (for instance, under the *Protection of Badgers Act 1992*) is implemented.

22.9.137 The conclusions drawn are that the magnitude of change is assessed to be **Very Low** (see **Table 22-21**) due to the extent of the loss in comparison to the size of home ranges and the temporary nature of the works. Although the effect will be negative, it will be **Not Significant** on an ecological feature of Local importance.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.138 Badgers are relatively tolerant of noise and vibration caused by human activity, as evidenced by sett building and occupation along motorway embankments, urban settings (such as grave yards / parks) and close to construction sites. As the majority of the onshore construction works will take place during periods when badgers will not be expected to be active (that is, they are occupying setts during the day time) the potential for significant disturbance due to noise and vibration is minimal with regard foraging and commuting individuals. In locations where 24 hour working maybe required (landfall, HDD compounds and the substation) activity will be confined and easily bypassed by individual animals. Based on current distribution up to three setts (two active subsidiary setts and one disused sett) could be disturbed. The disused sett is located within 30m of the proposed DCO Order Limits, but is in excess of 30m to the indicative cable corridor suggesting that disturbance can be avoided. The two subsidiary setts are approximately 15 to 25m from the indicative cable corridor. At these distances significant disturbance of any badger in occupation will not be expected. Further to this, measures are available to increase this distance on request from the Ecological Clerk of Works (ECoW) (for example, through relocation of soil storage) or acoustic barriers (see commitment C-26) to avoid impacts and avoid the need for licensing.

22.9.139 As badger distribution may alter between the present and start of construction, further pre-construction survey will be carried out (C-209), with an ECoW (C-207) then ensuring that any necessary mitigation (for example, avoidance, scheduling, supplementary feeding) and licensing (under the Protection of Badgers Act 1992) is implemented.

22.9.140 The conclusions drawn are that the magnitude of change is assessed to be **Very Low** (see **Table 22-21**) due to the location and temporary nature of the works

when in close proximity to identified setts. Although the effect will be negative, it will be **Not Significant** on an ecological feature of Local importance.

Increased light levels (resulting in disturbance or displacement)

22.9.141 Badgers regularly frequent areas lit by artificial lighting (for example, road corridors, parks, gardens etc.). However, new lighting in previous dark areas could result in temporary disruption of activity.

22.9.142 The temporary lighting associated with construction will be restricted to a small number of areas that are discrete and relatively small with regards the size of a typical badger home-range. These lit areas will also be in place for relatively short periods (measured in weeks or months) and will use lighting that is sympathetically designed for wildlife (C-105).

22.9.143 Permanent lighting will be in place at the substation location only, and this will largely remain unused except during repairs or maintenance. The habitats being created within the vicinity of the substation (see **Outline LEMP** (Document Reference: 7.10)) both before and following construction will provide additional habitat for badger and also help screen lighting from within the compound. Further, the permanent lighting will be sympathetically designed for wildlife (C-105).

22.9.144 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the restricted nature of the lighting, its temporary nature (other than at the substation) and its wildlife friendly design. Although the effect will be negative, it will be **Not Significant** on an ecological feature of Local importance.

Bats

Detailed baseline

22.9.145 West Sussex is known to support a wide-range of bats including both those that may be considered common and rarer species. The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)) identified 13 species and a large number of records within the area of search. The passive and active bat surveys identified at least nine species present within the proposed DCO Order Limits (**Appendix 22.8: Passive and active bat activity report, Volume 4** of the ES (Document Reference: 6.4.22.8) and **Appendix 22.18: Passive and active bat activity report 2023, Volume 4** of the ES (Document Reference: 6.4.22.18) **[PEPD-029]**) with 393 trees with bat roosting potential also identified in this area. The main activity for bats recorded within the proposed DCO Order Limits and the general surrounds was associated with woodlands, hedgerows, tree lines and watercourses as will be expected.

22.9.146 The landscape within which the onshore elements of the Proposed Development lie, provides a rich mosaic of habitats for commuting and foraging habitat. Chief amongst these are the woodlands, connecting hedgerow network and river systems. These habitats are interspersed with large areas of habitat that is suboptimal for the majority of bat species (for example, improved pasture and arable fields).

22.9.147 No roosts were identified within the proposed DCO Order Limits. However, the trees with bat potential could support roosts currently or in the future.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.148 The length of hedgerow to be temporarily lost is 1,310m (of which 318m is species-rich) and permanently lost is 650m (of which 0m is species-rich). The length of tree line to be temporarily lost is 474m, with no permanent losses expected. These losses represent a realistic worst-case scenario underpinned by commitment C-220 (shown on Figure 7.2.1 Vegetation Retention and Removal Plans - Hedgerows and tree lines of the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6)). In addition, approximately 0.47ha of woodland and 1ha of scrub will be lost. Together these habitats represent the best habitat for bats within the proposed DCO Order Limits that is to be lost. Although the amount of habitat temporarily and permanently lost is sizeable, it is located along the length of a 38.8km onshore cable route. This means that in any given location the losses are relatively modest. Furthermore, within a core sustenance zone of any individual bat the level of loss will be small in comparison to the available habitat available in adjacent areas for commuting and foraging. It is also noted that, through the implementation of the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) (see commitment C-220) and the approach to hedgerow crossings (see commitment C-115), the proposed DCO Order Limits will maintain habitat that can be utilised by bats. In the case of hedgerows, in the majority of instances the hedgerow will remain navigable and usable by bats for commuting and foraging.

22.9.149 At the location of the onshore substation, the permanent habitat loss will temporarily reduce opportunities within this area. However, there is an indicative planting plan (see **Outline LEMP** (Document Reference: 7.10)) that includes habitat creation both before and after construction takes place. This habitat (including broadleaved woodland, wet woodland, scrub and parkland trees) will overtime increase the amount of suitable habitats for bats in the area in the medium to long term. In addition, provision of roosting opportunities in the form of ten bat boxes will be provided at the onshore substation location.

22.9.150 Although the loss of commuting and foraging habitat for any individual bats will be limited, there is the potential that some losses of tree roost could occur. As roosts in trees are typically transitory the number of roosts that could be affected is unknown. However, all active roosts will be identified prior to commencement of construction (see commitment C-211). As the design has a degree of flexibility, the ECoW will liaise with the engineers finalising the detailed design to look for solutions that avoid loss. This could involve changing the alignment of the cables, hand digging the area around the roots to allow cable ducts to be installed whilst the tree remains standing or the use of a different trenchless crossing technique (at a small scale). A solution seeking avoidance will be prioritised, with a justification provided where this could not be accommodated in order to apply for a European Protected Species licence from Natural England. The licence application will include details of mitigation (for example, timing the felling appropriately) and

compensation (such as the provision of alternative roost features) at the level of the individual roost(s) in question.

22.9.151 Following restoration of habitats that have been temporarily lost, the bat community would be expected to exploit the area as previously rapidly. Although the reinstatement will take time to establish the negative effects of temporary habitat loss (due to sizes of localised losses) would only be expected in the short term.

22.9.152 In addition, the commitment to BNG will result in enhancements or creation of greater areas of habitats favourable to bats in the local area. As described in **Appendix 22.15: Biodiversity Net Gain information, Volume 4** of the ES (Document Reference: 6.4.22.15).

22.9.153 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the loss in comparison to the extent of other available habitat within the core sustenance zones of individual bats / bat colonies. New habitat will be provided that in the medium to long-term will increase habitat availability for this species around the substation location (the only location of permanent habitat loss for bats). Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Fragmentation of habitats (reduction of connectivity)

22.9.154 The temporary and permanent habitat loss described in **paragraph 22.9.144** will also fragment the landscape. This could reduce the ability of individual bats to access the habitats on which they rely in order to forage, socialise or disperse. Along the cable route the losses of habitat favourable to bats will be localised and minimal in most instances with typical hedgerows losing approximately 14m (one 6m notch and four 2m notches) of habitat (see commitment C-115) and woodland and watercourses 30m temporarily at each crossing point. The **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**)) (updated at Deadline 6) (see commitment C-220) ensures that the majority of habitat suitable for bats within the proposed DCO Order Limits is retained, meaning that bats can either navigate around the temporary losses in favourable habitats they are likely familiar with, or alternatively can cross gaps that are in keeping with those that are regularly crossed including field entrances, bridleways, farm tracks etc. (although it is noted that this may reduce the rate of bat use in the short-term). The majority of research focusing on bats crossing obstacles is connected with major road development (Berthinussen & Altringham, 2012) which still shows movement across relatively wide gaps (in excess of 50m), it would be expected in a non-lit and relatively peaceful environment (such as in areas of temporary habitat loss associated with the Proposed Development at night) that the propensity to cross gaps would be greater. This assumption is in line with that of the Joint Nature Conservation Committee's (JNCC) '*Habitat management for bats: a guide for land managers, landowners and their advisors*' (2001) which states that '…*even gaps as small as 10m may prevent bats using hedgerows and tree lines*'. Similarly, the Bat Conservation Trust in their guidance '*Landscape and urban design for bats and biodiversity*' recommend avoiding the opening of gaps greater than 10m in extent. It is also notable that the gaps created will be filled with

materials such as straw bales or willow hurdles prior to any reinstatement works to provide a structure along which bats can navigate (see commitment C-291).

22.9.155 Temporary habitat losses will be restored relatively quickly (see commitment C-103) in the majority of locations, with fences in place to protect developing habitats from herbivores. The fences will provide some additional connectivity across the gaps as the planting establishes rapidly over the short term. The permanent losses at the location of the substation will see movement corridors severed, however the indicative landscape plan (see **Outline LEMP** (Document Reference: 7.10)) shows that both east / west and north / south connections of greater quality than those being lost will be maintained, additional habitat suitable for bats being created prior to commencement of construction and further habitat being delivered once the substation has been completed.

22.9.156 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the fragmentation (in light of what is retained), its localisation, reinstatement and creation of new habitat. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.157 Noise and vibration due to construction will largely be associated with daylight hours (see Commitment C-22), other than at trenchless crossing compounds and the landfall where 24 hour may be required for activities such as drilling and concrete pours. There may be some activity at temporary construction compounds associated with 24 hour working sites and due to the need for security.

