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Rampion 2 WIND FARM

Volume 2, Chapter 23

Terrestrial ecology and nature conservation

GoBe wood.

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23. Terrestrial ecology and nature conservation

23.1 Introduction

23.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents the preliminary 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[1] species above mean high water springs (MHWS)[2]. It should be read in conjunction with the project description provided in **Chapter 4: The Proposed Development** and the relevant parts of the following chapters:

- **Chapter 9: Benthic, subtidal and intertidal ecology** (due to the intersections of habitats at MHWS);
- **Chapter 12: Offshore ornithology** (due to the presence of bird species that use marine, intertidal and terrestrial habitats);
- **Chapter 20: Air quality** (due to the potential for emissions and dust associated with the Proposed Development to negatively affect habitats, flora and fauna);
- **Chapter 21: Soils and agriculture** (due to the potential overlap between priority habitats such as calcareous grassland and soil type);
- **Chapter 22: Noise and vibration** (due to the potential for fauna to be disturbed or displaced by noise and vibration associated with the Proposed Development);
- **Chapter 25: Ground conditions** (due to some designated sites having both ecological and geological aspects to their designation): and;
- **Chapter 27: Water environment** (due to the close association between ecological features and local hydrology).

23.1.2 This chapter describes:

- the legislation, planning policy and other documentation that has informed the assessment (**Section 23.2: Relevant legislation, planning policy, and other information and guidance**);
- the outcome of consultation and engagement that has been undertaken to date, including how matters relating to terrestrial ecology and nature conservation within the Scoping Opinion received in August 2020 have been addressed (**Section 23.3: Consultation and engagement**);

[1] Notable species are those with conservation designations (e.g. birds that appear on the red or amber list of the Birds of Conservation Concern or invertebrates listed in relevant Red Data Books), but no specific legal protection.
[2] Habitats and species within intertidal and marine habitats are considered in **Chapter 14: Nature conservation**.

- the methods used for the baseline data gathering (**Section 23.4: Methodology for baseline data gathering**);
- the overall baseline (**Section 23.5: Baseline conditions**);
- the scope of the assessment for terrestrial ecology and nature conservation (**Section 23.6: Scope of the assessment**);
- embedded environmental measures relevant to terrestrial ecology and nature conservation and the relevant maximum design scenario (**Section 23.7: Basis for PEIR assessment** and **Section 23.8: Embedded environmental measures**);
- the assessment methods used for the PEIR (**Section 23.9: Methodology for PEIR assessment**);
- the assessment of terrestrial ecology and nature conservation effects (**Section 23.10: Preliminary assessment** and **Section 23.11: Preliminary assessment: Cumulative effects**);
- consideration of transboundary effects (**Section 23.12: Transboundary effects**);
- consideration of inter-related effects (**Section 23.13: Inter-related effects**);
- a summary of residual effects for terrestrial ecology and nature conservation (**Section 23.14: Summary of residual effects**);
- an outline of further work to be undertaken for the Environmental Statement (ES) (**Section 23.15: Further work to be undertaken for ES**);
- a glossary of terms and abbreviations is provided in **Section 23.16: Glossary of terms and abbreviations**; and
- a references list is provided in **Section 23.17: References**.

23.1.3 The chapter is also supported by the following appendices:

- **Appendix 23.1: Policy and legislation tables, Volume 4**;
- **Appendix 23.2: Terrestrial ecology desk study, Volume 4**; and
- **Appendix 23.3: Onshore winter bird report 2020-2021, Volume 4**.

23.1.4 This technical chapter has a structure that differs from others within this PEIR to reflect Ecological Impact Assessment (EcIA) guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018, updated 2019).

23.1.5 A **Habitats Regulations Assessment (HRA) Screening Report** was provided to specific stakeholders (see **Section 23.3**) in tandem with the submission to gain a scoping opinion from the Planning Inspectorate (PINS) (Planning Inspectorate, 2020). An update on the HRA process and outcomes to date has been provided to the same stakeholders, alongside this PEIR.

23.2 Relevant legislation, policy and other information and guidance

Introduction

23.2.1 This section identifies the 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** of this PEIR.

Legislation and national planning policy

23.2.2 **Table 23-1** lists the legislation relevant to the assessment of the effects on ecological features[3].

Table 23-1 Legislation relevant to terrestrial ecology and nature conservation

Legislation description	Relevance to assessment
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') into 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.	The Proposed Development will result in potential effects on constituents of the national site network and EPS which requires assessment in line with the Habitats Regulations. Within this chapter, the likely significant effects on these sites and EPS are assessed in **Section 23.10** with embedded environmental measures detailed in **Section 23.8**. A draft HRA Screening Report (RWE, 2020), was provided to participants in the Evidence Plan Process (see **Section 23.3**) alongside the EIA Scoping Report. This assessment identified a number of European sites that required further assessment within a "Report to Inform the Appropriate Assessment" (RIAA) and screened out others where effects were either absent or did not require mitigation

[3] 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, 2018, updated 2019)

Legislation description	Relevance to assessment
	to conclude no Likely Significant Effects. An update of this screening assessment and a draft RIAA will be the subject of future technical engagement prior to finalisation and submission alongside the ES. The conclusions drawn within the assessment in **Section 23.10** are consistent with those to be presented within the **Draft RIAA**.
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 Government's strategy with regards to biodiversity. The strategic aims of Government policy are addressed with regard to mitigation, compensation and enhancement in **Section 23.9**.
Natural Environment and Rural Communities Act 2006 ('the NERC Act')	
The NERC Act (amongst other matters) places a duty to conserve 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. These Habitats of Principal Importance (HPI) and Species of Principal Importance (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.	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 23.6** and **23.10**. Embedded environmental measures are detailed in **Section 23.8**.
Countryside and Rights of Way Act 2000 ('the CRoW Act')	
This CRoW Act, amongst other elements, details further measures for the	The Proposed Development will result in potential effects on SSSIs and protected

Legislation description	Relevance to assessment
management and protection of Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.	flora and fauna. The protection conferred to these ecological features through legislation is accounted for within the scope of the assessment (see **Section 23.6**), the likely significant effects in **Section 23.10** and the embedded environmental measures are detailed in **Section 23.8.**
The Hedgerows Regulations 1997 ('the Hedgerow Regulations')	
The Hedgerows Regulations 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 23.10** and embedded environmental measures detailed in **Section 23.8**.
Protection of Badgers Act 1992 ("the Protection of Badgers Act")	
The Protection of Badgers Act 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 23.6**), the likely significant effects in **Section 23.10** and the embedded environmental measures detailed in **Section 23.8**.
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). Amongst other matters it provides protection for wild birds, certain flora and fauna and sets the framework for the protection and management of SSSIs.	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 23.6**), the likely significant effects in **Section 23.10**, and the embedded environmental measures detailed in **Section 23.8**.

23.2.3 **Table 23-2** lists the national planning policy relevant to the assessment of the effects on terrestrial ecology and nature conservation receptors.

Table 23-2 National planning policy relevant to terrestrial ecology and nature conservation

Policy description	Relevance to assessment
Overarching National Policy Statement (NPS) for Energy (EN-1)	
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 23.6**. For those terrestrial ecological features where the potential for resulting likely significant effects exist, further assessment is provided in **Section 23.10**, alongside consideration of the embedded environmental measures, detailed in **Section 23.8**. The adherence to the CIEEM guidance (2018, updated 2019) 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 23.8**. As the design of the Proposed Development and baseline evolve over time specific mitigation, compensation and enhancement will be devised. As mitigation and compensation measures evolve, these will be included within amended or new embedded environmental measures, with enhancements detailed separately. This will be detailed in the ES.
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 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*	The design of the Proposed Development outlined in **Chapter 4** has avoided land take within any SSSIs. Potential effects on SSSIs close to the construction site and operational infrastructure are assessed in **Section 23.6** and **Section 23.10**. Embedded environmental measures are detailed in **Section 23.8.**

Policy description	Relevance to assessment
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."	
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 23.10**, alongside consideration of the embedded environmental measures described in **Section 23.8**.
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 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."*	The Proposed Development outlined in **Chapter 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 23.6** and **Section 23.10**. Embedded environmental measures are detailed in **Section 23.8**. Veteran trees have not yet been identified within the onshore part of the PEIR Assessment Boundary. Any veteran trees will be identified as part of an arboriculture survey in 2021. Embedded environmental measures in **Section 23.8** provide methods for avoidance should they be needed.

Policy description	Relevance to assessment
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 within the Proposed Development are detailed in **Section 23.8**. As the design of the Proposed Development and baseline evolve over time, specific mitigation, compensation and enhancement will be devised. This will be detailed in the ES.
National Policy Statement for Electricity Networks Infrastructure	
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 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.*"	Consideration of the potential effects of EMF are provided in **Sections 23.6** with embedded environmental measures described in **Section 23.8**.

Policy description	Relevance to assessment
National Planning Policy Framework	
Paragraph 174 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 23.5**, with the assessment described in **Sections 23.6** and **23.10**. Embedded environmental measures are described in **Section 23.8**.
Paragraph 175 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 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*	The baseline environment is described in **Section 23.5**, with the assessment described in **Sections 23.6** and **23.10**. Embedded environmental measures are described in **Section 23.8**. The Proposed Development outlined in **Chapter 4: The Proposed Development** has avoided land take within any SSSIs or ancient woodland.

Policy description	Relevance to assessment
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."*	

Local planning policy

23.2.4 **Appendix 23.1: Policy and legislation tables, Volume 4** provides the local planning policy relevant to the assessment of the likely significant effects on terrestrial ecology and nature conservation receptors. The policies described in **Appendix 23.1, Volume 4** are taken from the following documents:

- Adopted Arun Local Plan 2011 – 2031 (2018);
- Adopted South Downs Local Plan 2014 – 2033 (2019);
- Draft Horsham District Local Plan 2019 – 2036 (2018)[4];
- Horsham District Planning Framework (excluding South Downs National Park) (2015); and
- Mid-Sussex District Plan 2014 – 2031 (2018).

Other relevant information and guidance

23.2.5 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, updated in 2019).

[4] It is expected that a finalised Regulation 19 document will be published in Summer 2021. The updated plan will be considered within the ES.

23.3 Consultation and engagement

Overview

23.3.1 This section describes the outcome of, and response to, the Scoping Opinion in relation to terrestrial ecology and nature conservation assessment, and also provides details of the ongoing informal consultation that has been undertaken with stakeholders and individuals. An overview of such engagement undertaken can be found in **Section 1.5** of **Chapter 1: Introduction**.

23.3.2 Given the restrictions which have been in place due to the COVID-19 pandemic during this period, all consultation has taken the form of conference calls using Microsoft Teams.

Scoping opinion

23.3.3 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 PINS) on 2 July 2020. A Scoping Opinion was received on 11 August 2020 (Planning Inspectorate, 2020). The Scoping Report set out the proposed terrestrial ecology and nature conservation assessment methodologies, outline of the baseline data proposed and collected to date, and the scope of the assessment. **Table 23-3** sets out the comments received in Section 5 of the PINS Scoping Opinion, 'Aspect based scoping tables – Onshore', and how and where these have been addressed in this PEIR. A full list of the PINS Scoping Opinion comments and responses is provided in **Appendix 5.1: Response to the Scoping Opinion, Volume 4**. Regard has also been given to other stakeholder comments that were received in relation to the Scoping Report.

23.3.4 The information provided in the PEIR is preliminary and therefore where Scoping Opinion comments have not yet been able to be fully addressed at this stage, they will be within the ES.

Table 23-3 PINS Scoping Opinion responses – terrestrial ecology and nature conservation

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
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 23.6.** Emissions associated with construction traffic and plant on all statutorily designated sites have been scoped out, in agreement with PINS (Planning Inspectorate, 2020),

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
		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 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.*"	The assessment presented in **Section 23.6** follows the criteria of the IAQM regarding dust emissions.
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 PEIR Assessment Boundary is provided in **Section 23.6.** 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 PEIR Assessment Boundary 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.

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
5.5.3	Fragmentation of habitat – effects on shoveler, teal and wigeon features of the Arun valley SPA: "*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.*"	Wintering bird surveys have commenced and are ongoing within the relevant areas of the Arun Valley and Adur Valley. One element of this survey is the recording of species listed as designated features on the Arun Valley SPA and Ramsar site. A preliminary assessment of the potential effects of fragmentation on features of the Arun Valley SPA and Ramsar site is provided within this chapter and will be updated in the ES once a full data set is available (see **Section 23.10**). A summary of the current baseline position is provided within **Section 23.5.**
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 MHWS have been considered in **Section 23.6** within which they are scoped out on the basis of the embedded environmental measures described in **Section 23.8**.
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 any*	Emissions associated with construction traffic and plant on all statutorily designated sites were scoped out following the issue of the Scoping Opinion (Planning Inspectorate, 2020) and are not considered further within this chapter.

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
	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 23.6,** in light of embedded environmental measures detailed in **Section 23.8**.
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 PEIR Assessment Boundary and four LWS within it. The baseline situation is described in **Section 23.5** and the assessment of likely significant effects provided in **Section 23.9**.
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 Inspectorate does not agree that this matter can be scoped out as insufficient*	**Section 23.5** identifies all SSSIs within 5km of the onshore part of the PEIR Assessment Boundary (or 12km for SSSIs that cite one or more bat species). **Sections 23.6** and **23.10** assess the likely significant effects on the mobile features of the SSSIs identified from the fragmentation of habitats.

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
	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 23.5** identifies all SSSIs within 5km of the onshore part of the PEIR Assessment Boundary (or 12km for SSSIs that cite one or more bat species). **Sections 23.6** and **23.10** 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 PEIR Assessment Boundary supporting bats has been undertaken (**Section 23.5**). 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 23.10**.
5.5.11	Changes in hydrology for SSSIs and LWS: "*Impacts on changes to hydrology to SSSIs and LWS outside of the ZoI*	The ZOI used within this chapter is that established within **Chapter 27: Water environment** to assess the potential for changes in hydrology. This is based on the water

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
	(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."	environment in the area (e.g. catchments) and not on a simple measure of distance. **Section 23.6** uses information in **Chapter 27** to identify the SSSIs and LWS 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 23.10**.
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 PEIR Assessment Boundary (see **Section 23.5**) and likely significant effects on these have been subject to assessment in this document (see **Sections 23.6** and **23.10**). Embedded environmental measures are described within **Section 23.8.**
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 should be assessed within the ES*."	The potential for the spread of invasive non-native species, including those by hydrological means, is assessed in **Section 23.6,** in light of embedded environmental measure C-107 detailed in **Section 23.8**.
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 LWS are located within the onshore part of the PEIR Assessment Boundary (see **Section 23.5**). An assessment of the likely significant effects of fragmentation of habitats resulting on these designations is provided in **Section 23.10,** and embedded environmental measures detailed in **Section 23.8**. LWS outside of the

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
		PEIR boundary are not considered with regards fragmentation of habitats as per the Scoping Opinion (Planning Inspectorate, 2020).
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 LWS from lighting are considered in **Section 23.6** and embedded environmental measures detailed in **Section 23.8**.
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 23.6** within which they are scoped out on the basis of the embedded environmental measures detailed in **Section 23.8**.
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 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.*"	The survey programme includes for breeding bird surveys in 2021 (see **Table 23-7**). **Section 23.5** describes the current baseline (from desk study only), with preliminary assessment provided in **Section 23.10.** Embedded environmental measures are described within **Section 23.8.** The ES will assess likely significant effects should they remain.

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
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 evolution of design and future survey will inform an assessment of the potential effects on fish. This will be reported upon in the ES and include cross reference as appropriate. **Section 23.6** provides a preliminary 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 23.10** and will be further detailed in the 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 electromagnetic field (EMF) are considered within **Section 23.6**.

Evidence Plan Process (EPP)

23.3.5 The EPP has been set up to provide a formal, non-legally binding, independently chaired forum to agree the scope of the EcIA and HRA, and the evidence required to support the DCO Application. For terrestrial ecology and nature conservation, further engagement has been undertaken via the EPP Expert Topic Group (ETG) 'Onshore Ecology, Hydrology and Nature Conservation' which has met (virtually)

four times on 18 September, 28 October 2020, 23 March 2021 and 26 March 2021.

23.3.6 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, Adur and Worthing Councils and the Wildlife Trust.

23.3.7 The second conference call on 28 October 2020 covered responses to the Scoping Opinion 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 LWS and ancient woodland were considered. Attendees included: Natural England, WSCC, the Environment Agency, Sussex Ornithological Society (SOS), South Downs National Park Authority (SDNPA), SWT, RSPB and the Ouse and Adur Rivers Trust.

23.3.8 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.

23.3.9 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.

Informal consultation and further engagement

Overview

23.3.10 Informal consultation 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 informal consultation undertaken between the completion of the Scoping Report and up to and including March 2021 is outlined in this section.

Natural England

23.3.11 An initial meeting was held on 22 April 2020 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 Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and the approach to the HRA;
- summary of the DCO Application programme including submission of the EIA Scoping Report (RED, 2020), PEIR and Environmental Statement 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.

South Downs National Park Authority (SDNPA)

23.3.12 Independent of the EPP, further terrestrial ecology and nature conservation engagement with the SDNPA, has taken place on two conference calls on 31 July 2020 and 18 November 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 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)

23.3.13 Independent of the EPP, further terrestrial ecology engagement with WSCC took place on 25 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 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)

23.3.14 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)

23.3.15 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.

Sussex Local Nature Partnership (SLNP)

23.3.16 Correspondence with SLNP highlighted that it was content to not directly engage with the Rampion 2 project as several of their members (e.g. 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.

Informal consultation – January / February 2021

23.3.17 RED carried out an Informal Consultation exercise for a period of four weeks from 14 January 2021 to 11 February 2021. This Informal 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.

23.3.18 The key themes emerging from Informal Consultation 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.

23.3.19 The design of the onshore elements of the Proposed Development (**Chapter 4**) that forms the basis of the assessment in **Sections 23.6** and **23.10** has accounted for sensitive ecological features. Further evolution of the design will be informed by additional field survey data as it becomes available throughout 2021.

23.4 Methodology for baseline data gathering

Overview

23.4.1 Baseline data collection is being undertaken to obtain information over the study area as described below. The current baseline conditions (based on information

gathered to date) are presented in **Section 23.5**. At the time of publication, field surveys are ongoing due to constraints arising from land access, COVID-19 pandemic related issues and the seasonally constrained nature of many of the survey methodologies.

Study area

23.4.2 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[5] 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 PEIR Assessment Boundary[6], (as shown on **Figure 23.1a-c, Volume 3**);
- the desk study areas (known as 'areas of search') for sites designated for their nature conservation interest at the international, European[7], 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 preliminary[8] field survey area.

