



LLYR

LLYR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Volume 2: Chapter 8 – Ecology and Biodiversity

August 2024





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Acronyms and abbreviations

Acronym or Abbreviation	Definition	Acronym or Abbreviation	Definition
AWI	Ancient Woodland Inventory	NNR	National Nature Reserve
BCT	Bat Conservation Trust	NRW	Natural Resources Wales
BTHK	Bat Tree Habitat Key	NVC	National Vegetation Classification
CBC	Common Bird Census	OCEMP	Outline Construction Environmental Management Plan
CEMP	Construction Environmental Management Plan	PEA	Preliminary Ecological Appraisal
CIEEM	Chartered Institute of Ecology and Environmental Management	PCC	Pembrokeshire County Council
CSZ	Core Sustainance Zone	PPW	Planning Policy Wales
ECoW	Ecological Clerk of Works	PWM	Precautionary Working Method
EIA	Environmental Impact Assessment	PRA	Preliminary Roost Assessment
EPSML	European Protected Species Mitigation Licence	RDB	Red Data Book
ES	Environmental Statement	SAC	Special Area of Conservation
HMSO	His Majesty's Stationary Office	SINC	Site of Importance for Nature Conservation
HDD	Horizontal Directional Drilling	SPA	Special Protection Area
HPI	Habitat of Principal Importance	SPI	Species of Principal Importance
HRA	Habitat Regulations Assessment	SSSI	Site of Special Scientific Interest
INNPS	Invasive Non-Native Plant Species	TAN	Technical Advice Note
JNCC	Joint Nature Conservation Council	VP	Vantage Point
LBAP	Local Biodiversity Action Plan	WCA	Wildlife and Countryside Act
LDP	Local Development Plan	WFD	Water Framework Directive
LNR	Local Nature Reserve	WWBIC	West Wales Biological Information Centre
LWS	Local Wildlife Site	ZoI	Zone of Influence
NGR	National Grid Reference		

Glossary of project terms

Term	Definition
The Applicant	The developer of the Project, Llŷr Floating Wind Limited.
Array	All wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the Array Area, as defined, when considered collectively, excluding the offshore export cable(s).
Array Area	The area within which the wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure will be located.
Floventis Energy	A joint venture company between Cierco Ltd and SBM Offshore Ltd of which Llŷr Floating Wind Ltd is a wholly owned subsidiary.



Term	Definition
Landfall	The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays.
Llŷr 1	The proposed Project, for which the Applicant is applying for Section 36 and Marine Licence consents. Including all offshore and onshore infrastructure and activities, and all project phases.
Marine Licence	A licence required under the Marine and Coastal Access Act 2009 for marine works which is administered by Natural Resources Wales (NRW) Marine Licensing Team on behalf of the Welsh Ministers.
Offshore Development Area	The footprint of the offshore infrastructure and associated temporary works, comprised of the Array Area and the Offshore Export Cable Corridor, as defined, that forms the offshore boundary for the S36 Consent and Marine Licence application.
Offshore Export Cable	The cable(s) that transmit electricity produced by the WTGs to landfall.
Offshore Export Cable Corridor (OfECC)	The area within which the offshore export cable circuit(s) will be located, from the Array Area to the Landfall.
Onshore Development Area	The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore Substation, as defined, and including new access routes and visibility splays, that forms the onshore boundary for the planning application.
Onshore Export Cable(s)	The cable(s) that transmit electricity from the landfall to the onshore substation.
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.
proposed Project	All aspects of the Llŷr 1 development (i.e. the onshore and offshore components).
Onshore Substation	Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption.
Section 36 consent	Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works.



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8. TERRESTRIAL ECOLOGY

8.1 Introduction

1. Llŷr Floating Wind Limited (hereafter the Applicant) is proposing to develop the Llŷr 1 Floating Offshore Wind Farm (hereafter referred to as the proposed Project), located approximately 35 km off the coast of Pembrokeshire in the Celtic Sea.
2. The proposed Project is a test and demonstration wind farm development, comprising up to 10 wind turbine generators (WTGs). The proposed Project will make landfall at Freshwater West before connecting into Pembroke Dock power station and the national grid network.
3. The Applicant is seeking offshore (a Section 36 consent and Marine Licence) and onshore (deemed planning permission) consents for Llŷr 1, and this chapter forms part of the Environmental Statement (ES) which is submitted in support of those consent applications. This chapter describes the potential impacts and effects of the proposed Project on terrestrial ecology during the construction, operation and maintenance and decommissioning phases, and includes mitigation and good practice measures to reduce the impacts of the proposed Project on terrestrial ecology.
4. **Section 8.10** of this ES chapter provides a summary of the impact assessment undertaken and any residual significant effects on terrestrial ecology following consideration of any additional mitigation measures.
5. The assessment presented in this chapter should be read in conjunction with the following linked and supporting chapters:
 - **Chapter 04: Description of the Proposed Project** - provides further details of the project design parameters.
 - **Chapter 05: EIA Approach and Methodology** - provides further details of the general framework and approach to the EIA.
6. Additional information to support the assessment includes:
 - **Appendix 4A: Outline Construction Environmental Management Plan (OCEMP);**
 - **Appendix 8A: Chough Survey Report;**
 - **Appendix 8B: Preliminary Ecological Assessment Report (PEAR);**
 - **Appendix 8C: Bat Survey Report;**
 - **Appendix 8D: HRA Screening;**
 - **Appendix 8E: HRA RIAA; and**
 - **Appendix 8F: Green Infrastructure Statement**
7. The assessment has been undertaken by AECOM. Further details of the proposed Project Team's competency are provided in **Appendix 1A: Statement of Competence.**

8.2 Legislation, Policy and Guidance

8. The following sections identify specific legislation, policy and guidance that is applicable to the assessment of terrestrial ecology. Further detail on the wider legislation, policy and guidance relevant to this ES is provided in **Chapter 02: Regulatory and Planning Policy Context.**

8.2.1. Legislation

9. The legislation that is applicable to the assessment of terrestrial ecology is summarised below.



- The Conservation of Habitats and Species Regulations 2017 (as amended) (His Majesty's Stationary Office (HMSO), 2017);
- The Wildlife and Countryside Act (WCA) 1981 (as amended) (HMSO, 1981);
- The Countryside and Rights of Way (CROW) Act 2000 (as amended) (HMSO, 2000);
- Environment (Wales) Act 2016 (HMSO, 2016);
- Hedgerow Regulations 1997 (HMSO, 1997);
- Protection of Badgers Act 1992 (HMSO, 1992);
- Well-being of Future Generations (Wales) Act 2015b (HMSO, 2015);
- Water Environment (Water Framework Directive (WFD) (England and Wales) Regulations 2017 (HMSO, 2017); and
- The Invasive Non-native Species (Amendment etc.) (EU Exit) Regulations 2019 (HMSO, 2019).

8.2.2. *National Planning Policy*

10. This section outlines national planning policy relevant to terrestrial ecology with a summary of policy provided in **Table 8-1**.

Planning Policy Wales – Edition 12 (February 2024)

11. Planning Policy Wales (PPW) (Welsh Government, 2024) sets out the land use planning policies of the Welsh Government and aims to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental, and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation and resultant duties such as the Socio-economic Duty. The PPW sets out how the planning system at a national, regional, and local level can assist in delivering these requirements through Strategic Development Plans (SDPs) and Local Development Plans (LDPs).
12. Chapter 6 of PPW, Distinctive and Natural Places, outlines the Welsh Government's objectives for the environment, including Green Infrastructure, Biodiversity and Ecological Networks. The policy encourages developments to take a proactive approach to facilitate biodiversity and demonstrate that they have sought to fulfil the duties and requirements of Section 6 of the Environment (Wales) Act 2016.

Technical Advice Note 5 (TAN5) Nature Conservation and Planning (September 2009)

13. PPW is supplemented by a series of Technical Advice Notes (TANs). TAN 5 (Welsh Government, 2009) provides guidance on how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It provides advice on areas including the key principles of positive planning for nature conservation, nature conservation in Local Development Plans and development management procedures. It also provides advice on development affecting designated sites and habitats, in addition to habitats of principal importance (HPIs) and protected species.
14. Key principles include that the town and country planning system in Wales should integrate nature conservation into all planning decisions; that the town and country planning system should look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally and that they should ensure that the UK's international and national obligations for site, species and habitat protection are fully met in all planning decision.



Future Wales – The National Plan 2040

15. ‘Future Wales – the National Plan 2040’ (Welsh Government, 2021) is the Welsh Government’s national development framework which sets out the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.

Table 8-1. A summary of national planning policy relevant to terrestrial ecology

Summary of policy	How and where it is considered in the chapter
<p>PPW, Paragraph 6.2.12 outlines that developments should integrate green infrastructure into developments to provide net benefits to biodiversity. It outlines that a green infrastructure statement should be submitted with planning applications.</p> <p>Para 6.4.5 outlines that developments must provide a net benefit for biodiversity following the “step wise approach”.</p> <p>The attributes of the DECCA framework (Diversity, Extent, Condition, Connectivity and Adaptation) should be heeded to secure ecosystem resilience and a net benefit for biodiversity.</p>	<p>A green infrastructure statement outlining net benefits for biodiversity will be produced.</p>
<p>PPW, Paragraph 6.4.3 outlines that development proposal must consider and need to:</p> <ul style="list-style-type: none"> • Support the maintenance and enhancement of biodiversity and the resilience of ecosystems. • Ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats, including the most recent targets set out in the 2022 UN Global Biodiversity Framework. • Ensure statutorily and non-statutorily designated sites and habitats are properly protected and managed and their role at the heart of resilient ecological networks is safeguarded. • Safeguard protected species and species of principal importance (SPI) and existing biodiversity assets from direct, indirect or cumulative adverse impacts that affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water, air and soil, including peat; and • Secure the maintenance and enhancement of ecosystem resilience and resilient ecological, networks by improving diversity, extent, condition, and connectivity. 	<p>All ecological receptors are considered in the context of this planning policy throughout the chapter.</p> <p>A green infrastructure statement outlining net benefits for biodiversity will be produced.</p>
<p>Future Wales – The National Plan, Policy 9 – Resilient Ecological Networks and Green Infrastructure. To ensure the enhancement of biodiversity, the resilience of ecosystems and the provision of green infrastructure, through the:</p> <ul style="list-style-type: none"> • Identification of areas which should be safeguarded and created as ecological networks for their importance for adaptation to climate 	<p>A green infrastructure statement outlining net benefits for biodiversity will be produced.</p>



Summary of policy	How and where it is considered in the chapter
<p>change, for habitat protection, restoration or creation, to protect species, or which provide key ecosystems services, to ensure they are not unduly compromised by future development; and,</p> <ul style="list-style-type: none"> • Identification of opportunities where existing and potential green infrastructure could be maximised as part of placemaking, requiring the use of nature-based solutions as a key mechanism for securing sustainable growth, ecological connectivity, social equality and wellbeing. <p>In all cases, action towards securing the maintenance and enhancement of biodiversity (to provide a net benefit) the resilience of ecosystems and green infrastructure assets must be demonstrated as part of development proposals through innovative, nature-based approaches to site planning and the design of the built environment.</p>	

8.2.3. Local Planning Policy

16. This section outlines local planning policy relevant for terrestrial ecology with a summary of policy provided in **Table 8-2**.

Pembrokeshire Local Development Plan

17. On 28 February 2013, the Council adopted a Local Development Plan (LDP) for Pembrokeshire (excluding the area of the Pembrokeshire Coast National Park), (Pembrokeshire County Council, 2013). This therefore applies to all areas within the onshore development area to the east of Newton, including the area identified for the construction of the onshore substation. The LDP was intended to cover the period between 2013 and 2021, though this has been extended due to delays in the production of a new updated LDP.

Pembrokeshire Coast National Park Local Plan 2

18. The Local Development Plan (Pembrokeshire Coast National Park Authority, 2020) specific to Pembrokeshire Coast National Park provides the legal framework for the development and use of land within the National Park. The Plan comprises text and maps, and together with national planning policy will guide decisions on planning applications.
19. Habitats and species within the National Park must be considered within the wider context of biodiversity and of conservation effort. The 2016 State of Wildlife in Pembrokeshire report suggests that biodiversity associated with agriculture is in decline.

Table 8-2. A summary of local planning policy relevant to terrestrial ecology

Summary of policy	How and where it is considered in the chapter
<p>Pembrokeshire LDP GN.1.General Development Policy: Provides a framework for the evaluation of potential development impacts. Criterion 4 ensures that development will respect and protect the natural environment, including protected habitats and species. Any development proposal must demonstrate that it protects the natural environment and, where possible, enhances it.</p>	<p>All ecological receptors are considered in the context of this planning policy throughout the chapter.</p>



Summary of policy	How and where it is considered in the chapter
<p>Pembrokeshire LDP GN.3. Infrastructure and New Development: Makes provision for contributions to be sought, where appropriate and necessary, in conjunction with development proposals including for biodiversity.</p>	<p>Contributions are not considered necessary. Instead, all impacts will be mitigated for within the proposed Project boundaries (Section 8.8).</p>
<p>Pembrokeshire LDP GN.37 Protection and Enhancement of Biodiversity: Requires all new developments to demonstrate a positive approach to maintaining and, where possible, enhancing biodiversity. It aims to ensure that species and their habitats as well as wildlife and landscape features in both countryside and urban environments are protected from the potentially adverse effects of development and requires that where any such effects are anticipated, appropriate mitigation and / or enhancement should be made.</p>	<p>All ecological receptors are considered in the context of this planning policy throughout the chapter.</p>
<p>Pembrokeshire Coast National Park Local Development Plan 2, Policy 8. Special Qualities. This policy requires the conservation and enhancement of the special qualities of the Pembrokeshire Coast National Park, including ecosystems and their components. This policy also requires the protection of the National Park’s green infrastructure network.</p>	<p>All ecological receptors are considered in the context of this planning policy throughout the chapter.</p>
<p>Pembrokeshire Coast National Park Local Development Plan 2, Policy 9. Light Pollution. This policy requires projects to minimise potential impacts to the night sky. Where external artificial lighting is required, a full lighting scheme should be designed and lead to no adverse effect on the biodiversity of the area.</p>	<p>This policy is considered throughout the chapter, though lighting is specifically considered in relation to bats in Section 8.8.1.</p>
<p>Pembrokeshire Coast National Park Local Development Plan 2, Policy 10. Sites and Species of European Importance. This policy protects internationally designated sites, and specifies that developments with potential to have a significant effect on a European Site must not adversely affect the integrity of the site. This policy also gives protection to European protected species, and states that development likely to have adverse effect on them will only be permitted where there are overriding public interests, no satisfactory alternative and the project will not cause detriment to the maintenance of the population conservation status.</p>	<p>This policy is considered throughout the chapter, impacts to European protected habitats and species are described in Section 8.8.1.</p>
<p>Pembrokeshire Coast National Park Local Development Plan 2, Policy 11. Nationally Protected Sites and Species. This policy protects nationally protected sites and species. Development with potential to adversely impact nationally protected sites and species must have no suitable alternative. Developments must contribute to the protection, enhancement or positive management of a nationally protected site. Where a development has potential to adversely affect a nationally protected species, the population range and distribution of the species must not be impacted.</p>	<p>All ecological receptors are considered in the context of this planning policy throughout the chapter.</p>



Summary of policy	How and where it is considered in the chapter
<p>In all cases, the benefits of a development must clearly outweigh the impact on nationally protected species or site and appropriate avoidance, mitigation, compensation and enhancement must be implemented.</p>	
<p>Pembrokeshire Coast National Park Local Development Plan 2, Policy 12. Local Areas of Nature Conservation. This policy is in place to protect local nature conservation sites and states that developments that have potential to affect Local Nature Reserves (LNRs) and designated sites will only be permitted where they conserve / enhance the natural heritage of a site, or it could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site.</p>	<p>No local sites of nature conservation are present within the study area (Section 8.5.1).</p>

8.2.4. Policy Guidance

Pembrokeshire Nature Recovery Action Plan

- 20. The Nature Recovery Action Plan for Pembrokeshire has been produced by the Pembrokeshire Nature Partnership (2018). Whilst it can be used to guide the members of the Partnership in setting their priorities for action, it is a guide for everyone to use. This plan follows on from the Local Biodiversity Action Plan for Pembrokeshire, which remains a valuable source of information and advice specific to species and habitats covered in that plan.

Pembrokeshire Local Biodiversity Action Plan

- 21. The Pembrokeshire Local Biodiversity Action Plan (LBAP) (Pembrokeshire Nature Partnership (2011)) provides a framework within which existing and new actions are co-ordinated to conserve and enhance biodiversity in Pembrokeshire, taking account of local and national priorities.
- 22. The following Action Plans have been produced and considered throughout this assessment:
 - Grouped Habitat Action Plans: Grassland, Heathland, Lowland Farmland, Wetlands, Freshwater, Woodland, Coastal, Brown Field and Urban, Marine.
 - Grouped Species Action Plans: Bats, Farmland Birds, Reptiles and Amphibians, Grassland Fungi, Coprophagous and other Dung Related Species*, Commercial Fish Species*, Cetaceans*, Invasive Non-Native Species.
 - Species Action Plans: Otter (*Lutra lutra*), marsh fritillary (*Euphydryas aurinia*), brown hairstreak (*Thecla betulae*), southern damselfly (*Coenagrion mercuriale*), chough (*Pyrrhocorax pyrrhocorax*), kestrel (*Falco tinnunculus*), native oyster (*Ostrea edulis*), dormouse (*Muscardinus avellanarius*), purple broomrape (*Orobanche purpurea*).
- 23. N.B. Plans marked with * are not available to view on the pembrokeshire.gov.uk website.
- 24. N.B Relevant habitat and species-specific guidance and standards are noted in **Table 8-7** and **Table 8-8**.

8.3 Stakeholder Engagement and Consultation

- 25. Consultation with statutory and non-statutory organisations is a key element of the EIA process. Consultation with regards to terrestrial ecology has been undertaken to inform the approach to, and scope of, the assessment.



26. Stakeholders for the proposed Project include statutory consultees, landowners and local communities. In addition to the statutory consultation process, there has been ongoing engagement with statutory and non-statutory consultees to steer the development of the proposed Project and this is detailed in **Table 8-3**.