22.9.158 During daylight hours the disturbance of bats will be realised at roosts near to the works. Commitment C-211 will ensure that all bat roosts pertinent to the construction works will be identified prior to construction commencing. This will enable any potential effects to be minimised or negated by ensuring active works are more than 15m - 20m from identified roosts or works are scheduled to take place at times when bats are not present (established by the ECoW through monitoring). Should avoidance of disturbance of roosts not be an option, a European Species licence from Natural England will be applied for. The licence application will include details of mitigation (for example, timing of works, type of works, use of acoustic barriers etc.) and any necessary compensation (such as the provision of alternative roost features). It is noted that in the majority of instances installation works will progress rapidly and hence any disturbance will be apparent for a short time only.

22.9.159 Over-night the potential for commuting and foraging bats to be displaced by noise and disturbance will be restricted to a small number of locations at any time (estimate of a maximum of four – onshore substation, landfall and two trenchless crossing compounds). Given that the works over-night will be restricted to short periods and the locations are highly localised any displacement will be expected to have limited effects on individual bats. Further, sufficient habitat is to be retained within the proposed DCO Order Limits and adjacent habitats allowing minor deviations of course without altering the end destination.

22.9.160 The conclusions drawn are that the magnitude of change is assessed to be **Very Low** (see **Table 22-21**) due to the flexibility in design, the localised nature of the works when bats could be disturbed and the measures in place to avoid or mitigate effects. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Increased light levels (resulting in disturbance or displacement)

22.9.161 Lighting will be restricted in distribution to those locations where 24 hour working was occurring or at temporary compounds (for security purposes) during the construction phase. During the operational phase the substation will be the only structure that supported external lighting, however this will only be used during repairs or maintenance. Lighting will not be necessary for security purposes at the substation.

22.9.162 All lighting will be designed in line with guidance from the Institute of Lighting Professionals and the Bat Conservation Trust (see commitment C-105) whether permanent or temporary. This will seek to minimise light spill and minimise the overall amount of light required.

22.9.163 As lighting will only be used in specific locations for short periods of time, the potential for bats to be displaced is small. Further, sufficient habitat is to be retained within the proposed DCO Order Limits and adjacent habitats allowing minor deviations of course without altering the end destination.

22.9.164 The conclusions drawn are that the magnitude of change is assessed to be **Very Low** (see **Table 22-21**) due to sympathetic lighting design, the localised nature of the works and their short-term nature. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Hazel dormouse

Detailed baseline

22.9.165 The desk-study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)) has identified the presence of hazel dormouse in the wider area, but outside of the proposed DCO Order Limits. Forty-nine records were provided within 1km of the proposed DCO Order Limits with the closest record 300m from the proposed DCO Order Limits near Hammerpot (south of the A27). Dormouse were recorded during surveys within the proposed DCO Order Limits at a single location only. One juvenile dormouse was located in a nest tube within an area of scrub marking the boundary of the proposed DCO Order Limits at the location of the onshore substation.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.166 The habitat within which dormouse were located is to be retained through design of the onshore substation and temporary construction working areas. However,

this habitat is linked to other suitable dormouse habitat at the location of the substation that will be lost to the Proposed Development. In total, approximately 647m of species-poor hedgerow with trees (comprising mainly of hawthorn, blackthorn and pedunculate oak) will be lost. The habitat to be lost is considered more likely to be providing connectivity and some feeding opportunities, although due to its make-up and the nature of management is unlikely to be used for nesting.

22.9.167 Habitat creation in advance of site preparation works, during the early stages of site preparation works, and throughout the remainder of the construction phase are proposed to deliver suitable mitigation and compensation to maintain the favourable conservation status of hazel dormouse at the Oakendene substation location. This habitat creation is detailed in the **Outline Landscape and Ecology Management Plan** (Document Reference: 7.10) **[REP3-025]**, more specifically within the Indicative Landscape Plan and the Indicative Planting Phasing Plan) and summarised as:

- Advanced planting (pre-commencement of site mobilisation) of a strip of woodland / scrub 15m wide adjacent to the habitat within which dormouse were recorded. This will provide a stand-off to any activity, additional foraging and latterly nesting habitat. This habitat will be created from a range of trees and shrubs, including a mix of standard sizes (i.e. light, heavy etc.). This area is approximately 270m long and 15m wide equating to 0.4ha. Along its entire length it is bolstering existing vegetation. All of the advanced planting will be outside of the fence line that will be established to mark the areas within which construction activities may take place.
- Further advanced planting is proposed to reinforce the existing vegetation that is to be retained along the west side of the proposed substation. This provides approximately 0.2ha of planting (linear measure of approximately 280m) that bolsters existing linear features and ensures a contiguous habitat corridor to allow movement to the north or south of the proposed substation and links to other habitats that provide east / west connectivity.
- Following site mobilisation (e.g. first actions will be to gain access and erect site fencing), further planting will take place in the first available planting season outside of the fence line. This will include approximately 0.3ha of woodland/scrub planting along 825m of existing tree line and scrub and woodland planting (approximately 0.1ha) by the A272. Additional parkland tree planting along the western boundary is also proposed. Where specific Design Principles are proposed, these have been provided in Section 2 of the **Outline Landscape and Ecology Management Plan** (Document Reference: 7.10) **[REP3-037]** (updated at Deadline 4). These actions reinforce and expand existing habitat features.
- Prior to the completion of the construction programme areas of woodland and tree planting will be completed including screening planting for the substation and the establishment of wet woodland within the detention basins.

22.9.168 The planting in total provides the following:

- Native woodland – 0.8ha
- Native wet woodland – 1.9ha (provides foraging and linking habitat)

- Native scrub – 0.9ha
- Semi-mature parkland trees – no. 9

22.9.169 Therefore, overall there will be an increase in suitable dormouse habitat at the onshore substation site. Although there will be a reduction in quality of available dispersal habitat initially (newly established habitat will take time to provide the right conditions for dormouse), the level of provision and the advanced planting will ensure suitable habitat will be available throughout the construction period. With the provision in the medium to long term providing more and better quality habitat than that which would be lost.

22.9.170 There is the potential for dormouse to be present in some of the woodland, scrub and hedgerows that will be temporarily lost within the cable corridor. In most instances the opportunity for dormice to be directly encountered is low, although commitment C-232 ensures that further survey will be undertaken prior to construction to ensure legal compliance is maintained. In all instances the level of loss of suitable habitats is small in comparison to that available in immediately adjacent areas. In these locations dormouse would be passively displaced at a suitable time of year (see commitment C-299). These gaps would also be filled between construction and reinstatement (see commitment C-291) with material to facilitate commuting.

22.9.171 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the loss in comparison to the extent of other linked habitat available and the new habitat that will be provided that in the medium to long-term will increase habitat availability for this species. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Fragmentation of habitats (reduction of connectivity)

22.9.172 The loss of hedgerow habitat within the footprint of the onshore substation or the associated temporary construction compound could reduce the ability of dormouse to disperse through the area. However, at all points during delivery of the substation linkages from the location in which dormouse have been confirmed present and other suitable habitat will be maintained. The retained habitats can be seen on the **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) and new habitats (that will enhance connectivity) in Figure 1 of the **Outline Landscape and Ecology Management Plan** (Document Reference: 7.10) **[REP5-072]**.

22.9.173 There is the potential for dormouse to be present in some of the woodland, scrub and hedgerows that will be temporarily lost within the cable corridor. In most instances the opportunity for dormice to be directly encountered is low, although commitment C-232 ensures that further survey will be undertaken prior to construction to ensure legal compliance is maintained. In habitats that may be used for dispersal between woodland blocks (such as hedgerows) the proposed approach to construction ensures that in the majority of locations the gaps created are small enough for a dormouse to easily move between different sections of hedgerow (Mortelliti *et al*.. 2013). Even when woodland and scrub is crossed, the size of the gaps created (maximum of 30m) is still within the normal movement

range of this species. Further, commitment C-291 enables these gaps to be filled between construction and reinstatement (see commitment C-291) with material such as straw bales, dead hedging etc. to facilitate commuting. C-103 also ensures that the majority habitats suitable for dormouse will be re-established relatively rapidly.

22.9.174 The conclusions drawn are that the magnitude of change is assessed to be **Very low** (see **Table 22-21**) due to the extent of the loss in comparison to the extent of other linked habitat available and the new habitat that will be provided that in the medium to long-term will increase habitat availability for this species. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.175 Dormouse are relatively tolerant of noise and vibration caused by human activity, as evidenced by use of habitats along motorway embankments and central reservations. In order to minimise noise disturbance on dormouse, the fencing that marks the edge of the temporary construction area will be designed to dampen noise (for example, use of acoustic quilt or solid hoarding) (C-26).

22.9.176 Further, the new habitat to be created ahead of construction (see **Outline LEMP** (Document Reference: 7.10)) ensures that there is a stand-off between the location of known presence and areas of construction.

22.9.177 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the general tolerance of this species and the measures that will be taken to minimise noise. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of International importance.

Increased light levels (resulting in disturbance or displacement)

22.9.178 Dormice regularly frequent areas lit by artificial lighting (for example, road corridors). However, new lighting in previous dark areas could result in temporary disruption of activity.

22.9.179 Both temporary and permanent lighting around the onshore substation will use lighting that is sympathetically designed for wildlife (C-105). This will ensure that current habitats used by dormouse at this location are not directly lit. Further, the new habitat to be created ahead of construction (see **Outline LEMP** (Document Reference: 7.10)) ensures that there is a stand-off between the location of known presence and areas of construction.

22.9.180 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the restricted nature of the lighting and its wildlife friendly design. Although the effect will be negative, it will be **Not Significant** on an ecological feature of International importance.

Great crested newt

Detailed baseline

22.9.181 A total of 13 ponds are located within the proposed DCO Order Limits, with a further 247 within 250m of it. Of these ponds 113 were subject to eDNA survey for great crested newts with 36 providing positive results, 31 inconclusive results (assumed on a precautionary basis to be positive) and 46 negative results. Four of the positive results are from waterbodies within the proposed DCO Order Limits (see **Appendix 22.7: Great Crested Newt environmental DNA survey report 2021-2023, Volume 4** of the ES (Document Reference: 6.4.22.7) for distribution). The desk study (**Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)) also provided 155 records of great crested newts in the area, demonstrating that they are widespread across the general area.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.182 No ponds will be lost to the Proposed Development, as all within the proposed DCO Order Limits are to be retained (see **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6)). Therefore, the only habitat that could be lost to great crested newts is terrestrial habitats such as hedgerow bottoms, scrub and woodland.

22.9.183 The majority of terrestrial habitat that will be lost to great crested newts will be on a temporary basis and will be reinstated within a relatively short time period (C-103). At the onshore substation site 622m of potential habitat (species-poor hedgerow with trees will be permanently lost.