23.4.3 The extent of the areas of search (see **Table 23-4**) and field survey area (see **Table 23-7**) 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 (see **Figure 23.1a-c, Volume 3**). 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.

23.4.4 The study area will be reviewed and amended in response to such matters as refinement of the onshore elements of the Proposed Development, the identification of additional impact pathways and, where appropriate, in response to feedback from consultation. This is to ensure that there is sufficient data on which to conduct the assessment. These refinements are expected to reduce the extent

[5]'Ecological feature' is used within EcIA published by the CIEEM (CIEEM, 2018, updated 2019) in place of the term 'terrestrial ecology receptor'. The term ecological feature is used throughout this chapter.
[6] The term PEIR Assessment Boundary in this chapter refers to the onshore part of the Proposed Development only. Onshore is defined as all habitats above MHWS.
[7] The term European has been retained to differentiate between sites designated under the WCA (at the national level) and those constituents of the national site network that were previously referred to as European sites.
[8] The field survey area is preliminary as it will evolve over time as the Proposed Development design changes to accommodate newly identified constraints and the distribution of ecological features are determined.

of the study area[9] as the Proposed Development progresses, whilst still reflecting recognised good practice.

Desk study

23.4.5 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[10] that have been recorded over the previous 10 years (2010 to 2020). **Table 23-4** lists the data compiled within the study area[11]. **Appendix 23.2: Terrestrial ecology desk study, Volume 4** (PEIR stage[12]) provides further details.

Table 23-4 Data gathered during the desk study

Ecological feature	Example / definition	Coverage of study area[13]
Statutory sites designated under international conventions or the Habitats Regulations[14]	Special Areas of Conservation (SAC), candidate SAC (cSAC), Special Protection Areas (SPA), proposed SPA, Ramsar sites and proposed Ramsar sites.	SACs and possible[15] SACs were searched for inside and within 12km of the onshore part of the PEIR Assessment Boundary 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).

[9] The study area will reduce as the number of options reduce as the design of the Proposed Development evolves.
[10] 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.
[11] Note that the PEIR Assessment Boundary used to define the desk study was slightly larger than that presented in **Figure 23.1a-c, Volume 4** (due to design changes being made after the data had been collated).
[12] Note that the Terrestrial ecology desk study report published as an appendix to the Scoping Report (RED, 2020) has been updated to reflect the PEIR Assessment Boundary and to include additional data sources.
[13] Coverage is based on technical guidance as referenced in **Section 23.4**.
[14] Sites (e.g. SPAs and SACs) that were formerly termed European sites are referred to within this chapter as constituents of the national site network reflecting the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.
[15] Magic.gov.uk identifies 'possible SACs' as a category, as opposed to candidate SACs. Possible SACs are sites that have been identified but have not been submitted to the European Commission for designation (cSACs are the same except they have been submitted are but are not yet designated). There are no candidate SACs currently for the UK – possible SACs were included to ensure completeness.

Ecological feature	Example / definition	Coverage of study area[13]
		SPAs, proposed SPAs, Ramsar sites and proposed Ramsar sites were searched for inside and within 10km of the onshore part of the PEIR Assessment Boundary reflecting the upper foraging distances of dark-bellied brent geese *Branta bernicla bernicla* (Summers & Critchley, 1990) and Bewick's swan *Cygnus columbianus bewickii* (Robinson *et a*l. 2004) from 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	Sites of Special Scientific Interest (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 PEIR Assessment Boundary. NNRs and all other SSSIs were searched for inside and within 5km of the onshore part of the PEIR Assessment Boundary 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 Local Wildlife Sites[16] or notable road verges.	LWS and notable road verges were searched for inside and within 5km of the onshore part of the PEIR Assessment Boundary.
HPI and SPI, Red listed species and legally protected species	HPIs and SPIs, species recorded on The IUCN Red List of Threatened Species and/or local Red Lists for the UK or relevant sub-units (e.g.	HPI and SPI, Red listed species and Legally protected species were searched for inside and within 5km of the onshore part of the PEIR Assessment Boundary, unless otherwise specified.

[16] 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** and Local Geological Sites (LGS) are considered in **Chapter 25: Ground conditions**.

Ecological feature	Example / definition	Coverage of study area[13]
	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 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.	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 PEIR Assessment Boundary have been obtained (see **Figure 23.2, Volume 3**) Data on stone curlew *Burhinus oedicnemus* and lapwing *Vanellus vanellus* nesting locations and habitat creation measures (e.g. stone curlew plots) supplied by the RSPB inside the onshore part of the PEIR Assessment Boundary 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 PEIR Assessment Boundary 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 PEIR Assessment Boundary 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 PEIR Assessment Boundary.
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 PEIR Assessment Boundary and within 250m of it, also within 500m of onshore substation search areas.

23.4.6 **Table 23-5** lists the organisations and other sources that have supplied desk study data, together with the nature of that data.

Table 23-5 Data sources used to inform the terrestrial ecology and nature conservation PEIR assessment

Source	Date	Summary	Coverage of study area
A27 Bypass Environmental Assessment Report (Highways England, 2019)	November 2020	Data on legally protected and notable flora and fauna	Inside the onshore part of the PEIR Assessment Boundary and within 5km of it.
British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS) reports (Frost et al., 2020)	May 2020	Core count data (yearly peaks) for WeBS count sites	Inside the onshore part of the PEIR Assessment Boundary and within 1km of it.
Magic.gov.uk	May and November 2020	Data on the location of statutorily designated sites, data from the Ancient Woodland and Priority Habitat Inventories, granted European Protected Species Licence locations (2010 to 2020) 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 PEIR Assessment Boundary and within 12km of it. SPAs, pSPAs, Ramsar sites and proposed Ramsar sites: inside the onshore part of the PEIR Assessment Boundary and within 10km of it. SSSIs and NNRs: inside the onshore part of the PEIR Assessment Boundary and within 5km of it (up to 12km for SSSIs designated for bats). LNRs: inside the onshore part of the PEIR Assessment

Source	Date	Summary	Coverage of study area
			Boundary and within 1km of it. Ancient Woodland and Priority Habitats: inside the onshore part of the PEIR Assessment Boundary and within 5km of it. EPSLs: inside the onshore part of the PEIR Assessment Boundary and within 5km of it. Great crested newt eDNA survey: inside the onshore part of the PEIR Assessment Boundary and within 250m of it; and within 500m of the boundary at onshore substation search areas.
Mid-Arun Valley Environmental Survey Reports (MAVES)[17]	November 2020	Information on legally protected and notable flora and fauna.	Inside the onshore part of the PEIR Assessment Boundary and within 5km of it.
National Biodiversity Network (NBN) Gateway	May and November 2020	Information on legally protected and notable flora and fauna.	Inside the onshore part of the PEIR Assessment Boundary and within 500m of it.
Royal Society for the Protection of Birds (RSPB)	May 2020	Data on stone curlew and lapwing breeding and location of habitat creation (e.g. stone curlew plots).	Inside the onshore part of the PEIR Assessment Boundary and within 500m of it.

[17] MAVES reports published in 2015 through 2018

Source	Date	Summary	Coverage of study area
South Downs National Park Authority (SDNPA)	July 2020	Data on legally protected and notable fauna in the South Downs National Park, and information on the Sussex Study Area monitoring project on impacts of farming on flora and fauna of arable land.	Inside the onshore part of the PEIR Assessment Boundary and within 5km of it.
Sussex Biodiversity Records Centre (SxBRC)	May 2020	Data on sites designated for nature conservation, priority habitats and legally protected and notable flora and fauna.	Inside the onshore part of the PEIR Assessment Boundary and within 5km of it.
Sussex Ornithological Society (SOS)	May 2020	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[18].

Remote sensing

23.4.7 Remote sensing techniques using data from the World View 2 satellite gathered in 2018 and 2020 were used to provide a broad classification of habitats based on the categories described by the Joint Nature Conservation Committee (JNCC) in the Handbook for Phase 1 habitat survey (2010). Appendix F of the Scoping Report (RED, 2020) provides further details of this exercise.

23.4.8 The remote sensing model was informed by a habitat sampling exercise in the field that took place in April 2020. This sampling exercise recorded 2,294ha[19] of habitat according to the Phase 1 habitat category definitions. Part of this dataset

[18] Due to the way in which the data is gathered and was requested (at EIA Scoping stage) the extent of the coverage is wider than if based on the PEIR Assessment Boundary.
[19] The area sampled was determined by the Scoping Boundary and therefore covers a significantly larger area than that being considered for this assessment, which is focused on the reduced PEIR Assessment Boundary and the land within it.

was then used to train the model, whilst the remainder was used to test the accuracy of the outputs. Where the model could not accurately differentiate between habitat types (for example poor semi-improved grassland and neutral semi-improved grassland) categories were combined using professional judgement. **Table 23-6** summarises the remote sensing data collection exercise.

Table 23-6 Remote sensing data collection

Source	Date	Summary	Coverage of study area
Remote sensing	Satellite data: 2018 & 2020 Field samples: April 2020	Remote sensing has provided a broad habitat classification for the proposed onshore temporary construction corridor option on which the Scoping Report was based, along with a 500m buffer. This area covers the majority of that within the onshore part of the PEIR Assessment Boundary and its surrounds. The extent for the remote sensing exercise was based on areas where direct effects on habitats and species may be possible. The remote sensing model used satellite data to identify habitats based on a field survey that sampled 2,294 ha of habitat within the Scoping Boundary from Public Rights of Way.	Remote sensing has classified 85% (1,475ha) of habitats within the onshore part of the PEIR Assessment Boundary and within 50m of it. See **Figure 23.3a-e, Volume 3** for coverage.

Field surveys

23.4.9 Field surveys commenced in July 2020 and will continue throughout 2021 to inform the next phases of the Proposed Development[20]. The proposed field survey programme outlined in **Table 23-7** is based on the results of the desk study, remote sensing, industry guidance, discussions with Natural England and comments received in the Scoping Opinion. Dates of field survey will depend on the availability of land access; however, all surveys will be undertaken in the appropriate season according to respective best practice guidelines. Further

[20] Field surveys are progressing whilst maintaining social distancing and other measures associated with the COVID-19 pandemic. The COVID-19 pandemic may influence field survey through issues associated with land access and the ability to complete certain types of survey safely.

engagement and consultation regarding the survey programme will take places as it progresses with those organisations named in **Section 23.3**.

Table 23-7 Site survey programme and status of surveys that commenced in 2020

Survey type	Scope of survey	Survey status
Phase 1 habitat survey: 2020	Phase 1 habitat survey will be used to classify and map habitats inside the onshore part of the PEIR Assessment Boundary and within 50m of it. The survey will be 'extended' to identify the presence or potential presence of species of importance for biodiversity conservation and/or species that are afforded legal protection. Surveys will follow the methods described in the Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 habitat survey (2016).	Partially complete. Further survey April – September 2021.
National Vegetation Classification (NVC) survey	NVC surveys will take place within any habitats identified by the Phase 1 habitat survey that may qualify as Habitats of Principal Importance and could be subject to loss or degradation due to the Proposed Development. Surveys will comprise a single visit to each identified area inside the onshore part of the PEIR Assessment Boundary or within 25m of it. Surveys will follow the National Vegetation Classification: User's Handbook (Rodwell, 2010).	Surveys programmed for 2021 (April and June for woodland and late May/June for grassland)
Hedgerow Regulations Assessment survey	The aim of the survey is to identify Important hedgerows under the Regulations, focussing on hedgerows within the onshore part of the PEIR Assessment Boundary and within 25m of it that are crossed by the proposed onshore temporary construction corridor or at the location of the onshore substation.	Surveys programmed for April to September 2021.

Survey type	Scope of survey	Survey status
	Surveys will follow the guidance appended to the Hedgerows Regulations 1997.	
Bats – roosting (trees)[21]	Bat roost surveys will focus on establishing which trees inside the onshore part of the PEIR Assessment Boundary and within 25m of it support roosting bats. This will be achieved via a mix of ground based and tree climbing inspections and emergence/re-entry surveys. These surveys will follow the Bat Conservation Trust Good Practice Guidelines (2016), Bat Tree Habitat Key, 2013, and British Standard 8596:2015: Surveying for bats in trees and woodland, 2016.	Partially complete. Further survey during April to October 2021.
Bats – foraging and commuting	A suite of monthly bat activity surveys, comprising manual walked transects and static deployment, will be undertaken. Surveys will be undertaken inside onshore part of the PEIR Assessment Boundary and within 100m of it and will focus on areas only where proposed construction works will remove large amounts of optimal habitat or important linking features. These surveys will follow the Bat Conservation Trust Good Practice Guidelines (2016).	Partially complete – surveys undertaken in September and October 2020 of four areas where access was available. Further survey April – October 2021.
Badger	Badger surveys will focus on identifying signs of activity and places of shelter (setts) inside onshore part of the PEIR Assessment Boundary and within 50m of it.	Partially complete – surveys undertaken concurrently with the Phase 1 habitat surveys. Further survey April – September 2021.

[21] It is assumed that no buildings or structures will be impacted by the Proposed Development and as such no surveys are anticipated at this stage. Should this position change and buildings or structures be impacted, specific assessment and survey for roosting bats will be undertaken.

Survey type	Scope of survey	Survey status
	Surveys will be informed by Natural England standing advice (2015) and good practice guidelines by Scottish Badgers (2018).	
Birds - breeding	Breeding bird surveys will be undertaken following a territory mapping methodology akin to the BTO's common bird census (CBC).	Surveys programmed for late March to June 2021.
Birds - wintering	Wintering bird surveys were focused on the distribution of waders and wildfowl will be in two forms. The first was to record birds (monthly) in terrestrial habitats within the Arun and Adur Valleys using a field by field count methodology. Secondly the intertidal area[22] and coastal strip landward of MHWS was counted twice monthly (around high tide and low tide) over a period of 6 hours.	Complete. Undertaken September 2020 to March 2021.
Dormouse	Dormouse nest tubes and/or nest boxes will be deployed within habitat features considered to represent excellent dormouse habitat[23] and checked monthly. Surveys will focus on habitats that are inside the onshore part of the PEIR Assessment Boundary and within 15m of it. Surveys will be undertaken following Natural England guidelines *Hazel or common dormouse: surveys and mitigation for development projects* (2015).	Partially complete. Further survey April – November 2021.

[22] This survey effort is largely to inform the marine ornithology chapter, 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.
[23] 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
Great crested newts	Habitat Suitability Index (HSI) assessment surveys will be undertaken on all waterbodies inside the onshore part of the PEIR Assessment Boundary, and within 250m of it (where any potential effects will be temporary) and within 500m of onshore substation search areas. Waterbodies identified as having suitability to support great crested newts will be subject to eDNA surveys to determine the presence/likely absence of the species. The surveys will be undertaken in line with Natural England guidelines "Bats: surveys and mitigation for development projects" (2015), Oldham et al. "Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*)" (2000), and Biggs et al "Analytical and methodological development for improved surveillance of the Great Crested Newt" (2014).	Partially complete (HSI). Further survey April – September 2021. April – June 2021.
Otter	Otter *Lutra lutra* surveys, looking for signs of activity and resting places, will be undertaken inside the onshore part of the PEIR Assessment Boundary and up to 250m upstream and downstream of it. Surveys will take place using techniques described by Chanin in "Monitoring the Otter" (2003).	Partially complete – surveys undertaken concurrently with the Phase 1 habitat surveys. Further survey April – September 2021.
Reptiles	Reptile presence/likely absence surveys, comprising seven visits using artificial refugia, will be undertaken within the onshore part of the PEIR Assessment Boundary where necessary. This will focus on suitable habitat being permanently lost (e.g. onshore substation search areas). Surveys will follow Froglife (1999) Advice sheet 10 Reptile survey: An	Surveys programmed for March – October 2021.

Survey type	Scope of survey	Survey status
	introduction to planning, conducting and interpreting surveys for snake and lizard conservation.	
Terrestrial invertebrates	Invertebrate surveys will be undertaken where significant sections of semi-natural habitat (e.g. scrub, woodlands, grasslands) will be affected by the Proposed Development within the PEIR Assessment Boundary. Any survey necessary will be based on desk study results. Surveys will be undertaken in line with Natural England Research Report NERR005 “Surveying terrestrial and freshwater invertebrates for conservation evaluation” (2007).	Surveys programmed for May to September 2021.
Water vole	Water vole surveys will be undertaken to search for signs of activity and burrows inside the onshore part of the PEIR Assessment Boundary and up to 250m upstream and downstream of it. Surveys will take place using techniques described in the “Water Vole Mitigation Handbook” (Dean *et al*. 2016).	Partially complete – surveys undertaken concurrently with the Phase 1 habitat surveys. Further survey April – September 2021.
Fish	A walk-over survey to identify watercourses that may be subject to crossing using open cut techniques that may support important fish populations. Further survey will be recommended as necessary.	Survey programmed for May 2021

Data limitations

23.4.10 The key limitation with regards to the baseline data is the extent of land that has currently been subject to field surveys. This limitation is typical of projects at this stage of the DCO process, and its effects will be reduced or eliminated prior to the submission of an application (i.e. following the completion of surveys described in **Table 23-7**). The limited coverage of survey reported in this chapter is due to a number of constraints, the first being seasonality (i.e. some survey effort is calendar dependent), the second land access (i.e. access to private land must be negotiated and agreed prior to survey taking place) and the third due to logistical issues posed by lockdown measures associated with the COVID-19 pandemic.

Whenever limitations in baseline data are pertinent to the assessment these are described in the relevant feature's baseline text (in **Section 25.3**).

23.4.11 The full extent of the habitat within the onshore part of the PEIR Assessment Boundary has been classified - but it should be noted that mixture of data sources has been used to inform the characterisation. Different levels of confidence are associated with the different methods used. The detail of datasets gathered is set out here:

- Phase 1 habitat survey (highest level of confidence): approximately 27% coverage of the onshore part of the PEIR Assessment Boundary;
- remote sensing ground truthing field survey data: approximately 26% coverage of the onshore part of the PEIR Assessment Boundary;
- remote sensing LiDAR data: approximately 46% coverage of the onshore part of the PEIR Assessment Boundary; and
- desk study and satellite imagery (lowest level of confidence)[24]: approximately 1% coverage of the onshore part of the PEIR Assessment Boundary.

23.4.12 As is evident from **Figure 23.4a-g, Volume 3** there is also considerable coverage of areas adjacent to the onshore part of the PEIR Assessment Boundary from each of the first three data categories.

23.4.13 Where the baseline is incomplete (e.g. with regard to surveys for legally protected and notable species) a precautionary approach has been taken to the assessments provided in **Sections 23.6** and **23.10**. This results in the identification of a number of likely significant effects. It is likely that a number of these will be dismissed within the ES as more information becomes available, further embedded environmental measures are devised and the design of the Proposed Development evolves.