8.3.5. *Summary of Stakeholder Consultations*

Table 8-3. Summary of the key issues raised by consultees and how each issue was addressed

Consultee	Consultation type and date	Comment raised	How issue has been addressed and location of response in chapter
Scoping			
Pembrokeshire County Council (PCC)	Scoping responses	Concerns regarding the number of cable route projects across the angle peninsula and likely cumulative construction and operational effects.	Cumulative effects assessed as part of the ES, Section 8.11 .
PCC	Scoping responses	Identified records for hazel dormouse on the peninsula and suggests that hedgerow removal should be avoided.	Habitat suitability of hedgerows assessed for dormouse. Figure 8-7: Dormouse habitat suitability in Appendix 8B: Preliminary Ecological Appraisal.
Pembrokeshire Coast National Park Authority	Scoping responses	Suggest that the effects of cable landfall and onshore works must also be considered in combination with other projects.	Cumulative effects assessed as part of the ES, Section 8.11 .
NRW	Scoping responses	Concerns regarding potential for the proposed Project to have significant effect on protected sites.	Assessment undertaken in Sections 8.8.1 and 8.8.2 and Habitat Regulations assessment (HRA) provided in Appendix 8E
NRW	Scoping responses	Identifies requirement for assessment of likely significant effects, including on the SACs.	Assessment undertaken in Sections 8.8.1 and 8.8.2 and HRA provided in Appendix 8E
NRW	Scoping responses	Identifies requirement to undertake assessment for impacts on SSSI features to enhance conservation status of such features.	Assessment undertaken in Section 8.8 .
NRW	Scoping responses	Identifies requirement for Appropriate Assessment and consultation with NRW	HRA provided in Appendix 8E



Consultee	Consultation type and date	Comment raised	How issue has been addressed and location of response in chapter
		on likely effect on the National Site Network.	
NRW	Scoping responses	Advises that the species-specific impacts in the short, medium and long term, with any mitigation and compensation measures, be included in the EIA. Should impacts be identified, these should be included in the Ecological Impact Assessment (EclA) which will set out the long-term site security of mitigation and compensation, including management and monitoring.	Assessment undertaken in Section 8.8 . Mitigation outlined in Section 8.9 .
Pre-application			
PCC	Meeting 02 February 2023	Concerns regarding timing of works with Erebus mitigation proposals (hedgerow replanting).	As a worst case it has been assumed that removal of Erebus's mitigation measures will be required. Assessed within the Cumulative effects Section 8.11.3 .
PCC	Meeting 02 February 2023	PCC outlined that Erebus PEA would need to be updated as a minimum for ecology surveys and understand the requirement for additional surveys.	PEA updated by AECOM in 2023-24. Appendix 8B: Preliminary Ecological Appraisal .
PCC	Meeting 02 February 2023	Concerns regarding lighting in the vicinity of onshore substation locations. Agreed that if lighting is kept to a minimum, mitigation approach (rather than surveys) is potentially acceptable.	Assessment undertaken in Section 8.8.2 .
PCC	Meeting 02 February 2023	Requirement for projects to maintain and enhance biodiversity in proportion to the scheme. PCC encourage Llŷr to engage with Blue Gem Wind to align enhancements.	Mitigation designed in line with CIEEM guidance published in 2022. Mitigation measures are described in Sections 8.7 and 8.9 .
PCC	Meeting 02 February 2023	PCC advised to assume dormouse presence due to recent surveys nearby.	Existing baseline identified in Section 8.5.1 .
PCC	Meeting 06 July 2023	PCC advised that for the substation, as a full season of bat activity survey data could not be undertaken, any mitigation	Mitigation included as part of the proposed Project



Consultee	Consultation type and date	Comment raised	How issue has been addressed and location of response in chapter
		and enhancements should be included as commitments in the ES. Suggested mitigation included: <ul style="list-style-type: none"> • Leaving a minimum of 30m buffer between the substation northern edge and the habitat to the north. • Where possible planting hedgerows to provide linkages in habitat between existing hedgerows along the field boundary. • Refer to a Landscape Ecological Management Plan (details of which would be defined post-consent, but an overarching plan could be developed). • To avoid where possible cutting hedgerows every year, and instead leaving them on a 3-year rotation if safe to do so. • To keep lighting levels as low as possible within safety and security restrictions. 	outlined in Section 8.7 and Section 8.9 .
PCC	Email 07 March 2023	PCC confirmed that provided that the ecological surveys submitted can confidently answer the question - ‘what is the ecological impact’ then the use of survey work over 2 years old is acceptable.	Impacts and assessment of effects outlined in Section 8.8 Assessment of Environmental Effects.
PCC	Email 07 March 2023	PCC confirmed that an update PEA would need to include assessment of trees suitability to support roosting bats and any further surveys and an update survey for badger setts.	PEA updated by AECOM in 2023-24. Appendix 8B: Preliminary Ecological Appraisal.
PCC	Email 07 March 2023	PCC noted that any micro siting within the working corridor must aim to avoid any ancient trees.	Mitigation will include the micro siting of the works corridor with the aim to avoid important ecological features including ancient trees (Section 8.7).
PCC	Meeting 20 September 2023	PCC noted that the application would benefit from including a Landscape Environmental Management Plan (LEMP).	A LEMP will be provided post-submission. The LEMP will include all the relevant mitigation measures



Consultee	Consultation type and date	Comment raised	How issue has been addressed and location of response in chapter
			outlined in this chapter and the contents will be agreed with PCC and PCNPA pre-construction.
PCC	Meeting 20 September 2023	PCC noted that the area in which the corridor is located has been heavily surveyed previously, that it is unlikely that a regulator would request a full set of all possible surveys, and that AECOM should be able to utilise this existing data within their assessment for the consent application. PCC noted that where there are gaps in the data, mitigation measures should be included which cover the worst-case scenario (i.e. high abundance and diversity).	Assessment is based on a worst-case scenario as outlined in Section 8.4.1 . Mitigation measures associated with this scenario are described in Section 8.7 and 8.9 .
PCC	Meeting 20 September 2023	PCC would expect to see approximately a 10m working corridor, within the wider cable route corridor (approx. 50 – 100m). For the purposes of the assessment PCC would be looking for specific values for the working corridor that are clearly stated and consistent, especially in areas of high ecologically sensitive habitat (i.e. rivers and hedgerows) rather than a general reference to the wider 50 – 100m cable route corridor.	Confirmed that the working corridor will not exceed 10m through hedgerow and watercourses in Chapter 04: Description of the Proposed Project

8.4 Approach to Assessment

8.4.1. Assessment Methodology

27. **Chapter 05: EIA Approach and Methodology** provides a summary of the general impact assessment methodology applied in this ES. The following sections provide further detail on the specific methodology used to assess the potential impacts on terrestrial ecology.
28. The approach to the assessment of cumulative impacts, transboundary impacts and interrelated effects is provided in **Sections 8.11, 8.12, and 8.13** respectively.
29. An assessment of likely terrestrial ecology impacts associated with the proposed Project was undertaken in accordance with the Ecological Impact Assessment guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2022).
30. The CIEEM approach to assessment has several stages:
 - Scoping;



- Establishing the baseline and evaluating the importance of biodiversity features (described as determining the importance of ecological features in CIEEM guidance); and
 - Impact assessment and identification of significant effects.
31. The significance of potential effects has been evaluated using a systematic approach together with the expert judgement of the specialist consultant. The systematic approach is based upon the identification of the importance / value of receptors and their sensitivity to the proposed Project together with the predicted magnitude of the potential impact.
32. The importance (conservation value) of ecological features (designated sites, habitats, species assemblages and populations of species) is evaluated in **Section 8.5.1**. Importance is assessed with reference to their nature conservation status (i.e., rarity, threat status); their conservation value (which relates to the need to conserve representative areas of different habitats and the genetic diversity of species populations); and legal status. A review of the legislation, policy and the sensitivity of the ecological features has been undertaken and the importance of the ecological features was determined in a geographical context on the following basis:
- International;
 - National (Wales);
 - Regional (south-west Wales);
 - County (Pembrokeshire);
 - Local (within the onshore development area plus approximately 2km); and,
 - Site (within the proposed new (terrestrial) Site areas).
33. Several characteristics are considered to contribute to the importance of habitat and biodiversity features including, for example (but not exclusively), the rarity of a habitat or species, habitat diversity, whether the species population size is notable in a wider context, rich assemblages of species at the on the edge of their habitat range, particularly where their distribution is changing as a result of global trends and climate change. The values utilised within this report is described in **Table 8-4**.

Table 8-4. Assessment of importance of terrestrial ecological features

Importance	Comparable Receptor Sensitivity Criteria	Guidelines
International	Very High	<p>Habitats: SPAs; potential SPAs; SACs; candidate or possible SACs; and Wetlands of International Importance (Ramsar sites).</p> <p>Biogenetic Reserves, World Heritage Sites and Biosphere Reserves.</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Species: resident, or regularly occurring, populations of species which may be considered at an International or European level where:</p> <ul style="list-style-type: none"> • The loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale.



Importance	Comparable Receptor Sensitivity Criteria	Guidelines
		<ul style="list-style-type: none"> The population forms a critical part of a wider population at this scale; or the species is at a critical phase of its life cycle at this scale.
National	High	<p>Habitats: Designated sites including: SSSIs; and NNRs.</p> <p>Areas which meet the published selection criteria for e.g. JNCC Selection criteria for SSSI (1998) for those sites listed above but which are not themselves designated as such.</p> <p>Areas of Ancient Woodland e.g. woodland listed within the Ancient Woodland Inventory.</p> <p>Species: resident, or regularly occurring, populations of species which may be considered at an International, European, UK or National level (SPI) where:</p> <ul style="list-style-type: none"> The loss of these populations would adversely affect the conservation status or distribution of the species at this scale; or The population forms a critical part of a wider population at this scale; or the species is at a critical phase of its life cycle at this scale.
Regional	Medium	<p>Habitats: HPis which meets the criteria for habitat identified as being of importance in regional plans or strategies.</p> <p>Species: Resident, or regularly occurring, populations of species which may be considered at an International, European, UK or National level where:</p> <ul style="list-style-type: none"> The loss of these populations would adversely affect the conservation status or distribution of the species across the region; or The population forms a critical part of a wider population; or the species is at a critical phase of its life cycle.
County	Medium	<p>Habitats: Designated sites including: SINCS; and LNR designated in the County context.</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>HPis identified in the Environment Wales Act Section 7.</p> <p>Species: SPIs identified in the Environment Wales Act Section 7.</p> <p>Resident, or regularly occurring, populations of species which may be considered at an International, European, UK or National level where:</p> <ul style="list-style-type: none"> The loss of these populations would adversely affect the conservation status or distribution of the species across the County; or The population forms a critical part of the County population.
Local	Low	<p>Habitats: Areas of habitat considered to appreciably enrich the habitat resource within the local context (such as veteran trees), including features of value for migration, dispersal or genetic exchange. Areas of habitats identified in the Local BAP; and areas of</p>



Importance	Comparable Receptor Sensitivity Criteria	Guidelines
		habitat identified as being of Local value in the appropriate Natural Area Profile (or equivalent). Species: Populations / communities of species considered to appreciably enrich the biodiversity resource within the Local context.
Site	Negligible	Habitats: Areas of heavily modified or managed vegetation with low species diversity, or areas of heavily modified or managed vegetation which provides low value habitat for species of importance at County or National Scale Species: A good example of a population of a common or widespread species.

34. Characterisation of the impacts and resultant effects takes into consideration the following aspects (where appropriate), adapted from CIEEM guidelines (CIEEM, 2022):

- **Positive or negative**
 - Beneficial (i.e. positive) – a change that improves the quality of the environment, or halts or slows an existing decline in quality e.g. increasing the extent of a habitat of conservation value.
 - Negligible – A change that has an insignificant impact. Can be positive or negative e.g. loss of habitat of low conservation value.
 - No impact – A change that has no impact on the environment e.g. replacement of habitat of no conservation value with another habitat of no conservation value.
 - Adverse (i.e. negative) – a change that reduces the quality of the environment e.g. destruction of habitat or increased noise disturbance.
- **Extent:** spatial / geographical area over which the impact or effect may occur.
- **Magnitude:** description of level of severity of influence and is a combination of three criteria associated with the impact: scale of change; spatial extent of change and duration of change. Also, referred to as magnitude, determined on a quantitative basis if possible. When the receptor being considered is a habitat itself, size (magnitude) and extent may be synonymous.
- **Duration:** the time for which an impact is expected to last prior to recovery or replacement of the resource or feature. This is in ecological terms (e.g., in relation to the life cycle of the receptor) not human timeframes.
- Both **direct and indirect** impacts are considered within the assessment. A direct impact is directly attributable to a defined action such as the physical loss of a habitat or the immediate mortality of an individual of a particular species. Indirect impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or receptor. An example of an indirect effect would be the loss of an important prey species for a predator.
- **Temporary and permanent** impacts are considered as follows.



- A short-term temporary effect relates to an activity with a duration from several weeks to a few months.
 - A medium-term temporary effect relates to a duration estimated to be several months to a year.
 - A long-term temporary effect relates to a duration estimated to be several years.
 - A permanent effect is non-reversible.
- **Frequency and Timing:** important seasonal and / or life cycle constraints and any relationship with frequency considered e.g., bird nesting season.
 - **Reversibility:** an irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. Temporary impacts can have irreversible effects.
35. Cumulative impacts are effects on the environment caused by the combined results of past, current and future activities. There is significant spatial overlap between the proposed Project and others in the region, as such impacts on the same receptor may occur.
36. The identification and assessment of impacts on ecological features takes into account embedded mitigation or compensation measures that are applied to the project as a matter of course.

8.4.2. Significance Criteria

37. Potential impacts on relevant ecological receptors are assessed and a judgement is reached on whether or not the resultant effect on conservation status or structure and function is likely to be significant in EIA terms. This process takes into consideration the characteristics of the impact as outlined above.
38. The significance of effects has been assessed according to the CIEEM guidance:
‘For the purpose of ecological impact assessment, ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity).’
39. Ecological features are defined as ‘important’ if they require specific assessment within EclA. For the purposes of this assessment, a geographical level of importance is applied to each ecological feature, as in **Section 8.5.1**. Any ecological feature described as ‘Site’ level importance or higher is included. Ecological features that are of ‘less than site’ level importance, or have no intrinsic ecological value, have not been subject to further assessment.
40. For each phase of the proposed Project (e.g. construction, operation and decommissioning), the assessment has been structured and reported by ecological receptor with relevant potential impacts on that feature described in turn, and then the overall effect arising from those impacts reported. For example, any impacts on bat roosting habitat, and light disturbance on retained roosts will be documented, before a conclusion is reached on the overall effect on the conservation status of the of the local bat population concerned.
41. The assessment of significant effects is based on the best available scientific evidence proportionate to the severity of those effects. If sufficient information is not available further survey or additional research may be required. Where evidence is lacking and it is not possible to robustly justify a conclusion of no significant effects, the precautionary principle has been applied, where effects are considered in a likely worst-case scenario.



42. In order to provide consistency of terminology in the conclusions of the assessment the residual effects of the proposed Project are translated to a significance level on a scale of negligible, minor, moderate and major comparable to that used in other ES chapters as outlined in **Table 8-5**. The scale or magnitude of potential impacts (both beneficial and adverse) is determined by a combination of three criteria: scale of change, spatial extent of change and duration of change, as outlined in **Chapter 05: EIA Approach and Methodology, Section 5.4.9**.

Table 8-5. Significance criteria

Effect Significance Terminology		Equivalent CIEEM Assessment
Significant (Beneficial)	Major Beneficial	Beneficial effect on structure/function or conservation status at regional, national or international level.
	Moderate Beneficial	Beneficial effect on structure/function or conservation status at district or county level.
Non-significant	Minor Beneficial	Beneficial effect on structure/function or conservation status at site or local level.
Non-significant	Negligible	No effect on structure/function or conservation status.
Non-significant	Minor Adverse	Adverse effect on structure or conservation status at site or local level.
Significant (Adverse)	Moderate Adverse	Adverse effect on structure/function or conservation status at district or county level.
	Major Adverse	Adverse effect on structure/function or conservation status at regional, national or international level.

8.4.3. Study Area and Data Sources

43. The study area for the assessment of terrestrial ecology varies depending on the receptor, with each study area, being defined on the basis of the Zone of Influence (Zoi) of the proposed Project on a particular biodiversity feature.
44. The onshore development area is shown in **Volume 5: Figure 8-1**. The Study Area considered for each receptor is illustrated on its respective figure (**Volume 5: Figures 8-2 to 8-5**).

Desk Study

45. A comprehensive desk-based review was undertaken to inform the baseline for terrestrial ecology. Key data sources used to inform the assessment are set out in **Table 8-6**.

Table 8-6. Desk study area and data sources

Biodiversity feature	Study Area (Zoi)	Data sources	Date consulted
International statutory nature conservation designations (Special Protection Areas (SPAs), Ramsar sites, Special Areas of Conservation (SACs))	Up to 5 km from the onshore development area	Multi-Agency Geographic Information for the Countryside (MAGIC) website	6 July 2023
SACs and SSSIs designated for bats.	Up to 10 km from the onshore development area	MAGIC website	6 July 2023



Biodiversity feature	Study Area (Zoi)	Data sources	Date consulted
National and local statutory nature conservation designations (Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs))	Up to 2 km from the onshore development area	MAGIC website	6 July 2023
Non-statutory nature conservation designations (Sites of Interest for Nature Conservation (SINCs))	Up to 2 km from the onshore development area	Local environmental records centre (West Wales Biodiversity Information Centre)	24 February 2022
Ancient Woodland	Within or adjacent to the onshore development area	Ancient Woodland Inventory 2021	7 July 2023
Habitats of principal importance	Within or adjacent to the onshore development area	DatamapWales WOM21 Priority Habitat – High Sensitivity	7 July 2023
Protected and notable species	Up to 2 km from the onshore development area	Local environmental records centre (West Wales Biodiversity Information Centre)	24 February 2022

46. This Chapter uses desk study data presented in the ES prepared by Energised Environments Limited trading as ITP Energised (2021a) and on behalf of Blue Gem Wind Ltd for Project Erebus. This ES was produced in 2021, using data gathered from 2020-2021. Data which was used to inform this Chapter was gained from Volume 2 and Volume 3 of the Erebus ES.
47. The ES prepared by Arup & Partners Limited on behalf of Greenlink Interconnector in 2019 (Greenlink Interconnector Ltd., 2020) is also consulted in this Chapter. This report was produced in 2019, using survey data collected in 2018-2019. Surveys conducted in association with this assessment were within the 'Greenlink cable corridor', to the north of the onshore development area.
48. The areas assessed as part of these surveys, in the context of the proposed Project, are illustrated in **Volume 5: Figure 8-10**. Their assessments are considered relevant to this ES given that the study area associated with each is overlapping, or in close proximity to, the onshore development area.
49. These documents are summarised in this report where necessary, and provides reference to the outcomes of the assessments. Further details regarding the methodology and results of the surveys undertaken to inform the previous assessments is within the original documents which are publicly available. Ecological receptor survey methodologies undertaken as part of these assessments are summarised in **Table 8-7**. Where appropriate, these surveys form the basis of the assessment, as agreed with PCC in February 2023.



Table 8-7. Erebus and Greenlink ES field survey methodology and survey areas

Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
Habitats and notable plants	Project Erebus corridor	<p>A thorough site inspection was made during a preliminary ecological appraisal (PEA). The survey followed the methodology set out in the Joint Nature Conservation Committee (JNCC) (revised reprint 2010) Handbook for Phase 1 habitat survey and CIEEM guidelines for preliminary ecological appraisal (CIEEM, 2017).</p> <p>A NVC survey was undertaken following standard NVC survey procedure as described by Rodwell (1991a, 1991b, 1992 and 2000). Vegetation was mapped onto aerial photographs at a scale of 1:5,000, all vegetation (apart from ryegrass (<i>Lolium</i> sp.) leys and arable fields) was mapped. No targeted surveys for fungi, bryophytes or invasive non-native plant species (INNPS) were carried out. Where INNPS were present, they were recorded as part of the PEA survey.</p>	May, June and early July 2020	<p>Erebus Environmental Statement Technical Appendix 20.2: Preliminary Ecological Assessment (ITPnergised, 2021c); and</p> <p>Technical Appendix 20.3: National Vegetation Classification Study Report (ITPnergised, 2021d);</p> <ul style="list-style-type: none"> - Figure 20.2: Phase 1; - Figure 20.3: National Vegetation Classification;
	Greenlink cable corridor	A PEA was carried out following standard methodology (JNCC, 2010; CIEEM, 2017). Detailed botanical surveys were not undertaken.	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	<p>Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal (PEA) Report (Greenlink Interconnector Ltd., 2019a); and</p> <ul style="list-style-type: none"> - Figure 4: Extended phase 1 habitat map.
INNPS	Greenlink cable corridor	A search for evidence of INNPS listed under WCA Schedule 9 was conducted.	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal Report (Greenlink Interconnector Ltd., 2019a);
Terrestrial Invertebrates	Project Erebus corridor	No surveys for terrestrial invertebrates were undertaken. The value of habitat for invertebrates within the survey area and 2 km buffer was based on desk study information and assessment of habitats from other field surveys, particularly the PEA and NVC surveys.	May, June and early July 2020	Erebus Environmental Statement Technical Appendix 20.2: Preliminary Ecological Assessment (ITPnergised, 2021c).