22.9.184 In order to prevent death or injury of individuals during the construction phase the measures (see commitment C-214) described in the **Outline CoCP** (Document Reference: 7.2) will be implemented. Further, an application will be made for a derogation licence to ensure legal compliance. This will be in the form of a district level license that will provide new strategically located compensation areas within West Sussex[46].

22.9.185 The majority of suitable habitat lost will be reinstated within a short period (C-103), meaning that any effects will be short-term in duration. When considered in light with the extent of new strategically located habitat (through the district level license scheme) that will be delivered for this species the short to medium outcomes are likely to be positive.

22.9.186 The conclusions drawn are that the magnitude of change is assessed to be **Very low** (see **Table 22-21**) due to the retention of all ponds and the relatively low levels of habitat loss, the majority of which is temporary. Although within the

[46] A district level licence scheme for West Sussex has just opened. This scheme has been confirmed as appropriate for use by WSCC (to be delivered by NatureSpace) and will be in a format in line with other areas of England (including East Sussex).

proposed DCO Order Limits the effect will be negative, it will be **Not Significant** on an ecological feature of International importance.

Fragmentation of habitats (reduction of connectivity)

22.9.187 Great crested newts may become temporarily isolated from certain ponds and parts of wet ditches as the cable installation works progress. However, as the installation work progresses at approximately 150m per day (with excavations being infilled following duct placement) the disruption will be minimal. It is acknowledged that in these areas that the reinstatement of habitat will take place after this time, and therefore the habitat (bare ground) will not be optimal for crossing. However, as the majority of this is within areas that are currently arable fields or grazed pasture the disruption to movement is minimal. In areas of permanent habitat loss (at the substation location), the implementation of the landscape design proposals (see **Outline LEMP** (Document Reference: 7.10)) will ensure north / south and east / west corridors always remain available. As new habitat will be delivered through the district level license scheme the short to medium term outcomes are likely to be positive.

22.9.188 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the retention of all ponds and the relatively low levels of habitat loss, the majority of which is temporary. Although within the proposed DCO Order Limits the effect will be negative, it will be **Not Significant** on an ecological feature of International importance.

Reptiles (common species)

Detailed baseline

22.9.189 A large number of records (771) of common reptiles were returned during the desk study (see **Appendix 22.2: Terrestrial ecology desk study, Volume 4** of the ES (Document Reference: 6.4.22.2)), although none of these were from within the onshore part of the proposed DCO Order Limits. Many of the habitats present within the onshore part of the proposed DCO Order Limits have the potential to support adder, common lizard, slow worm and grass snake. Field survey data shows slow worm and grass snake are present at the substation site and around the existing National Grid Bolney Substation. The field survey results suggest that the populations are small (see **Appendix 22.12: Reptile survey, Volume 4** of the ES (Document Reference: 6.4.22.12) for distribution of survey data). The desk study returned four records of sand lizard from within the sand dunes at West Beach, Climping. Sand lizard have been scoped out of further assessment (see **Table 22-18**).

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.190 There are suitable habitats present within the proposed DCO Order Limits in a large number of places (for example, hedgerow bottoms, grassland, woodland edge etc.). In the majority of these locations temporary habitat loss will be small in

comparison to available habitat in the immediate vicinity, and it will be reinstated relatively quickly (C-103). Therefore, in the majority of situations reptiles can be easily moved in to adjacent habitat if present (to prevent injury and death of individuals) (see **Outline CoCP** (Document Reference: 7.2) and commitment C-208) whilst maintaining the fitness of the local population. At the onshore substation site there will be permanent loss of habitat (~622m of hedgerow / tree line bottoms). However, habitat (woodland creation that in the years before canopy closure will provide optimal habitat for reptiles) will be created ahead of construction that will provide additional habitat suitable for reptiles in the near vicinity. Following the completion of construction there will be a sizeable increase in habitat suitable for grass snake and slow worm including drainage features and extensive edge habitats (woodland, wet woodland and scrub edges).

22.9.191 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to the relatively low levels of temporary habitat loss, the small extent of permanent habitat loss, measures taken to ensure individuals are not killed or injured by works and the provision of reinstated habitat (along the onshore cable corridor) and new habitat (around the onshore substation site) created before and after construction. Although within the proposed DCO Order Limits the effect will be negative, it will be **Not Significant** on an ecological feature of National importance.

Breeding birds

Detailed baseline

22.9.192 A total of thirty-nine species were recorded breeding or holding territory during the breeding bird survey (See **Appendix 22.13: Breeding bird survey, Volume 4** of the ES (Document Reference: 6.4.22.13)), of which 13 were of particular note:

- Two were species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Cetti's Warbler and firecrest;
- Nine species listed as SPI: Corn bunting, dunnock, lapwing, linnet, reed bunting, skylark, song thrush, starling and yellowhammer.
- Eight species recorded as BoCC red-listed species: Corn bunting[47], greenfinch, lapwing, linnet, nightingale, skylark, starling and yellowhammer.

22.9.193 The range of breeding birds present within the onshore part of the proposed DCO Order Limits were representative of the range of habitat types represented including arable fields, pasture, coastal and floodplain grazing marsh, hedgerows and woodland habitats.

22.9.194 Towards the southern sections of the proposed DCO Order Limits the onshore cable route predominantly crosses arable and pastoral land limiting the occurrence of breeding birds. Woodlands, wetlands and areas of continuous scrub

[47] Note some species fall into more than one notable category (for example, corn bunting is both an SPI and on the BoCC red list).

synonymous with breeding bird activity are relatively infrequently encountered in this portion of the cable corridor, resulting in a restricted species list.

22.9.195 There was a notable increase in both density and diversity of the breeding bird assemblage within the northern section of the proposed DCO Order Limits, centred around the large woodland / scrub and hedgerow mosaics, and within the River Adur and Cowfold Stream floodplains; in areas of suitable breeding habitat.

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.196 Approximately 177ha of habitat will be lost (~165ha temporarily and ~12ha permanently (including to permanent infrastructure and habitat creation)). All of these habitats have some potential to support breeding birds, although the majority is arable fields (~77.5ha) and improved pasture (~91ha) where breeding bird densities are low. Of most importance to breeding birds will be the loss of more complex habitats including woodland, hedgerows and scrub.

22.9.197 Areas where habitat loss is temporary will mostly be reinstated within 2 years. Even before reinstatement, the rapid progression of the construction works (~150m of cable duct being installed per day) will mean that home ranges of individual pairs will be available the majority of the time. Further, the extent of available habitat in the immediate surrounds is such that it is unlikely that any individual pair of birds would be prevented from nesting due to lack of habitat. There is also nothing to suggest that the neighbouring habitat is of a different quality that could reduce breeding success.

22.9.198 To ensure that habitat supporting active nests is not lost during works commitments C-21 and C-203 (see **Section 22.7**) seek to ensure vegetation is removed at an appropriate time of year and checks are made to locate ground nesting birds within the working area. These will ensure that birds setting up territories can locate themselves outside of working areas (or if already present remain undisturbed until the nest is no longer active) negating much of the potential effect of land take / land cover change. In addition, **Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87 **[REP5-125]**) (updated at Deadline 6) (see commitment C-220) seeks to ensure that the types of habitats where breeding densities are highest (for example, within hedgerows and woodland) are retained wherever possible, including within the working area, whilst commitment C-103 ensures that the majority of habitat reinstatement will occur in the short term.

22.9.199 At the substation location, additional habitat is being provided in the form of wet woodland (1.9ha), woodland (0.8ha), scrub (0.9ha) and a number of standard size parkland trees (see the indicative landscape plan in the **Design and Access Statement** (Document Reference 5.8). The indicative landscape design evolved to account for a number of species, with particular habitats (such as areas of wet woodland and scrub) being included to support the local nightingale population.

22.9.200 The conclusions drawn are that the magnitude of change is assessed to be **low** (see **Table 22-21**) due to the small extent of the loss (in comparison to the availability of habitat in the immediate area), the temporary nature of the majority

of habitat loss, proposed reinstatement and measures to avoid losing habitats supporting active nests. In addition, in the longer term the reinstated habitats and the newly created habitats will ensure that there will be a small increase of suitable habitats within the proposed DCO Order Limits. Although the effect will be negative in the short term, it will be **Not Significant** on an ecological feature of National to Local importance.

Fragmentation of habitats (reduction of connectivity)

22.9.201 The temporary and permanent habitat loss described in **paragraph 22.9.196** will also fragment the landscape. This could reduce the ability of individual birds to access the habitats on which they rely in order to forage, socialise or disperse. The high mobility of the majority of species is likely to prevent any individuals becoming temporarily excluded from areas either side of a temporary working area. However, in the habitats where breeding densities are greatest (hedgerows, tree lines and woodland) particular emphasis has been made to limit losses. In most instances hedgerow crossings will result in temporary losses of approximately 14m of habitat (see commitment C-115), with gaps in woodland ranging between 6m and 30m (see **Table 22-24** and commitment C-204) and watercourses limited to 30m (see **paragraph 22.9.126**). These distances are such that they will be easily navigable by the breeding bird community present.

22.9.202 Temporary habitat losses will be restored relatively quickly (see commitment C-103). The permanent losses at the location of the substation will see movement corridors severed, however the indicative landscape plan (see **Outline LEMP** (Document Reference: 7.10)) shows that both east / west and north / south connections of greater quality than those being lost will be maintained, additional habitat suitable for breeding birds being created prior to commencement of construction and further habitat being delivered once the substation has been completed.

22.9.203 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the fragmentation (in light of what is retained), its localisation, reinstatement and creation of new habitat. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of National to Local importance.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.204 Tolerance to disturbance due to noise and vibration caused by construction activity will differ dependent on species. Many of the species present are relatively tolerant of disturbance, whilst others are more prone to nest abandonment due to human activity.

22.9.205 Minimising the potential for disturbance to breeding birds will be managed through the use of an Ecological Clerk of Works (commitment C-207) who will be responsible for ensuring, wherever possible, key areas of vegetation are removed prior to birds setting up breeding territories (C-21) and pre-construction checks taking place (commitment C-203). Should active bird nests be identified, disturbance will be managed through the imposition of stand-off zones (commitments C-203 and C-215) in order to ensure active nesting attempts can continue. In some instances, this could see works delayed in certain locations until

the nest is no longer active (for example, chicks have fledged or the nest has failed). Although these type of mitigation measures are typical of construction projects across the UK, it is acknowledged that this will not remove all potential disturbance of breeding birds in areas adjacent to the works. However, as the works will progress rapidly along the cable route (cable ducts being laid at approximately 150m per day) any disturbance will last for a short time only. At the substation location disturbance will occur over a longer period, however as the works are restricted to a defined footprint the local breeding bird population is likely to make minor changes to its distribution to manage disturbance without compromising its opportunity to persist.