23.5 Baseline conditions

Current baseline

Site context and surrounding habitats

23.5.1 The land within the onshore part of the PEIR Assessment Boundary is approximately ~800ha 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). Habitats are generally well connected for wildlife (for example via hedgerows, tree lines, rivers, streams and ditches), with minor fragmentation

[24] Areas of the Phase 1 habitat survey area covered by desk study and satellite imagery are limited to those areas that lie outside of the Scoping Boundary, and therefore no remote sensing data was available.

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 and the South Downs National Park.

23.5.2 Within the onshore part of the PEIR Assessment Boundary 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 PEIR Assessment Boundary 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.

Statutory nature conservation sites (International/European)

23.5.3 One Ramsar sites, two SPAs and three SACs were identified through the desk study, none of which fall within the onshore part of the PEIR Assessment Boundary. **Figure 23.5, Volume 3** illustrates the locations of the six statutory nature conservation sites designated under international conventions or making up the national site network, whilst **Table 23-8** provides information on the designations.

Table 23-8 International/European sites designated for nature conservation

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
Arun Valley	Ramsar	• Wetland invertebrate and plant species, assemblage of wintering waterfowl	3.8km north-west
Arun Valley	SAC	• Ramshorn snail *Anisus vorticulus*	3.8km 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	3.8km north-west
Duncton to Bignor Escarpment	SAC	• Asperulo-Fagetum beech forests	7.2km north-west
Solent and Dorset Coast	SPA	• Sandwich tern *Sterna sandvicensis* (breeding)	2.3km south-west

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
		• Common tern • Little tern	
The Mens	SAC	• Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) • Barbastelle *Barbastella barbastellus*[25]	11.2km north-west

Statutory nature conservation sites (national)

23.5.4 A total of 14 SSSIs and one LNR were identified through the desk study. All 14 SSSIs are within 5km of the PEIR Assessment Boundary. Following a further search up to 12km from the PEIR Assessment Boundary, no SSSIs cited for one or more bat species were found, (as requested within the Scoping Opinion – see **Section 23.3**).

23.5.5 Of the designated sites identified, Amberley Mount to Sullington Hill SSSI is located partially within the onshore part of the PEIR Assessment Boundary (an existing farm track that could provide an access point during the construction phase, runs along, and slightly overlaps with both the SSSI boundary and PEIR Assessment Boundary)**. Figure 23.6, Volume 3** illustrates the locations of the statutory nature conservation sites designated under national legislation, whilst **Table 23-9** provides information on the designated sites.

[25] It should be noted that the Mens SSSI is not identified in **Table 23-9** as it does not have barbastelle or any other bat species described within the citation documents.

Table 23-9 Nationally designated sites for nature conservation

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
Amberley Mount to Sullington Hill[26]	SSSI	• Calcareous grassland • Juniper *Juniperus communis* • Fly honeysuckle *Lonicera xylosteum* • Adonis blue butterfly *Polyommatus bellargus*	Within PEIR Assessment Boundary.
Amberley Wild Brooks	SSSI	• Redshank *Tringa tetanus* (breeding) • Bewick's swan (non-breeding) • Shoveler (non-breeding) • Teal (non-breeding) • Breeding bird assemblage • Invertebrate assemblage • Lowland ditch system • Dragonfly assemblage • True fox-sedge *Carex vulpine* • Cut-grass *Leersia oryzoides* • Swamp habitats • Variety of wintering bird species • Vascular plant assemblage	3.8km north-west
Arun Banks	SSSI	• Woodland habitats, *Schoenoplectus lacustris* sub-species *tabernaemontani x triqueter*	1.8km north-west

[26] Amberley Mount to Sullington Hill SSSI and Arundel Park SSSI are also identified as groundwater dependent terrestrial ecosystems in **Chapter 27: Water environment**.

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
Arundel Park	SSSI	• Breeding bird assemblage • Calcareous grassland • Invertebrate assemblage • Field cricket *Gryllus campestris* • Cut-grass.	1.0km north-west
Chanctonbury Hill	SSSI	• Breeding bird assemblage • Calcareous grassland • Woodland • Great crested newt	0.6km south-east
Chantry Mill[27]	SSSI	• EA – Aptian - Albian	0.7km north-west
Cissbury Ring	SSSI	• Breeding bird assemblage • Calcareous grassland • Adonis blue butterfly	4.5km south
Climping Beach	SSSI	• Sanderling *Calidris alba* • Shingle and dune communities	0.1km east
Fairmile Bottom	SSSI	• Silver-washed fritillary *Argynnis paphia* • Calcareous grassland • Woodland	4.3km north-west
Horton Clay Pit[27]	SSSI	• ED – Aptian - Albian	4.4km south-east

[27] These SSSI are not considered further in this assessment as they are cited for geological interest. See **Chapter 25: Ground conditions**.

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
Hurston Warren	SSSI	• Dry heath, wet heath and bog pool habitats	3.9km north-west
Parham Park	SSSI	• Lichens • Invertebrate assemblage • Woodland	2.6km north-west
Pulborough Brooks	SSSI	• Pintail *Anas actua* (non-breeding) • Ruff (nonbreeding) • Shoveler (non-breeding) • Teal (nonbreeding) • Wigeon (non-breeding) • Breeding bird assemblage • Invertebrate assemblage • Vascular plant assemblage	5.0km north-west
Sullington Warren	SSSI	• Breeding bird assemblage • Dry heath habitat	0.7km north-west
West Beach	LNR	• Sand flats, tide line, shingle, sand dunes and related fauna (part of Climping Beach SSSI)	0.7km east

Non-statutory nature conservation sites

23.5.6 The desk study identified 42 non-statutory nature conservation sites within 5km of the onshore part of the PEIR Assessment Boundary, of which four are located fully or partially within the onshore part of the PEIR Assessment Boundary, with a further three within 100m**.** **Figure 23.7, Volume 3** illustrates the locations of the non-statutory nature conservation sites (i.e. LWS), whilst **Table 23-10** provides information on the designations that are within the onshore part of the PEIR Assessment Boundary. The 35 remaining LWSs located outside the onshore part of the PEIR Assessment Boundary are detailed in **Appendix 23.2: Terrestrial ecology desk study, Volume 4**.

Table 23-10 Non-statutory sites designated for nature conservation

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
Arun Valley, Watersfield to Arundel	LWS	• This section of the River Arun and its floodplain forms an extensive tract of wetland, a nationally declining habitat. • Although many of the flood meadows have been improved, the wet grassland is important for breeding and wintering waders and wildfowl. There is a good network of ditches, some of which are very important botanically. • The site is important for birds, dragonflies, water beetles, snails and plants, and supports many rare and declining species. The unimproved meadows of Watersfield Brooks are of great botanical interest.	600m west of the PEIR Assessment Boundary.
Bines Green	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 PEIR Assessment Boundary.

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
Conyers Bank	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.	60m North West of the PEIR Assessment Boundary.
Littlehampton Golf Course & 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 PEIR Assessment Boundary.
Poling Copse	LWS	• Poling Copse is a large block of ancient, semi-natural woodland on the Coastal Plain south	20m East of the PEIR Assessment Boundary

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
		of the South Downs, just to the east of Arundel. • It consists predominantly of Oak-Hazel woodland, a type typical of base-poor soils in the area. Sycamore woodland dominates on South Fields – a section which has probably regenerated on an old field.	
Sullington Hill	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 PEIR Assessment Boundary.
Warningcamp Hill and New Down	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	Within PEIR Assessment Boundary.

Site name	Designation	Designated features	Approximate distance (km) / direction from the PEIR Assessment Boundary
		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.	

23.5.7 SxBRC also returned 37 records of notable road verges within 5km of the PEIR Assessment Boundary. **Figure 23.7, Volume 3** shows the location of the notable road verges identified.

Habitats

23.5.8 Eleven HPI were identified during the desk study from the Priority Habitat Inventory (MAGIC Website, Natural England), with five of these being within the onshore part of the PEIR Assessment Boundary or within 500m of it (see **Figure 23.8, Volume 3**). Ancient semi-natural and ancient replanted woodlands listed on the Ancient Woodland Inventory were also identified (see **Figure 23.9a-b, Volume 3**). A breakdown and extent of the habitat types identified is given in **Table 23-11**.

Table 23-11 HPI and ancient woodland identified during the desk study

Habitat type	Listing	Area within PEIR Assessment Boundary (ha)
Coastal and floodplain grazing marsh	Priority habitat inventory	83.2
Coastal vegetated shingle	Priority habitat inventory	0.49
Deciduous woodland	Priority habitat inventory	61.19
Lowland calcareous grassland	Priority habitat inventory	14.87
No main habitat but additional habitats present	Priority habitat inventory	0.7

Habitat type	Listing	Area within PEIR Assessment Boundary (ha)
Ancient semi-natural woodland	Ancient woodland inventory	0.19
Ancient replanted woodland	Ancient woodland inventory	0

23.5.9 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.

23.5.10 By the end of the 2020 survey period, approximately 1,721ha had been subject to Phase 1 habitat survey (see **Figure 23.10a –c, Volume 3**). To ensure complete coverage for this preliminary assessment, a combination of remote sensing field survey ground truthing data and satellite data was used to provide an overall Phase 1 habitat map (see **Figure 23.4a – 23.4d, Volume 3**). The broad habitat types identified included**:**

- woodland (broadleaved semi-natural, broadleaved plantation, mixed plantation and coniferous plantation);
- grassland (amenity, improved, poor semi-improved, neutral semi-improved, calcareous semi-improved and marshy grassland);
- scrub (dense, continuous and scattered);
- hedgerows;
- ditches;
- standing water (ponds / permanently wet ditches);
- running water (rivers and streams); and
- arable.

Woodland

23.5.11 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.

23.5.12 The semi-natural woodland recorded to date is all broadleaved woodland, typically dominated by 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.

23.5.13 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.

23.5.14 The majority of the broadleaved semi-natural woodland is likely to qualify as the HPI lowland mixed deciduous woodland. This will be confirmed following NVC surveys in 2021.

23.5.15 Veteran trees have been identified through the desk study only; an arboriculture survey is being carried out in 2021. The desk study identified that there are two veteran trees outside of the onshore part of the PEIR Assessment Boundary within 100m (Woodland Trust, n.d).

Grassland

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

23.5.17 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*, dandelion *Taraxacum* and white clover *Trifolium repens*. Most areas of poor semi-improved and improved grasslands were heavily grazed with a short sward.

23.5.18 There are areas of 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. Most of the areas identified to date by field survey are between Wepham and Warningcamp, set on a steep gradient with evidence of cattle grazing, with a small strip north-east of Burpham and a field to the west of Littlehampton. 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* were recorded in the area near Burpham.

23.5.19 The desk study identified the presence of the HPI coastal and floodplain grazing marsh to the south-west of Warningcamp via the Priority Habitats Inventory. As is typical of this habitat type, it was dominated by cattle grazed improved grassland with a network of wet ditches. The other dominant habitat present within the area was arable fields.

Scrub – dense/continuous and scattered

23.5.20 Dense/continuous scrub and scattered scrub were identified within the onshore part of the PEIR Assessment Boundary 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*.

Hedgerows

23.5.21 Hedgerows were recorded within the onshore part of the PEIR Assessment Boundary 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.

23.5.22 Hedgerows were classed as native and species-rich where they were recorded to comprise greater than 80% 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*.

23.5.23 Species-poor hedgerows were 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). All native hedgerows over 20m in length, both species-rich and species-poor, are defined as HPI; it is assumed that all hedgerows identified to date will qualify as HPI.

Dry ditches

23.5.24 Dry ditches were identified within the onshore part of the PEIR Assessment Boundary during the Phase 1 habitat survey. Dry ditches were generally associated with field boundaries. 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)

23.5.25 Wet ditches were identified during the Phase 1 habitat survey, with the majority present within the southern section of the onshore part of the PEIR Assessment Boundary between Climping Beach and Warningcamp, forming networks around the boundaries of arable and improved grassland fields.

23.5.26 The wet ditches were recorded to hold less than 30cm of water and have generally 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)

23.5.27 A total of 348 ponds were identified inside or within 250m of the onshore part of the PEIR Assessment Boundary, or 500m of proposed onshore substation search

areas during the desk study; of these 34 are inside the onshore part of the PEIR Assessment Boundary (see **Figure 23.11a** and **23.11b, Volume 3**). 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[28].

Running water (rivers and streams)

23.5.28 Two main rivers run through the onshore part of the PEIR Assessment Boundary; the River Arun to the south and west of Warningcamp, 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.

Arable

23.5.29 Arable land inside the onshore part of the PEIR Assessment Boundary is one of the most common habitat types 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 PEIR Assessment Boundary are generally larger to the south and east of Washington, West Sussex, with more numerous smaller fields present towards Bolney.

Other habitats

23.5.30 The remainder of the areas within the onshore part of the PEIR Assessment Boundary largely supported habitats such as tall ruderal vegetation and areas of hardstanding and buildings (including roads, commercial and residential development).

Notable plant species

23.5.31 A total of 1,279 records of vascular plants of 175 species that are legally protected or notable (some at a county level only) were identified within 5km of the onshore part of the PEIR Assessment Boundary from records provided by SxBRC. Of these, nine records of six species were inside the PEIR Assessment Boundary, comprising:

- one record of bastard-toadflax *Thesium humifusum* (Nationally Scarce[29], Sussex rare);
- three records of bluebell *Hyacynthoides non-scripta* (Schedule 8 of the Wildlife & Countryside Act 1981 (as amended));

[28] 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.
[29] JNCC, 2018

- two records of broad-leaved spurge *Euphorbia platyphyllos* (Sussex Rare);
- one record of prickly poppy *Papaver argemone* (Red List GB (2005): Vulnerable, Red List England (2014): Endangered);
- one record of stiff saltmarsh-grass *Puccinellia rupestris* (Nationally Scarce, Sussex Rare); and
- one record of strawberry clover *Trifolium fragiferum* (Red List England (2014): Vulnerable).

23.5.32 Records of vascular plants within 5km of the onshore part of the PEIR Assessment Boundary include[30]:

- four species listed on Schedule 8 of the Wildlife & Countryside Act 1981 (as amended);
- twenty-three species listed as SPI;
- sixty-one threatened species[31];
- seven nationally rare[29] species;
- thirty-six nationally scarce species; and
- forty-four Sussex rare species.

23.5.33 During the Phase 1 habitat surveys undertaken to date no legally protected or notable plant species have been recorded.

Invasive non-native flora

23.5.34 A total of 28 invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were identified from the desk study (inside the onshore part of the PEIR Assessment Boundary or within 5km of it), with 330 individual records. These include three records from within the onshore part of the PEIR Assessment Boundary of giant hogweed *Heracleum mantegazzianum,* New Zealand pygmyweed *Crassula helmsii* and Nuttall's waterweed *Elodea nuttallii.*

23.5.35 During the Phase 1 habitat surveys undertaken to date, single stands of Himalayan balsam and cotoneaster were recorded within the PEIR Assessment Boundary, located to the south of Wiston and south-east of Partridge Green respectively.

Badgers

23.5.36 The desk study returned records of badgers inside and within 5km of the onshore part of the PEIR Assessment Boundary. Specific locations are not provided due to confidentiality.

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[30] Further details on vascular plant records are provided in **Appendix 23.2, Volume 4**.
[31] Threatened species are those that are Critically Endangered, Endangered and Vulnerable in England and/or Great Britain (Stroh et al., 2014; Cheffings et al., 2005).

23.5.37 Badger surveys were undertaken in conjunction with the Phase 1 habitat survey, with much of the land within the onshore part of the PEIR Assessment Boundary assessed as providing suitable habitats for sett creation, foraging and commuting. During the field surveys only one disused outlier sett was recorded within a woodland block to the north-west of the existing National Grid Bolney substation and one active sett (status was unconfirmed due to limited visibility from accessible land) to the north-east of Ashurst.

23.5.38 Badger activity was recorded in the form of latrines, dung pits, snuffle holes, pathways and foraging signs. The majority of field signs were recorded to the north-west of the existing National Grid Bolney substation.

23.5.39 A further two active outlier setts were identified within a block woodland and scrub outside the onshore part of the PEIR Assessment Boundary as the onshore cable corridor passes Wepham. Badger activity in the form of extensive foraging signs were also recorded in this area. These setts are directly connected to the woodland, scrub and grassland that fall within 50m of the onshore part of the PEIR Assessment Boundary; it is highly likely that badgers will be encountered within the onshore part of the PEIR Assessment Boundary at this location.

Bats

23.5.40 The desk study returned a total of 1,227 records of at least 13 species of bats inside and within 5km of the onshore part of the PEIR Assessment Boundary, 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 noctula*, *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 PEIR Assessment Boundary. **Figure 23.12, Volume 3** shows the distribution of these records.

23.5.41 During the Phase 1 habitat survey, trees of low, moderate and high suitability for support roosting bats were recorded, significant numbers of which are mature oaks within improved grassland fields to the north and south of the A27 at Crossbush. Where access was available, aerial tree climbing inspections were undertaken in November and December 2020 of previously identified moderate and high suitability trees. No roosts were recorded during these surveys, however suitable roosting features for barbastelle and Bechstein's bat were identified.

23.5.42 Habitats crossing the onshore part of the PEIR Assessment Boundary 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.

23.5.43 Bat activity surveys (comprising walked transects and static detectors) commenced in September and October 2020 in four survey areas (see **Figure 23.13, Volume 3**). The surveys confirmed at least eight bat species or genus utilising habitats within the onshore part of the PEIR Assessment Boundary including barbastelle, brown long-eared bat, common pipistrelle, Leisler's bat,

Myotis sp., Nathusius' pipistrelle, noctule, serotine and soprano pipistrelle. 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

23.5.44 Sussex Ornithological Society has records of 18 SPI and 28 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 (e.g. Bewick's swan, dark-bellied brent goose), waders (e.g. lapwing, little ringed plover *Charadrius dubius*), raptors (e.g. red kite *Milvus milvus*, peregrine *Falco peregrinus*) and passerines (e.g. kingfisher *Alcedo atthis*, Cetti's warbler *Cettia cetti*). 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. **Figure 23.14, Volume 3** provides the distribution of breeding lapwing across the study area.

23.5.45 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*.

23.5.46 The field surveys completed during the winter period (September 2020 through March 2021) have identified a range of waterbirds (defined here simply as birds that frequent water). The winter bird surveys (see **Appendix 23.3: Onshore winter bird report 2020-2021, Volume 4**) focused on terrestrial habitats within the flood plains of the River Arun and River Adur and the area behind the flood defences close to the landfall point[32]. The surveys focused on recording waterbirds within the PEIR Assessment Boundary in these general areas and within 500m of it.