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
				Erebus Environmental Statement Technical Appendix 20.3: National Vegetation Classification Study Report (ITP Energised, 2021d); - Figure 20.2: Phase 1 Habitats; and - Figure 20.3: National Vegetation Classification.
	Greenlink cable corridor	No surveys for terrestrial invertebrates were undertaken, though a search for species records was conducted which identified the presence of 445 records of invertebrates classified as SPIs within 2 km of the cable corridor. This included 36 species of moth, five species of butterfly, three species of bee and one beetle. No appraisal was made for the suitability of the habitat within the project area to support terrestrial invertebrates.	3 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal Report (Greenlink Interconnector Ltd., 2019a).
Great crested newt (<i>Triturus cristatus</i>) and other amphibians	Project Erebus – 250 m buffer from the indicative cable route	No targeted surveys for amphibians were undertaken. Waterbodies were considered for their suitability to support amphibians during the PEA baseline survey.	May, June and early July 2020	Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITP Energised, 2021e).
	Greenlink cable corridor	The potential for the site to support legally protected species, including great crested newt, was recorded.	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal Report (Greenlink Interconnector Ltd., 2019a).
Reptiles	Project Erebus – 50 m buffer from the indicative cable route	Habitats or features with suitability for reptiles were recorded and visually searched for reptiles during the PEA survey. Dedicated reptile surveys involving the use of artificial refugia were not undertaken.	February 22, 23, 25, 26 and March 18, 19, 24 of 2020	Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITP Energised, 2021e).



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
	Greenlink cable corridor	During the PEA, the site was appraised for its suitability for reptiles. The assessment was based on guidance published in the Herpetofauna Workers' Manual (Gent and Gibson, 2003).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal Report (Greenlink Interconnector Ltd., 2019a).
Wintering birds	Project Erebus – cable corridor and an approximate 250 m survey buffer. Inter-tidal areas transect surveys within an approximate 500 m survey buffer.	A wintering bird survey, comprising six visits, to identify approximate numbers and the location of wintering birds. The surveys aimed to identify all bird species of conservation concern in all the inter-tidal areas and along the inland proposed cable routes with a particular focus on identifying the presence of any wintering chough. The survey comprised a 3-hour Vantage Point (VP) survey of four intertidal areas, including the three landfall option areas for the Erebus cable route, as well in the Pembroke River estuary directly east of the substation search area. The VP surveys were undertaken starting one hour before peak low tide and finish two hours after peak low tide. In addition, four hour transect surveys were completed, following each of the three potential cable routes: The survey was split two hours either side of peak high tide and, starting inland, included a high tide count at each of the three landfall intertidal areas. Due to the lack of desk study data at West Angle Bay an additional three low tide surveys were undertaken, as well as an additional three checks for wintering chough along the cabling route for Freshwater Bay, making six visits to each location in total.	October 2020 to March 2021 High tide surveys October 2020, December 2020 and February 2021.	Erebus Environmental Statement Technical Appendix 20.8: Wintering Bird Survey Report (ITP Energised, 2021i).
	Greenlink cable corridor	Transect surveys: six pre-defined routes were walked recording all encountered birds. Coastal surveys: counts of target species (all waterbirds including gulls, Annex 1 species and chough) were recorded within two hours of high tide. Six surveys were completed at each location.	2, 27 November 2018, 18 December 2018, 18 January 2019, 11 February 2019, 11 March 2019	Greenlink Environmental Statement – Onshore Wales Appendix 6.3 Wintering Birds Report (Greenlink Interconnector Ltd., 2019c); - Figure 3: Transect survey results;



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
		<p>Chough surveys: a survey following Bird Monitoring Methods (Gilbert <i>et al.</i>, 2011) including areas considered optimal for chough foraging. Six 1.5 hour VP surveys were conducted.</p>		<ul style="list-style-type: none"> - Figure 4: Coastal survey results; and - Figure 5: Chough survey results.
Breeding birds	<p>Project Erebus – cable corridor and an approximate 300 m survey buffer.</p>	<p>A breeding bird walkover survey, comprising three visits, was carried out to identify approximate numbers and the location of breeding pairs of birds. Transects were undertaken on higher value habitat, such as scrub, woodland and wetland. The proposed transects followed a modified common bird census (CBC) type methodology (as outlined in Bibby <i>et al.</i> (2000)) to record breeding birds. The CBC method was modified slightly so that three survey visits took place in the form of transects and were completed over three days in each of April, May and June. The surveys included a check for any sites which may be suitable for nesting barn owl (<i>Tyto alba</i>) (completed under Schedule 1 bird licence). In addition to breeding behaviour, records of foraging or flying chough were recorded during the transect surveys.</p>	Spring-summer 2021	<p>Erebus Environmental Statement Technical Appendix 20.7: Breeding Bird Survey Report (ITPEnergised, 2021h);</p> <ul style="list-style-type: none"> - Figure 20.6: Breeding Bird Survey Routes.
	Greenlink cable corridor	<p>During the PEA, the site was surveyed for suitable habitat for birds of conservation significance. Any birds or their field signs (such as nests or owl pellets) were recorded.</p>	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	<p>Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal (PEA) Report (Greenlink Interconnector Ltd., 2019a).</p>
	Greenlink cable corridor	<p>Pre-defined transect routes were walked by an experienced ornithological surveyor, recording and mapping all encountered birds identified by sight, song and call. The surveys followed best practice guidance in Bird Census Techniques (Bibby, 2000) and Bird Monitoring Methods (Gilbert, 1998). The surveys took place in the morning, when levels of avian activity are likely to be at their highest. Where birds were recorded to be showing signs of breeding, this was recorded, and a breeding territory was assumed present.</p>	Three surveys April-June 2018	<p>Greenlink Environmental Statement – Onshore Wales Appendix 6.2 Breeding Bird Survey Report (Greenlink Interconnector Ltd., 2019b);</p> <ul style="list-style-type: none"> - Figures 2-10: Breeding bird survey results; and



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
				<ul style="list-style-type: none"> - Figures 11-13: Likely territory locations of breeding red and amber listed birds of conservation concern.
Hazel dormouse	Project Erebus - 250 m buffer from the indicative cable route	All areas of potentially suitable dormouse habitat were identified, assessed and mapped. Targeted dormouse surveys were not undertaken.	May, June and early July 2020	Erebus Environmental Statement Technical Appendix 20.6: Dormouse Mitigation Strategy (ITP Energised, 2021g); and Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITP Energised, 2021e).
	Greenlink cable corridor	During the PEA, hedgerows, woodlands and dense vegetation were appraised for their suitability to support dormouse in accordance with standard guidance (Bright <i>et al.</i> , 2006).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal (PEA) Report (Greenlink Interconnector Ltd., 2019a).
	Greenlink cable corridor	Dormouse presence/absence surveys using nest tubes were conducted following standard practice methodology (Bright <i>et al.</i> , 2006).	June-September 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.4 Dormouse Survey Report (Greenlink Interconnector Ltd., 2019d); Greenlink Environmental Statement – Onshore Wales Appendix 6.12 Dormouse Method Statement (Greenlink Interconnector Ltd., 2019h); and <ul style="list-style-type: none"> - Appendix C Dormouse survey results.



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
Water vole (<i>Arvicola amphibius</i>)	N/A	Water vole are considered extinct in Wales from all but a few select locations in Glamorgan. No water vole surveys were undertaken.	N/A	Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITPEnergised, 2021e).
	Greenlink cable corridor	During the PEA, waterbodies within the site were assessed for their suitability for water vole following standard guidance (Strachan <i>et al.</i> , 2011).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal (PEA) Report (Greenlink Interconnector Ltd., 2019a).
	Greenlink cable corridor	A habitat suitability assessment was undertaken to identify the suitability of habitat for water vole. Criteria considered include rate of water flow, bank profiles, degree of shading, extent of suitable herbaceous vegetation suitable for shelter, food and nesting material, degree of cattle poaching, level of disturbance, potential for waterbody to dry out, suitability of bank substrate for burrowing and water quality. A presence/absence survey was conducted following methodology outlined in the Water Vole Conservation Handbook (Strachan <i>et al.</i> , 2011) and the Water Vole Mitigation Handbook (Dean <i>et al.</i> , 2016).	6, 7, 8 August 2018 3, 4, 5, 11, 12, 19, 20 September 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.5 Riparian Mammals Survey Report (Greenlink Interconnector Ltd., 2019e); - Figure 6: Habitat suitability water vole; and - Figure 12: Water vole survey results.
Badger (<i>Meles meles</i>)	Project Erebus - 100 m buffer from the indicative cable route	Field signs including setts, day beds, badger faeces in dung pits, evidence of foraging, badger paths, scratching posts, hair and footprints, were searched for. The survey was based on the methods described by Scottish Badgers (2018). The survey included all the woods and fields in the survey area with a focus on the hedgerows, field boundaries, watercourses, paths and other linear features. On identification of a badger sett, the number of entrances was noted, and an assessment of the activity level and status of the sett was made where possible. The status of a sett was evaluated and determined where this was possible based on descriptions presented in Scottish Badgers	Not known – Confidential Appendix	Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITPEnergised, 2021e).



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
		good practice guidelines (2018). Each sett entrance can be classified according to its degree of usage.		
	Greenlink cable corridor	During the extended phase 1 habitat survey, any evidence of badger such as setts, paths, latrines or foraging remains were recorded. The survey of any setts followed standard methodology (Harris <i>et al.</i> , 1989).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal (PEA) Report (Greenlink Interconnector Ltd., 2019a).
	Greenlink cable corridor	Not known – Confidential Appendix.	Not known – Confidential Appendix	Greenlink Environmental Statement – Onshore Wales Appendix 6.6 – Restricted Badger Survey Report (Greenlink Interconnector Ltd., 2019f).
Bats	Project Erebus - 50 m buffer from the indicative cable route	<p>A targeted preliminary roost assessment (PRA) was carried out. Targeting was achieved initially through careful examination of the route and aerial imagery, to identify possible bat roost constraints to the development. The remote targeting was then ground-truthed and assessed during the site survey visits where any potential roost features were identified. The survey area was surveyed to identify potentially valuable roosting features for bats following current Bat Conservation Trust (BCT) guidelines (Collins, 2016) and taking note of the Bat Tree Habitat Key (BTHK) (BTHK, 2018) guidance for potential tree features. Potential roost features identified in the PRA were not subjected to internal inspection. Following the PRA, the trees were then graded as to whether they contained Negligible, Low, Moderate or High roost suitability and the requirement for further survey was determined (following the iterative process outlined in good practice guidance (Collins, 2016).</p>	13 July 2021	<p>Erebus Environmental Statement Technical Appendix 20.5: Bat Survey Report (ITP Energised, 2021f); Technical Appendix 20.4: Protected Species Survey Report (ITP Energised, 2021e); and</p> <ul style="list-style-type: none"> - Figure 20.5: Trees with Potential Bat Features.



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
	Greenlink cable corridor	During the PEA any buildings/trees identified within the site were appraised for their suitability to support breeding, resting and hibernating bats using standard survey methodology (Collins, 2016).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal (PEA) Report (Greenlink Interconnector Ltd., 2019a).
	Greenlink cable corridor	<p>Preliminary ground level roost assessments: Structures and trees within the site boundary were surveyed to assess their potential to support roosting bats. Potential roosting features and signs of bats were searched for, including woodpecker holes, hazard beams, cracks, splits, bat droppings, staining below a feature, presence of bats.</p> <p>Aerial tree climbing surveys: An endoscope was used to look inside potential roosting features to further assess their suitability to support roosting bats.</p> <p>Transect surveys: Habitats on site were assessed as having Moderate suitability to support foraging and commuting bats, transects were carried out once a month. Six transect routes were defined and walked once per month May-October, inclusive. Transect surveys commenced at dusk and lasted 2-3 hours.</p> <p>Static detector surveys: Eight static bat detectors (Song Meter SM2) were deployed for a minimum of five nights in suitable habitat across the transect routes each month April-October, inclusive. An additional two static bat detectors were deployed August-October, inclusive. Detectors were set to record 30 minutes before sunset until 30 minutes after sunrise.</p>	<p>Preliminary Ground Level Roost Assessments: March 2018</p> <p>Transect surveys: May-October 2018</p> <p>Static bat detector deployments: May-October 2018</p>	<p>Greenlink Environmental Statement – Onshore Wales Appendix 6.7 Bat Survey Report (Greenlink Interconnector Ltd., 2019g);</p> <ul style="list-style-type: none"> - Figure 3: Preliminary Roost Assessment Results; - Figure 4: Tree Climbing Results - Figures 5-11: Transect Survey Results by species; - Figures 12-17: Transect Survey Results by timing; - Figures 18-24: Transect Survey Results by month; - Figure 25: Inferred proximity of roosts from transect data; and - Figures 26-39: Passive activity surveys indices and proportions.
Otter	Project Erebus - 250 m buffer from the indicative cable route	A search was undertaken of the valleys and woods where suitable habitat for otter was present. Throughout the survey area, streams and pond edges, overhanging banks, cavities, bankside vegetation and riparian features, such as boulders and mud, were searched for signs of otter use.		<p>Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITPEnergised, 2021e); and</p> <ul style="list-style-type: none"> - Figure 20.4: Otter Survey Results.



Ecological Receptor	Survey Area	Method	Date(s) of Survey	Data sources
	Greenlink cable corridor	During the PEA water bodies were assessed for their suitability to support otter following standard guidance (Chanin, 2003).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal Report (Greenlink Interconnector Ltd., 2019a).
	Greenlink cable corridor	An otter habitat suitability assessment was undertaken based on proximity of site to habitats suitable for shelter, foraging and breeding, degree of modification of watercourse, levels of disturbance, levels of visible pollution and potential use of urban features including culverts and bridges. A presence/absence survey was carried out following standard guidance (Chanin, 2003). A search for field signs including spraints, anal jelly, holts, bank slides, runs, tunnels, feeding remains and footprints was conducted.	6, 7, 8 August 2018 3, 4, 5, 11, 12, 19, 20 September 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.5 Riparian Mammals Survey Report (Greenlink Interconnector Ltd., 2019e); - Figure 5: Habitat Suitability Otter; and - Figures 7-11: Otter signs.
Other SPIs	N/A	No surveys for SPIs were undertaken. The likelihood of SPIs being present within the site and 2 km buffer was based on desk study information and assessment of habitats from other field surveys.	N/A – no survey conducted	Erebus Environmental Statement Technical Appendix 20.4: Protected Species Survey Report (ITPEnergised, 2021e).
	Greenlink cable corridor	During the PEA the site was appraised for its suitability for other SPIs, including hedgehog (<i>Erinaceus europaeus</i>), harvest mouse (<i>Micromys minutus</i>) and brown hare (<i>Lepus europaeus</i>).	26-29 March 2018, 26-27 April 2018, 1-2 May 2018 and 25 May 2018	Greenlink Environmental Statement – Onshore Wales Appendix 6.1 Preliminary Ecological Appraisal Report (Greenlink Interconnector Ltd., 2019a).



Site Specific Surveys

50. To provide site specific information on which to base the impact assessment for terrestrial ecology, field surveys were conducted. The area within which the surveys were undertaken varies depending on the features being surveyed for. For each ecological feature a Zol is defined. This is the area within which the feature may be subject to effects resulting from the proposed Project. The Zol for each feature was determined through:
- Review of baseline conditions for each ecological feature based on desk studies, field surveys and information from consultees and stakeholders.
 - Assessment of the sensitivity of each ecological feature based on scientific literature, where possible.
 - The outline design of the proposed Project, construction methodologies and likely decommissioning methods.



Table 8-8: Summary of surveys undertaken to inform this ES.

Ecological Receptor	Survey Area	Method	Dates of survey	Reference/ Appendix
Habitats and notable plants	Onshore development area	<p>A PEA walkover survey was undertaken following the Phase 1 habitat survey methodology (JNCC, 2010). Plant names recorded during the survey followed Stace (2019).</p> <p>During scoping (AECOM, 2022a), it was highlighted that early gentian surveys should be conducted to map the location and extent of early gentian within the onshore development area when it is in flower (April-June). Due access constraints this was not undertaken, but a habitat suitability assessment was undertaken to identify suitable habitat for early gentian within the onshore development area.</p>	13 June 2023 - 25 October 2023	<p>Appendix 8B: Llŷr Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-5: Habitats of Principal Importance.</p> <p>Figure 8-6: Phase 1 Habitat Plan.</p>
Terrestrial invertebrates	Onshore development area	An assessment of the potential of habitats within the Survey Area to support notable species of invertebrates, both terrestrial and aquatic (including white-clawed crayfish) was undertaken.	13 June 2023 - 25 October 2023	<p>Appendix 8B: Llŷr Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-6, Phase 1 Habitat Plan</p>
Great crested newt and other amphibians	Onshore development area	The PEA undertaken included an appraisal for the potential for the onshore development area to support protected species including great crested newt and other amphibians.	13 June 2023 - 25 October 2023	Appendix 8B: Llŷr Preliminary Ecological Appraisal Report.
Reptiles	Onshore development area	An assessment for the potential for habitats within the onshore development area to support reptiles was undertaken during the PEA following standard guidance (Froglife, 1999; JNCC, 2003). This included an appraisal of habitats to support active reptiles and the target noting of features with suitability for hibernating reptiles.	13 June 2023 - 25 October 2023	<p>Appendix 8B: Llŷr Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-6, Phase 1 Habitat Plan.</p> <p>Volume 5: Figure 8-8, Reptile Habitat Suitability Plan.</p>



Ecological Receptor	Survey Area	Method	Dates of survey	Reference/ Appendix
Birds	Coastal habitats between Freshwater West and West Angle Bay	Chough and peregrine (<i>Falco peregrinus</i>) surveys: a 7.1 km transect was completed on the cliffs between West Angle Bay and Freshwater West for breeding chough and peregrine. A mixture of walkover VP watches were employed following an adapted CBC survey method (Gilbert <i>et al.</i> , 2011) with the aim to map all nest sites and record any flightlines or feeding areas for chough and peregrine along the coastal strip and inland, in addition to any observed territorial and / or breeding behaviour. The CBC survey methodology was adapted as this guidance stipulates 10 visits. Generally complex habitats such as woodland attract ten visits. This number was reduced based on the less complex habitats on Site. Each survey started at sunrise and had an average duration of six hours. Each successive survey alternated between starting at either Angle Bay or Freshwater West Bay to reduce bias.	Chough and peregrine surveys: four visits April-June 2022	Appendix 8A: Chough Survey Report.
	Onshore development area	Habitat assessment: An assessment of the potential of habitats within the Survey Area to support breeding, wintering or migrating birds, either individually notable species or assemblages of both common and rarer species was made during the PEA.	PEA: 13 June 2023 – 25 October 2023	Appendix 8B: Preliminary Ecological Appraisal Report.
Hazel dormouse	Onshore development area	An assessment of the potential of habitats within the Survey Area to support hazel dormouse, following English Nature guidance (2006) was undertaken. In 2021, NRW confirmed that presence/absence surveys for hazel dormouse would not be required due to a lack of records and optimal habitat (AECOM, 2022a).	13 June 2023 – 25 October 2023	Appendix 8B: Preliminary Ecological Appraisal Report. Volume 5: Figure 8-6, Phase 1 Habitat Plan. Volume 5: Figure 8-7, Dormouse Habitat Suitability Plan.