22.9.206 The conclusions drawn are that the magnitude of change is assessed to be **Low** (see **Table 22-21**) due to the extent of the disturbance, its temporary nature in most locations and the active approach to managing potential conflicts. Although the effect will be negative in the short-term, it will be **Not Significant** on an ecological feature of National to Local importance.

Increased light levels (resulting in disturbance or displacement)

22.9.207 Breeding birds could be disturbed by the use of temporary lighting used to enable construction in hours of darkness. Lighting is only likely to be necessary in places where trenchless crossings are being completed as 24 hour working maybe required (see **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4)). However, the trenchless crossing compounds are localised and all lighting will be designed to be 'wildlife friendly' (see commitment C-105). As pre-construction checks (see commitment C-203) will have already ensured that there is an adequate stand-off to any active nests and light spill will be managed through design the potential for displacement of breeding birds is small.

22.9.208 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to light spill being managed appropriately. The effect will be neutral (no change expected) and therefore it will be **Not Significant** on an ecological feature of National to Local importance.

Wintering birds

Detailed baseline

22.9.209 **Table 22-26** provides the peak counts of waterbirds recorded during the wintering bird survey. It is evident from the data that the arable fields and golf course behind the seawall support a range of wildfowl and waders that utilised the area to forage. Many of the birds recorded were observed making movements between the intertidal, nearshore and terrestrial environments especially in response to disturbing activities occurring on the beach (such as flood defence works or dog walking etc.).

22.9.210 Within the Arun Valley recorded activity was focused on lakes close to St Mary Magdalene's Church near Lyminster and along the banks of the River Arun (and neighbouring fields) close to Tortington. The majority of activity in the Adur Valley

recorded was associated with flooded fields immediately adjacent to the River Adur.

Table 22-26 Wintering bird survey results (inside and within 500m of the onshore part of the proposed DCO Order Limits)

Location	Species	Peak count	Comment
Arun Valley	Coot	6	Knucker hole, Lyminster
	Little egret	4	River Arun
	Gadwall	7	Knucker hole, Lyminster
	Grey heron	4	River Arun
	Lapwing	389	Day roosting in ploughed field
	Little grebe	1	
	Mallard	110	Knucker hole, Lyminster
	Moorhen	8	Knucker hole, Lyminster
	Mute swan	73	In fields west of River Arun
	Mediterranean gull	7	In fields west of River Arun
	Snipe	1	Flushed from field north of A27
	Tufted duck	5	Knucker hole, Lyminster
	Wigeon	86	Knucker hole, Lyminster
Adur Valley	Cormorant	5	
	Canada goose	152	Feeding in flooded fields near Ashurst
	Little egret	4	Feeding in flooded fields near Ashurst

Location	Species	Peak count	Comment
	Greylag goose	300	Peak in December 2020
	Grey heron	1	Feeding in flooded fields near Ashurst
	Lapwing	110	
	Mallard	15	
	Moorhen	2	
	Mute swan	23	Feeding in flooded fields near Ashurst
	Shoveler	15	In excess of 500m from the onshore part of the proposed DCO Order Limits. Highlighted as designated feature of Arun Valley Ramsar site and SPA.
	Snipe	4	
	Teal	151	Feeding in flooded fields near Ashurst
	White-fronted goose	30	Peak in December 2020
	Wigeon	600	Feeding in flooded fields near Ashurst
Coastal strip	Barnacle goose	1	Foraging behind seawall
	Black-tailed godwit	1	Roosting on beach above MHWS
	Curlew	7	Foraging behind seawall
	Dark-bellied brent goose	650	Foraging behind seawall

Location	Species	Peak count	Comment
	Dunlin	48	Roosting west beach above MHWS
	Grey plover	63	Roosting in fields behind seawall
	Kingfisher	1	Foraging on beach, above MHWS
	Knot	1	Roosting in fields behind seawall
	Lapwing	16	Roosting in fields behind seawall
	Mediterranean gull	56	Foraging in fields behind seawall
	Oystercatcher	11	Roosting in fields behind seawall
	Purple sandpiper	1	Foraging behind seawall
	Ringed plover	27	Roosting in fields behind seawall
	Snipe	1	Foraging behind seawall
	Sanderling	31	Roosting west beach above MHWS
	Turnstone	90	Foraging in fields behind seawall
	Wigeon	13	Foraging in fields behind seawall

Predicted effects and their significance

22.9.211 All predicted effects and their significance are common with those described for the Arun Valley Ramsar site, despite the wider range of bird species present:

- Land take / land cover change – **paragraphs 22.9.7** to **22.9.10**;
- Fragmentation – **paragraphs 22.9.11** to **22.9.13**;
- Increased noise and vibration – **paragraph 22.9.14**; and

- Increased light levels – **paragraphs 22.9.15** to **22.9.16**.

22.9.212 The effects on the wintering bird assemblage for all environmental changes outlined in the paragraphs listed above are assessed as **Not Significant** on an ecological feature of between Local and International importance (dependent on species, or if the assemblage is considered as a whole).

Water vole

Detailed baseline

22.9.213 SxBRC returned 229 records of water vole for inside the onshore part of the proposed DCO Order Limits and within 5km of it. Four of these records were from within the onshore part of the proposed DCO Order Limits, with these being within the valley of the River Arun. Water vole were recorded in six general locations during the field survey along the Ryebank Rife (close to the A259 at Climping; burrow recorded; Crossing Matrix reference DTX-1dw-01[48]), the Black Ditch and linked tributaries (north-west of Wick; burrow, latrine and feeding remains recorded; Crossing Matrix references DTX-1dw-08, DTX-1dw-09 and DTX-1dw-10), ditches at Knucker Hole (north west of Lyminster; burrows, feeding remains, latrine and run recorded; no Crossing Matrix reference as outside of the proposed DCO Order Limits), Buncton Stream (at Wiston; burrow recorded; Crossing Matrix references STRX-1dw-05), unnamed tributary of Cowfold Stream 1 (north east of Shermanbury; latrine, footprints, latrines and feeding remains recorded; Crossing Matrix references STRX-1dw-017) and unnamed tributary of Cowfold Stream (crosses Kent Street south of proposed substation; possible burrow recorded; Crossing Matrix references STRX-1dw-019). In addition, habitat with the potential to support water vole was located along multiple watercourses and ditches within the proposed DCO Order Limits and the general surrounds. An anecdotal recording of American mink was also made (see **Appendix 22.11: Badger, otter and water vole survey report, Volume 4** of the ES (Document Reference: 6.4.22.11) for distribution of water vole signs).

Predicted effects and their significance

Land take / land cover change (resulting in habitat loss or degradation)

22.9.214 The installation of the onshore cable during the construction phase will result in the open trench crossing of two wet ditches and a watercourse where water vole activity has been identified. An additional 4 crossings of habitats used by this species will be crossed using trenchless techniques. In the locations where water vole activity has been recorded the following is proposed to occur:

- Ryebank Rife– trenchless crossing (DTX-1dw-01);
- Black Ditch – trenchless crossing of main ditch (DTX-1dw-08), open cut crossings of two linked ditches (DTX-1dw-09 and DTX-1dw-10);

[48] This is the crossing reference in the Crossing Matrix Report

- Ditches at Knucker Hole – outside of proposed DCO Order Limits;
- Bucton Stream – trenchless crossing (STRX-1dw-05);
- Unnamed tributary of Cowfold Stream 1 – trenchless crossing (STRX-1dw-017; Cowfold Stream is also crossed trenchlessly);
- unnamed tributary of Cowfold Stream 2 – open cut (STRX-1dw-019).

22.9.215 Where these streams and ditches are crossed by cable ducts using open cut techniques, installation will be done rapidly using a duct block. This enables each cable duct (up to four required) to be put in place rapidly with the bed material then redressed. Water will be kept away from the excavations through the placement of a temporary dam with trapped water over-pumped. The trenches to receive the cable ducts will be dug and the duct blocks put in place. These blocks will then be buried using the existing material, and the bank sides returned to the original shape. Estimates are that the ducts will all be put in place within a 48-hour period. In addition to the cable ducts, a temporary construction haul road will be required in a number of locations. This temporary construction haul road will be placed on top of a temporary clear span bridge in all locations where water vole are present (C-255) to retain the ability to move through the area easily and retain as much bankside habitat as possible. The haul road crossings (approximately 6m wide) will be in place until all works in that section were complete.

22.9.216 As part of the embedded environmental measure (commitment C-210) described in **Section 22.7** (see **Table 22-20**) survey for water vole will take place prior to construction commencement to identify the activity at all watercourse and ditch crossings. Where necessary a licence (issued by Natural England) will be applied for to enable the temporary works to proceed. Given that the works will occupy a relatively small stretch of ditch approximately 30m (noting that soil storage cannot occur within the crossing) it is likely that water voles could be temporarily displaced from the area whilst cable installation was undertaken and then allowed to re-enter following temporary habitat loss. The **Outline LEMP** (Document Reference: 7.10) notes that bankside vegetation will either be allowed to re-establish naturally or be seeded dependent on the habitat present and the expertise of the EcOW. Although the loss could affect individual water voles, it is not expected that the scale of these works will reduce the size of a given local population.

22.9.217 The conclusions drawn are that the magnitude of change is assessed to be **Very low** (see **Table 22-21**) due to the small extent of the loss, its temporary nature, rapid proposed reinstatement and use of temporary clear span bridges. As the streams / ditches will remain functional for water vole (other than for a very short period measured in hours during which temporary dams will be in place), although the effect will be negative, it will be **Not Significant** on an ecological feature of National importance.

Fragmentation of habitats (reduction of connectivity)

22.9.218 Streams and ditches occupied by water vole will only be temporarily fragmented (during the installation of duct blocks), with water, bed and bankside habitat available throughout the vast majority of the construction phase. Each watercourse is likely to be blocked to water vole for a period of up to 48 hours only (during duct

block installation and the redressing of bed materials and bank profiling). Following the installation works the habitat reinstatement (or natural growth if facilitated to regenerate – for example, through temporary fencing out of wild herbivores and livestock) will potentially reduce movement rates, but water vole are known to be easily capable of traversing 30m of sub-optimal habitat. Haul roads will cross streams and ditches on which water vole are present using a clear span bridge, as opposed to a culvert to maintain connectivity (commitment C-255).