23.5.47 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 PEIR Assessment Boundary). 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).

23.5.48 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.

23.5.49 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

[32] Birds frequenting the intertidal area are assessed in **Chapter 12: Offshore ornithology**.

(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).

23.5.50 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.

23.5.51 Wildfowl and waders using the terrestrial habitat close to the landfall site were dark-bellied brent goose (650), dunlin *Calidris alpina* (2), grey plover *Pluvialis squatarola* (40), knot (1), lapwing (16), ringed plover *Charadrius hiaticula* (27), snipe (1), sanderling (7), turnstone (90) and wigeon (13). Other notable species were Mediterranean gull (56) and kingfisher (1).

23.5.52 Activity at the landfall was confined to a narrow strip of land close to the location of the 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.

Fish

23.5.53 The desk study returned 100 records of seven species of fish outside but within 5km of the onshore part of the PEIR Assessment Boundary. Records were returned for brook lamprey *Lampetra planeri*, brown trout *Salmo trutta subsp. fario*, brown/sea trout *Salmo trutta*, bullhead *Cottus gobio*, European eel *Anguilla anguilla*, plaice *Pleuronectes platessa* and sea trout *Salmo trutta subsp. trutta*.

23.5.54 No baseline data collection has been undertaken to date. A walkover of watercourse crossings that would be subject to cable crossings using pen trenching techniques is scheduled for Summer 2021. This survey will determine the need for electro-fishing surveys that would be scheduled in late summer/autumn 2021 if necessary.

Amphibians

23.5.55 Data returned by SxBRC included 188 records of great crested newts and 144 records of common toad *Bufo bufo* (SPI) inside and within 5km of the onshore part of the PEIR Assessment Boundary. Of these, 15 records of great crested newts and one record of common *Bufo bufo* are from inside the onshore part of the PEIR Assessment Boundary. **Figure 23.15, Volume 3** shows the distribution of these records.

23.5.56 Ordnance Survey (OS) mapping identified a total of 348 waterbodies inside and within 250m of the onshore part of the PEIR Assessment Boundary and within 500m of the proposed onshore substation search areas, with the majority located in areas north and east of Washington, West Sussex.

23.5.57 Waterbodies (including ponds and wet ditches) that could be accessed during the Phase 1 habitat survey were subject to Habitat Suitability Index (HSI) assessments to determine their suitability for great crested newts. Of the 348 waterbodies identified from the desk-based searches, 21 were subject to HSI assessments in 2020, a further 10 were recorded to be dry at the time of survey and nine were not fully visible to survey due to access constraints.

Hazel dormouse

23.5.58 Data returned by SxBRC included 265 records of hazel dormouse outside but within 5km of the onshore part of the PEIR Assessment Boundary. None relate to land inside the onshore part of the PEIR Assessment Boundary. **Figure 23.16, Volume 3** shows the distribution of these records.

23.5.59 Suitable habitats for dormouse are present within the onshore part of the PEIR Assessment Boundary in the form of woodland, scrub and hedgerows that form a well-connected network with the wider landscape.

23.5.60 Dormouse presence/likely absence surveys were commenced in two areas in 2020 (see **Figure 23.17, Volume 3**), comprising ancient semi-natural woodland, scrub and hedgerows. No evidence of dormouse has been recorded to date; these will continue in 2021, with surveys begun in additional areas.

Otter

23.5.61 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 PEIR Assessment Boundary. The record was not made from within the onshore part of the PEIR Assessment Boundary. Otters are not yet thought to be resident in West Sussex, although populations are expanding in number and distribution across England relatively rapidly.

23.5.62 Two main rivers (River Arun and River Adur) cross the onshore part of the PEIR Assessment Boundary. Where the River Arun crosses the onshore part of the PEIR Assessment Boundary, 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, have been identified as being highly suitable for foraging and commuting otters, as well as for resting places.

23.5.63 Surrounding terrestrial habitats that are suitable for otter are dominated by grassland fields, with smaller areas of woodland and scrub and grassland. No signs of otter have been recorded to-date.

Reptiles

23.5.64 The desk study returned 668 records of five species of reptiles, comprising 58 records of adder *vipera berus*, 204 records of common lizard *Zootoca vivipara*, 164 records of grass snake *Natrix natrix*, two records of sand lizard *Lacerta agilis*, and 240 records of slow worm *Anguis fragilis* within 5km of the onshore part of the PEIR Assessment Boundary (see **Figure 23.15, Volume 3**). None of the records are from within the onshore part of the PEIR Assessment Boundary.

23.5.65 Suitable habitats for basking, foraging, commuting and hibernating reptiles are present throughout the onshore part of the PEIR Assessment Boundary in the form of grassland, tall ruderal, scrub, ponds and ditches (for grass snake), woodland edge and hedgerows. During the Phase 1 surveys, common lizard and

an unidentified snake species were observed within scrub south of the River Arun and woodland edge habitat east of Batworthpark Plantation respectively.

Terrestrial and aquatic invertebrates

23.5.66 The desk study returned 8,513 records of 524 species of invertebrates inside and within 5km of the onshore part of the PEIR Assessment Boundary. Of these, 16 records of 12 species were identified from within the onshore part of the PEIR Assessment Boundary including: four records of brown hairstreak *Thecla betulae* (SPI), and single records of the beetles *Pilemostoma fastuosa* (notable A[33]), and *Anobium inexspectatum* (notable B[33]), 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.

23.5.67 Habitats within the onshore part of the PEIR Assessment Boundary that have potential to support an important invertebrate assemblage include areas of calcareous grassland, herb-rich neutral grassland, semi-natural woodland and river and stream corridors.

Water vole

23.5.68 The desk study returned 774 records of water vole inside and within 5km of the onshore part of the PEIR Assessment Boundary, of which five are from within the onshore part of the PEIR Assessment Boundary (see **Figure 23.16, Volume 3**).

23.5.69 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.

23.5.70 A noise typical of a water vole entering the water (categorised by its 'plop' sound) was heard along a stretch of the River Adur, indicating an animal may have been present in the watercourse at the time of survey. No other signs of water vole have been recorded during the Phase 1 habitat survey to date.

[33] 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).

23.6 Scope of the assessment

Overview

23.6.1 This section sets out the scope of the PEIR assessment for terrestrial ecology and nature conservation. This scope has been developed as the Proposed Development design has evolved and responds to feedback received to-date as set out in **Section 23.3**. As outlined in PINS Advice Note Seven (Planning Inspectorate, 2020), information presented in the PEIR is preliminary, therefore this scope will continue to be reviewed and may be refined as Rampion 2 evolves, and as a result of ongoing engagement and consultation.

23.6.2 The project-wide approach to the assessment methodology is set out in **Chapter 5: Approach to the EIA**. 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.

23.6.3 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, remote sensing and field survey undertaken to-date (see **Section 23.5**) to determine which of the identified ecological features are 'important'. Following CIEEM (2018, updated 2019) guidance, the importance of each ecological feature was determined using a geographic scale[34] (see **Table 23-6**). The importance of the ecological features has been described in relation to UK legislation and policy and with regard to the extent of habitat or size of population that may be significantly affected by the Proposed Development.

23.6.4 The importance of ecological features can therefore differ from that which would be conferred solely by legislative protection or identification as a conservation notable species. For example, house sparrow is important at a national level (in policy terms) because it is a Species of Principal Importance[35] and features on the Birds of Conservation Concern red list[36]. However, a small population that could be affected by a development might be assessed as only being of local importance due to the large, albeit declining, UK population (in excess of five million pairs).

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[34] 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.

[35] Species of Principal Importance covered under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

[36] 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. [Online] Available from: http://www.iucnredlist.org/apps/redlist

Similarly, a small length of hedgerow (a HPI), even if deemed to be 'important[37]' with regard to the Hedgerow Regulations, is unlikely to be considered to have greater than 'local' importance due to the extent of this habitat type across a given county.

23.6.5 Wherever possible, information regarding the extent and population size, population trends and distribution of the ecological features was used to inform their categorisation, and determine their importance 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 importance.

Table 23-12 Defining Importance of Ecological Features

Geographic context of importance	Description
International or European	• National site network constituents including SPAs, SACs and candidate SACs. pSPAs, pSACs, Ramsar sites (designated under international convention) and proposed Ramsar sites are also considered in the same manner, in accordance with national planning policy. • 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 that are not addressed directly in Part 2 of the 'Guidelines for Selection of Biological SSSIs' but can be determined to be of national importance using the principles described in Part 1 of the guidance. • Areas of ancient woodland, for example woodland listed within the Ancient Woodland Inventory and ancient and veteran trees.

[37] 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 guidelines.

Geographic context of importance	Description
Regional (south-east England)	• The South East Biodiversity Strategy[38] 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. • Regularly occurring HPI or populations of SPI, Red listed and legally protected species may be of regional importance in the context of published information on population size and distribution.
County (West Sussex)	• LNRs and Non-Statutory Designated sites including: LWSs and notable roadside verges. • 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	• HPI and SPI, Red listed and legally protected species that based on their extent, population size, quality etc are determined to be at a lesser level of importance than the geographic contexts above. • Common and widespread semi-natural habitats occurring within the onshore part of the PEIR Assessment Boundary in proportions greater than may be expected in the local context. • Common and widespread native species occurring within the onshore part of the PEIR Assessment Boundary 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 PEIR Assessment Boundary. • Areas of heavily modified or managed land uses (for example, hard standing used for car parking, as roads etc.)

[38] The South East Biodiversity Strategy was archived in 2009. However, targets were set for habitats for delivery in 2015. This strategy provides an overview of habitat types and extents that is not replicated elsewhere.

23.6.6 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, updated 2019).

23.6.7 Legally protected species and ecological features that are of sufficient importance that effects upon them arising from the Proposed Development could be significant, 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 decommissioning of the Proposed Development have been considered. Given the ongoing design process, at this stage of the Proposed Development, the environmental changes have been considered in broad categories only. 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

23.6.8 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.

23.6.9 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).

23.6.10 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).

23.6.11 The ZOIs for each broad environmental change are specified below. Due to the level of information currently available for this preliminary assessment, the ZOIs have been applied broadly to be precautionary:

- permanent or temporary land take / land cover change – ZOI within the onshore part of the PEIR Assessment Boundary for habitats and sedentary species; mobile species may be affected beyond that if the onshore part of the PEIR Assessment Boundary lies within their typical home-ranges;
- fragmentation of habitats – ZOI within the onshore part of the PEIR Assessment Boundary for habitats and sedentary species; mobile species may be affected beyond that if the onshore part of the PEIR Assessment Boundary lies within their typical home-ranges;
- increased noise and vibration – ZOI for sensitive species is up to 500m from the 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 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 27: Water environment**, 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 PEIR Assessment Boundary, 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 PEIR Assessment Boundary, 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 Preliminary Assessment Boundary (although will be focused on the onshore cable corridor); mobile species may be affected beyond that if the onshore part of the PEIR Assessment Boundary lies within their typical home-ranges.

23.6.12 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 23.8**) associated with good practice have been taken into account (for example dust suppression, appropriately scheduled vegetation removal etc.).

23.6.13 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 23.6.9** are outlined in **Table 23-7**.

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

- Changes in hydrology – **Chapter 27: Water environment** 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 or decommissioning of the Proposed Development. Therefore, the ecological 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 (see **Section 23.8**). These measures will be effective in negating the risk to ecological features.
- 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 (see **Section 23.8**). 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. There are also unlikely to be detectable above background in the channels that are most likely to be supporting species most sensitive to EMF (i.e. migratory fish). This is because embedded environmental measure C-5 will see all main rivers crossed via HDD where the onshore temporary cable corridor will be at a distance considerably greater than 1m below bed level. Thermal effects of 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.

Table 23-13 Terrestrial ecology and nature conservation scoping assessment

Ecological Feature	Importance – legislation and policy	Importance – project level	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 (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Fragmentation	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased noise and vibration	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased light levels	In – this Ramsar site lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
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 (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Fragmentation	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased noise and vibration	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased light levels	In – this SPA lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
Arun Valley SAC	International	International	Land take / land cover change	Out – this SAC is 3.8km from the onshore part of the PEIR Assessment Boundary.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Fragmentation	Out – this SAC supports a single sedentary species 3.8km from the onshore part of the PEIR Assessment Boundary.
			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 7.2km from the onshore part of the PEIR Assessment Boundary. There is no connectivity via river systems to the onshore part of the PEIR Assessment Boundary.
Solent and Dorset Coast SPA	International	International	All environmental changes	Out – all features are considered within **Chapter 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 (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Fragmentation	In – this SAC lies within the foraging distances of the barbastelle bats listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased noise and vibration	In – this SAC lies within the foraging distances of the barbastelle bats listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased light levels	In – this SAC lies within the foraging distances of the barbastelle bats listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
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 PEIR Assessment Boundary. However, the area of Sullington Hill crossed by the onshore cable corridor will be subject to a trenchless crossing (e.g. HDD) and access needs will be met through the use of existing tracks outside of the SSSI boundary.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			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 corridor will Sullington Hill cross this location using a trenchless crossing technique.
			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[39]	National	National	Land take / land cover change	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Fragmentation	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).

[39] 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	Importance – project level	Environmental change	Scoped in/out
			Increased noise and vibration	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
			Increased light levels	In – this SSSI lies within the foraging distances of the wildfowl listed on the designation (i.e. functionally linked land may lie within the onshore part of the PEIR Assessment Boundary).
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 PEIR Assessment Boundary (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.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
Climping Beach SSSI	National	National	All environmental changes	Out – features are considered within **Chapter 9** and **Chapter 12**.
West Beach LNR	County	County	All environmental changes	Out – features are considered within **Chapter 9**.
Arun Valley, Watersfield to Arundel LWS	County	County	Land take / land cover change	Out – this LWS lies outside the onshore part of the PEIR Assessment Boundary. Land take of suitable habitat for wintering wildfowl (associated with the LWS) outside of the LWS boundary is captured under consideration of the Arun Valley Ramsar site, Arun Valley SPA and overlapping SSSI designations and within the assessment of wintering birds.
			Fragmentation	Out – this LWS lies outside the onshore part of the PEIR Assessment Boundary. Land take of suitable habitat for wintering wildfowl (associated with the LWS) outside of the LWS boundary is captured under consideration of the Arun Valley Ramsar site, Arun Valley SPA and overlapping SSSI designations and within the assessment of wintering birds.
			Increased noise and vibration	In – noise and vibration may disturb the wildfowl supported by this LWS.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Increased light levels	In – light pollution may disturb the wildfowl supported by this LWS.
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 PEIR Assessment Boundary 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 land take 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.
Conyers Bank LWS; Poling Copse LWS	County	County	All environmental changes	Out – These LWS are within 100m of the onshore part of the PEIR Assessment Boundary, however they are not identified as being of importance to mobile species, or those sensitive to disturbance from noise or light.
Littlehampton Golf Course & Atherington Beach LWS	County	County	All environmental changes	Out – this LWS lies within the onshore part of the PEIR Assessment Boundary but will be crossed using a trenchless technique such as HDD. There will be no surface works within the boundary of the LWS. Or within 100m of it and it is not designated for

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
				species that would be considered sensitive to disturbance via noise, vibration or light.
Sullington Hill LWS	County	County	All environmental changes	Out – this LWS lies within the onshore part of the PEIR Assessment Boundary but will be crossed using a trenchless technique such as HDD. Access across the LWS will be via an existing farm track that can be maintained/upgraded within current footprint.
Warningcamp Hill and New Down LWS	County	County	Land take / land cover change	In– this LWS lies within the onshore part of the PEIR Assessment Boundary and is crossed by the onshore cable corridor.
			Fragmentation	In– this LWS lies within the onshore part of the PEIR Assessment Boundary and is crossed by the onshore cable corridor.
			Increased noise and vibration	Out – this LWS is not designated primarily for species sensitive to disturbance via noise and vibration.
			Increased light levels	Out – this LWS is not designated primarily for species sensitive to disturbance via light.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
All other LWS as noted in Appendix 23.2, Volume 4	County	County	All environmental changes	Out – these LWS are over 500m from the onshore part of the PEIR Assessment Boundary and are not identified as being of importance to mobile species, or those sensitive to disturbance from noise or light.
Ancient woodland	National	National	All environmental changes	Out – very small areas of ancient woodland are present within the onshore part of the PEIR Assessment Boundary due to being adjacent to existing access tracks etc. However, embedded environmental measure C-6 (see **Section 23.8**) ensures that this habitat will not be lost to development.
Veteran trees	National	National	Land take / land cover change [40]	In – an arboriculture survey is being carried out in 2021, therefore veteran trees have not been identified to-date. As a precaution veteran trees are scoped in, in case any may be lost or damaged. Embedded environmental measure C-174 (see **Section 23.8** seeks to ensure avoidance of any veteran trees that may be identified at later stages of design of the onshore elements of the Proposed Development.