Ecological Receptor	Survey Area	Method	Dates of survey	Reference/ Appendix
Water vole	Onshore development area	An assessment of the potential for watercourses and water bodies within the Survey Area to support water vole, following The Mammal Society (2016) guidance was undertaken.	13 June 2023 - 25 October 2023	<p>Appendix 8B: Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-6, Phase 1 Habitat Plan.</p>
Badger	Onshore development area and 30 m buffer	<p>During the PEA survey a search for signs of badger activity including setts, tracks, snuffle holes and latrines, following the methodology detailed in Scottish Badgers (2018) and Harris <i>et al</i> (1989) was undertaken.</p> <p>A 30 m buffer was applied. Badgers can be disturbed by works within 30 m of a sett (NRW, 2023).</p>	13 June 2023 – 25 October 2023	<p>Appendix 8B: Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-9, Confidential Badger Field Signs Including Sett Locations.</p>
Bats	Onshore development area and 30 m buffer	<p>A habitat suitability assessment was undertaken by AECOM following accepted best practice guidance (Collins, 2023). This took into account the habitats within the onshore development area as well as their connectivity to each other and to the wider landscape.</p> <p>A search for and categorisation of potential roosting sites for bats within trees and structures, in accordance with Bat Conservation Trust (BCT) guidance (Collins, 2023) was undertaken during the PEA (AECOM, 2024a).</p> <p>Night-time bat activity walkover surveys were undertaken in June, July, August and October 2023 by appropriately experienced AECOM ecologists following best practice guidelines in place at the time of survey. Given restrictions with land access (see Limitations), walked transect surveys were only possible from public rights of way in June and July. To provide greater coverage in August and October, two transects were walked in each month. The surveys involved walking a pre-defined route to provide coverage of habitats throughout the Site. Surveyors carried an Elekon Batlogger M to detect and record bat calls.</p> <p>Static bat detectors were deployed at five locations in October 2023. Bat calls recorded during the surveys were identified by an appropriately experienced</p>	11 June 2023 – 26 October 2023	<p>Appendix 8C: Bat Activity Survey Report;</p> <p>Volume 5: Figure 8-4, Internationally and Nationally Designated Sites within 10 km Designated for Bats</p>



Ecological Receptor	Survey Area	Method	Dates of survey	Reference/ Appendix
		<p>ecologist with Kaleidoscope Pro software. A hierarchical geographical approach was utilised to assign biodiversity importance of the bat assemblage associated with the onshore development area following the Bat Mitigation Guidelines (Reason and Wray, 2023).</p> <p>Bat surveys conducted were limited by land access available at the time of the survey. Each survey followed best practice guidance available at the time, though insufficient survey numbers were conducted.</p> <p>A 30 m buffer was applied, following consideration of the likely ZOI as outlined in the Bat Mitigation Guidelines (Reason and Wray, 2023).and professional judgment.</p>		
Otter	Onshore development area and 30 m buffer	<p>An assessment of the potential of watercourses and water bodies, and adjacent terrestrial habitat within the Survey Area to support otter, following RSPB (1994) and Chanin, P. (2003) guidance was undertaken.</p> <p>A 30 m buffer was applied. Otters can be disturbed by works within 30 m of a holt or couch (NIEA, 2011).</p>	13 June 2023 - 25 October 2023	<p>Appendix 8B: Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-6, Phase 1 Habitat Plan.</p>
Other SPIs	Onshore development area	<p>An assessment of the potential of habitat within the Survey Area to support other SPIs, such as hedgehog, brown hare, polecat or common toad (<i>Bufo bufo</i>).</p>	13 June 2023 – 25 October 2023	<p>Appendix 8B: Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-6, Phase 1 Habitat Plan.</p>
INNPS	Onshore development area and 30 m buffer	<p>Evidence of the presence of INNPS listed on Schedule 9 of the WCA and subject to strict legal control was recorded.</p>	13 June 2023 - 25 October 2023	<p>Appendix 8B: Preliminary Ecological Appraisal Report.</p> <p>Volume 5: Figure 8-6, Phase 1 Habitat Plan.</p>



8.4.4. *Assessment Assumptions and Limitations*

51. The surveys undertaken to inform this assessment, as summarised in **Table 8-8**, were subject to limitations and constraints. The full details of these are provided in the appropriate reports (**Appendices 8A-C**). As a worst-case scenario is adopted as the basis for this assessment, these limitations and constraints are not considered to compromise the validity of the surveys to inform the baseline conditions of the assessment. Where these limitations have potential to influence the conclusions of this report, they are described below.
52. This assessment is based on surveys that were subject to limitations, due to a lack of land access available to ecologists. Where access to the onshore development area was not possible for ecology surveys to be conducted, assumptions have been made regarding the potential for protected and notable species to be present within these areas. This is based on the habitats present, as identified from vantage points within accessible lands, and publicly available aerial imagery utilised to inform a desk-based assessment. Where this is the case, an assessment has been made based on the worst-case scenario, and all information available at the time of writing. To mitigate for the lack of surveys undertaken, pre-construction surveys will be undertaken in advance of commencement of works. This will enable the identification of ecological receptors with potential to be impacted by the proposed Project, and adjustments to be proposed works including micro-siting and the implementation of ecological method statements. These pre-works surveys may identify the need for licensing (European Protected Species Mitigation Licence (EPSML)) or badger sett closure where identified features cannot be avoided. This licensing process, and associated requirement to follow mitigation and working methods agreed with NRW, will result in temporary impacts only. For example any sett closures can be re-opened once the proposed Project is complete, with adequate mitigation and agreement from NRW.
53. A significant data gap is present in relation to the bat surveys undertaken within the onshore development area. To satisfy current best practice guidelines (Collins, 2023), at least one night-time bat walkover survey should be conducted in each season (spring – April/May, summer – June/July/August, autumn – September/October), static bat detectors should also be deployed for a minimum of five consecutive nights per month during the bat active season (April-October, inclusive). Overall, the bat surveys undertaken to date enable the identification of species present within the onshore development area, though do not provide sufficient information to make an accurate assessment of the impact of works within the onshore development area. It is also possible that additional species may be present within the onshore development boundary. As such, a worst-case scenario has been considered, based on the species identified and designated sites present within 10 km of the onshore development area. Species present within designated sites greater than 10 km from the onshore development area are not likely to be impacted as a result of the proposed Project, as the greatest known core sustenance zone of UK bat species is 6 km (BCT, 2020). It is therefore considered that the potential impacts of the Project on bats are fully assessed within this report. To identify specific mitigation requirements for the construction of the onshore substation, pre-construction surveys for bats will be undertaken in advance of the commencement of works.
54. Where available, the results of thorough surveys undertaken in the surrounding area were consulted, as summarised in **Table 8-7**. Where existing reports have been consulted, and external information utilised to inform the conclusion of this report, the information contained within these documents has not been verified by AECOM ecologists. It is assumed that the results provided within these reports are true and correct. It should be noted that these



surveys are considered out of date (conducted 2018-2021), and the area these surveys were conducted in does not cover the entire onshore development area. As this information is utilised to provide context to the assessment only, and the assessment is based on an up to date evaluation of habitat suitability, the time elapsed between these surveys and the assessment is not considered to pose a significant limitation to the assessment. This was discussed with PCC during consultation and the assessment approach was agreed to be acceptable (see **Table 8-3**).



8.5 Baseline

55. The following sections describe the baseline environment relating to terrestrial ecology.

8.5.1. Existing Baseline

Nature Conservation Designations

56. **Table 8-9** summarises the statutory sites designated for bats, statutory and non-statutory designated sites situated within the Study Area (as outlined in **Table 8-6**). The described sites, and associated Study Areas are also shown on **Volume 5: Figures 8.2 to 8-5**. No locally designated sites were identified within 2 km of the onshore development area.

Table 8-9. Nature Conservation Designations Within Study Area

Site/ Designation	Distance from onshore development area	Qualifying Feature(s)
Statutory Designated Sites of International Importance		
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC	Within the onshore development area in the western portion of the onshore development area. The designated site extends from the coastal section of the onshore development area, north of the A4320 to the area immediately west of Newton.	An area of coastline designated primarily for its habitats which consist of Annex I habitats present as a primary reason for the site selection including “Vegetated sea cliffs of the Atlantic and Baltic Coasts”, as well as “Fixed coastal dune with herbaceous vegetation (‘grey dunes’)”. Annex I habitat present as a qualifying feature include European dry heaths, semi-natural dry grasslands and, scrubland facies on calcareous substrates submerged and partially submerged sea caves and caves not open to the public. Annex II species present as a primary reason for site selection include early gentian (<i>Gentianella anglica</i>), greater horseshoe bat (<i>Rhinolophus ferrumequinum</i>) and Annex II species present as a qualifying feature include petalwort (<i>Petalophyllum ralfsii</i>).
Pembrokeshire Marine / Sir Benfro Forol SAC	Present at the southwestern onshore development area, directly adjacent. This designated site extends along the coast in both directions.	A multiple interest site selected for the presence of eight marine habitat types and the associated wildlife. The SAC is considered to be one of the best areas in the UK for large shallow inlets and bays, estuaries and reefs; all of which are Annex I habitats that are a primary reason for site selection. Annex II species that are primary reasons for the site designation include: grey seal (<i>Halichoerus grypus</i>) and shore dock (<i>Rumex rupestris</i>). Annex I and II habitats and species that are listed as qualifying features for the site selection include: sandbanks, mudflats and sandflats, coastal lagoons, Atlantic Sea meadows and sea caves as well as the following species which include allis shad (<i>Alosa alosa</i>), twaite shad (<i>Alosa fallax</i>), river lamprey (<i>Lampetra fluviatilis</i>), sea lamprey (<i>Petromyzon marinus</i>) and otter.
Castlemartin Coast SPA	Within the onshore development area in the western portion	An area of ‘outstanding’ marine habitat consisting of exposed limestone sea-cliffs, bare headlands, short-sward grasslands, maritime heaths and dune systems.



Site/ Designation	Distance from onshore development area	Qualifying Feature(s)
	of the onshore development area, south of the A4320 road and extends up to the Freshwater West coast.	The cliffs support a range of maritime plant communities. The site qualifies for 12- 14 pairs of breeding chough (about 4% of the British population). Notable also are up to 2 pairs of peregrine, and regionally important cliff-nesting seabird populations, principally at Elegug Stacks, including guillemot (<i>Uria aalge</i>), razorbill (<i>Alca torda</i>), kittiwake (<i>Rissa tridactyla</i>), and several pairs of puffin (<i>Fratercula arctica</i>). Small numbers of swift (<i>Apus apus</i>), and several small colonies of house martin (<i>Delichon urbica</i>), nest in the sea-cliffs.
West Wales Marine / Corllewin Cymru Foral SAC	Directly adjacent to the western boundary of the onshore development area.	This site is a marine statutory designation, for the presence of harbour porpoise (<i>Phocoena phocoena</i>). The site is located off the coast of Wales, extending from the Llyn peninsula in the north to Pembrokeshire in the south-west. The conservation objective of this site is for the prevention of significant disturbance to harbour porpoise and the maintenance of the availability of prey.
Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC	The SAC is split across 8 Sites of Special Scientific Interest (SSSI) the closest of which; Orielton Stable Block and Cellars SSSI is located approximately 2.8 km southeast of the onshore development area.	Several Sites of Special Scientific Interest, including known bat roosting sites and a series of calcium-rich, nutrient-poor lakes, loch and pools, are combined to form this SAC and provide good conditions for confirmed populations of otter, as well as greater horseshoe bat and lesser horseshoe bat (<i>Rhinolophus hipposideros</i>).
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro SPA	Approximately 4.3 km south of the western extent of the onshore development area.	A statutory site designated for the presence of 3500 breeding pairs of storm petrel (<i>Hydrobates pelagicus</i>), 4 pairs of breeding chough, 6 pairs of breeding short owl (<i>Asio flammeus</i>), 150,968 pairs of breeding manx shearwater (<i>Puffinus puffinus</i>) and 9500 pairs of breeding puffin (<i>Fratercula arctica</i>). During the breeding season, this site is known to regularly support at least 394,260 individual seabirds.
Statutory Designated Sites of National Importance		
Broomhill Burrows SSSI	Within the onshore development area in the western portion of the onshore development area. The designated site extends from the coastal section of the	Falling within Castlemartin Coast SPA and Limestone Coast of Wales SAC, this site is one of Pembrokeshire's largest dune systems with extensive and diverse dune slack vegetation. Numerous invertebrate species have been recorded, as well as lapwing (<i>Vanellus vanellus</i>) breeding in the dune slacks, and adder (<i>Vipera berus</i>), grass snake (<i>Natrix natrix</i>), slow worm (<i>Anguis fragilis</i>) and common lizard (<i>Zootoca vivipara</i>). Palmate



Site/ Designation	Distance from onshore development area	Qualifying Feature(s)
	onshore development area, north of the A4320 to the area immediately west of Newton.	<i>(Lissotriton helveticus)</i> and common toad are also present.
Milford Haven Waterway SSSI	Approximately 0.1 km east of the onshore development area at its north-eastern end at the Pembroke Power Station.	Milford Haven Waterway is of special interest for its ancient woodland, saltmarsh and swamp habitats, saline lagoons, rare and scarce plants and invertebrates, nationally important numbers of migratory waterfowl, greater and lesser horseshoe bats, and otter.
Angle Peninsula Coast / Arfordir Penrhyn Angle SSSI	Approximately 0.3 m west of the onshore development area at its south-western onshore development area along the Freshwater West coast.	Cliff and foreshore rock outcrops at the north-western end of this site provide exposures chiefly consisting of mudstones and sandstones of the Devonian Milford Haven Group. The Angle Peninsula coast supports a small breeding population (usually one to two pairs a year), and roosting areas for a significant proportion of the South Pembrokeshire non-breeding population of chough. Feeding peregrine are regularly seen and have been recorded breeding on this site, along with feeding and over wintering greater and lesser horseshoe bats.
Gweunydd Somerton Meadows SSSI	Approximately 0.4 km south of the onshore development area at its closest, within the central portion of the onshore development area, east of Wallaston Green.	The site is of significance for its grassland fungi assemblage, and for unimproved neutral grassland – it is considered one of the best grassland fungi sites in Wales. The grassland fungi assemblage includes a diverse range of waxcaps (Hygrophoraceae), coral fungi (Clavariaceae), pink-gills (Entolomataceae), earth tongues (Geoglossaceae) as well as several species of <i>Dermoloma</i> . The site also supports small breeding populations of two highly localised and declining invertebrates: the marsh fritillary butterfly and the shrill carder bee (<i>Bombus sylvarum</i>), as well as supporting a rich dragonfly (Odonata) fauna.
Castlemartin Range SSSI	Approximately 0.4 km south of the onshore development area.	Castlemartin Range is of special interest for its sand dunes, wetland habitats, calcareous grassland, cliff and coastal grassland and heath, together with the most extensive area of species-rich neutral grassland in Wales. Also of special interest are rare and scarce plants and invertebrates, breeding seabirds, greater and lesser horseshoe bats, otter and grey seal.
Castlemartin Corse SSSI	Approximately 0.5 km south of the onshore development area.	This site is of special interest primarily for its swamp and calcareous fen meadow habitats. Other habitats present include neutral grassland, scrub and open water. The ditches within the site support a range of plants including fen pondweed (<i>Potamogeton coloratus</i>).



Site/ Designation	Distance from onshore development area	Qualifying Feature(s)
Orielton Stable Block and Cellars SSSI	Approximately 2.8 km southeast of the onshore development area.	The site is of special interest as one of the largest nursery roosts of lesser horseshoe bats in Pembrokeshire. Greater horseshoe bats have also been recorded here along with small numbers of brown long-eared bats (<i>Plecotus auratus</i>), whiskered bats (<i>Myotis mystacinus</i>), soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) and noctule (<i>Nyctalus noctula</i>).
Scoveston Fort SSSI	Approximately 4.2 km north of the onshore development area at its north-eastern extent, beyond the mouth of the estuary.	Notified in December 2022, the site is of interest for its population of hibernating greater horseshoe bats. Since 2005 the site has had at least 50 hibernating greater horseshoe bats annually.
Stackpole SSSI	Approximately 5.8 km southeast of the onshore development area.	Habitats within the site include the shallow freshwater Bosherton lakes, woodlands, dunes, limestone cliffs and beaches. Stackpole is a stronghold for several species and is home to one of Britain's largest populations of the greater horseshoe bats. Other bat species which been recorded roosting and breeding at Stackpole include: lesser horseshoe bats, noctule, and Daubenton's bat (<i>Myotis daubentonii</i>). The lakes are abundant with wildlife especially otters which are resident within and around the lake margins and have at least one breeding holt.
Stackpole Courtyard Flats and Walled Garden SSSI	Approximately 6.5 km southeast of the onshore development area.	The site consists of several lofts and redundant heating ducts. The Stackpole clock tower loft is 'the major breeding site in Wales of the greater horseshoe bat'. The lofts and ducts are used by a variety of other species, in addition to greater bats. These include common pipistrelle (<i>Pipistrellus pipistrellus</i>), brown long-eared bat, Natterer's bat (<i>Myotis nattereri</i>), Daubenton's bat, and whiskered bat.
Park House Outbuildings, Stackpole SSSI	Approximately 6.8 km southeast of the onshore development area.	This site is of special interest as the largest known nursery roosts of lesser horseshoe bats in Pembrokeshire. Other bat species observed emerging from the roost include common pipistrelle and brown long-eared bat. Swallows (<i>Hirudo rustica</i>) also breed here.
Non-Statutory Designated Sites of National Importance		
Restored Ancient Semi-Natural Woodland (RAWS)	Located adjacent to the onshore development area.	Restored Ancient Semi-Natural Woodland



Habitats

57. A range of habitats are present within the onshore development area, these are summarised in **Table 8-10**, with a description of their location in relation to the proposed Project and an evaluation of their importance.