22.9.219 The conclusions drawn are that the magnitude of change is assessed to be **Very low** (see **Table 22-21**) due to the small extent of the loss, its temporary nature, rapid proposed reinstatement and use of temporary clear span bridges. As the streams / ditches will remain functional for water vole (other than for a very short period measured in hours during which temporary dams will be in place), although the effect will be negative, it will be **Not Significant** on an ecological feature of National importance.

Increased noise and vibration (resulting in disturbance or displacement)

22.9.220 Water voles are relatively tolerant of noise and vibration caused by human activity (Dean et al., 2016). However, it will still be necessary to minimise the potential effects on water vole due to noise and vibration. In order to minimise the risk of water voles entering the working area temporary habitat displacement will be used (see **paragraph 22.9.186**). This will also ensure that the potential for water vole to be disturbed will be minimised. The residual risk of disturbance will also be covered under the licence that will be applied for through Natural England.

22.9.221 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to water vole being displaced from the temporary working area and the temporary nature of the works. Although the effect will be negative, it will be **Not Significant** on an ecological feature of National importance.

Increased light levels (resulting in disturbance or displacement)

22.9.222 Water vole could be disturbed by the use of temporary lighting used to enable construction in hours of darkness. Lighting is only likely to be necessary in places where trenchless crossings are being completed as 24 hour working maybe required (see **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4)). However, the trenchless crossing compounds will be set back from the watercourses (see commitment C-182) and all lighting will be designed to be ‘wildlife friendly’ (see commitment C-105).

22.9.223 The conclusions drawn are that the magnitude of change is assessed to be **Negligible** (see **Table 22-21**) due to light spill being managed appropriately. The effect will be neutral (no change expected) and therefore it will be **Not Significant** on an ecological feature of National importance.

22.10 Assessment of cumulative effects

Approach

22.10.1 A CEA examines the combined impacts of Rampion 2 in combination with other developments on the same single receptor or resource and the contribution of Rampion 2 to those impacts. The overall method followed in identifying and assessing potential cumulative effects in relation to the onshore environment is set out in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5) and **Appendix 5.3: Cumulative effects assessment detailed onshore search and screening criteria, Volume 4** of the ES (Document Reference: 6.4.5.3).

22.10.2 The onshore screening approach follows the Planning Inspectorate's Advice Note Seventeen (Planning Inspectorate, 2019) which is an accepted process for Nationally Significant Infrastructure Projects (NSIPs) and follows the four-stage approach set out in the guidance.

Cumulative effects assessment

22.10.3 For terrestrial ecology and nature conservation, a ZoI has been applied for the Cumulative Effects Assessment (CEA) to ensure direct and indirect cumulative effects can be appropriately identified and assessed. The ZoI has been set at 100m from the proposed DCO Order Limits for all cumulative effects where cable ducts are to be installed below ground and 500m for longer term temporary works (landfall and temporary construction compounds), the onshore substation and the connection to the existing National Grid Bolney substation. For European and nationally designated sites, this ZoI has been expanded to 1km from the proposed DCO Order Limits, with specific attention paid to those proposals that could affect functionally linked land used by waterbirds and barbastelle bats.

22.10.4 A short list of 'other developments' that may interact with the Rampion 2 ZoIs during their construction, operation or decommissioning is presented in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4** of the ES (Document Reference: 6.4.5.4) and on **Figure 5.4.2** to **5.4.4, Volume 4** of the ES (Document Reference: 6.4.5.4). This list has been generated applying criteria set out in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5) and **Appendix 5.3: Cumulative effects assessment detailed onshore search and screening criteria, Volume 4** of the ES (Document Reference: 6.4.5.3) and has been collated up to the finalisation of the ES through desk study, consultation, and engagement.

22.10.5 Only those 'other developments' in the short list that fall within the terrestrial ecology and nature conservation ZoI have the potential to result in cumulative effects with the Proposed Development on terrestrial ecology and nature conservation. All 'other developments' falling outside the terrestrial ecology and nature conservation ZoI are excluded from this assessment. The following types of 'other development' have the potential to result in cumulative effects on terrestrial ecology and nature conservation.

22.10.6 A tiered approach to the CEA has been set out in **Table 5-6** in **Chapter 5: Approach to the EIA, Volume 2** of the ES (Document Reference: 6.2.5) and can be summarised as follows:

- Tier 1: developments under construction, permitted applications, and submitted applications;
- Tier 2: Other developments on the Planning Inspectorate Programme of Projects where a Scoping Report has been submitted; and
- Tier 3: Other developments on the Planning Inspectorate Programme of Projects where a Scoping Report has not been submitted, or where developments are identified in Development Plans or other plans as appropriate.

22.10.7 On the basis of the above, the following specific other developments contained within the short list in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4** of the ES (Document Reference: 6.4.5.4) are considered in this CEA, as discussed in **Table 22-27**.

Table 22-27 Developments considered as part of the terrestrial ecology and nature conservation CEA

ID[49]	Development type	Development name	Application reference	Status	Confidence in assessment	Tier[50]	Distance to Rampion 2 (m)
1	Highways	A27 Arundel Bypass	TR010045	Pre-application: Scoping Opinion published 14/04/2010	Medium	2	900
13 / 14 / 63	Mixed use	Land at Climping / Arun Local Plan (2018) Reference Site SD10. Policy H SP2c	CM/48/21/RES & CM/1/17/OUT	Application approved (after appeal) 28/09/2018 / Application pending a decision: submitted 31/08/2021	High	1	Within the proposed DCO Order Limits
39	Industry (resource extraction)	Rock Common Quarry	WSCC/028/21	Application pending a decision: submitted 14/07/2021	High – quarry extant. Application making changes to current permission	1	Within the proposed DCO Order Limits

[49] ID reference as stated in Table 2-1 in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4** of the ES (Document Reference: 6.4.5.4) and on **Figure 5.4.2** to **5.4.4, Volume 4** of the ES (Document Reference: 6.4.5.4).
[50] **Chapter 5: Approach to the EIA, Volume 2 of the ES** (Document Reference: 6.2.5) sets out the full definitions of the tiers.

ID[49]	Development type	Development name	Application reference	Status	Confidence in assessment	Tier[50]	Distance to Rampion 2 (m)
51	Energy storage	Ghyll Farm	DM/20/2554	Negative screening decision (EIA not required): decision 06/08/2020	Low	3	Within proposed DCO Order Limits
52	Energy storage	Battery energy storage system at Coombe Farm #2	DM/22/0807	Negative screening decision (EIA not required): decision 25/05/2021	Low	3	Within proposed DCO Order Limits
54	Energy generation (solar)	Land Coombe Farm	DM/15/0644	Application approved 17/02/2017	High	1	Adjacent (20m)
57	Utilities infrastructure (energy)	Grid stability infrastructure at Bolney Substation	DM/21/4285	Negative screening decision (EIA not required): decision 14/01/2022	Low	3	Within proposed DCO Order Limits

22.10.8 The cumulative Project Design Envelope is described in **Table 22-28**.

Table 22-28 Cumulative Project Design Envelope for terrestrial ecology and nature conservation

Project phase and activity / impact	Scenario	Justification
Cumulative habitat loss	All Tier 1 and 3 projects identified in **Table 22-27**	The Proposed Development and all projects identified in **Table 22-27** will result in both temporary and permanent habitat loss. Due to the close proximity of the projects the effect on local biodiversity may be cumulative, especially if the construction phases overlap.
Cumulative temporary increase in disturbance of designated features of the Arun Valley SPA / Ramsar site	Construction phase of A27 Arundel Bypass	The A27 Arundel Bypass will result in construction and operational activity occurring within land functionally linked to the Arun Valley SPA / Ramsar site, as will the Proposed Development.
Cumulative temporary increase in disturbance of other fauna (such as bats, birds etc.)	All Tier 1 and 3 projects identified in **Table 22-27**	The Proposed Development and all projects identified in **Table 22-27** will result in temporary increases in disturbance of local fauna. Due to the close proximity of the projects the effect on local biodiversity may be cumulative, if the construction phases overlap.
Cumulative temporary increase in habitat fragmentation	All Tier 1 and 3 projects identified in **Table 22-27**	The Proposed Development and all projects identified in **Table 22-27** will result in temporary or permanent increases in habitat fragmentation. Due to the close proximity of the projects the effect on local biodiversity may be cumulative, especially if the construction phases overlap.

22.10.9 The CEA for terrestrial ecology and nature conservation is set out in **Table 22-29**.

Table 22-29 Cumulative effects assessment for terrestrial ecology and nature conservation

ID[51]	Development name	Application reference	Assessment discussion	Environmental measures
1	A27 Arundel Bypass	TR010045	Should construction programmes overlap there is the potential for water birds associated with the Arun Valley SPA / Ramsar site to be displaced from a greater area than for each of the projects alone. However, commitment C-117 ensures that the temporary construction activity for the Proposed Development will be scheduled to take place outside of the sensitive feature. This potential effect is therefore discounted.	C-117
13 / 14 / 63	Land at Climping / Arun Local Plan (2018) Reference Site SD10. Policy H SP2c	CM/48/21/RES & CM/1/17/OUT	Construction of housing within close proximity to a temporary construction compound could result in cumulative habitat loss and fragmentation within the home ranges of local fauna. However, in both instances the habitat being occupied for construction is primarily arable fields and can be discounted. Local fauna could be disturbed cumulatively if the construction phases overlap; however, given that the habitats that they may use (for example, hedgerows) will largely remain intact then this potential effect is discounted.	N/A

[51] ID reference as stated in Table 2-1 in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4** of the ES (Document Reference: 6.4.5.4) and on **Figure 5.4.2** to **5.4.4, Volume 4** of the ES (Document Reference: 6.4.5.5).