[40] For all habitats only land take / land cover change and fragmentation are considered in **Table 23-13** as consideration of disturbance via noise, vibration or light are not relevant.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Fragmentation	Out – fragmentation is not considered as veteran trees by their nature are individual assets.
Broad-leaved semi-natural woodland	National	County	Land take / land cover change	In – the majority of this habitat type within the onshore part of the PEIR Assessment Boundary may qualify as HPI.
			Fragmentation	Out– the majority of this habitat type within the onshore part of the PEIR Assessment Boundary may qualify as HPI. However, the narrow nature of the onshore cable corridor, and the extensive linkages in the landscape will avoid meaningful fragmentation for woodland.
Plantation woodland – broadleaved	County	Local	Land take / land cover change	Out –the level of habitat present within the worst case construction scenario (see **Section 23.5**) is small (1.16ha – not in a single location) compared to the overall extent of this habitat in the local area. It does not qualify as an HPI.
			Fragmentation	Out –the level of habitat present within the worst case construction scenario (see **Section 23.5**) is small (1.16ha) and scattered compared to the overall extent of this habitat in the local area. It does not qualify as an HPI.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
Plantation woodland – coniferous	Local	Local	Land take / land cover change	Out –the level of habitat present within the worst case construction scenario (see **Section 23.5**) is small (0.40ha) compared to the overall extent of this habitat in the local area. It does not qualify as an HPI.
			Fragmentation	Out –the level of habitat present within the worst case construction scenario (see **Section 23.5**) is small (0.40ha) and scattered compared to the overall extent of this habitat in the local area. It does not qualify as an HPI.
Plantation woodland – mixed	Local	Local	Land take / land cover change	Out –the level of habitat present within the worst case construction scenario (see **Section 23.5**) is small (0.42ha) compared to the overall extent of this habitat in the local area. It does not qualify as an HPI.
			Fragmentation	Out –the level of habitat present within the worst case construction scenario (see **Section 23.5**) is small (0.42ha) and scattered compared to the overall extent of this habitat in the local area. It does not qualify as an HPI.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
Neutral semi-improved grassland	County	Local	Land take / land cover change	Out – this habitat is common and widespread, with only a small extent present (6.81ha) within the land take associated with the worst case construction scenario (see **Section 23.5**). Embedded environmental measure C-103 (see **Section 23.8**) ensures that these habitats will be reinstated across the majority of the construction area (i.e. where assets are underground) or enhanced.
			Fragmentation	Out – this habitat is common and widespread, with only a small extent present (6.81ha) within the land take associated with the worst case construction scenario (see **Section 23.5**). Embedded environmental measure C-103 (see **Section 23.8**) ensures that these habitats will be reinstated across the majority of the construction area (i.e. where assets are underground) or enhanced.
Calcareous semi-improved grassland	National	County	Land take / land cover change	In – this HPI is present within the onshore part of the PEIR Assessment Boundary, including in the onshore cable corridor within Warningcamp and New Down LWS.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Fragmentation	Out – this HPI is present within the onshore part of the PEIR Assessment Boundary, including in the onshore cable corridor within Warningcamp and New Down LWS. However, the narrow nature of the construction working area, temporary nature of the works and the restoration proposed will avoid meaningful fragmentation for chalk grassland flora.
Native, species-rich hedgerows / native species poor hedgerows	National	County	Land take / land cover change	In – there are a number of crossings of this HPI in the onshore part of the PEIR Assessment Boundary.
			Fragmentation	Out – there are a number of crossings of this HPI in the onshore part of the PEIR Assessment Boundary. However, the hedgerow and woodland network is extensive with multiple linkages present.
Standing water (ponds and permanently wet ditches)	National	County	Land take / land cover change	In – these habitats will largely qualify as HPI. There are numerous ponds and ditches within or close to the onshore part of the PEIR Assessment Boundary.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Fragmentation	Out – there are a number of ponds/permanently wet ditches of this HPI in the onshore part of the PEIR Assessment Boundary. However, the network is extensive and the conflict highly localised with multiple other linkages present.
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 **Section 23.8**) will avoid negative effects on this ecological feature via the use of trenchless crossing techniques (e.g. HDD).
Streams	County	County	Land take / land cover change	In – There are up to 18 stream of this potential HPI that will be crossed by the onshore cable corridor using open trenching techniques.
			Fragmentation	Out – There are up to 18 crossings of this potential HPI by the onshore cable corridor using open trenching techniques. However, design ensures that flow is maintained during the temporary construction period.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
Common and widespread habitats **Improved grassland, amenity grassland, poor semi-improved grassland, marsh/marshy grassland, tall ruderal, arable, ephemeral/short perennial, dry ditches, active quarry.**	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. C-103 (see **Section 23.8**) ensures that these habitats will be reinstated across the majority of the construction area (i.e. where assets are underground) or enhanced.
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 PEIR Assessment Boundary.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			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 PEIR Assessment Boundary.
			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. The extent of the populations within the onshore part of the PEIR Assessment Boundary are assigned county importance as the dominant habitats (e.g. arable) are not key resources for this species group.
			Fragmentation	In – habitats used by bats will be crossed by the Proposed Development.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			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 PEIR Assessment Boundary.
			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 PEIR Assessment Boundary.
Hazel Dormouse	International	County	Land take / land cover change	In – dormouse are known to be present within the general area of the onshore elements of the Proposed Development. The extent of the population is unknown currently, but is assigned county importance as the dominant habitats (e.g. arable) are not used by this species.
			Fragmentation	In – habitats that maybe used by dormice will be crossed by the onshore elements of the Proposed Development.
			Increased noise and vibration	In – there is the potential for dormice to be within or close to the onshore part of the PEIR Assessment Boundary.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Increased light levels	In - there is the potential for dormice to be within or close to the onshore part of the PEIR Assessment Boundary.
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.
			Fragmentation	In – great crested newts are known to be widespread across this area of West Sussex.
			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	Land take / land cover change	In – toads are known to be widespread across this area of West Sussex.
			Fragmentation	In – toads are known to be widespread across this area of West Sussex.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Increased noise and vibration	Out – toads are not considered to be susceptible to significant disturbance by noise and vibration.
			Increased light levels	Out – toads are not considered to be susceptible to significant disturbance by light.
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 throughout the onshore part of the.
			Fragmentation	In – due to legislative protection. These species are likely to be distributed across suitable habitat throughout the onshore part of the PEIR Assessment Boundary.
			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 (e.g. sand dune complexes) will be crossed via HDD and therefore there will be no points of interaction.

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
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.
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. Although it may occur occasionally 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.
Water voles	National	County	Land take / land cover 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.
			Fragmentation	In – temporary water course crossings may fragment water vole habitats

Ecological Feature	Importance – legislation and policy	Importance – project level	Environmental change	Scoped in/out
			Increased noise and vibration	In – temporary water course crossings may disturb water voles via production of noise and vibration
			Increased light levels	In – temporary water course crossings may disturb water voles via use of temporary lighting
Fish	International to Local	International to Local	All environmental change	In – the baseline situation for fish or the channels that are proposed for crossing using open trenching techniques is unknown. Hence, they are scoped as a precaution.
Invertebrates (terrestrial and aquatic)	International to Local	International to Local	All environmental change	In – the area is known to support a range of legally protected and notable invertebrate species, although a baseline is not yet established.

Temporal scope

23.6.15 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** with a summary relevant to terrestrial ecology and nature conservation provided below**:**

- construction: years 1 to 4;
- operation and maintenance: years 5+[41]; and
- decommissioning: within 4 years of operation and maintenance phase concluding.

23.6.16 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 (e.g. land take). The assessment in **Section 23.10** describes the effects on the ecological features scoped in 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

23.6.17 The future baseline is likely to remain relatively constant within the onshore part of the PEIR Assessment Boundary through the lifetime of the Proposed Development in the majority of locations. This is because most land crossed is in agricultural usage, typically in longer term use. Across some of the agricultural land, changes in farming policy and efforts by third parties such as the South Downs National Park Authority may see further benefits for biodiversity and natural capital secured (e.g. hedgerow establishment, tree planting, natural flood resilience measures etc.). However, these are likely to be relatively localised and unlikely to be implemented at scale prior to the construction phase for the Proposed Development.

23.6.18 The Environment Agency works on the sea defence and beach at Atherington Beach are likely to have caused some localised re-distribution or disturbance of sensitive species in the area. This relates to birds that may use both the intertidal (considered in **Chapter 12**) and adjacent arable and grassland habitats (for example Brent geese). The result is likely to be a field survey data set that has under-estimated presence, thus effects will be adjusted and acknowledged as necessary. It should be noted that the data necessary to undertake this assessment is not available at this stage (the wintering bird surveys being only partially complete) and therefore this issue will be addressed within the ES submitted in support of the application for DCO.

[41] **Section 4.6** of **Chapter 4** identifies the expected operational lifetime of the Proposed Development to be around 30 years.

23.6.19 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 established following the completed desk study and field surveys.

23.7 Basis for PEIR assessment

Maximum design scenario

23.7.1 The use of a parameter-based design envelope approach means that the assessment considers a maximum design scenario whilst allowing the flexibility to make further improvements in the future that cannot be predicted at the time of submission of the DCO Application.

23.7.2 For the purposes of this assessment the footprint of physical activity (i.e. areas in which 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 PEIR Assessment Boundary will be temporarily or permanently lost to development would be a gross over-estimate of the level of effect likely due to the number of options currently present within the design. Therefore, the physical footprint has been defined as follows:

- Land take has been based on the greatest level of habitat loss for each individual habitat type from the 20 option combinations[42] possible. The greatest habitat loss for each habitat category is then expressed within the assessment in **Section 23.10,** thereby representing a composite picture of the RWCS. It should be noted that in order to limit the number of possible combinations, all of the potential temporary construction compounds are included within each combination.
- Land take has been assumed to include the proposed onshore temporary construction corridor, the temporary construction compounds (all current options included in all option scenarios) and the onshore substation search areas – the entire onshore part of the PEIR Assessment Boundary has not been included as it is unrepresentative of the proposed construction footprint. Access options have not been included as the often-wide search areas are unrepresentative of the 5m wide tracks required at each relevant location (especially noting that many access points use existing farm tracks). The over-estimate of habitat loss driven by the composite habitat loss case outlined above is considered sufficiently precautionary to account for future quantified losses from access routes.

23.7.3 **Table 23-14** provides the maximum assessment assumptions.

[42] Each option is made up of a unique mix of the onshore temporary cable corridor and onshore substation search areas under consideration.

Table 23-14 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 temporary construction corridor is 50m in width for the entire length, with no amendments to land take due to narrowing of the cable corridor through sensitive locations. Calculations of habitat loss are based on the most likely alignment as proposed. • Onshore temporary construction corridor includes for the cable trenches, haul road and soil storage. • Additional area is included to enable trenchless crossings. • Cable is installed in sections with less than 500m of cable trench open in a single location at any one time. • Construction compounds are temporary. The number and locations have not been assumed for the assessment (this is a worst-case scenario). • Onshore substation variants are assumed to take the entire option area (this is a worst-case scenario). • Temporary construction access routes have not been accounted for due to the degree of uncertainty, the use of existing tracks where feasible and the over-estimate of habitat loss in-built by other assumptions.	• This reflects a realistic worst case scenario

Project phase and activity/impact	Maximum assessment assumptions	Justification
Disturbance due to noise and vibration	• Assumed that noise and vibration is restricted to normal working hours (see **Section 23.8**, 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 (e.g. 500m sections of the onshore temporary construction corridor, onshore substation location, HDD compounds and temporary construction compounds)	• This reflects a realistic worst case scenario
Disturbance due to light	• Assumed that temporary lighting is restricted to locations within which active works are being pursued (e.g. 500m sections of the onshore temporary construction corridor, onshore substation location, HDD compounds and temporary construction compounds). • Assumed permanent lighting is restricted to the onshore substation.	• This reflects a realistic worst case scenario

23.8 Embedded environmental measures

23.8.1 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 features. These embedded environmental measures will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process.

23.8.2 These measures typically 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 PEIR.

23.8.3 **Table 23-15** sets out the relevant embedded environmental measures within the design and how these affect the terrestrial ecology and nature conservation assessment.

Table 23-15 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-1	The onshore cable route will be completely buried underground for its entire length where practicable.	Scoping	DCO works plans, description of development and requirements	This measure allows for greater restoration of habitats.
C-3	At sensitive crossing locations the working width will be reduced as far as practicable.	Scoping	DCO works plans, description of development and requirements	This measure reduces habitat loss.
C-4	Horizontal Directional Drill (HDD) technique will be used at the landfall location.	Scoping	DCO works plans, description of development and requirements	This measure reduces habitat 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
C-5	Main rivers, watercourses, railways and roads that form part of the Strategic Highways Network will be crossed by Horizontal Directional Drill HDD or other trenchless technology where this represents the best environment solution and is financially and technically feasible (see commitment C-17).	Scoping - updated at PEIR	DCO works plans and order limits	This measure reduces habitat loss / degradation.
C-6	Where practical, sensitive sites will be avoided by the temporary and permanent onshore project footprint including SSSIs, Local Nature Reserves, Local Wildlife Sites, ancient woodland, areas of consented development, areas of historic landfill and other known areas of potential contamination, National Trust Land, Listed Buildings, Scheduled monuments, and	Scoping - updated at PEIR	DCO works plans and order limits	This measure reduces habitat 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
	mineral resources (including existing mineral sites, minerals sites allocated in development plans and mineral safeguarding areas).			
C-17	Where trenchless techniques are not required or are not practical, watercourses may 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 (e.g. for Main Rivers, works on or near sea defences/flood defence structures or in a flood plain) or from the Lead Local Flood Authority (LLFA) (for Ordinary Watercourse crossings) (see C-5).	Scoping - updated at PEIR	Outline Code of Construction Practice (COCP) and DCO requirement	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-21	Vegetation will be retained where possible. Where necessary, vegetation removal will be scheduled over winter to avoid 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	Outline COCP and DCO articles/ requirement	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	Scoping	Outline COCP and DCO articles/ requirement	This measure reduces the opportunity for disturbance

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	0700 to 1900 Monday to Friday, and 0800 to 1300 on Saturdays, apart from specific circumstances to be set out and agreed in the Outline COCP			(particularly of nocturnal species).
C-24	Best practices air quality management measures will be applied as described in Institute of Air Quality Management (IAQM) (2014) guidance on the Assessment of Dust from Demolition and Construction 2014, version 1.1.	Scoping - updated at PEIR	Outline COCP and DCO articles/ requirement	This measure reduces potential for habitat degradation.
C-76	In line with good practice, Pollution Prevention Plans (PPPs) will be developed to detail how ground and surface waters will be protected in construction and operation. These will include information on the use and storage of any fuels, oils and other chemicals (in line with	Scoping - updated at PEIR	Outline COCP and DCO requirement	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
	commitments C-8 and C-184) and pollution incidence response planning. These will include measures for the protection of licenced and private abstractions. This could include a monitoring regime associated with critical or very near receptors.			
C-103	Areas of temporary habitat loss will be reinstated, wherever practicable, following the completion of construction in each area. Wherever possible, reinstatement will be back to the type of habitat crossed.	Scoping	Outline COCP and DCO articles/ requirement	This measure enables habitat restoration.
C-104	Enhancements to terrestrial ecology will be achieved as part of the Proposed Development through the delivery of new or improved habitats or measures to boost populations of certain species. Opportunities for	Scoping	DCO works plans, description of development and requirements	This measure seeks to improve biodiversity.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	these enhancements will be identified following further evolution of the Proposed Development design and through engagement with stakeholders. These enhancements may be delivered directly by RED within or close to the DCO boundary or via collaboration with independent organisations.			
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 informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals (2018). The lighting design will account for the potential effects on biodiversity by	Scoping	Outline COCP and DCO requirement	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
	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.			
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	Outline COCP and DCO requirement	This measure reduces potential for traffic collisions with wildlife.
C-107	Tried and tested invasive species control and biosecurity measures will be used to avoid the spread of infested materials.	Scoping - updated at PEIR	Outline COCP and DCO requirement	This measure manages the risk of invasive species spread.
C-112	No ground-breaking activity or use of wheeled or tracked vehicles will take place within the	PEIR	Outline COCP and DCO requirement	This measure avoids habitat loss / degradation 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
	Littlehampton Golf Course and Atherington Beach Local Wildlife Site (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).			
C-113	The construction corridor through the Warningcamp Hill and New Down Local Wildlife Site (LWS) will be narrowed to no more than 30m for its entire length. A method statement for the Warningcamp Hill and New Down Local Wildlife Site (LWS) will be written and agreed with the South Downs National Park Authority and West Sussex County Council.	PEIR	Outline COCP and DCO requirement	This measure minimises temporary habitat loss within an LWS.
C-114	Sullington Hill Local Wildlife Site (LWS) will be	PEIR	Outline COCP and DCO requirement	This measure avoids habitat

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	crossed using a trenchless method such as Horizontal Direction Drill (HDD).			loss within an LWS.
C-115	The construction corridor through woodland, tree lines and across important hedgerows (in terms of the Hedgerows Regulations 1997) will be narrowed to no more than 30m for its entire length to minimise habitat losses. All hedgerows will be reinstated following cable installation.	PEIR	Outline COCP and DCO requirement	This measure reduces the amount of habitat and tree loss / degradation.
C-117	Works in the floodplain will be programmed to occur in late summer / early autumn if possible, to avoid interaction with known flooding periods to minimise the potential for displacement of floodwater..	PEIR	Outline COCP and DCO requirement	This measure reduces potential to disturb wintering birds associated with the Arun Valley SPA / Ramsar site.
C-174	Any veteran trees identified will be avoided by micro-siting. A suitable root protection	PEIR	Embedded into design	This measure reduces the potential that veteran trees will be lost.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to terrestrial ecology and nature conservation assessment
	zone (with reference to BS 5837:2012) will be identified and used to define the limits of the micro-siting.			

23.9 Methodology for PEIR assessment

Introduction

Overview

23.9.1 The project-wide generic approach to assessment is set out in **Chapter 5: Approach to the EIA**. The assessment methodology for terrestrial ecology and nature conservation for the PEIR is consistent with that provided in in the Scoping Report (RED, 2020) and no changes to that methodology have been made since the scoping phase.

23.9.2 The assessment methodology within this chapter is aligned with the standard industry guidance provided by CIEEM (2018, updated 2019), informed by the general approach described in **Section 23.6**. The assessment is based upon the results of the desk study and field surveys (partially complete at present), 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 23.3**), and professional knowledge of ecological processes and functions.

23.9.3 For each scoped-in ecological feature (see **Table 23-13**), effects are assessed against the baseline conditions for that feature during construction, operation 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 to avoid or reduce adverse effects or to deliver enhancements.

Significance evaluation methodology

23.9.4 CIEEM (2018, updated 2019) defines a significant effect as one ‘that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general’.

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

- 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;
- 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.

23.9.6 Although the characteristics described above are all important in assessing effects, the magnitude of the environmental change as a result of the Proposed Development provides useful context, as described in **Table 23-16,** to provide a contextual understanding of the relative scale of change from the baseline position.

Table 23-16 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.

Magnitude	Criteria and resultant effect
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

23.9.7 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, updated in 2019 (in paragraph 5.3.2) 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*".

23.9.8 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.

23.9.9 A similar procedure will be used where designated sites may be affected by the Proposed Development, except that the focus will be on the effects on the integrity of each site; defined 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*."

23.9.10 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

23.9.11 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 borough importance becomes of county importance following delivery of the Proposed Development).

23.10 Preliminary assessment

Introduction

23.10.1 The preliminary assessment outcomes have been provided below on a precautionary basis. Where a degree of uncertainty great enough to result in a different conclusion (i.e. Significant or Not Significant) exists, a conclusion of Significant has been drawn. However, through the evolution of the design and the development of more detailed mitigation and compensation measures it is likely that within the ES many of the “Significant” conclusions will be changed to “Not Significant”.

Assessment of terrestrial ecology and nature conservation effects – The Arun Valley Ramsar site

Detailed baseline

23.10.2 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 winter and occasional summer flooding. It is dissected by a network of ditches, many of which supporting a rich diversity of flora and invertebrate fauna. Wintering wildfowl and breeding waders characterise the outstanding ornithological resource present.