Table 8-10. Summary evaluation of habitats present with the study area

Phase 1 Habitat type	Summary description and rationale for evaluation	Location in relation to the proposed Project	Importance	Reference
Improved grassland	<p>Species present indicative of highly managed and nutrient enriched soils including perennial rye-grass (<i>Lolium perenne</i>), annual meadow-grass (<i>Poa annua</i>), cock's-foot (<i>Dactylis glomerata</i>), bent (<i>Agrostis</i> sp.), red clover (<i>Trifolium pratense</i>), white clover (<i>Trifolium repens</i>), creeping buttercup (<i>Ranunculus repens</i>), yarrow (<i>Achillea millefolium</i>) and ragwort (<i>Jacobaea vulgaris</i>). NVC survey of the improved grassland in the centre of the onshore development area identified MG6b <i>Lolium perenne</i> – <i>Cynosurus cristatus</i> grassland, this is not consistent with any Habitat of Principal Importance (HPI) definition and is heavily managed with low botanical and structural diversity and common in the wider landscape.</p>	Present across the entire Survey Area	Site	<p>Appendix 8B Llŷr Preliminary Ecological Appraisal; Volume 5: Figure 8-6: Phase 1 Habitat Plan; NVC Survey Report (ITP Energised, 2021d). - Figures 2-9: NVC Survey Results</p>
Cultivated/ disturbed land – arable	<p>Arable fields present throughout the onshore development area are dominated by crop species such as barley (<i>Hordeum vulgare</i>). Non-crop species present include marsh cudweed (<i>Gnaphalium uliginosum</i>), common fumitory (<i>Fumaria officinalis</i>), shepherd's purse (<i>Capsella bursa-pastoris</i>), scarlet pimpernel (<i>Anagallis arvensis</i>), germander speedwell (<i>Veronica chamaedrys</i>), ribwort plantain (<i>Plantago lanceolata</i>), white clover, greater plantain (<i>Plantago major</i>) and dandelion (<i>Taraxacum</i> sp.). Habitat is heavily managed with low botanical and structural diversity and common in the wider landscape, although arable field margins provided value for biodiversity and is included in the LBAP.</p>	Present across the entire Survey Area	Site	<p>Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6: Phase 1 Habitat Plan.</p>
Dune grassland	<p>Grassland present within the dune system near Freshwater West dominated by marram (<i>Ammophila arenaria</i>) with scattered sea holly (<i>Eryngium maritimum</i>). The eastern most area of dune grassland was subject to NVC survey, communities identified within this area include MG1 <i>Arrhenatherum elatius</i> grassland, M25c <i>Molinia caerulea</i>-<i>Potentilla erecta</i> mire <i>Angelica sylvestris</i> sub-community, SD9a <i>Ammophila arenaria</i>-<i>Arrhenatherum elatius</i> dune grassland typical sub-community, SD8b <i>Festuca rubra</i>-<i>Galium verum</i> fixed dune grassland <i>Luzula campestris</i> sub-</p>	In the west of the Survey Area	International	<p>Appendix 8B Llŷr Preliminary Ecological Appraisal; Volume 5: Figure 8-6: Phase 1 Habitat Plan; NVC Survey Report (ITP Energised, 2021d).</p>



Phase 1 Habitat type	Summary description and rationale for evaluation	Location in relation to the proposed Project	Importance	Reference
	<p>community and SD8a <i>Festuca rubra-Galium verum</i> fixed dune grassland typical sub-community. Other dune vegetation was also present and was dominated by <i>Equisetum palustre</i>. Where SD8 and SD9 are present, these are consistent with the coastal sand dunes HPI, the identified communities of M25 are consistent with purple moor grass and rush pastures HPI. Other dune vegetation identified during the NVC survey also meets the criteria for coastal sand dunes HPI.</p> <p>This habitat forms part of the primary reason for the designation of the Limestone Coast of South West Wales SAC.</p>			<p>Figures 2-9: NVC Survey Results.</p>
<p>Poor semi-improved grassland</p>	<p>This habitat generally lacks diversity though species present include Yorkshire fog, annual meadow grass, perennial rye grass, ribwort plantain, greater plantain, daisy (<i>Bellis perennis</i>) and silverweed (<i>Potentilla anserina</i>).</p> <p>This habitat is subject to agricultural improvement has low botanical and structural diversity and is common in the wider landscape.</p>	<p>In seven small areas, particularly field margins and road verges.</p>	<p>Site</p>	<p>Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.</p>
<p>Neutral grassland – semi-improved</p>	<p>Species present indicative of low management including cocksfoot and false oat-grass (<i>Arrhenatherum elatius</i>), as well as species indicating agricultural improvement including perennial rye grass, Italian rye grass (<i>Lolium multiflorum</i>), annual meadow grass, Yorkshire fog. Herb species present include creeping cinquefoil (<i>Potentilla reptans</i>), common knapweed (<i>Centaurea nigra</i>) and common bird’s foot trefoil (<i>Lotus corniculatus</i>). Small area in the centre of the onshore development area identified as MG1 <i>Arrhenatherum elatius</i> grassland, this is not consistent with any habitats of principal importance.</p> <p>Although this habitat is of relatively low species diversity it is listed as a LBAP habitat.</p>	<p>In three small areas, the largest are in the east and west extent of the Survey Area.</p>	<p>Local</p>	<p>Appendix 8B Llŷr Preliminary Ecological Appraisal; Volume 5: Figure 8-6, Phase 1 Habitat Plan; NVC Survey Report (ITP Energised, 2021d). Figures 2-9: NVC Survey Results.</p>
<p>Open sand dune</p>	<p>An area of dune at early succession stage near Freshwater West, meets the criteria of coastal sand dunes HPI. This habitat is the primary reason for the designation of the Limestone Coast of South West Wales SAC.</p>	<p>In the west of the Survey Area</p>	<p>International</p>	<p>Appendix 8B Llŷr Preliminary Ecological Appraisal; and</p>



Phase 1 Habitat type	Summary description and rationale for evaluation	Location in relation to the proposed Project	Importance	Reference
				Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Scrub – dense/continuous and scattered	<p>Largely dominated by bramble (<i>Rubus fruticosus</i> agg.) and encroaching on arable fields and grasslands at field boundaries. Other species present include gorse (<i>Ulex europaeus</i>) and bracken (<i>Pteridium aquilinum</i>).</p> <p>Communities recorded included W21 <i>Crataegus onogyna</i> – <i>Hedera helix</i> scrub, W22 <i>Prunus spinosa</i> – <i>Rubus fruticosus</i> scrub and W24 <i>Rubus fruticosus</i> – <i>Holcus lanatus</i> scrub.</p> <p>These habitats contain low species diversity and are small in extent.</p>	Present in the east and west of the Survey Area	Site	Appendix 8B Llŷr Preliminary Ecological Appraisal; Volume 5: Figure 8-6, Phase 1 Habitat Plan; and NVC Survey Report (ITP Energised, 2021d). Figures 2-9: NVC Survey Results.
Dune scrub	<p>Present within the dune system near Freshwater West, meets the criteria of coastal sand dunes HPI.</p> <p>A community consistent with W22 is present in the centre of the onshore development area and is consistent with coastal sands = maritime cliff and slope HPI.</p> <p>Where associated with the dune system this habitat forms part of the designation of the Limestone Coast of South West Wales SAC.</p>	In the west of the Survey Area	County - National	Appendix 8B Llŷr Preliminary Ecological Appraisal; Volume 5: Figure 8-6, Phase 1 Habitat Plan; and NVC Survey Report (ITP Energised, 2021d). Figures 2-9: NVC Survey Results.
Broadleaved woodland – semi-natural	<p>Most woodland within the proposed Project area contains a mix of broadleaved species including ash (<i>Fraxinus excelsior</i>), willow (<i>Salix</i> sp.), sycamore and box. An area of broadleaved woodland to the south of Newton is dominated by grey willow (<i>Salix cinerea</i>) and meets the classification for wet woodland HPI.</p> <p>Communities identified include W1 <i>Salix cinerea</i> – <i>Galium palustre</i> woodland present in the centre and east of the onshore development area, it is classified as wet woodland HPI. Areas of woodland within the Survey Area meet the criteria to be classified as habitats of principal importance (wet woodland and lowland mixed</p>	Parcels are present throughout the Survey Area	County	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.



Phase 1 Habitat type	Summary description and rationale for evaluation	Location in relation to the proposed Project	Importance	Reference
	deciduous woodland), though are small in extent and contain relatively low biodiversity.			
Marsh/ marshy grassland	Unmown areas of damp grassland including meadowsweet (<i>Filipendula ulmaria</i>), purple loosestrife (<i>Lythrum salicaria</i>), sharp-flowered rush (<i>Juncus acutiflorus</i>), compact rush (<i>Juncus conglomeratus</i>) and common fleabane (<i>Pulicaria dysenterica</i>). Grass species present include common bent (<i>Agrostis capillaris</i>) and Yorkshire fog (<i>Holcus lanatus</i>). NVC survey of this grassland identified MG5a <i>Cynosurus cristatus</i> – <i>Centaurea nigra</i> grassland and M23 <i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush pasture, these habitats are consistent with lowland meadow and purple moor grass and rush pastures habitats of principal importance, respectively. This habitat is also included in the LBAP.	In the centre of the Survey Area	County	Appendix 8B Llŷr Preliminary Ecological Appraisal; Volume 5: Figure 8-6, Phase 1 Habitat Plan; and NVC Survey Report (ITP Energised, 2021d). Figures 2-9: NVC Survey Results.
Other tall herb and fern – ruderal	Ruderal plants dominated by willowherb (<i>Epilobium</i> sp.), bullrush (<i>Typha latifolia</i>), reed sweet-grass (<i>Glyceria maxima</i>), dock species (<i>Rumex</i> sp.) and hedge bindweed (<i>Heracleum sphondylium</i>). Habitat contains low species diversity and is small in extent.	Three small patches throughout the Survey Area	Site	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Standing water	One body of standing water is present within the onshore development area, and an additional two waterbodies are in the 30 m buffer surrounding the onshore development area. All of these are subject to significant disturbance (cattle grazing, man-made and within a residential property, or containing INNPS Nuttall's waterweed; <i>Elodea nuttallii</i>). Habitat is subject to significant modification or management and is small in extent, although all ponds are included in the LBAP.	In the centre and west of the Survey Area	Site-Local	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Mixed woodland – semi-natural	A small area of semi-natural mixed woodland featuring alder (<i>Alnus glutinosa</i>), sycamore, and pine (<i>Pinus</i> sp.). Habitat is small in extent and includes a significant cover of non-native pine trees.	In the centre of the Survey Area	Site	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.



Phase 1 Habitat type	Summary description and rationale for evaluation	Location in relation to the proposed Project	Importance	Reference
Marginal and inundation – marginal vegetation	Marginal habitat associated with waterbody P3, species include soft rush (<i>Juncus effusus</i>), water mint, purple loosestrife and great willowherb (<i>Epilobium hirsutum</i>). Habitat is small in extent and subject to significant anthropogenic influence.	In the centre of the Survey Area	Site	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Swamp	Marginal habitat associated with waterbody P3, species include common club rush (<i>Schoenoplectus lacustris</i>), bullrush and water mint (<i>Mentha aquatica</i>). Habitat is small in extent and subject to significant anthropogenic influence, although all ponds are included in the LBAP	In the centre of the Survey Area	Site-Local	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Hedgerows	The Survey Area contains several hedgerows, in both defunct and intact condition. Species present within the hedgerows include hawthorn, blackthorn, elm (<i>Ulmus</i> sp.), rose (<i>Rosa</i> sp.), willow, elder (<i>Sambucus nigra</i>) and hazel (<i>Corylus avellana</i>). As over 80% coverage of these hedgerows are attributed to UK native species, they are classified as HPI and are included in the LBAP. Where hedgerows are subject to significant management, they may be classified as Local Importance.	Present throughout the Survey Area	Local - County	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Running water	Watercourses associated with agricultural fields and woodlands are present throughout. Vegetation present include rush species (<i>Juncus</i> sp.), water mint, soft rush and hemlock water-dropwort (<i>Oenanthe crocata</i>). Further surveys are required to confirm whether this habitat meets the criteria to be classified as a HPI (rivers), though given the levels of disturbance in the area, it is unlikely to support sufficient species diversity.	Present throughout the Survey Area	Local	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.
Broadleaved parkland/ scattered trees	A line of willow (<i>Salix</i> spp.), hawthorn (<i>Crataegus monogyna</i>) and blackthorn (<i>Prunus spinosa</i>) up to 10 m in height associated with a dense bramble understorey and wet ditch. This line of trees meets the HPI definition associated with hedgerows, though lacks the species diversity to be classified as County level importance.	In the centre of the Survey Area	Local	Appendix 8B Llŷr Preliminary Ecological Appraisal; and Volume 5: Figure 8-6, Phase 1 Habitat Plan.



Species and species assemblages

58. Several species have been identified as present, or potentially present, within the onshore development area, details regarding these species and their importance are provided in **Table 8-11**.



Table 8-11. Summary evaluation of species present with the study area

Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
Notable plants	<p>The 2022 desk study returned 13 species of protected / notable flowering plants within the Study Area. Four species records were located within the onshore development area at Freshwater West dunes within the SAC and SSSI: Squinancy-wort (<i>Asperula cynanchica</i> subsp. <i>occidentalis</i>) (Red Data Book(RDB)(UK) Vulnerable, LBAP), dune fescue (<i>Vulpia fasciculata</i>) RDB(UK) Vulnerable, LBAP), least soft-brome (<i>Bromus hordeaceus</i> subsp. <i>feronii</i>) RDB(UK) Vulnerable), Locally Important), sea carrot (<i>Daucus carota</i> subsp. <i>gummifer</i>) RDB(UK) Vulnerable, Locally Important). A record for corn marigold (<i>Glebionis segetum</i>) RDB(UK) Vulnerable and LBAP) was returned adjacent to the onshore development area within the solar array north of Trebowen Farm. Early gentian forms part of the Limestone Coast of South West Wales SAC.</p> <p>The NVC survey conducted for Project Erebus in 2021 found a species rich stand of grassland with southern marsh orchid (<i>Dactylorhiza praetermissa</i>), pyramidal orchid (<i>Anacamptis pyramidalis</i>) and bee orchid (<i>Ophrys apifera</i>) present. They were located at within Broomhill Burrows SSSI and Limestone Coast of South West Wales SAC at NGR SM 89479 01046.</p>	<p>Assemblage within SSSI and SAC - International</p> <p>Remainder of the onshore development area - Site.</p>	<p>Appendix 8B Preliminary Ecological Appraisal; and</p> <p>National Vegetation Classification Survey Report (ITP Energised, 2021d).</p>
Fungi and Bryophytes	<p>Twelve protected or notable species records for fungi and bryophytes were returned within the Study Area. One record of sand-hill screw-moss (<i>Syntrichia ruralis</i> var. <i>ruraliformis</i>) RDB(Wales), LBAP and Locally Important) was located within the onshore development area within the dunes at the western extent. Four SPIs were identified: big blue pinkgill (<i>Entoloma bloxamii</i>; approximately 820 m south of the onshore development area), earth tongue (<i>Microglossum olivaceum</i>; approximately 800 m south of the onshore development area) (LBAP), hazel gloves (<i>Hypocreopsis rhododendri</i>; approximately 250 m south east of the onshore development area) and petalwort (<i>Petalophyllum ralfsii</i>; approximately 1.4 km south of the onshore development area) (WCA8, SPI, RDB(Wales), LBAP and Locally Important).</p> <p>Petalwort forms a qualifying feature of the Limestone Coast of South West Wales SAC.</p> <p>During the NVC survey conducted for Project Erebus in 2021, habitats similar to areas of the dune systems that form part of the Limestone Coast of South-West Wales SAC are known to support dense bryophyte mats and are a locus for rare species such as petalwort. A specific search was made for petalwort, but none was found, and no suitable habitat was noted.</p>	<p>Assemblage within SAC - National.</p> <p>Remainder of the onshore development area - Local (precautionarily)</p>	<p>Appendix 8B Preliminary Ecological Appraisal; and</p> <p>National Vegetation Classification Survey Report (ITP Energised, 2021d).</p>



Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
<p>Terrestrial Invertebrates</p>	<p>The 2022 desk study returned a total of 68 species of notable invertebrate within the 2 km search area. Including four species listed on Schedule 5 of the WCA: marsh fritillary (<i>Euphydryas aurinia</i>) (~750 m south of the onshore development area) (WCA5, SPI, RDB(UK) Vulnerable and LBAP), silver-studded blue (<i>Plebejus argus argus</i>) (~300 m north of the onshore development area) (WCA5, SPI, RDB(UK) vulnerable and LBAP), small blue (<i>Cupido minimus</i>) (~1.4 km north)(WCA5, SPI and LBAP) and white-letter hairstreak (<i>Satyrium w-album</i>) (~1.5 km north) (WCA5, SPI, RDB(UK) Endangered and LBAP). In addition, the desk study returned 46 records of species listed as SPI, 56 species listed as LBAP and 17 RDB listed species.</p> <p>Broomhill Burrows SSSI, within the onshore development area is in part designed for its wide range of invertebrate species, including marsh fritillary and shrill carder bee.</p> <p>The marsh fritillary and silver-studded blue rely on habitats such as chalk hillsides, heathland, moorland and damp meadows, none of which are present within the onshore development area. No food plants for marsh fritillary were identified during the PEA assessment, however there is small areas suitable habitat for the larval food plants within the marshy grassland in the onshore development area. Larval food plants for the silver-studded blue include widespread species such as common birds' foot trefoil (<i>Lotus corniculatus</i>), black medick (<i>Medicago lupulina</i>) and gorse (<i>Ulex europaeus</i>), all of which have potential to be present within the onshore development area. The small blue butterfly is present within a wide variety of habitats, though requires significant presence of kidney vetch (<i>Anthyllis vulneraria</i>) for larval feeding. Given that kidney vetch is most common in sand dunes and calcareous grassland, and was not recorded during the site surveys, it is likely that small blue is not present in the onshore development area. White letter hairstreak is found in close proximity to elm, with a preference for wych elm, as this is present within the onshore development area there is potential for the presence of white letter hairstreak. The onshore development area, excluding the area where HDD will be utilised, includes a range of habitats which may be in use by terrestrial invertebrates, including hedgerows, grasslands, scrub and woodland. However, given that these are widespread and common in the local landscape, it is unlikely that the onshore development area would support a high value or rare assemblage of terrestrial invertebrates.</p>	<p>Area within SSSI - National. Remainder of the onshore development area – Site</p>	<p>Appendix 8B: Preliminary Ecological Appraisal.</p>
<p>Great crested newt and other amphibians</p>	<p>Great crested newt (Conservation of Habitats and Species Regulations, WCA5, SPI, RDB(UK) and LBAP) is considered absent from Pembrokeshire due to large barriers such as rivers preventing their colonisation of the area (Wilkinson <i>et. al</i>, 2011).</p>	<p>Site</p>	<p>Appendix 8B Preliminary Ecological Appraisal.</p>



Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
	<p>Despite the general agricultural landscape being sub-optimal habitat, suitable areas of habitat for amphibians (including common toad; SPI and LBAP) are occasionally present, including numerous standing waterbodies such as ponds and ditches.</p> <p>Amphibians are potentially present within the onshore development area.</p>		
Reptiles	<p>There are 36 records of common reptiles within the Study Area including adder (closest record at Freshwater West with connectivity to the onshore development area), common lizard (closest record at Freshwater West), grass snake (2 km south east), slow-worm (closest record ~1.1 km north at Pwllcrochan). All of these species are listed on WCA5, SPI and LBAP.</p> <p>No targeted surveys for reptiles have been undertaken, though suitable habitat is present throughout the onshore development area. This is largely in the form of grassland associated with scrub, hedgerows and woodland.</p>	<p>Local</p> <p>Area in SSSI – County</p>	<p>Volume 5: Figure 8-8, Reptile Habitat Suitability.</p>
Birds (excluding chough)	<p>A total of 109 species of bird were returned in the 2022 desk study. These include 19 species listed on Annex 1 of the EC Birds Directive, 35 species listed on Schedule 1 of the WCA, 30 species listed as SPIs, 31 species on the Birds of Conservation Concern 5 (BoCC5) Red list, 60 species on the BoCC5 Amber list and 27 species listed on the LBAP.</p> <p>The wintering bird survey undertaken for Project Erebus recorded the following protected and notable species within or adjacent to the proposed Project area and within the Freshwater West area: hen harrier (<i>Circus cyaneus</i>), red kite (<i>Milvus milvus</i>), marsh harrier (<i>Circus aeruginosus</i>), peregrine and the following species across the remainder of the proposed Project area: lapwing, herring gull (<i>Larus argentatus</i>) lesser black-backed gull (<i>Larus fuscus</i>), black-headed gull (<i>Chroicocephalus ridibundus</i>) and common gull (<i>Larus canus</i>). Other species recorded across the surveys included redwing (<i>Turdus iliacus</i>), house sparrow (<i>Passer domesticus</i>), mistle thrush (<i>Turdus viscivorus</i>), skylark (<i>Alauda arvensis</i>), yellow hammer (<i>Emberiza citrinella</i>), linnet (<i>Linaria cannabina</i>), starling (<i>Sturnus vulgaris</i>) and song thrush (<i>Turdus philomelos</i>).</p> <p>The breeding bird survey undertaken for Project Erebus, identified one of pair of peregrine breeding on the coast (over 2 km from the offshore development area). Notable species recorded within or adjacent to the onshore development area include stonechat (<i>Saxicola rubicola</i>), linnet, skylark, meadow pipit (<i>Anthus pratensis</i>), duncock (<i>Prunella modularis</i>), yellow hammer, house sparrow, bullfinch (<i>Pyrrhula pyrrhula</i>), mistle thrush, reed bunting (<i>Emberiza schoeniclus</i>) and song thrush.</p> <p>Breeding bird surveys undertaken to inform the Greenlink cable identified the following UK Red List species in proximity to the onshore development area: grasshopper warbler (<i>Locustella naevia</i>), house sparrow, linnet, mistle</p>	<p>Local</p>	<p>Appendix 8B Preliminary Ecological Appraisal;</p> <p>Project Erebus Wintering Bird Survey Report (ITP Energised, 2021i);</p> <p>Project Erebus Breeding Bird Survey Report (ITP Energised, 2021h); and</p> <p>Greenlink Breeding Bird Survey Report (Greenlink</p>



Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
	<p>thrush, skylark (<i>Alauda arvensis</i>), song thrush, yellowhammer, curlew, herring gull and whimbrel. A further 12 species featuring on the UK Amber List and 11 SPI were also identified.</p> <p>The assemblages of wintering and breeding bird species are considered to be typical of farmland habitat in the local area.</p>		<p>Interconnector Ltd., 2019b).</p>
<p>Chough</p>	<p>During the breeding bird survey for Project Erebus, two pairs of breeding chough were recorded and during the wintering bird survey, chough was recorded, although the peak count was not indicated.</p> <p>During the 2022 chough surveys, chough was recorded during all four surveys; between Angle Bay and Freshwater West Bay, although the closest record was over 700 m from the proposed offshore development area. High numbers of chough were recorded foraging and flying along the cliffs and one instance of possible nesting.</p> <p>Cough is protected under Schedule 1 of the WCA and the Birds Directive, it is classified as a SPI and LBAP. The species forms part of the designation of the Castlemartin Coast SPA and Angle Peninsula SSSI. Although relatively high numbers of chough were recorded, they were all recorded along coastal cliff habitat which will not be directly impacted by the proposed Project.</p>	<p>Local</p>	<p>Appendix 8A: Chough Survey Report;</p> <p>Project Erebus Breeding Bird Survey Report (ITP Energised, 2021h); and</p> <p>Project Erebus Wintering Bird Survey (ITP Energised, 2021i).</p>
<p>Hazel dormouse</p>	<p>No dormouse records were returned in the 2022 desk study.</p> <p>The Greenlink Interconnector Ltd. surveys identified areas of suitable dormouse habitat (mostly in the area south of the power station) and recorded the presence of dormouse during surveys within suitable habitats with connectivity to the proposed Project area. The survey appears to have been restricted to the area to the southwest of Greenhill. A total of 10 tubes were found to contain confirmed or probable nests of dormice during the course of the surveys.</p> <p>Given the lack of desk study information, dormouse are likely to be relatively sparse or under-recorded in the area. It assumed that dormouse is present in all areas of suitable habitat, including hedgerows, scrub and woodland, within the onshore development area.</p> <p>Dormouse are legally protected under WCA5 and the Conservation of Habitats and Species Regulations 2017 (as amended). They are also listed as SPI and LBAP.</p>	<p>County</p>	<p>Appendix 8B Preliminary Ecological Appraisal;</p> <p>Volume 5: Figure 8-7, Dormouse Habitat Suitability; and</p> <p>Greenlink ES (Greenlink Interconnector Ltd., 2020).</p>



Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
Water vole	<p>The Greenlink Interconnector Ltd. surveys for riparian mammals identified no conclusive signs of water vole. Water vole are considered extinct in Wales from all but a few select locations in Glamorgan. They are therefore not considered further from an impacts point of view; however, habitat retention and restoration should be considered as precursors to possible re-introduction efforts. Water vole will not be considered further within this ES.</p>	N/A	Greenlink Riparian Mammal Surveys (Greenlink Interconnector Ltd., 2019e).
Badger	<p>The desk study undertaken in 2022 returned 20 badger records with the closest 0.2 km south the onshore development area. Given that badgers are a mobile species and that the habitats throughout the proposed Project are broadly suitable for sett creation, it can reasonably be expected that badgers could be present throughout the proposed Project area. The PEA identified badger signs throughout the Survey Area, including active and partially used setts, snuffle holes, latrines and push unders.</p> <p>Badgers are only protected from persecution rather than due to their rarity, declining population or ecological importance.</p>	Local	<p>Appendix 8B Preliminary Ecological Appraisal; and</p> <p>Volume 5: Figure 8-9, Confidential Badger Field Sign.</p>
Bats	<p>During roost surveys carried out in 2018 for the Greenlink project, the war memorial (gun emplacement/gun battery) located on the B4319, north of Freshwater West Beach was identified as a frequently used roost for greater horseshoe bats and more infrequently used by lesser horseshoe bats. This is directly adjacent to the onshore development area, including the landfall area.</p> <p>Further bat surveys undertaken on behalf of the Greenlink project identified the presence of the following species: lesser horseshoe bat, greater horseshoe bat, common pipistrelle, soprano pipistrelle, Myotis species, noctule, barbastelle (<i>Barbastella barbastellus</i>), Leisler’s bat (<i>Nyctalus leisleri</i>), Nathusius’ pipistrelle (<i>Pipistrellus nathusii</i>), serotine (<i>Eptesicus serotinus</i>) and long-eared (<i>Plecotus sp.</i>) bats.</p> <p>The desk study undertaken in 2022 returned the following species with records of roosts, with core sustenance zones that overlap the onshore development area: common pipistrelle, lesser horseshoe bat, brown long-eared bat, greater horseshoe bat, Natterer’s bat and serotine. Additional species recorded as foraging or commuting bats included: whiskered bat/ Brandt’s bat, Daubenton’s bat, soprano pipistrelle, noctule and long-eared bat species.</p> <p>A PRA conducted by AECOM in 2023 identified three PRF-I trees with minimal opportunity for roosting bats and two PRF-M trees with large cavities and potential to support multiple roosting bats. Also, within or adjacent to the onshore development area, four buildings were classified as having Low suitability for roosting bats. Therefore, there is potential for bats to be roosting within the onshore development area.</p>	<p>Greater and lesser horseshoe - International</p> <p>All other bat species - County</p>	<p>Appendix 8B Preliminary Ecological Appraisal;</p> <p>Appendix 8C: Bat survey report;</p> <p>Greenlink Environmental Statement – Onshore Wales Appendix 6.7 Bat Survey Report (Greenlink Interconnector Ltd., 2019g)</p>



Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
	<p>Bat activity surveys undertaken by AECOM in 2023 identified the following species within the onshore development area: lesser horseshoe bat, greater horseshoe bat, common pipistrelle, soprano pipistrelle, Nathusius’ pipistrelle, myotis species, serotine, noctule, Leisler’s bat and long-eared bat species. An assessment of the importance of the bat assemblage within the onshore development area identified this to be of national Importance. However, given that the onshore development area is known to support greater horseshoe bats, and these may be associated with the identified SACs and SSSIs in proximity to the onshore development area, their value is considered to be of international value.</p> <p>All bats are listed on the Conservation of Habitats and Species Regulations 2017 (as amended) and WCA5. Common pipistrelle, soprano pipistrelle, brown long-eared bat, Bechstein’s bat, noctule, greater horseshoe bat and lesser horseshoe bat are SPI.</p>		
Otter	<p>Four records of otter were identified within 2 km of the onshore development area during the 2022 desk study, the closest located within 0.2 km of the onshore development area at Freshwater West.</p> <p>The survey identified several areas of suitable otter habitat within the onshore development area, including ponds and watercourses, though no field signs for otter were recorded.</p> <p>The surveys carried out for the Greenlink Interconnector project in 2018 identified a potential holt and three couches (open, uncovered areas used as a resting place) around the water body east of Greenhill and a further potential holt north of Vine Cottage, near Hoplass. Additionally, spraint, prints, slides and feeding remains were identified throughout the area.</p> <p>Signs of otter evidence were found in suitable habitat throughout the Survey Area during the surveys undertaken in 2020 for Project Erebus. These included four spraints, seven slides, 17 possible trails/runs and feeding evidence. No otters or holts, breeding or resting sites were confirmed during the survey, but such sites are rarely located when carrying out routine otter surveys (Liles, 2003). Although, there were 21 areas of habitat that were assessed as high potential for otter holt/resting sites and seven areas of habitat that were assessed as low to medium potential for otter holt/resting sites.</p> <p>Otter is listed on the Conservation of Habitats and Species Regulations and WCA5. The species is also SPI and LBAP.</p>	County	<p>Appendix 8B Preliminary Ecological Appraisal; and</p> <p>Greenlink Riparian Mammal Surveys (Greenlink Interconnector Ltd., 2019e)</p> <p>Project Erebus Protected Species Survey Report (ITP Energised, 2021e).</p>
Other SPIs	<p>During the 2022 desk study undertaken by AECOM, the records of polecat (<i>Mustela putorius</i>), weasel (<i>Mustela nivalis</i>) and hedgehog (<i>Erinaceus europaeus</i>) were returned.</p>	Site	<p>Appendix 8B Preliminary Ecological Appraisal.</p>



Important Ecological Feature	Summary description and rationale for evaluation	Importance	Reference
	<p>Habitats within the onshore development area, particularly broadleaved woodland, have suitability to support these species.</p>		
<p>INNPS</p>	<p>Twenty records of nine INNPS were returned in the 2022 desk study, three of which are listed on Schedule 9 of the WCA: Himalayan balsam (<i>Impatiens glandulifera</i>), montbretia (<i>Crocasmia x crocosmiiflora</i>) and Japanese knotweed (<i>Reynoutria japonica</i>). The closest Himalayan balsam was 1.4 km south of the onshore development area at its closest point and montbretia was 2 km north west. Multiple records of Japanese knotweed were returned, the closest record was 1 km west of the onshore development area.</p> <p>INNPS were recorded as present within the onshore development area. Species recorded included montbretia located adjacent to a residential property in Neath and a farm access track at Broomhill, Japanese rose (<i>Rosa rugosa</i>) along hedgerow/ residential property boundary, and Nuttall’s waterweed (<i>Elodea nuttallii</i>) within a pond margin.</p> <p>As INNPS have no nature conservation value they cannot be valued using the same approach as the other ecological features.</p>	<p>N/A</p>	<p>Appendix 8B Preliminary Ecological Appraisal.</p>



8.5.2. *Future Baseline*

59. This section considers the changes to the baseline conditions described above that might occur during the time period over which the proposed Project will be in place. It considers changes that might occur in the absence of the proposed Project being installed.
60. In the event that the onshore development area remained undeveloped, aside from slight variations in populations and their distribution of more mobile species, it is considered unlikely that there would be any significant change to the baseline conditions within the study area. Any changes in livestock management within the onshore development area may give rise to changes to the ground conditions over extended periods of time.
61. Habitats and the ecosystem within the onshore development area are established i.e. there has been no significant landscape scale changes resulting from development or restoration projects in the area. Therefore, it can be assumed that if the Project did not proceed, species populations would not be expected rise or fall significantly - status quo would be maintained. This means that a net increase in species population numbers would not be expected, should the proposed Project not proceed. Other changes over time may occur as a result of climatic change, although these are difficult to predict but likely to involve increased precipitation and gradual increases in average temperatures. Some change in the vegetation assemblage is likely to occur as a result.

8.6 **Scope of the Assessment**

62. An EIA Scoping Report for the proposed Project was submitted to NRW Marine Licensing Team (MLT) in April 2022. The Scoping Report was also shared with relevant consultees, inviting comment on the proposed approach adopted by the Applicant. A Scoping Opinion was provided to the Applicant by NRW MLT in July 2022. Based on the Scoping Opinion received, and further consultation undertaken, potential impacts on terrestrial ecology scoped out of the assessment are included in **Table 8-13**.
63. As set out in **Section 8.4.1** this assessment considers the design parameters, as set out in Chapter -4 Description of the Project, of the proposed Project which are predicted to result in the greatest environmental impact, known as the 'realistic worst-case scenario'. The realistic worst-case scenario represents, for any given receptor and potential impact on that receptor, various options in the onshore boundary that would result in the greatest potential for change to the receptor in question. Given that the realistic worst-case scenario is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that the development of any alternative options within the design parameters will give rise to effects no greater or worse than those included in this impact assessment.
64. The design scenarios identified in **Table 8-13** have been selected as those having the potential to result in the greatest effect on an identified ecological receptor or receptor group. These scenarios have been selected from the details provided in **Chapter 04: Description of the proposed Project**.



Table 8-12. Design scenario considered for the assessment

Potential impact	Design scenario	Justification
Construction		
<p>Direct loss of or damage to ecological receptors from installation activities / ground-breaking works. Temporary impact of disturbance of ecological receptors from construction activities.</p>	<p>Construction of all onshore components-will commence with the preparation and installation of temporary access roads, working areas and Temporary Construction Compound (TCCs) for a particular working area.</p> <p>The following activities are considered in the design scenario for assessment.</p> <ul style="list-style-type: none"> • Soil strip: prior to cable installation, topsoil will be removed and set aside. • Vegetation clearance: clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route. This will be undertaken only where completely necessary and will be kept to a minimum. • Establishment of temporary compounds and access tracks. • Installation of onshore cables – open trench cutting • Installation of onshore cables - trenchless installation (HDD). • Establishment of onshore substations. • Operation and movement of construction plant / vehicles. • Employment and movement of construction workforce (human activity). • Construction lighting. • Construction water management, including de watering ground water table that impedes construction activity. • Generation of waste. • Demolition of existing buildings/structures. <p>Up to five temporary construction compounds will be formed in total (consisting of one main compound (100 m x 50 m) near to the substation, and four smaller (50 m x 50 m) satellite compounds).</p> <p>Landfall HDD drilling will require one 100 m x 75 m temporary compound as part of the HDD temporary works area.</p> <p>At the Landfall site the subsea cables will be connected to onshore cables in an underground transitional joint bay (TJB). There will be up to two TJBs and each will be up</p>	<p>The reasonable worst case design scenario during construction is:</p> <p>Permanent and / or temporary habitat loss, severance, or fragmentation. A direct impact related to the change in land use resulting from the proposed Project. Demolition and construction activities will require clearance of habitats within the footprint for proposed cable routes, onshore substation and compounds;</p> <p>Damage or degradation of habitats. A direct or indirect impact resulting in the reduction in the suitability of the habitat for the identified important receptor;</p> <p>Killing or injury of species. A direct impact on a population of a species associated with killing or injury due construction activities; and</p> <p>Disturbance of species and sensitive habitats. An indirect impact resulting from a change in normal conditions that would result in the important ecological feature changing its typical behaviour. Visual disturbance from increased human presence, noise, light and dust pollution arising from demolition and construction activities are key impacts likely to affect sensitive species and habitats.</p>



Potential impact	Design scenario	Justification
	<p>to 12 m long, 6 m wide and 2.25 m deep. Once constructed, the only infrastructure remaining above-ground will be the link pillar above each TJB. Link pillars are required for TJB inspection and maintenance and will be of a size up to 1 m x 1 m x 0.6 m.</p> <p>A 100 m x 50 m temporary works area along with a 40 m x 50 m construction compound will be used at each joint for installation activity. There will be one onshore export cable from each TJB, at either 66 kV or 132 kV.</p> <p>The onshore cable length will be a maximum of 7.1 km, with the Onshore Development Area footprint likely occupying an area of 2.1 km², based on the length and width of the proposed onshore cable corridor.</p> <p>The cables will be laid in separate trenches created by Open Cut Trenching (OCT). At certain locations along the OnECC, for example at water and road crossings, where OCT is not feasible the cables will be installed by HDD.</p> <p>The minimum burial depth of the OnECC is 0.9 m, except for agricultural lands where the minimum burial depth is 1.1m, and this may be increased in certain locations for example across some arable fields to allow for ploughing. The maximum trench width will be 1.2 m. It should be noted that this will also vary with depth of cover (the deeper the cables are buried the wider the trench may become), however 1.2m represents the maximum width.</p> <p>Working width of the corridor is up to 35 m, with the exception of passing through hedgerows where this width would reduce to 10m. A five-metre width corridor will be required for heavy vehicle access (earth digging equipment and lifting equipment for the cable drums) along the side of the trench, and a further 5 m will be required for lay down of equipment, topsoil, and spoil from the trenching. Another 1.5 m (depending on method of trench shoring) is required from the edge of the trench on each side for safety and to prevent trench collapse under load, and a final 3 m to 5 m should be provided on the far side of the trench for access, storage or working as required.</p> <p>The onshore substation and control building will be located near the grid connection point at Pembroke Power Station. The substation will occupy a maximum area of 126 m x 109 m (excluding SuDS and laydown area). The maximum control building height will be 15 m, depending on whether air insulated, or gas insulated switchgear will be utilised Within</p>	



Potential impact	Design scenario	Justification
	the Substation Area, there will also be an additional area of up to 1,709 m ² for a Sustainable Drainage System (SuDS).	
Operation and maintenance		
Permanent impact of disturbance on ecological receptors.	<p>The substation will also be complemented with security infrastructure such as 2.4 m high, galvanised steel panelised fencing, CCTV, motion sensor lighting as well as security alarms. Different lighting will be used throughout the substation site. This will include 10 lux along access paths and electrical paths and further 2.2 lux lighting around the security fencing. In a worst case scenario this lighting will be operated for 24 hours although ideally these will only be used when required.</p> <p>Occasional repair works on the substation or the onshore cable, with potential for temporary loss of habitat and linear features. However, this would be anticipated to be very small scale, highly localised and of a short-term duration.</p> <p>Maintenance and site access activities would be required which could require site vehicle access, human presence and vegetation management.</p>	The reasonable worst case design scenario during operation and maintenance is: Permanent disturbance and severance of connectivity as a result of permanent lighting. Degradation of habitats resulting in reduction in suitability of the habitat for the identified important receptor. Disturbance of species and sensitive habitats resulting from a change in normal conditions (light, noise, and human activity) that would result in the important ecological feature changing its typical behaviour. Killing or injury of species. A direct impact on a population of a species associated with mortalities including from collisions with site vehicles, possible pollution incidents and management practices. Spread of INNPS.
Decommissioning		
Impacts to be similar to those during construction	<p>It is anticipated that upon decommissioning the onshore cable would be left in-situ and, as such, there would not be any impact resulting from excavations, which is where most effects associated with the onshore cable originate from.</p> <p>Any impacts would likely be as a result of the demolition of the substation and TJB. Protected species may have established within the enhanced habitats surrounding the substation, prior to any demolition taking place.</p>	Same as during construction. The reasonable worst case design scenario during decommissioning is the demolition of the substation and TJB as this presents the greatest impact on ecological receptors.