ID[51]	Development name	Application reference	Assessment discussion	Environmental measures
39	Rock Common Quarry	WSCC/028/21	This is change to existing quarrying operation will not markedly change the situation for local flora and fauna and therefore will not act cumulatively (it is reflected within the existing baseline).	N/A
51	Ghyll Farm	DM/20/2554	This is a small development that would result in the loss of a small amount of grassland and ruderal vegetation. Hedgerows and woodland maintained. A habitat management plan to enhance the remainder of the field (larger than the area of loss) is recommended in the submitted documents. Given its scale, design, and opportunity to deliver a Biodiversity Net Gain, no cumulative effects are predicted.	N/A
52	Battery energy storage system at Coombe Farm #2	DM/22/0807	This is a small development that would result in the loss of arable land. Hedgerows and fringing woodland would be maintained. Given its scale, outline design and opportunity to deliver a Biodiversity Net Gain, no cumulative effects are predicted.	N/A
54	Land Coombe Farm	DM/15/0644	This solar development has been designed to maintain hedgerows and fringing woodland and provide positive management following construction for biodiversity. There is potential for construction phase overlap with the Proposed Development to result in	N/A

ID[51]	Development name	Application reference	Assessment discussion	Environmental measures
			increased levels of disturbance. However, given the overlap of areas simultaneous construction is not considered likely.	
57	Grid stability infrastructure at Bolney Substation	DM/21/4285	This is a small development that would result in the loss of a small amount of grassland and ruderal vegetation. Hedgerows and woodland maintained. A habitat management plan to enhance the remainder of the field (larger than the area of loss) is recommended in the submitted documents. Given its scale, design, and opportunity to deliver a Biodiversity Net Gain, no cumulative effects are predicted.	N/A

22.11 Transboundary effects

22.11.1 Transboundary effects arise when impacts from a development within one European Economic Area (EEA) states affects the environment of another EEA state(s). A screening of transboundary effects has been carried out and is presented in Appendix B of the Scoping Report (RED, 2020).

22.11.2 The onshore infrastructure, with reference to terrestrial ecology and nature conservation will not result in any transboundary effects being realised.

22.12 Inter-related effects

22.12.1 The inter-related effects assessment considers likely significant effects from multiple impacts and activities from the construction, operation and maintenance and decommissioning phases of Rampion 2 on the same receptor, or group of receptors.

22.12.2 Inter-related effects could potentially arise in one of two ways. The first type of inter-related effect is a Proposed Development lifetime effect, where multiple phases of the Proposed Development interact to create a potentially more significant effect on a receptor than in one phase alone. The phases for Rampion 2 are construction, operation and maintenance, and decommissioning. All Proposed Development lifetime effects are assessed in **Chapter 30: Inter-related**

effects, Volume 2 of the ES (Document Reference: 6.2.30). However, the ecological features identified in this chapter in **Sections 22.6** and **22.9** account for this through the approach taken to the assessment (also see **Section 22.8**).

22.12.3 The second type of inter-related effect is receptor-led effects. Receptor-led effects are where effects from different environmental aspects combine spatially and temporally on a receptor. These effects may be short-term, temporary, transient or longer-term.

22.12.4 Receptor-led effects have been considered, where relevant, in this chapter for potential interactions between terrestrial ecology and nature conservation and the following environmental aspects:

- **Chapter 9: Benthic, subtidal and intertidal ecology, Volume 2** of the ES (Document Reference: 6.2.9) due to the intersections of habitats at MHWS;
- **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference: 6.2.12) due to the presence of bird species that use marine, intertidal and terrestrial habitats;
- **Chapter 19: Air quality, Volume 2** of the ES (Document Reference: 6.2.19) due to the potential for emissions and dust associated with the Proposed Development to negatively affect habitats, flora and fauna;
- **Chapter 20: Soils and agriculture, Volume 2** of the ES (Document Reference: 6.2.20) due to the potential overlap between priority habitats such as calcareous grassland and soil type;
- **Chapter 21: Noise and vibration, Volume 2** of the ES (Document Reference: 6.2.21) due to the potential for fauna to be disturbed or displaced by noise and vibration associated with the Proposed Development;
- **Chapter 24: Ground conditions, Volume 2** of the ES (Document Reference: 6.2.24) due to some designated sites having both ecological and geological aspects to their designation; and
- **Chapter 26: Water environment, Volume 2** of the ES (Document Reference: 6.2.26) due to the close association between ecological features and local hydrology.

22.12.5 However, the approach to the assessment has been to consider the potential effects on ecological features, as opposed to the outcomes of individual actions during the construction, operation and maintenance and decommissioning phases. Therefore, further consideration of interrelated effects is not necessary.

22.12.6 Full results of the receptor-led effects assessment can be found in **Chapter 30: Inter-related effects, Volume 2** of the ES (Document Reference: 6.2.30).

22.13 Summary of residual effects

22.13.1 **Table 22-30** presents a summary of the assessment of significant effects, any relevant embedded environmental measures and residual effects on terrestrial ecology and nature conservation receptors.

Page intentionally blank

Table 22-30 Summary of residual effects

Ecological feature	Magnitude of effect	Importance	Embedded environmental measures	Assessment of residual effect (significance)
Arun Valley Ramsar site	Negligible	International	C-103, C-117	**Not Significant**
Arun Valley SPA	Negligible	International	C-103, C-117	**Not Significant**
The Mens SAC	Negligible	International	C-105	**Not Significant**
Amberley Wild Brooks SSSI	Negligible	National	C-103, C-117	**Not Significant**
Pulborough Brooks SSSI	Negligible	National	C-103, C-117	**Not Significant**
Climping Beach SSSI	Negligible	National	C-112, C-117	**Not Significant**
Littlehampton Golf Course and Atherington LWS	Negligible	County	C-112	**Not Significant**
Sullington Hill LWS	Negligible	County	C-24, C-114	**Not Significant**

Ecological feature	Magnitude of effect	Importance	Embedded environmental measures	Assessment of residual effect (significance)
Ancient woodland	Negligible	National	C-103, C-115, C-216, C-220	**Not Significant**
Veteran trees	Negligible	National	C-174, C-220	**Not Significant**
Woodland	Low to Negligible	Local to national	C-12, C-104, C-115, C-199, C-204, C-220	**Not Significant**
Coastal and floodplain grazing marsh	Low to Negligible	National	C-5, C-103, C-117	**Not Significant**
Neutral semi-improved grassland	Low to Negligible	National	C-12, C-103, C-199	**Not Significant**
Native hedgerows (species rich and species poor)	Low to Very Low	National	C-103, C-104, C-115, C-220	**Not Significant**
Streams and permanently wet ditches	Low	National	C-17, C-103, C-199	**Not Significant**
Badgers	Very Low to Negligible	Local	C-26, C-105, C-207, C209	**Not Significant**

Ecological feature	Magnitude of effect	Importance	Embedded environmental measures	Assessment of residual effect (significance)
Bats	Low to Very Low	National	C-22, C-103, C-105, C-115, C-211, C-220, C-291	**Not Significant**
Hazel dormouse	Low to Very Low	International	C-26, C-103, C-105, C-232, C-291, C-299	**Not Significant**
Great crested newt	Very Low to Negligible	International	C-105	**Not Significant**
Reptiles	Negligible	National	C-103, C-208	**Not Significant**
Breeding birds	Low	International to local	C-21, C-103, C-105, C-115, C-203, C-204, C-207, C-220	**Not Significant**
Wintering birds	Negligible	International to local	C-103, C-117	**Not Significant**
Water vole	Very Low to Negligible	National	C-105, C-182, C-210, C-255	**Not Significant**

Page intentionally blank

22.14 Glossary of terms and abbreviations

Table 22-31 Glossary of terms and abbreviations – terrestrial ecology and nature conservation

Term (acronym)	Definition
Baseline	Refers to existing conditions as represented by latest available survey and other data which is used as a benchmark for making comparisons to assess the impact of development.
Baseline conditions	The environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
BoCC	Birds of Conservation Concern
BTO	British Trust for Ornithology
CBC	Common Bird Census
Centre for Environment, Fisheries and Aquaculture Science (Cefas)	The Government's marine and freshwater science experts, advising the UK government and overseas partners.
CIEEM	Chartered Institute of Ecology and Environmental Management
Code of Construction Practice (CoCP)	The code sets out the standards and procedures to which developers and contractors must adhere to when undertaking construction of major projects. This will assist with managing the environmental impacts and will identify the main responsibilities and requirements of developers and contractors in constructing their projects.
Construction Effects	Used to describe both temporary effects that arise during the construction phases as well as permanent existence effects that arise from the physical existence of development (for example new buildings).
CROW Act 2000	Countryside and Rights of Way Act 2000
Cumulative effects	Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments, taken together' (SNH, 2012)

Term (acronym)	Definition
Cumulative Effects Assessment (CEA)	Assessment of impacts as a result of the incremental changes caused by other past, present and reasonably foreseeable human activities and natural processes together with the Proposed Development.
cSAC	candidate Special Area of Conservation
DCO Application	An application for consent to undertake a Nationally Significant Infrastructure Project made to the Planning Inspectorate who will consider the application and make a recommendation to the Secretary of State, who will decide on whether development consent should be granted for the Proposed Development.
Decommissioning	The activities during which a development and its associated processes are removed from active operation.
Development Consent Order (DCO)	This is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects, under the Planning Act 2008.
EcIA	Ecological Impact Assessment
Ecological Feature	The term used in this chapter to describe a receptor. This is noted by CIEEM as covering 'habitats, species and ecosystems' (also see receptor below)
ECoW	Ecological Clerk of Works
EEA	European Economic Area
Electromagnetic field (EMF)	An electromagnetic field is an electric and magnetic force field that surrounds a moving electric charge.
Embedded environmental measures	Equate to 'primary environmental measures' as defined by Institute of Environmental Management and Assessment (2016). They are measures to avoid or reduce environmental effects that are directly incorporated into the preferred masterplan for the Proposed Development.
Environmental Impact Assessment (EIA)	The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or 'baseline').
Environmental measures	Measures which are proposed to prevent, reduce and where possible offset any significant adverse effects (or to avoid, reduce and if possible, remedy identified effects. (GLVIA3, 2013 Para 3.37).