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

23.10.4 Criteria five and six are met for the winter waterfowl assemblage (i.e. wildfowl and waders) and the population of wintering pintail respectively. Functionally linked land for northern pintail is assumed to cover suitable habitat within the PEIR Assessment Boundary within the coastal strip, Arun Valley and Adur Valley; with the other species considered for the Arun Valley only. This is based on distances of foraging flights provided in Johnson et al. 2014.

23.10.5 Based on current design information and survey data, the functionally linked habitat that may be affected by the Proposed Development does not regularly

support northern pintail, teal, shoveler or ruff. Wigeon are present frequently, although this is outside the PEIR Assessment Boundary (approximately 100m east) within the waterbodies close to the St Mary Magdalene Church, Lyminster (see **Section 23.6** and **Appendix 23.3, Volume 4**).

Predicted effects and their significance

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

23.10.6 There is no direct land take within the Arun Valley Ramsar site during the construction phase, with the nearest possible construction activity 3.8km from the designation boundary. Land-take of functionally linked land (arable fields, grasslands and ditches, particularly in the Arun Valley) used by the waterfowl assemblage for foraging could occur due to the Proposed Development. Despite not recording the designated features within the onshore part of the PEIR Assessment Boundary during the winter bird survey, it is assumed that these species could occur based on suitable habitat types and proximity to the Ramsar site. 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.

23.10.7 As part of the embedded environmental measures (C-103 and C-104) described in **Section 23.8** the restoration of habitats will be undertaken across the installed cables. The restoration of the agricultural grassland and arable fields these birds may use is straightforward and akin to current practices including ploughing and re-seeding. The timing of the works within the Arun and Adur Valley floodplains will also be limited (C-117) and will reduce interactions with waterfowl and avoid times of potential flooding over-winter.

23.10.8 The preliminary conclusions drawn at this stage for the Proposed Development are that the magnitude of change is predicted to be **negligible** (see **Table 23-16**). 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 Ramsar site. Further, 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)

23.10.9 The presence of construction and decommissioning works could result in waterfowl avoiding certain fields (i.e. 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.

23.10.10 The construction of the proposed onshore temporary construction corridor will progress across relatively short distances (~500m) at any given point limiting the potential for fragmentation to occur (i.e. avoidance of working area will be highly localised). The mobility of the species in question (i.e. 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 and crossed the A27, suggesting that they are already acclimatised to some degree of human activity. Further, the timing of the works will also be limited (C-117) reducing or eliminating the need for designated features to cross active working areas during the winter period when moving between the Ramsar site and functionally linked habitat.

23.10.11 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be **negligible** (see **Table 23-16**) 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)

23.10.12 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 Ramsar site population. Based on the survey data gathered it is wigeon that would be most susceptible to disturbance based on their frequent use of waterbodies north-west of Lyminster. These waterbodies are however, screened from the works by the presence of scrub which would lessen or remove some visual disturbance cues (e.g. presence of people). Regardless of proximity, the greatest influence will be the timing of the works (C-117). By reducing or eliminating the temporal overlap (within 300m) of the waterbodies at Lyminster the potential for disturbance to occur is limited.

23.10.13 As the works are localised (therefore so is the disturbance source), will mainly take place at the times of year when the birds are not present (i.e. spring/summer), and the extent of available foraging resources is considerable in comparison to the area within the onshore part of the PEIR Assessment Boundary individual birds will easily be able to avoid sources of disturbance. Therefore, the threat to the fitness of individual birds is negligible. 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)

23.10.14 Lighting may be required during the construction phase to ensure security (restricted to equipment storage areas and access points) and to provide a safe working area for 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 activities are occurring that cannot be ceased over-night (e.g. HDD activities and major concrete pours). This light could dissuade birds from feeding in locations where illumination is greater than current baseline.

23.10.15 As the works are localised (therefore so is the disturbance source) and will mainly take place outside the period when the designated features (wildfowl) are present the potential for fitness to be compromised is negligible. 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.

23.10.16 Within the ES, the assessment of the likely significant effects on the Arun Valley Ramsar site will be further informed by a definitive design and refined environmental measures. Within the ES, the significance of the positive effects associated with any habitat enhancement will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – The Arun Valley SPA

Detailed baseline

23.10.17 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 and is 3.8km from the onshore part of the PEIR Assessment Boundary.

23.10.18 The survey programme has not recorded the presence of Bewick's swan. This species has been recorded regularly by Sussex Ornithological Society at Burpham Water Meadows, a usual wintering location. All records provided are at distances greater than 500m from the onshore part of the PEIR Assessment Boundary and separated from it by a mixture of habitats including woodland belts, as well as a hilltop. The occurrence of teal, wigeon and shoveler listed on the designation is described in **paragraph 23.10.5**).

Predicted effects and their significance

23.10.19 All predicted effects and their significance are common with those described for the Arun Valley Ramsar site **(paragraphs 23.10.1** to **23.10.16**). The effects on the Arun Valley SPA for all environmental changes outlined in **Table 23-13** are therefore assessed as **Not Significant** on an ecological feature of International importance.

23.10.20 Within the ES, the assessment of the likely significant effects on the Arun Valley SPA will be further informed by a definitive design and refined environmental measures. Within the ES, the significance of the positive effects associated with any habitat enhancement will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – The Mens SAC

Detailed baseline

23.10.21 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.

23.10.22 The woodland habitats that characterise The Mens SAC are generally (97.33% of the extent) in favourable condition as measured by Natural England between 2008 and 2020 (noting different units were surveyed in different years).

23.10.23 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 PEIR Assessment Boundary being approximately 11.2km away.

Predicted effects and their significance

Land take / land use change (habitat loss)

23.10.24 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.

23.10.25 The extent of the overlap with the onshore part of the PEIR Assessment Boundary is approximately 35 ha, which is a small proportion (0.06%) of the area within a 12km foraging range (59,2001 ha in 12km foraging range).

23.10.26 As part of the embedded environmental measures described in **Section 23.8** the working width of the onshore temporary construction corridor will be narrowed as it passes through many of the habitat types favoured by this species (e.g. woodland and important hedgerows). This will reduce the onshore temporary construction corridor from a 50m width to 30m thereby reducing the amount of habitat loss (note that the narrowing points are not accounted for in the extent quoted in **paragraph 23.10.15** as these will be confirmed as the design evolved).

23.10.27 Compensation for woodland will be provided through tree planting along the onshore temporary cable corridor (although not immediately above the cable to allow for maintenance and prevent damage). The extent and location of this tree planting has not been determined at this point.

23.10.28 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be negligible (see **Table 23-16**) due to the extent of the loss being minor in comparison to the extent of habitat available and the separation between the onshore elements of the Proposed Development and The Mens SAC. It is expected that compensation will provide additional habitats for barbastelle bats from The Mens SAC in the medium to long term (i.e. as tree

planting matures). 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.

Fragmentation of habitats (reduction of connectivity)

23.10.29 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, assuming that the 12km provides a general limit (although not an absolute limit) for this colony (noting that they are resident) the potential for fragmentation is small, given that the habitat loss will occur at the outer edge of the range. Further, the habitat loss in the relevant area is temporary and will be reinstated (see C-103, C-104) and additional habitat will be created. The width of the onshore cable corridor working area at 50m is also small in terms of the ability of a barbastelle bat to cross more open areas.

23.10.30 The preliminary conclusions, drawn at PEIR stage, are that the scale of change is assessed to be negligible (see **Table 23-16**) due to the extent of the loss being relatively minor in comparison to the extent of habitat available and the separation between the onshore elements of the Proposed Development and The Mens SAC. It is expected that compensation may result in an improvement in habitat connectivity for barbastelle bats from The Mens SAC in the medium to long term (i.e. as tree planting matures). 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 noise and vibration (resulting in disturbance or displacement)

23.10.31 The potential for barbastelle bats from The Mens SAC to be disturbed or displaced by noise and vibration can be discounted. Although the installation of the cables may result in some noise and vibration being created during the hours of darkness (for example at Sullington Hill due to the use of trenchless crossing techniques), this will be highly localised and be restricted to areas already subject to temporary habitat loss. All roosting features for barbastelle bats within The Mens SAC are in excess of 11km from the onshore part of the PEIR Assessment Boundary, negating any potential disturbance during the daytime.

23.10.32 The preliminary conclusions, drawn at PEIR stage, are that the scale of change is assessed to be negligible (see **Table 23-16**) 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)

23.10.33 The areas of the onshore part of the PEIR Assessment Boundary most likely usable by barbastelle bats (i.e. 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 ensure security of plant and materials during the construction and decommissioning phases, alongside other lighting that will be required to light specific locations within the working area.

23.10.34 Typical onshore cable installation works will take place largely within daylight hours, with only activities such as HDD requiring extended or 24-hour working patterns. Therefore, the majority of the construction working area will not be lit. Security lighting will be focused on specific locations (e.g. temporary construction compounds in which plant and materials are stored, access points to active construction locations etc.). All lighting will be temporary and will be moved as the onshore elements of the Proposed Development progress. This ensures that barbastelle bats will have the opportunity to easily avoid lit areas in order to avoid disruption to commuting. Although the light may displace some foraging activity, this will be akin to the loss of habitat described above as it is only active areas that will require lighting.

23.10.35 As part of the embedded environmental measures described in **Section 23.8** lighting will be designed in accordance with joint guidance from the Bat Conservation Trust and Institution of Lighting Professionals (2018).

23.10.36 The preliminary conclusions, drawn at PEIR stage, are that the scale of change is assessed to be negligible (see **Table 23-16**) 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.

23.10.37 Within the ES the assessment of the likely significant effects on The Mens SAC will be further informed by increased quantities of baseline data, a definitive design that has been optimised to reduce tree loss and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES the significance of the positive effects associated with habitat enhancement will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – Amberley Wild Brooks SSSI / Pulborough Brooks SSSI

Detailed baseline

23.10.38 The Amberley Wild Brookes SSSI (3.8km from the onshore part of the PEIR Assessment Boundary) and Pulborough Brooks SSSI (5km from the onshore part of the PEIR Assessment Boundary) are overlapped by the Arun Valley Ramsar site, Arun Valley SAC and Arun Valley SPA and 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.

23.10.39 The Amberley Wild Brookes SSSI specifically references Bewick's swan, teal, shoveler and redshank (*Tringa totanus*). Bewick's swan, teal and shoveler occurrence is described in **paragraphs 23.10.5** and **23.10.18**; redshank were noted in the Arun Valley on two occasions, both as single birds.

23.10.40 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 23.10.5 and 23.10.18**.**

Predicted effects and their significance

23.10.41 All predicted effects and their significance are common with those described for the Arun Valley Ramsar site (**paragraphs 23.10.1** to **23.10.16**). The effects are therefore assessed as **Not Significant** on an ecological feature of National importance.

23.10.42 Within the ES, the assessment of this likely significant effects on these SSSIs will be further informed by increased quantities of baseline data and a definitive design. Within the ES, the significance of the positive effects associated with any habitat enhancement will be considered as part of the assessment.

Assessment of effects – Arun Valley: Watersfield to Arundel LWS

Detailed baseline

23.10.43 This section of the River Arun and its floodplain forms an extensive tract of wetland, a nationally declining habitat. Although many of the flood meadows have been improved, the wet grassland is important for breeding and wintering waders and wildfowl. There is a good network of ditches, some of which are very important botanically. The LWS is important for birds, dragonflies, water beetles, snails and plants, and supports many rare and declining species. The unimproved meadows of Watersfield Brooks are of great botanical interest. This LWS is approximately 30m from the closest access point to the working area and 600m from the area within which cables may be installed.

23.10.44 As described above (**Section 23.6**) the floodplain of the River Arun within and close to the onshore part of the PEIR Assessment Boundary was noted as supporting 17 species during the winter bird survey. This included (species with peak counts in excess of 1) coot (peak count of 4), gadwall (4), mallard (90), moorhen (3), mute swan (36) and wigeon (80). Other species noted were little egret (4), grey heron (4), lapwing (38) and Mediterranean gull (2).

Predicted effects and their significance

Increased noise and vibration (resulting in disturbance or displacement)

23.10.45 The potential for construction works associated with access provision (e.g. temporary tracks, visibility splay provision) could take place within a distance of

the LWS where disturbance could occur. However, the access provision in this location is taken from a public road and is located opposite the village of Warningcamp. The village screens the access point from the LWS, other than the precautionary provision made at this juncture to guarantee adequate visibility splays. The cable installation works are all at a distance where disturbance of birds within the LWS would not be expected.

23.10.46 The preliminary conclusions, drawn at PEIR stage, are that the scale of change is assessed to be negligible (see **Table 23-16**) due to the small scale of the access works, their screening by the village of Warningcamp and the large extent of the LWS (and other suitable habitat within the Arun Valley) enabling very short movements of birds within suitable habitat should disturbance result in a behavioural reaction. 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 birds using the Arun Valley: Watersfield to Arundel LWS. The effect is therefore assessed as **Not Significant** on an ecological feature of County importance.

23.10.47 Within the ES the assessment of the likely significant effects on the Arun Valley: Watersfield to Arundel LWS will be further informed by a refined design and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES the significance of the positive effects associated with habitat enhancement will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – Warningcamp to New Down LWS

Detailed baseline

23.10.48 Calcareous semi-improved grassland habitat type is mainly associated with the escarpments and other slopes within the South Downs National Park. The onshore part of the PEIR Assessment Boundary mainly overlaps with this habitat type in two LWSs, namely Warningcamp to New Down LWS and Sullington Hill LWS.

23.10.49 Warningcamp to New Down LWS has not yet been subject to survey. It is described within the designation information as a steep, north-west facing slope of New Down supporting herb-rich chalk grassland with extensive patches of burnet rose and a very large population of the rare small-flowered buttercup. The site also includes an old chalk pit and a small area of ancient, semi-natural woodland.

23.10.50 Warningcamp to New Down LWS lies within a Source Protection Zone (SPZ). An SPZ is an area protected due to it supporting groundwater sources that are used for public drinking water supply. This means that the cable will be installed by open trenching through this LWS.

Predicted effects and their significance

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

23.10.51 The installation of the onshore cable during the construction phase will result in the temporary loss of ~0.8 ha of calcareous semi-improved grassland within the LWS.

23.10.52 As part of the embedded environmental measures described in **Section 23.8** mitigation (see measure C-113) will be provided for calcareous grassland through the narrowing of the construction working width as the onshore cable corridor passes through this habitat type. This will shrink the onshore cable corridor from a 50m width to 30m thereby reducing the amount of habitat loss. Reinstatement will occur through the replacement of turves that were cut, labelled and maintained to allow replacement from the location that they were stripped from.

23.10.53 Compensation for this habitat has not been established but could involve the enhancement of other areas of this habitat along the onshore cable corridor.

23.10.54 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be **medium** (see **Table 23-16**) due to the extent of the loss and the scarcity of this habitat in general. Although the grassland will be replaced, as opposed to reseeded, its condition will take time to reach or exceed its previous condition. This means that the effect is considered to be negative and is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.55 Within the ES, the assessment of this likely significant effect will be further informed by increased quantities of baseline data, a definitive Proposed Development design that has been optimised to reduce loss within this LWS and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES, the significance of the positive effects associated with habitat enhancement and creation will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – Veteran Trees

Detailed baseline

23.10.56 To date, no veteran trees have been identified within the onshore part of the PEIR Assessment Boundary as an arboriculture survey has yet to take place. However, the landscape supports extensive semi-natural woodlands (including ancient woodland) and standard trees within hedgerows and therefore it is likely that one or more veteran trees will be present within the onshore part of the PEIR Assessment Boundary.

Predicted effects and their significance

23.10.57 Without further field survey information, it is not possible to determine the extent of any likely significant effects on veteran trees. Should effects by identified they will fall under the environmental change of land take / land cover change resulting in tree loss or potential damage. However, given the flexibility for the onshore cable corridor to be micro-sited within the onshore part of the PEIR Assessment

Boundary and the emphasis of the design being the crossing of open fields, the number of veteran trees within areas that would be subject to construction is likely to be low.

23.10.58 Embedded environmental measure C-174 is in place to minimise losses via micro-siting. This environmental measure, alongside the policy protection provided to veteran trees (see **Section 23.2**) and the likely small number of veteran trees present suggest that the opportunity to avoid loss of individual specimens is high. Therefore, the magnitude of change is expected to be negligible. The effect is therefore assessed as **Not Significant** on this ecological feature of National importance.

23.10.59 Within the ES, the assessment of this likely significant effect will be further informed by the results of an arboriculture survey and a definitive Proposed Development design that has been optimised to avoid or reduce loss.

Assessment of terrestrial ecology and nature conservation effects – Semi-natural broadleaved woodland

Detailed baseline

23.10.60 Semi-natural broadleaved woodland occupies 576ha of the area shown on **Figure 23.4a – 23.4d, Volume 3**. This habitat 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 proposed onshore temporary construction corridor. This habitat type is often connected within the landscape by hedgerow systems and other types of woodland.

Predicted effects and their significance

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

23.10.61 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 semi-natural broadleaved woodland over an area of 5.53ha (based on the realistic worst-case scenario described in **paragraph 23.7.2** - range 2.77 to 5.53ha). Some of this woodland qualifies as a HPI (extent to be confirmed by NVC surveys planned for 2021).

23.10.62 Areas of semi-natural broadleaved woodland immediately adjacent to these construction activities may also be subject to negative habitat change from edge effects including root damage (resulting in tree loss) and wind throw.

23.10.63 As part of the embedded environmental measures described in **Section 23.8** the working width will be narrowed as the onshore cable corridor passes through semi-natural broadleaved woodland. This will shrink the onshore temporary construction corridor from a 50m width to 30m thereby reducing the amount of habitat loss (note: that the narrowing points are not accounted for in the extent

quoted in **paragraph 23.10.56** as these will be confirmed as the Proposed Development design evolves).

23.10.64 Compensation for the loss of semi-natural broadleaved woodland will be provided through tree planting along the onshore cable corridor. The extent and location of this tree planting has not been determined at this point.

23.10.65 The preliminary conclusions, drawn at PEIR stage, are that the scale of change is assessed to be low (see **Table 23-16**) due to the extent of the loss being relatively minor in comparison to the extent of semi-natural broadleaved woodland present within the local area. Although woodland will be created as part of the Proposed Development, the time taken for this newly created habitat to reach maturity means that the effect is still considered to be negative and assessed as **Significant** on an ecological feature of County importance.

23.10.66 Within the ES, the assessment of this likely significant effect will be further informed by increased quantities of baseline data, a definitive Proposed Development design that has been optimised to reduce tree loss and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES, the significance of the positive effects associated with habitat enhancement and creation will be considered as part of the assessment.