8.6.1. Ecological receptors scoped out of assessment

- 65. A number of ecological receptors have been scoped out of the assessment during EIA scoping (AECOM, 2022). These impacts are outlined, together with the justification for scoping them out, in **Table 8-13**.

Table 8-13. Potential impacts scoped out the assessment

Ecological Receptor	Potential impact	Justification
All receptors	General Construction Activity - Damage to ecological features through dust deposition, noise, vibration and lighting.	Not likely to result in any significant impacts due to the inclusion of nuisance management measures in OCEMP.
All receptors	General Construction Activity - Damage to ecological features (including waterbodies and watercourses) through pollution.	Not likely to result in any significant impacts due to the inclusion of pollution prevention measures in OCEMP.
Protected and priority invertebrates (terrestrial and aquatic)	Temporary habitat loss and fragmentation.	Limited suitable habitat in onshore development area. Not likely to result in significant impacts to protected and priority invertebrates through avoidance and habitat restoration protocols and precautionary working methods to be outlined in the OCEMP.
Amphibians, including common toad	Temporary habitat loss and fragmentation.	Not likely to result in significant impacts to amphibians, including common toad as a result of precautionary working methods to be outlined in the OCEMP.
Reptiles	Temporary habitat loss and fragmentation. Killing or injury of reptiles.	Not likely to result in significant impacts to reptiles as loss of suitable habitat will be temporary and minimal. Precautionary working methods to be outlined in the OCEMP will avoid killing or injury of reptiles.
Birds (excluding SPA features, which will be assessed under designated sites)	Disturbance to Schedule 1 birds. Destruction of nests. Killing or injury of birds.	Not likely to result in significant impacts if works can be timed to avoid breeding bird season/ or pre-works checks and implementation of species- specific buffers (outlined in PWM) and habitat restoration protocols are followed.



8.7 Embedded Mitigation, Management Plans and Best Practice

66. As part of the project design process, a number of designed-in measures have been proposed to reduce the potential for impacts on terrestrial ecology (see **Table 8-14**). The design of the proposed Project therefore includes embedded mitigation that will be produced as conditions of consent, and which will further mitigate potential impacts. This approach has been employed in order to demonstrate commitment to mitigation measures by including them in the design of the proposed Project and as such these measures have been considered within the assessment presented in **Section 8.8 below**. Assessment of effects and therefore significance includes the implementation of these measures.

Table 8-14. Mitigation measures, management plans and best practice adopted as part of the proposed Project

Embedded Mitigation Measures, Management Plans and Best Practice	Justification
Design Embedded Measures	
Mitigation Hierarchy	<p>The mitigation hierarchy has been considered and has been taken into consideration when assessing the potential impacts. A summary is provided below.</p> <p>Mitigation Hierarchy (CIEEM, 2018):</p> <ol style="list-style-type: none"> 1. Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative site or use of technology, or timing to eliminate impact). 2. Mitigation – Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation. 3. Compensation – Used as last resort to offset impacts. 4. Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation. <p>Mitigation measures cannot be detailed in full as further requirements may be identified following the completion of surveys and may be required for protected species licencing. As this assessment is based on a worst-case scenario, mitigation measures have been identified to account for the greatest potential impacts that may result from the proposed Project.</p>
Project design	<p>The design process has minimised the number of watercourse crossings required, and buffer strips around sections of workings adjacent to watercourse crossings and bund and embankment features will be implemented. This will avoid impacts on watercourses, including their hydrological and habitat linkages.</p>
Minimising habitat loss	<p>Wherever possible, habitats will be retained during construction. Hedgerow removal will be limited to a maximum of 10 m at each hedgerow crossing. The final CEMP will identify habitats in which works should be avoided as far as possible.</p>
Reinstating habitat	<p>Following completion of the works, hedgerows will be replanted with locally native species to maintain the ecological function of the hedgerow and connectivity to the wider landscape. However, it is noted that deep</p>



Embedded Mitigation Measures, Management Plans and Best Practice	Justification
	<p>rooting trees cannot be planted within 3 m of the cable, it is assumed that it will be possible to plant scrub and shrub species within any created gaps following the completion of works.</p>
<p>Management Plans</p>	
<p>Construction Environment Management Plan (CEMP)</p>	<p>An OCEMP has been produced and is provided in Appendix 4A. The CEMP will be finalised prior to the commencement of works. This provides details regarding methodology to be followed during works and the following mitigation:</p> <ul style="list-style-type: none"> • Measures to reduce the impacts of construction activities such as dust, noise, vibration and lighting. • Surface and ground water protection measures and a pollution prevention plan. • Existing trees to be retained and appropriate root protection zones implemented where possible. No ancient woodland or veteran trees are likely to require removal. • A protocol for the restoration of land which will be temporarily used for construction. • Environmental training requirements and identification of responsibilities of personnel. <p>The OCEMP requires the production of a biosecurity plan and biodiversity management plan which will include a PWM. This will be in place to prevent the spread of invasive non-native species potentially present within the site, identify methodology to be followed for the removal of habitat with suitability for protected species and describe the responsibilities of the ecological clerk of works (ECoW) to be employed for the duration of the works. Responsibilities of the ECoW will be finalised in the biodiversity management plan and may include:</p> <ul style="list-style-type: none"> • The delivery of a Toolbox Talk ahead of works; • Pre-construction surveys (for example, checks for breeding birds, badger setts, otter holts etc.); • Watching briefs or observations of construction/site preparation activities; • Monitoring the effectiveness of mitigation measures; • Responding to situations arising, and potentially updating the working methods, to avoid harm to valued ecological receptors; and, • Auditing or monitoring, requiring specialised skills. <p>The completed CEMP will identify the need for long-term site security, and identify measures which may be employed to confirm this. This will include the requirement for long-term monitoring of mitigation measures associated with the proposed Project.</p>



8.8 Assessment of Environmental Effects

67. The impacts and effects (both beneficial and adverse) associated with the construction, operation and maintenance and decommissioning of the proposed Project are outlined in the sections below. The assessments take into account the embedded mitigation measures described in **Section 8.7**. Other Chapters assess aspects that may impact on ecology: **Chapter 10: Water Environment, Chapter 11: Geology and Hydrology, Chapter 14: Air Quality and Chapter 15: Noise and Vibration.**

8.8.1. Construction Effects

68. The following activities comprising the proposed Project are likely to give rise to impacts on receptors:

- Soil strip: prior to cable installation, topsoil will be removed and set aside.
- Vegetation clearance: clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route. This will be undertaken only where completely necessary and will be kept to a minimum.
- Establishment of temporary compounds and access tracks.
- Installation of onshore cables – open trench cutting
- Installation of onshore cables - trenchless installation (HDD).
- Establishment of onshore substations.
- Operation and movement of construction plant / vehicles.
- Employment and movement of construction workforce (human activity).
- Construction lighting.
- Construction water management, including de watering (surface and ground water table that impedes construction activity).
- Generation of waste.
- Existing structures demolished to facilitate the Proposed project.

69. Based on the nature of the proposed Project (Chapter 4 Project Description), the following impacts upon ecological features are anticipated to be associated with the construction phase:

- Permanent and / or temporary habitat loss, severance, or fragmentation. A direct impact related to the change in land use resulting from the proposed Project. Demolition and construction activities will require clearance of habitats within the footprint for proposed cable routes, onshore substation and compounds;
- Damage or degradation of habitats. A direct or indirect impact resulting in the reduction in the suitability of the habitat for the identified important receptor;
- Killing or injury of species. A direct impact on a population of a species associated with killing or injury due construction activities; and
- Disturbance of species and sensitive habitats. An indirect impact resulting from a change in normal conditions that would result in the important ecological feature changing its typical behaviour. Visual disturbance from increased human presence, noise, light and dust pollution arising from demolition and construction activities are key impacts likely to affect sensitive species and habitats.



Designated Sites

Limestone Coast of South West Wales SAC

70. The SAC boundary is located within the western extent of the onshore development area, directly adjacent to the landfall. Horizontal directional drilling (HDD) will be undertaken to take the cable under the extent of the SAC.
71. Features of the SAC which could be present in this area (concurrent with Broomhill Burrows SSSI) are:
 - Fixed dunes with herbaceous vegetation;
 - Petalwort (*Petalophyllum ralfsii*);
 - Early gentian (*Gentianella anglica*); and
 - Greater horseshoe bat (*Rhinolophus ferrumequinum*).
72. The landfall area is adjacent to the SAC. However given that works within the SAC will be avoided through the use of HDD techniques, with the HDD works being initiated and terminated outside the SAC, no direct ecological impacts on habitats and plant species are anticipated. HDD drilling fluids will be tested and selected to curtail environmental damage and potential leakage. This chiefly includes using biodegradable substances that Pose Little or No Risk to the Environment (PLONOR) and adequate contamination testing and drilling fluid disposal. The Geology chapter has not identified any significant impacts due to HDD drilling fluid. At its closest point the HDD work area is c. 100m from the SAC boundary. Construction activities will not cause damage to the dune habitats, early gentian and petalwort.
73. Construction activities will follow a precautionary approach to avoid damage to the dune habitats, plants and bryophytes through vegetation clearance, trampling and crushing by machinery or people, or through pollution spills. This will be implemented through the OCEMP.
74. Given that horseshoe bats are recognised as having a core sustenance zone of approximately 3 km (BCT, 2020), changes to habitat within the onshore development area may affect foraging potential as well as commuting corridors, through change or removal of linear features used by bats for navigation (Ransome, 1996). It understood that sections of hedgerows removed for the construction phase will be re-instated. Any physical loss of habitat associated with the proposed Project is anticipated to be temporary, except for the footprint of the substation, substation access roads and transition joint bay (TJB). These will be situated on improved grassland which is typically of low foraging value for bats. However improved grassland, if grazed by cattle, can provide a valuable foraging resource for bats, particularly greater and lesser horseshoe bats, which predate on the beetles and flies associated with cattle droppings. The land to be lost at the footprint of the substation is improved grassland. The substation location is bordered by hedgerows, a small section of which is anticipated to be permanently removed to provide access to the substation. These hedgerows are likely to be used as a commuting feature by bats and may provide foraging resource. At the time of writing, it is understood that artificial lighting will be required to enable the construction of the onshore substation. The substation construction site, equipment and compounds will require lighting to the brightness of 10 lux. Fencing will require 2.2 lux and brightness of 110 lux will be used for entry points. Where possible this lighting will be timed to be used only when required (except for instances of safety and security where it will likely be required 24 hours), the worst-case scenario of 24 hours has been assessed. Ransome (1996) determined that greater horseshoe bats, in particular, are vulnerable to the severance of linear features when light



levels are lighter (i.e. earlier and later stages of the night), with gaps of c.10 m wide affecting their movements under such conditions. As such, in the absence of mitigation the resulting gaps may sever linear commuting features used by bats. Therefore, it is considered that in the absence of mitigation the construction phase of the onshore cable corridor may lead to **major adverse** and **significant** effects through physical loss and connectivity of commuting features for bats.

75. The proposed Project is likely to cause the loss of key commuting corridors for bats within the onshore development area. In general, a temporary impact as replanting efforts will be made as soon as possible following the installation of the onshore export cable. Hedgerows will be replaced wherever possible although trees cannot be planted within 3 m of any sections of underground cable that have been installed. All planting will be maintained and monitored, with replacement provided where this does not establish. Where the removal of a hedgerow is required, this will be undertaken in the winter months when bats are hibernating (i.e. November-March). Suitable alternative commuting routes must be available for bats once they arise from hibernation in the spring (March-April). Where works are still required, or replanting is not yet fully established, this may include temporary measures such as the use of heras fencing and barrels mounted with vegetation to be placed into any gaps overnight. There is potential for the installation of the onshore export cable route to require artificial lighting, particularly if works should be required at night. This should be avoided as far as possible to limit the impact of disturbance on bats present within the onshore development area. Where night working and associated lighting cannot be avoided, screening must be provided to direct bats to intact flyways (retained woodland and hedgerows). Given all described mitigation measures, it is concluded that the effect of the proposed Project on bat species present within this SAC is **minor adverse** and **non-significant**.
76. As the mitigation measures described above will avoid potential impacts or reduce the magnitude of potential impacts from the proposed Project, it is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of SAC. Therefore, with appropriate mitigation in place there is no potential for an effect on Limestone Coast of South West Wales SAC either alone or in-combination (see **Appendix 8E: HRA RIAA** for more detail on assessment).

Pembrokeshire Marine SAC (Onshore features only)

77. The SAC is directly adjacent to the onshore development area. Marine features will be assessed separately in **Volume 3** of this ES. Onshore features of the SAC include otter and shore dock, impacts to these will be avoided through the use of HDD beneath the SAC. HDD drilling fluids will be tested and selected to curtail environmental damage and potential leakage. This chiefly includes using biodegradable substances that Pose Little or No Risk to the Environment (PLONOR) and adequate contamination testing and drilling fluid disposal. The Geology chapter has not identified any significant impacts due to HDD drilling fluid. At its closest point the HDD work area is c. 100m from the SAC boundary. Given that the works will follow pollution control measures, impacts to the SAC through pollution spills, including to fresh water, are not anticipated.
78. Based on a worst-case scenario, there will be no direct impact on the terrestrial ecology of this receptor. As such effects are considered **negligible** and **non-significant**.
79. As the mitigation measures described above will avoid potential impacts from the proposed Project, it is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex I habitat and Annex II species features.



Therefore, there is no potential for an effect on Pembrokeshire Marine SAC either alone or in-combination (see **Appendix 8E: HRA RIAA** for more detail on assessment).

Castlemartin Coast SPA

80. The Castlemartin Coast SPA is located within the onshore development area. The SPA is designated for its breeding chough as well as important cliff nesting bird species. Direct impacts on habitats within the SPA are considered unlikely given the use of HDD methodology.
81. Surveys for chough identified only one potential breeding site, although this was located at a distance that disturbance from the proposed Project would not be anticipated. A pre-construction survey for chough will be conducted to identify any breeding individuals. Should they be present, disturbance impacts will be avoided through the implementation of a temporary exclusion zone in which no works will take place until after all young have fledged this will avoid and reduce opportunities for noise or human activity within proximity to chough breeding sites. For choughs, the buffer zone should be set at 1 km as a precaution and then works may commence with an experienced ornithologist present to observe behaviour of any chough to determine whether a smaller buffer is appropriate. Where topography etc limits visual and noise disturbance reaching the nesting or foraging location it may be possible to reduce the buffer zone after observations of behaviour have been made. As a result of this precautionary methodology, impacts to chough population associated with the SPA are anticipated to be **negligible** and **non-significant**.
82. It is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex I chough feature. Therefore, with appropriate mitigation in place, there is no potential for an effect on Castlemartin Coast SPA either alone or in-combination (see **Appendix 8E: HRA RIAA** for more detail on assessment).

West Wales Marine / Corllewin Cymru Foral SAC

83. The West Wales Marine SAC is directly adjacent to the onshore development area, it is designated for marine features including harbour porpoise. Impacts resulting on this designation are therefore limited to marine impacts and will be addressed separately in **Volume 3** of this ES.

Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC

84. This designation is located 2.8 km from the onshore development area at its closest. One of the primary reasons for its designation includes roosts for greater horseshoe bats and a qualifying reason is roosts for lesser horseshoe bats. Direct impacts to roosting features are not anticipated as a result of the proposed Project, though there is potential for the works within the onshore development area to impact bats associated with this SAC as outlined in **paragraph 74**. Many other species are identified as present within this SAC, including brown-long eared bats, whiskered bats, common pipistrelle, soprano pipistrelle, noctule and Daubenton's bat. With the exception of whiskered bats, these species are all confirmed to utilise habitats within the onshore development area, it can be assumed that the individuals present within the onshore development area are accessory to the populations within the SAC. Similarly, to the impacts to greater horseshoe described above, the proposed Project has the potential to cause permanent and temporary loss of foraging and commuting habitat in use by these species. Where artificial lighting is required during construction, there is the potential for the proposed Project to cause disturbance to bats associated with the SAC. Although with mitigation outlined in **paragraph 75** the effect on bats is considered to be **minor adverse** and **non-significant**.



85. On that basis of mitigation being secured via the CEMP, outlined in **paragraph 75**, it is not anticipated that visual and noise disturbance will hinder the conservation objectives of the Annex II terrestrial mammal features of the Limestone Coast of South West Wales SAC or Pembrokeshire Bat Sites and Bosherton Lakes SAC, and it can be concluded that there is no potential for effects on the Limestone Coast of South West Wales SAC or Pembrokeshire Bat Sites and Bosherton Lakes SAC due to visual and noise disturbance (see **Appendix 8E: HRA RIAA** for more detail on assessment).

86. It is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex II terrestrial mammal features. Therefore, there is no potential for effects on Pembrokeshire Bat Sites and Bosherton Lakes SAC either alone or in-combination (see **Appendix 8E: HRA RIAA** for more detail on assessment).

Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro SPA

87. This designation is approximately 4.3 km from the onshore development area and designated for the presence of breeding and wintering seabirds. Given the distance between the designation and onshore development area, impacts are not anticipated. It is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex I ornithological features. Therefore, with appropriate mitigation in place, there is no potential for an effects on Skomer, Skokholm and the Seas off Pembrokeshire SPA either alone or in-combination (see **Appendix 8E: HRA RIAA** for more detail on assessment).

Broomhill Burrows SSSI

88. This SSSI lies within the western extent of the onshore development area and overlaps with part of the Limestone Coast of South West Wales SAC. It is designated for dune habitats, invertebrates, rare vascular plants and bryophytes.

89. The proposed landfall of the export cable is located adjacent to the SSSI. Construction activities will follow a precautionary approach, implemented via the OCEMP, to avoid damage to the dune habitats, plants and bryophytes through vegetation clearance, trampling and crushing by machinery or people, or through pollution spills.

90. Up-to-date survey information on the interest features of the SSSI in the onshore development area is not currently available. Based on a worst-case scenario, including mitigation within the CEMP, impacts would be temporary and **minor adverse** and **non-significant**.

91. It is considered that the impact pathways associated with the proposed Project will not hinder the conservation objectives of SAC. Therefore, with appropriate mitigation in place there is no potential for an effects on Limestone Coast of South West Wales SAC either alone or in-combination.

Milford Haven Waterway SSSI

92. The SSSI is approximately 0.1 km east of the onshore development area. At this distance, no direct impacts on habitats within the SSSI boundary are anticipated. The SSSI is designated in part for greater and lesser horseshoe bat and otter populations. There is potential for the proposed Project to impact these species outside of the SSSI boundary.