Term (acronym)	Definition
Environmental Statement (ES)	The written output presenting the full findings of the Environmental Impact Assessment.
European Protected Species (EPS)	European Protected Species are species of plants and animals (other than birds) protected by law throughout the European Union.
EPSLs	European Protected Species Licenses
European site	European sites are those that are designated through the Habitats Directive and Birds Directive (via national legislation as appropriate). Within England additional sites designated through international convention are given the same protection through policy – overall all of these are referred to as European sites. European sites in England are considered to be SPAs, SACs, candidate SACs and Sites of Community Importance (SCI). Potential SPAs (pSPA), possible SACs (pSACs), Ramsar sites (designated under international convention) and proposed Ramsar sites
Expert Topic Group (ETG)	As part of the Evidence Plan Process, the ETGs are formed of experts from relevant organisations relative to the topics considered. These groups are established to discuss and agree the evidence and assessment requirements for each EIA and HRA topic area identified.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach and the information required to support the EIA and HRA for certain aspects.
Formal consultation	Formal consultation refers to statutory consultation that is required under Section 42 and Section 47 of the Planning Act 2008 with the relevant consultation bodies and the public on the preliminary environmental information.
Future Baseline	Refers to the situation in future years without the Proposed Development.
Habitats Regulation Assessment (HRA)	The assessment of the impacts of implementing a plan or policy on a European Site (as required by the Conservation of Habitats and Species Regulations 2017 (as amended), the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it will adversely affect the integrity of the site.
Horizontal Directional Drill (HDD)	A trenchless crossing engineering technique using a drill steered underground without the requirement for open trenches. This technique is often employed when crossing environmentally sensitive areas, major water courses and

Term (acronym)	Definition
	highways. This method is able to carry out the underground installation of pipes and cables with minimal surface disruption
HPI	Habitats of Principal Importance
HSI	Habitat Suitability Index
IAQM	Institute of Air Quality Management's
Impact	The changes resulting from an action.
Impact pathway	A change descriptively assessed by one aspect, used by another aspect to inform a related assessment.
Indirect effects	Effects that result indirectly from the Proposed Development as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects. Often used to describe effects on landscape character that are not directly impacted by the Proposed Development such as effects on perceptual characteristics and qualities of the landscape.
Informal consultation	Informal consultation refers to the voluntary consultation that RED undertake in addition to the formal consultation requirements.
IPC	Infrastructure Planning Commission
IUCN	International Union for Conservation of Nature
km	kilometres
LGS	Local Geological Sites
Likely Significant Effects (LSE)	It is a requirement of Environmental Impact Assessment Regulations to determine the likely significant effects of the Proposed Development on the environment which should relate to the level of an effect and the type of effect.
LNR	Local Nature Reserve
Local Wildlife Site (LWS)	Local Wildlife Sites are non-statutory designations conferred by local planning authorities and given weight through local planning policy. These sites are selected through a selection of criteria (criteria are area dependent) aimed at identifying "substantive nature conservation value".

Term (acronym)	Definition
m	metres
Magnitude (of change)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short term or long term in duration'. Also known as the 'degree' or 'nature' of change.
MAVES	Mid-Arun Valley Environmental Survey
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
mSNCI	Marine Sites of Nature Conservation Importance
Nationally Significant Infrastructure Project (NSIP)	Nationally Significant Infrastructure Projects are major infrastructure developments in England and Wales which are consented by DCO. These include proposals for renewable energy projects with an installed capacity greater than 100MW.
NBN	National Biodiversity Network
NERC Act	Natural Environment and Rural Communities Act
NNR	National Nature Reserve
NPS	National Policy Statement
NVC	National Vegetation Classification
Onshore part of the proposed DCO Order Limits	An area that encompasses all planned onshore infrastructure.
OS	Ordnance Survey
Particulate Matter	Microscopic portions of solid matter suspended in air. PM_{10} - microscopic particles with an aerodynamic diameter of 10 microns or less. $PM_{2.5}$ - microscopic particles with an aerodynamic diameter of 2.5 microns or less.
Planning Inspectorate	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England and Wales.
Preliminary Environmental	The written output of the preliminary Environmental Impact Assessment undertaken for the Proposed Development. It is

Term (acronym)	Definition
Information Report (PEIR)	developed to support formal consultation and presents the preliminary findings of the assessment to allow an informed view to be developed of the Proposed Development, the assessment approach that has been undertaken, and the preliminary conclusions on the likely significant effects of the Proposed Development and environmental measures proposed.
pSAC	possible Special Area of Conservation
pSPA	potential Special Protection Area
Rampion 1	The existing Rampion Offshore Wind Farm located in the English Channel off the south coast of England.
Ramsar site	Areas designated by the UK Government under the International Ramsar Convention (the Convention on Wetlands of International Importance) 1971.
Receptor	These are as defined in Regulation 5(2) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and include population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and landscape that may be at risk from exposure to pollutants which could potentially arise as a result of the Proposed Development.
RED	Rampion Extension Development Ltd
RIAA	Report of Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
RWCS	Realistic Worst-Case Scenario
Scoping Opinion	A Scoping Opinion is adopted by the Secretary of State for a Proposed Development.
Scoping Report	A report that presents the findings of an initial stage in the Environmental Impact Assessment process.
SDNPA	South Downs National Park Authority
Secretary of State	The Minister for Department for Energy Security and Net Zero (DESNZ).
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.

Term (acronym)	Definition
Significant effects	It is a requirement of the EIA Regulations, 2017 to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect. Where possible significant effects should be mitigated. The significance of an effect gives an indication as to the degree of importance that should be attached to the impact described. Whether or not an effect should be considered significant is not absolute and requires the application of professional judgement. Significant – 'noteworthy, of considerable amount or effect or importance, not insignificant or negligible'. The Concise Oxford Dictionary. Those levels and types of effect likely to have a major or important / noteworthy or special effect of which a decision maker should take particular note.
Site of Importance for Nature Conservation	A designation used by local authorities for area of land of local conservation value.
Site of Special Scientific Interest (SSSI)	Sites designated at the national level under the Wildlife & Countryside Act 1981 (as amended). They are a series of sites that are designated to protect the best examples of significant natural habitats and populations of species.
SLNP	Sussex Local Nature Partnership
SOS	Sussex Ornithological Society
Special Area of Conservation (SAC)	International designation implemented under the Habitats Regulations for the protection of habitats and (non-bird) species. Sites designated to protect habitats and species on Annexes I and II of the Habitats Directive. Sufficient habitat to maintain favourable conservation status of the particular feature in each member state needs to be identified and designated.
Special Protection Area (SPA)	Sites classified for birds under The Conservation of Habitats and Species Regulations 2017 (as amended)
SPI	Species of Principal Importance
SWT	Sussex Wildlife Trust
SxBRC	Sussex Biodiversity Records Centre

Term (acronym)	Definition
Temporal Scope	The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur and are typically defined as either being temporary or permanent.
Temporary or permanent effects	Effects may be considered as temporary or permanent. In the case of wind energy development, the application is for a 30 year period after which the assessment assumes that decommissioning will occur and that the site will be restored. For these reasons the development is referred to as long term and reversible.
The Applicant	Rampion Extension Development Limited (RED)
The Proposed Development / Rampion 2	The development that is subject to the application for development consent, as described in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).
UK	United Kingdom
WCA	Wildlife and Countryside Act
WeBS	Wetland Bird Survey
WSCC	West Sussex County Council
Zone of Influence (ZoI)	The area surrounding the Proposed Development which could result in likely significant effects.

22.16 References

Arun District Council, (2018). *Adopted Local Plan*. [Online] Available at: https://www.arun.gov.uk/adopted-local-plan [Accessed 01 June 2023].

Bat Conservation Trust and Institution of lighting professionals (2018). *Bats and artificial lighting in the UK*. [Online] Available at: https://cdn.bats.org.uk/uploads/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?v=1542109349 [Accessed 01 June 2023

Bat Conservation Trust, (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition*. [Online] Available at: https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-3rd-edition [Accessed 01 June 2023].

Berthinussen, A. & Altringham, J. (2012) *The effect of a major road on bat activity and diversity*. Journal of Applied Ecology 49: 82-89.

Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F, (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*. Freshwater Habitats Trust, Oxford.

British Standards Institution, (2012*). BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*. London, UK.

Chanin and Smith, (2003). *Monitoring the Otter. Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No 10*. Peterborough, English Nature.

Chartered Institute of Ecology and Environmental Management (CIEEM), (2018). *Guidelines for ecological impact assessment in the UK and Ireland*. [Online] Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1Update.pdf [Accessed 01 June 2023].

Cheffings. C. M and Farrell. L, (2005). *The Vascular Plant Red Data List for Great Britain, Species Status No. 7*. Joint Nature Conservation Committee, Peterborough.*Countryside and Rights of Way Act 2000*. [Online] Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents/enacted [Accessed 01 June 2023].

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. [online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043 [Accessed 01 June 2023].

Countryside and Rights of Way Act 2000. [Online] Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents [Accessed 01 June 2023].

Crofts, A. and Jefferson, R.G. (Eds.) (1999) *The Lowland Grassland Management Handbook.* English Nature and the Wildlife Trusts, Peterborough.

Cutts, N., Phelps, A. and Burdon, D., 2009. *Construction and waterfowl: Defining sensitivity, response, impacts and guidance. Report to Humber INCA by the Institute of Estuarine and Coastal Studies, University of Hull. EN (2003) The Humber Estuary European Marine Site: English Nature's advice given under Regulation, 33(2).*Dean, M., Strachan, R., Gow, D. and Andrews, R., (2016). *The Water Vole Mitigation Handbook (The*

Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

Dean, M., Strachan, R., Gow, D. & Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series).* Eds Fiona Matthews and Paul Chanin. The Mammal Society, London.

Department for Energy Security and Net Zero (DESNZ), (2023). *DRAFT Overarching National Policy Statement for Energy (EN-1).* [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147380/NPS_EN-1.pdf [Accessed 01 June 2023].

Department for Energy Security and Net Zero (DESNZ), (2023b). *DRAFT National Policy Statement for Electricity Networks Infrastructure (EN-5)*. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147384/NPS_EN-5.pdf [Accessed 01 June 2023].

Department for Environment, Food and Rural Affairs (Defra), 2022. MAGIC Interactive Map. [Online] Available at: https://magic.defra.gov.uk/MagicMap.aspx [Accessed 01 June 2023].

Department of Energy & Climate Change, (2011b). *National Policy Statement for Electricity Networks Infrastructure (EN-5)*. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf [Accessed 01 June 2023].

Department of Energy and Climate Change (DECC), (2011a). *Overarching National Policy Statement for Energy (EN-1).* [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf [Accessed: 01 June 2023].

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Codified version). [online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147 [Accessed 01 June 2023].

Edwards, M., (2016). *An Entomological Survey within Binsted Parish, 2016*. MAVES Group, Arundel

Edwards, M., (2017). *An Entomological Survey within Binsted Parish, 2016 and 2017.* MAVES Group, Arundel.

Froglife, (1999). Froglife Advice Sheet 10: reptile survey. [Online] Available at: https://www.wildcare.co.uk/media/wysiwyg/pdfs/froglife_advice_sheet_10_-_reptile_surveys.pdf [Accessed 01 June 2023].

Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. & Austin, G.E., (2020). *Waterbirds in the UK 2018/19: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT*. British Trust for Ornithology, Thetford.