Assessment of effects – Calcareous semi-improved grassland

Detailed baseline

23.10.67 Calcareous semi-improved grassland habitat type is mainly associated with the escarpments and other slopes within the South Downs National Park. The onshore part of the PEIR Assessment Boundary mainly overlaps with this habitat type in two LWSs, namely Warningcamp to New Down LWS (assessed in **paragraphs 23.10.44** to **23.10.50**) and Sullington Hill LWS (scoped out of assessment as crossed via a trenchless technique). Other patches of this habitat that have been identified tend to occur in areas that have yet to be physically surveyed and are likely to over-represent the occurrence of this habitat type. This is because the remote sensing (**Section 23.3**) exercise took a precautionary approach to identifying this habitat, given its particular value within the South Downs National Park.

23.10.68 Areas of calcareous grassland outside of the LWSs that fall within the onshore part of the PEIR Assessment Boundary and have been subject to Phase 1 habitat survey are small in extent and comprise red fescue, bird's-foot trefoil, red clover, black knapweed, greater knapweed and lady's bedstraw.

Predicted effects and their significance

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

23.10.69 The temporary works associated with the installation of the onshore cables will result in the loss or change of calcareous semi-improved grassland over an area of 5.01ha (based on the realistic worst-case scenario described in **paragraph 23.7.2** - range 4.95 to 5.01ha) – excluding Warningcamp to New Down LWS. This

habitat qualifies as a HPI (further detail to be provided via the NVC surveys planned for 2021).

23.10.70 As part of the embedded environmental measures described in **Section 23.8** (see C-113) mitigation will be provided for calcareous semi-improved grassland through the narrowing of the construction working width as the onshore cable corridor passes through this habitat type. This will shrink the onshore cable corridor from a 50m width to 30m thereby reducing the amount of habitat loss (note: that the narrowing points are not accounted for in the extent quoted in **paragraph 23.10.64** as these will be confirmed as the Proposed Development design evolves). Reinstatement will occur through the replacement of turves that were cut, labelled and maintained to allow replacement from the location that they were stripped from.

23.10.71 Compensation for this habitat has not been established but could involve the enhancement of other areas of this habitat along the onshore cable corridor.

23.10.72 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be **low** (see **Table 23-16**) due to the extent of the loss and the scarcity of this habitat in general. Although the grassland will be replaced, as opposed to reseeded, its condition will take time to reach or exceed its previous condition. This means that the effect is considered to be negative and is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.73 Within the ES, the assessment of this likely significant effect will be further informed by increased quantities of baseline data, a definitive Proposed Development design that has been optimised to reduce loss of calcareous semi-improved grassland and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES, the significance of the positive effects associated with habitat enhancement and creation will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – Native Hedgerows (species rich and species poor)

Detailed baseline

23.10.74 Species-rich hedgerows are a common feature within the onshore part of the PEIR Assessment Boundary 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.

23.10.75 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). Both species poor and species rich native hedgerows are HPI.

23.10.76 The length of hedgerow that is within the potential areas of construction is unknown as some types of the data collection (e.g. remote sensing) are not particularly accurate in identifying narrow linear features. In order to provide scale, the Phase 1 habitat survey identified 63 hedgerows in 2020.

Predicted effects and their significance

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

23.10.77 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 lost is not estimated at PEIR stage, but is likely to measure in the low 1,000s of metres.

23.10.78 As part of the embedded environmental measures described in **Section 23.8** the onshore temporary construction corridor will be narrowed as it passes through this habitat type, where the hedgerow in question qualifies as “important” under the Habitats Regulations 1997. This will reduce the onshore temporary construction corridor from a 50m width to 30m thereby reducing the amount of habitat loss. Further, all areas of this habitat crossed will be reinstated, with an emphasis on reinstating with species rich mixes where agreeable to landowners.

23.10.79 Compensation for hedgerows has not been established, but could involve the enhancement of other areas of hedgerow along the onshore temporary construction corridor (e.g. filling hedgerow gaps) or via the planting of new species-rich hedgerows.

23.10.80 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be **low** (see **Table 23-16**) due to the extent of the loss in comparison to the resource in West Sussex, the ability to reinstate in a rapid and straightforward manner and that the losses will affect a portion of each hedgerow only (as opposed to its full length). The temporary loss of this habitat to the Proposed Development and the time taken for this habitat to reach target condition means that the effect is considered to be negative and is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.81 Within the ES, the assessment of this likely significant effect will be further informed by increased quantities of baseline data, a definitive design that has been optimised to reduce loss of hedgerow and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. In the ES, the significance of the positive effects associated with habitat enhancement and creation will be considered as part of the assessment.

Assessment of effects – Standing water (ponds and permanently wet ditches)

Detailed baseline

23.10.82 Twenty-five ponds have been identified inside the onshore part of the PEIR Assessment Boundary. Pond density is highest towards the northern section of the onshore part of the PEIR Assessment Boundary, particularly in the area surrounding the proposed onshore substation search areas. Ponds are variable in size, with most being less than one hectare. Many were dry at the time of survey, with evidence of cattle poaching frequently recorded.

23.10.83 Wet ditches were identified during the Phase 1 habitat survey, with the majority present within the southern section of the onshore part of the PEIR Assessment Boundary between Climping Beach and Warningcamp. Up to nine permanently wet ditch crossings (where open trenching methods for cable installation are proposed) have been identified within the Crossing Schedule (**Appendix 4.2: Crossing schedule, Volume 4**). The majority of these wet ditch crossings have not been subject to field survey. Those that have been visited form networks around the boundaries of arable and improved grassland fields.

Predicted effects and their significance

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

23.10.84 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 up to nine ponds (range two to nine) and a number of permanently wet ditches (number unknown at this stage). These habitats are assumed to represent HPI.

23.10.85 As part of the embedded environmental measures described in **Section 23.8** micro-siting will likely ensure that the majority of ponds are retained in-situ. Further all permanently wet ditches crossed will be reinstated.

23.10.86 Compensation for this habitat has not been established, but could involve the enhancement of other ponds or permanently wet ditches (dependent on hydrology) along the onshore temporary construction corridor.

23.10.87 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be **low** (see **Table 23-16**) due to the extent of the loss in comparison to the resource in the local area and the proposed reinstatement. The loss of ponds and permanently wet ditches to development and the time taken for this habitat to reach target condition means that the effect is considered to be negative and is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.88 In the ES, the assessment of this likely significant effect will be further informed by increased quantities of baseline data, a definitive Proposed Development design that has been optimised to reduce loss of ponds and minimise crossings of permanently wet ditches and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES, the significance of the positive effects associated with habitat enhancement and creation will be considered in the assessment.

Assessment of terrestrial ecology and nature conservation effects – streams

Detailed baseline

23.10.89 Up to 18 stream crossings (where open trenching methods for cable installation are proposed) have been identified within the Crossing Schedule (**Appendix 4.2, Volume 4**). The majority of these stream crossings have not been subject to field

survey. Those that have been visited are largely modified watercourses bounding fields; they are typically shaded by tree lines or hedgerows. Further survey of these streams will be undertaken in 2021.

Predicted effects and their significance

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

23.10.90 The installation of the onshore cable during the construction phase will result in the open trench crossing of up to 18 stream courses. These habitats are assumed to represent HPI.

23.10.91 As part of the embedded environmental measures (C-3) described in **Section 23.8** the width of the working area at the crossing points will be minimised, and passage for fish and other aquatic organisms will be maintained throughout the construction phase.

23.10.92 Compensation for this habitat has not been established, but could involve the enhancement of streams along the onshore temporary construction corridor.

23.10.93 The preliminary conclusions, drawn at PEIR stage, are that the magnitude of change is assessed to be **low** (see **Table 23-16**) due to the extent of the loss in comparison to the resource in the local area and the proposed reinstatement. Although the temporary disruption of stream courses will be relatively short lived at each crossing point (measured in weeks) the effect is still considered to be negative and is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.94 In the ES, the assessment of this likely significant effect will be further informed by increased quantities of baseline data, a definitive Proposed Development design that has been optimised to reduce loss of ponds and minimise crossings of permanently wet ditches and an understanding of the extent and location of some of the compensatory habitat to be created as part of the Proposed Development. Within the ES, the significance of the positive effects associated with habitat enhancement and creation will be considered in the assessment.

Assessment of terrestrial ecology and nature conservation effects – Badgers

Detailed baseline

23.10.95 Badgers are known to be present across the area within the onshore part of the PEIR Assessment Boundary. This species is widespread and common in West Sussex and it is considered likely that following the completion of detailed survey work several badger setts will have been identified. These are likely to occur within the woodlands, hedgerow bottoms and field edges that characterise much of the onshore cable corridor and onshore substation search areas.

Predicted effects and their significance

23.10.96 The onshore elements of the Proposed Development will lead to the temporary (along the onshore cable corridor), and possibly permanent (at the onshore

substation location), loss and fragmentation of foraging habitat for this species. Construction works could also result in the damage or destruction of one or more badger setts.

23.10.97 The noise, vibration and lighting associated with construction and the operational onshore substation could also lead to disturbance of this species. Typically the construction works will be temporary and highly localised suggesting that badgers will have ample opportunity to avoid them without suffering a loss of fitness, likewise badgers are common around existing operational electrical infrastructure suggesting that the onshore substation development will not cause undue harm. However, without further information on particular locations of setts in the context of the area in which they are located it is not possible to discount disturbance as a likely significant effect.

23.10.98 Without further field survey information it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the extent of any likely significant effect, and tried and tested mitigation measures for this species will be employed. The effect is therefore assessed as **Not Significant** on an ecological feature of Local importance.

23.10.99 Within the ES, further survey information will be available on which to base a full assessment. Furthermore, specialist technical engagement focused on licensing (under the Protection of Badgers Act 1992) will be held with Natural England to ensure that the Proposed Development can be constructed and operated in a manner in line with legislation.

Assessment of terrestrial ecology and nature conservation effects – Bats

Detailed baseline

23.10.100 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 23.2, Volume 4**) identified 13 species and a large number of records within the area of search. The limited bat surveys undertaken to-date have confirmed at least eight bat species or genus utilising habitats within the onshore part of the PEIR Assessment Boundary including barbastelle, brown long-eared bat, common pipistrelle, Leisler's bat, *Myotis* sp., Nathusius' pipistrelle, noctule, serotine and soprano pipistrelle.

23.10.101 The majority of habitat that lies within the areas that may be lost to the Proposed Development is unsuitable for roosting bats as it does not support the necessary structures (i.e. buildings or trees). However, there are a number of trees that have been identified that may support bats and could be lost during the construction phase. Losses of roosts are considered to be permanent regardless of whether removal is due to the presence of above ground infrastructure or buried cables. This is because the time taken for a planted tree to have the opportunity to support roosting bats is measured in decades.

23.10.102 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.

Predicted effects and their significance

23.10.103 The onshore elements of the Proposed Development will lead to the temporary, and possibly permanent, loss and fragmentation of foraging habitat for this species group. Land take could also result in the damage or destruction of one or more bat roosts.

23.10.104 The noise, vibration and lighting associated with construction could also lead to disturbance of bats, although it is acknowledged that the effects of this disturbance will be temporary and localised at any given location. Lighting of the operational onshore substation could permanently exclude some bats from the semi-natural habitats adjacent to the fence line.

23.10.105 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the extent of any likely significant effect. However, due to the diversity of the bat population in the area, its reliance on the physical structure of the habitats present and their sensitivity to elements such as construction and operational lighting the preliminary conclusion considers the effects as negative. The effect is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.106 Within the ES, further survey information will be available on which to base a full assessment. Furthermore, specialist technical engagement focused on licensing (under the Conservation of Habitats and Species Regulations 2017 (as amended)) will be held with Natural England to ensure that the Proposed Development can be constructed and operated in a manner in line with legislation.

Assessment of terrestrial ecology and nature conservation effects – Hazel Dormouse

Detailed baseline

23.10.107 The desk-study (**Appendix 23.2, Volume 4**) has identified the presence of hazel dormouse in the study area (the closest record being from information published regarding the A27 Arundel By-pass proposals), although not within the onshore part of the PEIR Assessment Boundary. The number of records provided within 5km of the onshore part of the PEIR Assessment Boundary (265) is considered to be low, given the extensive areas of seemingly suitable habitat for dormice. Although dormice have not been recorded within the onshore part of the PEIR Assessment Boundary to-date, it is expected that this species will be identified during future field survey.

Predicted effects and their significance

23.10.108 The onshore elements of the Proposed Development will lead to the temporary, and possibly permanent, loss and fragmentation of habitat for this species. During the construction phase the majority of habitats suitable for dormice will be temporarily lost (e.g. at hedgerow crossings), whilst permanent losses of

potentially suitable habitat through the operation and maintenance phase could occur at the onshore substation location and in any areas of woodland removed for cable installation (as woodland cannot be reinstated above the installed cables).

23.10.109 The noise, vibration and lighting associated with construction and the operational onshore substation could also lead to disturbance of dormice. Although it is acknowledged that the effects of this disturbance will be temporary and localised at any given location. It is noted that dormice are present within the vicinity of a large number of operational substations, suggesting that any likely significant effects are more likely associated with the construction phase.

23.10.110 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the extent of any likely significant effect. Given that dormice are likely to be present in only a small number of areas that are affected by habitat loss (e.g. where woodland or hedgerow loss occurs) the potential to have an expansive effect is low. However, due to the sensitivity of dormouse the preliminary conclusion considers the effect as negative. The effect is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.111 Within the ES, further survey information will be available on which to base a full assessment. Furthermore, specialist technical engagement focused on licensing (under the Conservation of Habitats and Species Regulations 2017 (as amended)) will be held with Natural England to ensure that the Proposed Development can be constructed and operated in a manner in line with legislation.

Assessment of terrestrial ecology and nature conservation effects – Great crested newt

Detailed baseline

23.10.112 Great crested newts were identified during the desk study (188 records returned) including 15 from within the onshore part of the PEIR Assessment Boundary. There are 34 ponds lying within the onshore part of the PEIR Assessment Boundary and a further 314 within 250m of it, making it highly likely that great crested newts use habitats that may be subject to construction works.

Predicted effects and their significance

23.10.113 The onshore elements of the Proposed Development will lead to the temporary loss and fragmentation of habitat during the construction phase for great crested newt, with potential for permanent losses associated with works close to the existing National Grid Bolney substation (based on desk study records from ponds immediately adjacent to the substation fence). It is considered most likely at this juncture that habitat loss will all be associated with terrestrial habitat and that ponds suitable for breeding will be avoided through design.

23.10.114 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the

extent of any likely significant effect. Given that great crested newt are likely to be present across large lengths of the onshore cable corridor and around the onshore substation search areas the potential to have an effect on the local population cannot be ruled out at this stage of the Proposed Development. Due to the wide-spread nature and sensitivity of great crested newt the preliminary conclusion considers the effects will be negative. The effect is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.115 Within the ES, further survey information will be available on which to base a full assessment. Furthermore, specialist technical engagement focused on licensing (under the Conservation of Habitats and Species Regulations 2017 (as amended)) will be held with Natural England to ensure that the Proposed Development can be constructed and operated in a manner in line with legislation.

Assessment of terrestrial ecology and nature conservation effects – Common toad

Detailed baseline

23.10.116 Common toads were identified during the desk study (144 records returned) including one from within the onshore part of the PEIR Assessment Boundary. There are 34 ponds lying within the onshore part of the PEIR Assessment Boundary and a further 314 within 250m of it, making it highly likely that common toads use habitats that may be subject to construction works.

Predicted effects and their significance

23.10.117 The onshore elements of the Proposed Development will lead to the temporary, and possibly permanent, loss and fragmentation of habitat for common toad. It is considered most likely at this juncture that habitat loss will all be associated with temporary loss of terrestrial habitat during the construction phase and that ponds suitable for breeding will be avoided through design.

23.10.118 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the extent of any likely significant effect. Given that common toad maybe present across large lengths of the onshore cable corridor and around the onshore substation search areas the potential to have an effect on the local population cannot be ruled out at this stage of the Proposed Development. Due to the wide-spread nature of this species and potential sensitivity to fragmentation the preliminary conclusion considers the effects will be negative. The effect is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.119 Within the ES, further information on the design of the Proposed Development will be available, alongside any detailed environmental measures being implemented for amphibians.

Assessment of terrestrial ecology and nature conservation effects – Reptiles

Detailed baseline

23.10.120 A large number of records of common reptiles were returned during the desk study (666); although none of these were from within the onshore part of the PEIR Assessment Boundary. Many of the habitats present within the onshore part of the PEIR Assessment Boundary have the potential to support adder, common lizard, slow worm and grass snake. Sand lizard were also noted in the desk study (see **Appendix 23.2, Volume 4**), however as the sand dunes from where these records were returned do not lie within any area that may be subject to construction works, they can be discounted.

Predicted effects and their significance

23.10.121 The onshore elements of the Proposed Development will lead to the temporary, and possibly permanent, loss and fragmentation of habitat for these species. The majority of habitat loss would be temporary, taking place within the construction phase. However, some habitats suitable for reptiles may be lost throughout the operation and maintenance phase within the bounds of the onshore substation.

23.10.122 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the extent of any likely significant effect. Further site-specific working methods (to be detailed at ES stage) should ensure that the potential for a likely significant effect on this species group is negligible, due to the wide-spread nature of these species, the embedded environmental measures and the common techniques to avoid death or injury of individuals on construction site. The preliminary conclusion is therefore that the effect is assessed as **Not Significant** on an ecological feature of Local importance.

23.10.123 In the ES, further information on the design of the Proposed Development will be available, alongside baseline survey information from areas of optimal habitat where permanent habitat loss is proposed.

Assessment of terrestrial ecology and nature conservation effects – Breeding birds

Detailed baseline

23.10.124 A range of breeding birds will be present within the onshore part of the PEIR Assessment Boundary. They will include a range of common and widespread species typical of farmland and woodland habitats, alongside others that may be of greater interest (e.g. stone curlew, lapwing and red kite). In general, the onshore part of the PEIR Assessment Boundary (and particularly the onshore cable corridor, temporary construction compounds and substation search areas) are unlikely to support high densities of species likely to be sensitive to the Proposed Development.

Predicted effects and their significance

23.10.125 The onshore elements of the Proposed Development will lead to the temporary and permanent loss of habitat for breeding birds, and the construction and decommissioning activities may result in disturbance. Temporary losses of suitable habitat during the construction phase will include hedgerows and grasslands, whilst more permanent losses associated with the operation and maintenance phase will be woodland and any suitable habitats within the onshore substation footprint.

23.10.126 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will reduce the extent of any likely significant effect. Further site-specific working methods (for example pre-construction survey and implementation of “disturbance buffers”; to be detailed at ES stage) should ensure that the potential for a likely significant effect on this species group is negligible, due to the embedded environmental measures and the common techniques to avoid disturbance of certain species. The preliminary conclusion is therefore that the effect is assessed as **Not Significant** on an ecological feature of International to Local importance.

23.10.127 In the ES, further information on the design of the Proposed Development will be available, alongside baseline survey information.

Assessment of terrestrial ecology and nature conservation effects – Wintering birds

Detailed baseline

23.10.128 **Table 23-17** provides the peak counts of waterbirds recorded during the wintering bird survey undertaken to date. It is evident from the data that the arable fields and golf course behind the seawall support a range of wildfowl and waders that are largely using the area for feeding. 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 (e.g. flood defence works, dog walking etc.).

23.10.129 Within the Arun Valley recorded activity was focused on lakes close to St Mary Magdelene’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. In general, occurrence of each species was in relatively low numbers and sporadic.

Table 23-17 Wintering bird survey results (inside and within 500m of the onshore part of the PEIR Assessment Boundary)

Location	Species	Peak count	Comment
Arun Valley	Coot	4	
	Little egret	4	

Location	Species	Peak count	Comment
	Gadwall	4	Lyminster area
	Grey heron	4	
	Lapwing	32	
	Little grebe	1	
	Mallard	90	Lyminster area
	Moorhen	3	
	Mute swan	6	
	Mediterranean gull	2	
	Snipe	1	
	Tufted duck	1	
	Wigeon	80	Lyminster area
Adur Valley	Cormorant	3	
	Canada goose	152	
	Little egret	1	
	Greylag goose	300	Peak in December 2020
	Grey heron	1	
	Lapwing	51	
	Mallard	15	
	Moorhen	2	
	Mute swan	23	
	Shoveler	10	In excess of 500m from the onshore part of the PEIR Assessment Boundary. Highlighted as designated feature of Arun Valley Ramsar site and SPA.

Location	Species	Peak count	Comment
	Snipe	4	
	Teal	151	
	White-fronted goose	30	Peak in December 2020
	Wigeon	600	Feeding in flooded fields near Ashurst
Coastal strip	Dark-bellied brent goose	650	
	Dunlin	2	
	Grey plover	40	
	Kingfisher	1	
	Knot	1	
	Lapwing	16	
	Mediterranean gull	56	
	Ringed plover	27	
	Snipe	1	
	Sanderling	7	
	Turnstone	90	
	Wigeon	13	

Predicted effects and their significance

23.10.130 The Proposed Development will lead to the temporary loss and fragmentation of habitat for wintering birds during the construction phase, particularly within the floodplains associated with the River Arun and River Adur. The construction and decommissioning activities may also result in disturbance. The species of interest are those wildfowl and waders that use the river valleys for extensive foraging.

23.10.131 All assessed effects and their significance are common with those described for the Arun Valley Ramsar site (see **paragraph 23.10.10**), albeit for a wider range of species. The effects are therefore assessed as **Not Significant** on an ecological feature of International to Local importance.

23.10.132 Within the ES, the assessment of this likely significant effects on wintering birds will be further informed by increased quantities of baseline data and a definitive

design. Within the ES, the significance of the positive effects associated with any habitat enhancement will be considered as part of the assessment.

Assessment of terrestrial ecology and nature conservation effects – Water vole

Detailed baseline

23.10.133 SxBRC returned 774 records of water vole for inside the onshore part of the PEIR Assessment Boundary and within 5km of it. Some of these records were from within the onshore part of the PEIR Assessment Boundary, with these being within the valley of the River Arun. No records of water vole have been recorded to date during the field survey, although is likely artefact of access.

Predicted effects and their significance

23.10.134 The onshore elements of the Proposed Development will lead to the temporary loss and fragmentation of habitat for this species during the construction phase when watercourses/ditches are crossed using open cut techniques.

23.10.135 Without further field survey information, it is not possible to understand the magnitude of change that may occur. However, embedded environmental measures C-3, C-5, C-76, C-103 and C-104 will reduce the extent of any likely significant effect. However, dependent on the location, timing and duration of construction works it is possible that water vole burrows will be destroyed and local populations temporarily fragmented. Therefore, the preliminary conclusion is considered negative. The effect is therefore assessed as **Significant** on an ecological feature of County importance.

23.10.136 In the ES, further information on the design of the Proposed Development will be available, alongside baseline survey information from suitable habitat to be crossed by the onshore temporary construction corridor.

Assessment of terrestrial ecology and nature conservation effects – Fish

Detailed baseline

23.10.137 The desk study (**Appendix 23.2, Volume 4**) returned 100 records of seven species of fish outside but within 5km of the onshore part of the PEIR Assessment Boundary. Records were returned for brook lamprey *Lampetra planeri*, brown trout *Salmo trutta subsp. fario*, brown/sea trout *Salmo trutta*, bullhead *Cottus gobio*, European eel *Anguilla anguilla*, plaice *Pleuronectes platessa* and sea trout *Salmo trutta subsp. trutta*.

Predicted effects and their significance

23.10.138 There are 18 watercourses to be crossed by the onshore temporary construction corridor where an open cutting technique is proposed. This will result in the removal of a section of the watercourse as the cable ducts are installed, noting that water will remain flowing and fish passage enabled. At this stage these

watercourses have not been subject to detailed field survey, however from satellite imagery they all appear to be small watercourses that largely follow field boundaries and are generally heavily shaded. The main watercourses will be crossed trenchlessly, working areas through watercourses to be open trenched will be narrow and that fish passage will be maintained. The preliminary conclusion of the effect is therefore assessed as **Not Significant** on an ecological feature of International to Local importance.

23.10.139 In the ES, further information on the design of the Proposed Development will be available, alongside baseline survey information from suitable habitat to be crossed by the onshore temporary construction corridor.

Assessment of terrestrial ecology and nature conservation effects – Terrestrial and Aquatic Invertebrates

Detailed baseline

23.10.140 Large numbers of records of invertebrates were provided via the desk study (see **Appendix 23.2, Volume 4**). Of the 524 species recorded 12 were noted from within the onshore part of the PEIR Assessment Boundary. Many of the species recorded were either lepidoptera associated with chalk grassland or wetland species such as Desmoulin's whorl snail.

Predicted effects and their significance

23.10.141 Habitat loss and fragmentation will temporarily reduce the resources available to invertebrates within each habitat patch when crossed by the cable installation and at the temporary construction compounds. However, the embedded environmental measures C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106 and C-115 will minimise the level of effect. Further, it is not expected that the loss of the land within which permanent above ground infrastructure will be placed will have a material difference on local populations of invertebrates. The preliminary conclusion of effect is therefore assessed as **Not Significant** on an ecological feature of International to Local importance.

23.10.142 In the ES, further information on the design of the Proposed Development will be available, alongside baseline survey information from suitable habitat to be crossed by the onshore cable corridor.

23.11 Preliminary assessment: Cumulative effects

Approach

23.11.1 A preliminary cumulative effects assessment (CEA) has been undertaken for Rampion 2 which examines the result from the combined effects of Rampion 2 with other developments on the same single receptor or resource and the contribution of Rampion 2 to those impacts. The overall method followed when identifying and assessing potential cumulative effects in relation to the onshore environment, is set out in **Chapter 5** and **Appendix 5.3: Cumulative effects assessment detailed onshore search and screening criteria, Volume 4**.

23.11.2 The onshore screening approach will follow the Planning Inspectorate's Advice Note Seventeen (Planning Inspectorate, 2019) which is an accepted process for NSIPs and will follow the four-stage approach set out in the guidance.

Cumulative effects assessment

23.11.3 For terrestrial ecology and nature conservation, a ZOI has been defined for each ecological feature for each potential effect (see **Section 23.6**). This has been applied for the CEA to ensure direct and indirect cumulative effects can be appropriately identified and assessed. For example, if the ZOI is applied for a particular feature to the Proposed Development and another project, and these overlap, a CEA is undertaken.

23.11.4 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** and on **Figure 5.4.2, Volume 4**. This short list has been generated applying criteria set out in **Chapter 5** and **Appendix 5.3: Cumulative effects assessment detailed onshore search criteria, Volume 4** and has been collated up to the finalisation of the PEIR through desk study, consultation and engagement.

23.11.5 Only those 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. The terrestrial ecology and nature conservation ZOI is shown in **Figure 23.18, Volume 3**. All developments falling outside the terrestrial ecology and nature conservation ZOIs are excluded from this assessment.

23.11.6 On the basis of the above, the following specific other developments contained within the short list in **Appendix 5.4, Volume 4** are scoped into CEA.

Table 23-18 Developments to be considered as part of the CEA

ID (Figure 5.4.2)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
1	Transport	A27 Arundel Bypass Project	Pre-application, no scoping report yet submitted. Preferred alignment issued	High	3	Information from environmental report included within desk study (**Appendix 23.2, Volume 4**). Physical routeing of the bypass considered

ID (Figure 5.4.2)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
						within assessment.

23.11.7 The cumulative Project Design Envelope is described in the following table.

Table 23-19 Cumulative Project Design Envelope for terrestrial ecology and nature conservation

Project phase and activity/impact	Scenario	Justification
Cumulative temporary and permanent habitat loss	Tier 3: A27 Arundel By-pass project	The A27 Arundel By-pass project will result in temporary and permanent land-take within the vicinity of Crossbush, overlapping with the onshore cable corridor (which crosses the proposed alignment of the bypass). The additional temporary and permanent habitat loss in the area may result in greater effects on fauna including bats and dormice if the construction phases coincided.
Cumulative disturbance (noise, vibration and light)	Tier 3: A27 Arundel Bypass project	Disturbance caused by the A27 Arundel by-pass construction could result in the displacement of various fauna, many of which could also be displaced by the cabling works. Should these projects coincide the pressure of displacement is likely to increase.

23.11.8 The A27 Arundel Bypass has the potential to act cumulatively with the Proposed Development across a relatively localised area where the projects intersect. If the construction works take place at the same time there may be disruption to the use of habitats for foraging, commuting and sheltering by a number of species including bats, dormice and badgers. This has the potential to result in a Significant effect on these species. Further information is required to enable a more robust assessment to be undertaken, including the evolution of the Proposed Developments crossing point of the A27 Arundel Bypass and an idea of the construction schedules of each project relative to each other.

23.11.9 Baseline data and further information on other developments will continue to be collected prior to the finalisation of the ES and iteratively fed into the assessment. An updated cumulative effects assessment will be reported in the ES.

23.12 Transboundary effects

23.12.1 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).

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

23.13 Inter-related effects

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

23.13.1 The potential inter-related effects include:

- Proposed Development lifetime effects: i.e., those arising throughout more than one phase of the Proposed Development (construction, operation and maintenance, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation; and
- Receptor-led effects: assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group). Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

23.13.2 The potential inter-related effects that could arise in relation to terrestrial ecology and nature conservation are presented in **Table 23-20**. A description of the process to identify and assess these effects is presented in **Chapter 5**.

Table 23-20 Inter-related effects assessment for terrestrial ecology and nature conservation

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
Proposed Development lifetime effects			
Construction, operation and maintenance, and decommissioning	Loss of ecological features of sufficient importance and	Impacts range from Not Significant to Significant	The loss of ecological features of sufficient importance and protected species is considered in this chapter over the lifetime of the Proposed Development (construction, operation and

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
	protected species		maintenance, and decommissioning). Therefore, there are no further inter-related lifetime effects for the Proposed Development beyond the effects described in **Section 23.10**.
Receptor-led effects			
Designated sites Potential for inter-related effects with noise and vibration, air quality, landscape and visual impact, soils and agriculture, lighting and water environment		The assessment of effects on terrestrial ecology and nature conservation features, as presented in **Sections 23.6** and **23.10** have taken into account the potential for multiple impacts from Rampion 2 affecting particular features. For example, disturbance effects on faunal receptors resulting from noise and vibration, visual disturbance and lighting have all been assessed together. The implementation of the Outline COCP and other embedded environmental measures have been considered within the assessment described in **Chapter 20: Air quality** which conclude the effects on ecological receptors are Not Significant. Topsoil stripped from the Warningcamp Hill and New Down LWS in the onshore construction corridor will be managed in line with the embedded environmental measures set out in in the Commitments Register (**Appendix 4.1, Commitment Register, Volume 4**). **Chapter 27: Water environment** 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 or decommissioning of the Proposed Development. Therefore, the ecological features that these designated sites and habitats support will also not be subject to likely significant effects. Therefore, no inter-related receptor-led effects are likely to occur other than those that are described in the individual aspect chapters.

23.14 Summary of residual effects

23.14.1 **Table 23-21** presents a summary of the preliminary assessment of significant impacts, any relevant embedded environmental measures and residual effects on terrestrial ecology and nature conservation receptors.

Table 23-21 Summary of preliminary assessment of residual effects

Ecological feature	Magnitude of effect	Importance	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Arun Valley Ramsar site	Negligible	International	C-103, C-104, C-117	**Not Significant**
Arun Valley SPA	Negligible	International	C-103, C-104, C-117	**Not Significant**
The Mens SAC	Negligible	International	C-3	**Not Significant**
Amberley Wild Brooks SSSI	Negligible	National	C-103, C-104, C-117	**Not Significant**
Pulborough Brooks SSSI	Negligible	National	C-103, C-104, C-117	**Not Significant**
Arun Valley: Watersfield to Arundel LWS	Negligible	County	C-103, C-104, C-117	**Not Significant**
Warningcamp to New Down LWS	Medium	County	C-113	**Significant**
Veteran trees	Negligible	National	C-174	**Not Significant**
Semi-natural broadleaved woodland	Low	County	C-3	**Significant**
Calcareous semi-improved grassland	Low	County	C-3	**Significant**

Ecological feature	Magnitude of effect	Importance	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Native hedgerows (species rich and species poor)	Low	County	C-3	**Significant**
Standing water (ponds and permanently wet ditches)	Low	County	C-3	**Significant**
Streams	Low	County	C-3	**Significant**
Badgers	Unknown	Local	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Not Significant**
Bats	Unknown	County	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Significant**
Hazel dormouse	Unknown	County	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Significant**
Great crested newt	Unknown	County	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Significant**
Common toad	Unknown	County	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Significant**
Reptiles	Unknown	Local	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Not Significant**

Ecological feature	Magnitude of effect	Importance	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Breeding birds	Unknown	International to local	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Not Significant**
Wintering birds	Negligible	International to local	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Not Significant**
Fish	Negligible	International to local	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Not Significant**
Terrestrial and aquatic invertebrates	Negligible	International to local	C-3, C-5, C-6, C-21, C-103, C-104, C-105, C-106, C-115	**Not Significant**

23.15 Further work to be undertaken for ES

Introduction

23.15.1 Further work that will be undertaken to support the terrestrial ecology and nature conservation assessment and presented within the ES is set out below.

Baseline

23.15.2 An extensive programme of field survey is ongoing and will inform the assessment provided in the ES. This survey programme (described in **Table 23-7**) has been discussed and agreed as suitable with a wide array of technical stakeholders (see **Section 23.3**).

Assessment

23.15.3 The assessment within the ES will follow the methodology provided in **Sections 23.6** and **23.10**. It will however be informed by the baseline data collection, evolved design and detailed analysis from other environmental disciplines.

Consultation and engagement

23.15.4 Further consultation and engagement that will be undertaken to inform the terrestrial ecology and nature conservation assessment and presented within the ES is set out in **Table 23-22.**

Table 23-22 Further consultation and engagement

Consultee	Issues to be addressed	Relevance to assessment
Expert Topic Group (see Section 23.3)	Baseline establishment, mitigation and compensation design, approach to assessment, assessment outcomes	Relevant across all aspects of the terrestrial ecology and nature conservation assessment
Natural England (in addition to participation in ETG)	EPS licensing approach Licensing approaches (if necessary) for badger and water vole	Relevant to the assessment of legally protected species and the mitigation and compensation design

Environmental measures

23.15.5 Further environmental measures that will be considered and presented within the ES are set out in **Table 23-23.**

Table 23-23 Further environmental measures

Receptor	Changes and effects	Environmental measures and influence on assessment
All ecological features	As the design evolves and further baseline information is gathered the locations of potential conflict will be identified. These conflicts will inform the design (e.g. avoidance) and mitigation design (e.g. scheduling to avoid active periods).	To be confirmed following identification of conflicts.

23.16 Glossary of terms and abbreviations

Table 23-24 Glossary of terms and abbreviations

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
Cefas	Centre for Environment, Fisheries and Aquaculture Science
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	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)
Cumulative Effects Assessment (CEA)	Assessment of impacts as a result of the incremental changes caused by other past, present and reasonably

Term (acronym)	Definition
	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 period 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
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).
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.

Term (acronym)	Definition
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, 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.
Habitats Regulations	EC Council Directive 92/43/EEC, known as the Habitats Directive, was transposed in the UK by the Habitats Regulations 1994 (as amended). The Habitats Regulations apply to UK land and territorial waters and act to ensure biodiversity of natural habitats and of wild flora and fauna through a range of measures including designation of SACs.
Horizontal Directional Drill (HDD)	An engineering technique avoiding open trenches.
HPI	Habitats of Principal Importance

Term (acronym)	Definition
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.
IUCN	International Union for Conservation of Nature
km	kilometres
LGS	Local Geological Sites
LSE	Likely Significant Effects
Likely Significant Effects	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".
m	metres

Term (acronym)	Definition
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 PEIR Assessment Boundary	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.
PEIR Assessment Boundary	The PEIR Assessment Boundary combines the search areas for the offshore and onshore infrastructure associated with the Proposed Development. It is defined as the area within which the Proposed Development and associated infrastructure will be located, including the temporary and permanent construction and operational work areas.
Planning Inspectorate (PINS)	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications,

Term (acronym)	Definition
	examinations of local plans and other planning-related and specialist casework in England and Wales.
Preliminary Environmental Information Report (PEIR)	The written output of the Environmental Impact Assessment undertaken to date for the Proposed Development. It is 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
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 (SoS)	The body who makes the decision to grant development consent.

Term (acronym)	Definition
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.
Significant effects	It is a requirement of the EIA Regulations 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 (based on the magnitude of the effect and the sensitivity of the receptor) 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 landscape and visual 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

Term (acronym)	Definition
	particular feature in each member state needs to be identified and designated.
Special Protection Area (SPA)	Sites designated under EU Directive (79/409/EEC) to protect habitats of migratory birds and certain threatened birds under the Birds Directive (The Conservation of Habitats and Species Regulations 2017)
SPI	Species of Principal Importance
SWT	Sussex Wildlife Trust
SxBRC	Sussex Biodiversity Records Centre
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 onshore and offshore infrastructure associated with the offshore wind farm comprising of installed capacity of up to 1,200MW, located in the English Channel in off the south coast of England. The development that is subject to the application for development consent, as described in Chapter 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.

23.17 References

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