Highways England, (2019). *A27 Arundel bypass Environmental Assessment Report* [Online] Available at: https://highwaysengland.citizenspace.com/he/a27-arundel-bypass-further-

consultation/supporting_documents/A27%20Arundel%20Bypass%20%20Environmental%20Assessment%20Report%202019%20%20Final%20002.pdf [Accessed 01 June 2023].

Horsham District Council, (2015). *Horsham District Planning Framework (excluding South Downs National Park).* [Online] Available at: https://www.horsham.gov.uk/__data/assets/pdf_file/0016/60190/Horsham-District-Planning-Framework-November-2015.pdf [Accessed 01 June 2023].

Horsham District Council, (2018). *Draft Horsham District Local Plan 2019-2036*. [Online] Available at: https://strategicplanning.horsham.gov.uk/consult.ti/LocalPlanReview/viewCompoundDoc?docid=10336756 [Accessed 01 June 2023].

Institute of Air Quality Management (IAQM), (2016). *Guidance on the assessment of dust from demolition and construction, version 1.1*. [Online]. Available at: https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf [Accessed 01 June 2023].

Joint Nature Conservation Committee (JNCC), (2016). *Handbook for Phase 1 habitat survey – a technique for environmental audit.* [Online] Available at: https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf [Accessed 01 June 2023].

Liley, D & Fearnley, H (2011). *Bird Disturbance Study North Kent 2010/2011*. Dorset; Footprint Ecology.

Mid Sussex District Council (2018). *Mid Sussex District Plan 2014-2031*. [Online] Available at: https://www.midsussex.gov.uk/planning-building/mid-sussex-district-plan/ [Accessed 01 June 2023].

Mid Sussex District Council, (2022). *Draft Mid-Sussex District Plan 2021 – 2039.* [Online] Available at: https://www.midsussex.gov.uk/media/8769/district-plan-reg-18-consultation-version-for-web.pdf [Accessed 01 June 2023].

Mid-Arun Valley Environmental Survey (MAVES), (2015). *2015 MAVES Survey Results Summary*. [Online] https://www.aruncountryside.org/_app_/resources/documents/www.aruncountryside.org/MAVES%20-%202015%20Survey%20Results%20Summary.pdf [Accessed 01 June 2023].

Ministry of Housing Communities & Local Government, (2021). *National Planning Policy Framework*. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf [Accessed 01 June 2023].

Mortelliti, A., Santarelli, L., Sozio, G., Fagiani, S. & Boitani, L. (2013) *Long distance field crossings by hazel dormice (Muscardinus avellanarius) in fragmented landscapes*. Mammalian Biology 78: 309-312.

National Biodiversity Network (NBN), (2015). *Non Native Species*. [Online] Available at: https://nbn.org.uk/tools-and-resources/useful-websites/non-native-species/#:~:text=First%20published%20in%202008%20and%20updated%20in%202015,native%20British%20species,%20our%20health%20or%20our%20economy [Accessed 01 June 2023].

Natural England and Department for Environment, Food & Rural Affairs (Defra), (2015). *Badger Meles meles: surveys and mitigation for development projects*. [Online] Available

at: https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects [Accessed 01 June 2023].

Natural England and Department for Environment, Food & Rural Affairs (Defra), (2015a). *Bats: surveys and mitigation for development projects.* Available at: https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-development-projects?share=telegram [Accessed 01 June 2023].

Natural England and Department for Environment, Food & Rural Affairs (Defra), (2015b). *Hazel or common dormice: surveys and mitigation for development projects.* [Online] Available at: https://www.gov.uk/guidance/hazel-or-common-dormice-surveys-and-mitigation-for-development-projects [Accessed 01 June 2023].

Natural England and Forestry Commission (2022) *Ancient woodland, ancient trees and veteran trees: advice for making planning decisions*. [Online] Available at: https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions#avoid-impacts-reduce-mitigate-impacts-and-compensate-as-a-last-resort [Accessed 01 June 2023].

Natural England and Other Parties (2023). Biodiversity Metric 4.0 User Guide [Online] Available at: https://publications.naturalengland.org.uk/publication/6049804846366720 [Accessed 10 June 2023].

Natural England, (2007*). Surveying terrestrial and freshwater invertebrates for conservation evaluation (NERR005).* [Online] Available at: http://publications.naturalengland.org.uk/publication/36002 [Accessed 01 June 2023].

Natural England, (2015). *Great crested newts: protection and licences*. [Online] Available at: https://www.gov.uk/guidance/great-crested-newts-protection-surveys-and-licences [Accessed 01 June 2023].

Natural England (2012) *Technical Information Note 110: Assessing whether created or restored grassland is a BAP Priority Habitat*. Natural England, Peterborough.

Natural Environment and Rural Communities (NERC) Act 2006. [Online] Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents [Accessed 01 June 2023].

Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M., (2000). *Evaluating the suitability of habitat for the great crested newt (Triturus cristatus)*. Herpetological Journal, 10(4), p.143-155.Panks et al 2022.

Planning Act (2008). [Online] Available at: https://www.legislation.gov.uk/ukpga/2008/29/introduction [Accessed 01 June 2023].

Planning Inspectorate (2020a). *Scoping Opinion: Proposed Rampion 2 Offshore Wind Farm.* [Online]. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000045-EN010117%20Scoping%20Opinion.pdf [Accessed 01 June 2023].

Protection of Badgers Act 1992. [Online] Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed 01 June 2023].

Rampion Extension Development Limited (RED), (2020). *Scoping Report: Proposed Rampion 2 Offshore Wind Farm.* [Online] Available at: https://infrastructure.planninginspectorate.gov.uk/wp-

content/ipc/uploads/projects/EN010117/EN010117-000006-EN010117 - Scoping Report.pdf [Accessed 01 June 2023].

Rampion Extension Development Limited (RED), (2021). *Preliminary Environmental Information Report 2021.* [Online] Available at: https://rampion2.com/consultation-2022/documents/#documents2021 [Accessed 01 June 2023].

Robinson, J.A., K. Colhoun, J.G. McElwaine & E.C. Rees (2004*). Bewick's Swan Cygnus columbianus bewickii (Northwest Europe population) in Britain and Ireland 1960/61 – 1999/2000*. Waterbird Review Series, The Wildfowl & Wetlands Trust/Joint Nature Conservation Committee, Slimbridge.

Rodwell, J.S. and Joint nature conservation committee (GB), (2006). *National vegetation classification: Users' handbook*. Peterborough: Joint nature conservation committee.

Royal Haskoning DHV (2019) *Norfolk Boreas Wind Farm – Clarification Note Trenchless Crossings and Potential Effects of Breakout on the River Wensum.* [Online]. Available at EN010087-001319-Clarification Note Trenchless Crossings and Potential Effects of Breakout on the River Wensum.pdf (planninginspectorate.gov.uk) [Accessed 01 June 2023].

Ruddock, M. and Whitfield, D.P. (2007). *A review of disturbance distances in selected bird species*. *A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.* [online] Available at: https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance [Accessed 01 June 2023].

Scottish Badgers, (2018). *Surveying for Badgers Good Practice Guidelines, Version 1.* [Online] Available at: https://www.scottishbadgers.org.uk/wp-content/uploads/2020/12/Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf [Accessed 01 June 2023].

South Downs National Park (SDNP), (2019). *South Downs Local Plan Adopted 2 July 2019 (2014-33).* [Online] Available at: https://www.southdowns.gov.uk/planning-policy/south-downs-local-plan/local-plan/south-downs-local-plan-adopted-2-july-2019-2014-33/ [Accessed 01 June 2023].

South Downs National Park Authority (SDNPA) and Natural England (2018). *Draft Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol*. [Online]. Available at: https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf [Accessed 01 June 2023].

Stroh, P., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T. and Preston, C.D., (2014). *A vascular plant red list for England*. BSBI News, 9, p.1-193

Summers, R.W. & Critchley, C.N.R, (1990). *Use of grassland and field selection by Brent geese Branta bernicla.* Journal of Applied Ecology (27), p834-846.

Taylor SE, Welch WT, Kim HS, Sherman DK (2007). *Cultural differences in the impact of social support on psychological and biological stress responses*. Psychol Sci. 2007 Sep;18(9):831-7

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. [online] Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573 [Accessed 01 June 2023].

The Conservation of Habitats and Species Regulations 2017. [Online] Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made [Accessed 01 June 2023].

The Environment Act 2021. [Online] Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed 01 June 2023].

The Hedgerows Regulations 1997. [Online] Available at: https://www.legislation.gov.uk/uksi/1997/1160/contents/made [Accessed 01 June 2023].

The Infrastructure Planning (Decisions) Regulations 2010. [Online] Available at: https://www.legislation.gov.uk/uksi/2010/305/contents/made#:~:text=The%20Infrastructure%20Planning%20%28Decisions%29%20Regulations%202010%201%20Citation,Act%201985%206%20Hazardous%20substances%207%20Biological%20diversity [Accessed 01 June 2023].

The Invasive Alien Species (Enforcement and Permitting) Order 2019. SI 2019:527. [Online] Available at: https://www.legislation.gov.uk/uksi/2019/527/made [Accessed 01 June 2023].

Thompson, J., (2016). *An ecological survey of the Mid-Arun Valley.* MAVES, Arundel.

Thompson, J., (2017). *An ecological survey of the Mid-Arun Valley: March 2017 supplement to October 2016 report*. MAVES, Arundel.

Thompson, J., (2018). *An ecological survey of the Mid-Arun Valley.* MAVES, Arundel.

Thompson, J., (2018). *MAVES – The Mid-Arun Valley 2018 Update*. MAVES, Arundel.

Town and Country Planning Act 1990. [Online] Available at: https://www.legislation.gov.uk/ukpga/1990/8/contents [Accessed 01 June 2023].

Whitby, D., (2016). *Bat survey – Trapping Survey Binsted Woods*. MAVES Group, Arundel.

Whitby, D., (2017). *Bat survey – Trapping Survey Binsted Woods.* MAVES Group, Arundel.

Whitby, D., (2018). *Bat survey – Trapping Survey Binsted Woods.* MAVES Group, Arundel.

Wildlife and Countryside Act 1981. [Online] Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents [Accessed 01 June 2023].

Zeale, MRK; Davidson-Watts, I & Jones, G. (2012) *Home range use and habitat selection by barbastelle bats (Barbastella barbastellus): implications for conservation*, Journal of Mammalogy, Volume 93, Issue 4, 14 September 2012, Pages 1110–1118,

Page intentionally blank

Rampion 2
WIND FARM