93. Given that there is suitable habitat for otter within the onshore development area, with direct connectivity to the SSSI, there is potential for otters within the SSSI to utilise habitats within the onshore development area. Where works are required within a watercourse, and the watercourse is assessed during pre-construction surveys as being suitable for otter the following actions will be included: access along the watercourse and/or immediate banks will



be retained unobstructed for otters to pass, obstacles within the watercourse (such as fencing) will be removed at the end of each shift. Works will stop 1 hour before dusk and commence no sooner than 1 hr after dawn, to avoid times of peak otter activity, Lighting will be managed to prevent light spill onto watercourses, or temporary fencing retaining dark corridors and allowing otter to continue to move throughout the landscape. A survey for otter holts will be conducted in advance of the commencement of works, where these are identified the onshore cable route will be adjusted within the RLB to reduce impacts to otter as far as possible. Where this is not possible, and impacts to an otter holt cannot be avoided, monitoring will be required to confirm whether the holt is in use. Should this be the case, a EPSML will be required from NRW for disturbance to otter, which will specify methodology required to limit impacts to otter. If methodology outlined about is followed effects to the otter population within the SSSI is considered **minor adverse** and **non-significant**.

94. Given that the onshore development area is known to support greater and lesser horseshoe bats, and it is within the CSZ of the SSSI, it can be assumed that individuals present within the SSSI may utilise habitats within the onshore development area for foraging and commuting. As outlined in **paragraph 74**, there is potential for the proposed Project to cause permanent and temporary loss of habitat in use by horseshoe bats, but with mitigation outlined in **paragraph 75** this is anticipated to result in **minor adverse** and **non-significant** effects.

Angle Peninsula Coast / Arfordir Penrhyn Angle SSSI

95. Angle Peninsula SSSI is approximately 0.3 km west of the onshore development area. At this distance, no direct impacts on habitats present within the SSSI are anticipated. The SSSI is designated in part for greater and lesser horseshoe bat and chough populations.
96. Given that the onshore development area is known to support greater and lesser horseshoe bats, and it is within the CSZ of the SSSI, it can be assumed that individuals present within the SSSI may utilise habitats within the onshore development area for foraging and commuting. As described in **paragraph 74**, there is potential for the Project to cause permanent and temporary loss of habitat in use by horseshoe bats, although if mitigation outlined in **paragraph 75** is followed the resulting effects are anticipated to be **minor adverse** and **non-significant**.
97. As described in **paragraph 81**, impacts to breeding chough will be avoided through the completion of a pre-works survey and implementation of exclusion zones. As a result of this precautionary methodology, effects on the chough population associated with this SSSI are anticipated to be **negligible** and **non-significant**.

Gweunydd Somerton Meadows SSSI

98. This designation is approximately 0.4 km south of the onshore development area, connectivity is provided in the form of improved grassland and farmland. The designation is for the grassland fungi assemblage, and it supports a small breeding population of marsh fritillary butterfly and shrill carder bee. Given the distance from the onshore development area, impacts to the grassland fungi assemblage are not anticipated. Habitats within the onshore development area are of low suitability for marsh fritillary and shrill carder bee. As a precautionary approach, methods to avoid impacts to protected invertebrate species should be followed and will be detailed in the OCEMP. As a result, **negligible** and **non-significant effect** to the features within this SSSI are anticipated.

Castlemartin Range SSSI

99. The Castlemartin Range SSSI is approximately 0.4 km from the onshore development area. This is designated for the presence of habitats including sand dunes, wetlands, grasslands and



coastal habitats. Species present include rare plants, breeding seabirds and horseshoe bats. At this distance, direct impacts on the habitats are not anticipated. De-watering (ground water and surface water) of excavations during construction is required and this may cause temporary impacts on ground water flow which could impact ground water dependent terrestrial ecosystems (wetlands) with potential impacts considered to be **minor adverse** and **non-significant**. Potential for groundwater ingress to excavations will be managed following standard construction techniques potentially including pumping, damming, and shoring up the pits. A Groundwater Risk Assessment will be undertaken post consent (Chapter 10). This will assess potential for groundwater ingress and outline the dewatering requirements to be adopted in order to ensure no adverse impacts on the receiving water environment.

100. There is potential for construction of the proposed Project to impact on the greater and lesser horseshoe bats associated with the SSSI, through the severing of commuting features, temporary loss of foraging habitat and disturbance from artificial lighting as outlined in **paragraph 74**. Given that the onshore development area is known to support greater and lesser horseshoe bats, and it is within the CSZ of the SSSI, it can be assumed that individuals present within the SSSI may utilise habitats within the onshore development area for foraging and commuting. As described in **paragraph 74**, there is potential for the proposed Project to cause permanent and temporary loss of habitat in use by horseshoe bats, although if mitigation measures outlined in **paragraph 75** and implemented the resulting effects are considered **minor adverse** and **non-significant**.

Castlemartin Corse SSSI

101. The Castlemartin Corse SSSI is within the onshore development area. This SSSI is designated for habitats including swamp and calcareous fen meadow and plant species of interest. De-watering (ground water and surface water) of excavations during construction is required and this may cause pollution with potential impacts on this SSSI in Chapter 10 Water environment considered to be **minor adverse** and **non-significant**. De-watering (ground water and surface water) of excavations during construction is required and this may cause temporary impacts on ground water flow which could impact ground water dependent terrestrial ecosystems (swam and fen) with potential impacts on this SSSI in Chapter 10 Water environment considered to be **minor adverse** and **non-significant**. Potential for groundwater ingress to excavations will be managed following standard construction techniques potentially including pumping, damming, and shoring up the pits. A Groundwater Risk Assessment will be undertaken post consent (Chapter 10). This will assess potential for groundwater ingress and outline the dewatering requirements to be adopted in order to ensure no adverse impacts on the receiving water environment.

Orielton Stable Block and Cellars SSSI

102. Orielton Stable Block and Cellars SSSI is approximately 2.8 km from the onshore development area and is designated for the presence of a large nursery roost of lesser horseshoe bats. Greater horseshoe bats, brown long-eared bats, whiskered bats, soprano pipistrelle and noctule are also present in low numbers. The onshore development area is within the CSZ of all of these species, with the exception of whiskered bats (BCT, 2020) and all have been confirmed present within the onshore development area. It can therefore be assumed that the bats present within the onshore development area are accessory to the populations within this SSSI. As outlined in **paragraph 74**, there is potential for the proposed Project to cause permanent and temporary loss of habitat in use by bats although if mitigation measures outlined in **paragraph 75** are followed the effects on bats is anticipated to be **minor adverse** and **non-significant**.



Scoveston Fort SSSI

103. Scoveston Fort SSSI is designated for the presence of at least 50 hibernating greater horseshoe bats, approximately 4.2 km from the onshore development area. The distance between this SSSI and the onshore development area is greater than the CSZ of greater horseshoe bats (3 km; BCT, 2020). However, there is potential that the individuals present are accessory to the population within the SSSI and impacts outlined in **paragraph 74** are possible. However, if mitigation measures outlined in **paragraph 75** are followed the proposed Project is anticipated to result in **negligible** and **non-significant** effects on populations associated with the SSSI.

Stackpole SSSI

104. Stackpole SSSI is approximately 5.8 km from the onshore development area and designated for foraging habitats and an important sheltered flight route in use by greater horseshoe bats and lesser horseshoe bats roosting within the Stackpole Courtyard Flats and Walled Gardens SSSI. Given that the SSSI is designated for habitats and no impacts to these habitats are anticipated effects from the proposed Project are considered **negligible** and **non-significant**.

Stackpole Courtyard Flats and Walled Garden SSSI

105. Stackpole Courtyard Flats and Walled Garden SSSI consists of structures in use as a breeding site for greater horseshoe bats, approximately 6.5 km from the onshore development area. Other species known to roost here include common pipistrelle, brown long-eared bat, natterer's bat, Daubenton's bat and whiskered bat. All these species are likely to be present within the onshore development area, and although the distance between the onshore development area and the SSSI is greater than the CSZ of all cited species (BCT, 2020), there is potential for the individuals utilising habitats within the onshore development area to be accessory to the populations within this SSSI and impacts outlined in **paragraph 74** are possible. However, if mitigation outlined in **paragraph 75** is followed the proposed Project is anticipated to result in **negligible** and **non-significant** effects on populations within this SSSI.

Park House Outbuildings, Stackpole SSSI

106. Park House Outbuildings, Stackpole SSSI is approximately 6.8 km from the onshore development area and designated for a large nursery roost of lesser horseshoe bats. Other species present include common pipistrelle and brown long-eared bats. As described above, the distance between this SSSI and the onshore development area is significantly greater than the CSZ of each of these species (BCT, 2020). Whilst that there is potential for populations accessory to those in the SSSI to be present within the onshore development area, there is potential for the Project to lead to **negligible** and **non-significant** effects on the designating features of the SSSI.

Habitats

Permanent Impacts

107. Permanent loss of habitat will occur where the TJB associated with the landfall and the substation will be constructed. The TJB is anticipated to occupy a space approximately 20 x 3 m. The 2022 desk study identified broad HPI areas of coastal sand dunes within the landfall area, although the area was confirmed to support improved grassland with a small patch of scattered scrub, both these habitats are classified as of site importance.
108. The onshore substation compound area is anticipated, as a worst-case, to occupy a space of 15,000 m² and an additional 6,600 m² will be required for a Sustainable Drainage System (SuDS) pond. This onshore substation will be constructed within an improved grassland field, this improved grassland habitat is valued of as site importance. The field is bordered by an



intact species-poor hedgerow of local importance to the east and south, and an intact species-rich hedgerow of county importance to the north. It is anticipated that, worst-case, removal of hedgerow assessed as local importance will be required for the access track to the onshore substation. It is anticipated that scrub and tree planting will be included around the perimeter of the onshore substation. If the scrub planting is designed to link into the existing hedgerows this will compensate for the permanent loss of this hedgerow.

109. Given the permanent loss of small areas of site importance grassland and a small section (minimum required to allow access to the onshore substation, committed to no more than 10 m wide at each hedgerow crossing) of local importance hedgerow compensated for by scrub and tree planting (secured through the CEMP) the effects are considered **minor adverse** and **non-significant**.

Temporary Impacts

110. Temporary impacts are anticipated as a result of the construction of the onshore export cable corridor, it is understood that construction activities will be constrained to a corridor up to a maximum of 35 m wide. Where possible the works will be micro-sited to avoid areas of higher value such as trees, hedgerows and watercourses while utilising arable land and existing infrastructure such as roads and tracks. All habitats will be reinstated following the completion of the onshore cable construction.
111. The majority of the habitats within the onshore development area, where the cable will be routed are improved grassland and arable fields of site importance. Other habitats of site importance with potential to be impacted by the construction of the onshore cable include poor semi-improved grassland, dense and scattered scrub, other tall herb and fern ruderal, semi-natural mixed woodland, marginal and inundation vegetation and swamp. These habitats are of low intrinsic ecological value and the effect of short-term temporary loss of these habitats is considered to be a **negligible** and **non-significant**.
112. Habitats of higher value likely to be impacted by construction within the onshore cable corridor include:
- Semi-improved neutral grassland of local importance;
 - Broadleaved semi-natural woodland of local importance;
 - Marsh/marshy grassland of county importance;
 - Hedgerows of local-county importance;
 - Running water of local importance; and,
 - A line of trees of local importance.
113. Where possible, construction activities within habitats of local or county importance should be avoided and preferentially located in habitats of lower importance. In all cases, the existing habitat will be reinstated following the completion of construction works. The overall impact of the construction of the onshore cable route within the listed habitats with this mitigation applied is considered to be **minor adverse** and **non-significant**.
114. As the cable will be installed using HDD up until the landfall areas habitats direct impacts to habitats in this area will be avoided this includes dune grassland, dune scrub and open sand dune. The dune grassland and open sand dune are classified as international importance, and the dune scrub is of county-national importance. The avoidance of these habitats will therefore result in **negligible** and **non-significant** effects.



115. As far as possible, works within watercourses will be avoided. Where they cannot be avoided, it is anticipated cable installation will follow a dry open trench methodology and flow will be maintained through the implementation of damming and pumping methods. These watercourses are drainage ditches without much suitable for protected or priority fish species. None of the watercourses within the onshore development area are main rivers and are classified as having local importance. Temporary impacts to watercourse habitats are therefore assessed as **minor adverse** and **non-significant**.
116. A temporary compound will be required, associated with the landfall HDD and will require 100 m x 50 m temporary works area with a 40 m x 50 m construction compound at each joint for installation activities. The total area of these temporary works will lead to a temporary loss of 7000 m² habitat. As this compound is anticipated to be constructed within improved grassland of site importance, the ecological impact is considered to be **negligible** and **non-significant**.

Protected and Notable Species

Notable Plants

117. The onshore development area within the SAC and SSSI has been assessed as being of international importance for notable plants within the SAC, but as of site importance for the remainder of the onshore development area.
118. As impacts within the SAC and SSSI are to be avoided through the use of HDD construction techniques, **negligible** effects are anticipated to the populations of international importance.
119. In the remainder of the onshore development area habitats subject to permanent habitat loss are of low ecological value, and unlikely to provide suitable habitat for notable plant species. In areas where temporary habitat loss is anticipated there is potential for the proposed Project to cause temporary loss of notable plants, although due to the temporary nature of the works, reinstatement of habitat and the low likelihood of notable plant presence this is anticipated to result in **minor adverse** and **non-significant effects**.

Notable Bryophytes and Fungi

120. The area within the Limestone Coast of South Wales SAC has been assessed as being of national importance for bryophytes and fungi and the rest of the onshore development area has been assessed precautionarily as local importance, as targeted surveys have not been undertaken.
121. Given that construction within the Limestone Coast of South West Wales SAC is limited to HDD, and no habitat loss is anticipated, **negligible** and **non-significant** effects on bryophytes and fungi are anticipated in this area.
122. The majority of habitats within the remainder of the onshore development area is of low suitability for bryophytes and fungi as it is generally dominated by improved grassland and arable fields. In areas where temporary habitat loss is anticipated there is potential for the proposed Project to cause temporary loss of notable bryophytes and fungi, although due to the temporary nature of the works, reinstatement of habitat and the low likelihood of notable bryophytes and fungi presence this is anticipated to result in **minor adverse** and **non-significant effects**.

Invasive non-native plant species

123. INNPS recorded within the onshore development area include Japanese rose, montbretia and Nuttall's waterweed. A INNPS Management Plan will be produced and followed throughout the duration of construction works, secured within the CEMP (Appendix 4a). This will include



biosecurity measures and disposal of waste at a licensed facility. If measures set out in the CEMP are followed, **negligible** effects are anticipated.

Hazel Dormouse

124. The population of dormouse within the onshore development area has precautionarily been assessed as being of county importance. The construction phase of the Project has the following potential impacts on hazel dormouse:
- Kill or injure individual dormice;
 - Disturbance of dormouse; and
 - Permanent and temporary habitat loss and fragmentation.
125. Dormouse can be particularly susceptible to works affecting hedgerows, given the value of these habitats as connecting corridors. As they are assumed to be present within suitable habitat throughout the onshore development area, the removal of sections of hedgerow would fragment dormouse habitat and potentially injure or kill individual dormouse. In addition, there is a potential for dormouse to be disturbed by noise, vibration and lighting from plant used for vegetation clearance and construction works.
126. The removal of the majority of hedgerows, woodland and scrub is anticipated to be temporary as all habitats, not associated with the onshore substation and TJB, will be reinstated. The only permanent habitat loss is anticipated to be a small section of hedgerow for the access track to the onshore substation. This loss of permanent habitat is anticipated to be compensated for through the planting of scrub and trees surrounding the substation. Habitat connectivity would be retained by ensuring that this planting connects with retained habitats. Without mitigation outlined below, the construction of the proposed Project would result in, temporary **moderate adverse** and **significant** effects on dormouse.
127. As dormouse are assumed to be present within the onshore development area a dormouse surveys of habitat with suitability (**Volume 5: Figure 8.7**) will be undertaken. If dormouse is identified within the onshore development area, then a EPSML from NRW will be required to allow the works to proceed. Mitigation outlined as part of the method statement supporting the licence must be followed.
128. The removal of woodland, scrub and hedgerows will take place following a two-stage process, whereby the first stage would reduce vegetation to 300 mm above ground in the winter months. Vegetation can be removed or translocated in the spring (April/May) to avoid impact to dormouse potentially hibernating within the habitat. This methodology will be detailed in a PWM, and all works within suitable dormouse habitat will take place under the technical oversight of a suitably experienced licenced ecologist to ensure that the risk to dormouse is minimised.
129. Disturbance will be restricted to small working areas and the short-term duration of such operations will be limited. To reduce impacts work should be undertaken during the day between October and November, after the main dormouse breeding period, or during the winter months when dormouse are hibernating. Where suitable dormouse habitat is removed, connectivity to adjacent habitats must be maintained. This should include the provision of dormouse bridges, or heras fencing with brash attached, to be placed across gaps over each night to ensure that connectivity to the wider landscape is maintained during works. As soon as possible, gaps should be replanted with a mixture of native species. Temporary measures, as described, must be implemented until the planting is fully established.



130. With the mitigation outlined above the construction of the proposed Project would result in, **minor adverse** and **non-significant** effects on dormouse.

Badger

131. The population of badger within the onshore development area has been assessed as being of local importance.
132. The potential impacts of construction would be:
- Disturbance to badger within a sett;
 - Damage or destruction of a badger sett within the footprint of the works;
 - Permanent loss of low value foraging habitat; and,
 - Temporary loss of moderate value foraging habitat.
133. Badger setts have been recorded within the onshore development area. As badger is a highly mobile species, an update survey will be undertaken prior to the commencement of works. If impacts to a badger sett(s) is anticipated a badger closure licence from NRW will be secured and methods with the licence will be followed.
134. The majority of habitat within the onshore development area will be reinstated and the area will remain well connected to other habitat in the surrounding landscape. The permanent habitat loss resulting from the construction of the onshore substation and landfall will be located in habitat with low value for foraging badger. If no main setts require closure, it is anticipated that the proposed Project would result in **negligible** and **non-significant** effects on the badger population.
135. Should a main sett be identified and require closure to facilitate the works, there is potential for this to cause a temporary **minor adverse** and **non-significant** effects on local badger populations.

Bats

136. The populations of greater and lesser horseshoe bats within the onshore development area have been assessed as being of international importance. The populations of remaining bat species within the onshore development area have been assessed as being of county importance. Construction has the potential to cause the following impacts to these populations:
- Temporary and permanent loss and fragmentation of foraging and commuting habitat;
 - Disturbance to foraging and commuting bats through the production of noise, vibration and lighting; and,
 - Disturbance to bats potentially roosting within the onshore development area.

Bat Roosts

137. A preliminary roost suitability assessment for roosting bats must be conducted on all suitable structures, buildings and trees within 50 m of the onshore development area in advance of works commencing. Additional emergence/re-entry surveys may be required following this assessment and the need for any licences. At least five trees and four buildings have been identified within or adjacent to the onshore development area with potential to support roosting bats. As such, there is potential for works within the onshore development area to cause disturbance to roosting bats. Should these roosts be at risk of damage, destruction or disturbance throughout the required works, further surveys will be required to confirm whether bats are roosting within them. As a worst-case scenario, if the structures were to be



destroyed to facilitate works associated with the proposed Project, it would lead to the loss of a roost location for a small number of bats. Species could be those of international importance. Overall, this would be considered a **moderate adverse** and **significant effect**. As the destruction or damage of any roost requires the provision of an EPSML from NRW, and prior survey, it is assumed that the methodology accepted and controlled through such a EPSML would require sufficient mitigation and compensation, in the form of precautionary methods and creation of alternative roost features, that this effect would be concluded to be temporary. Overall, after mitigation and compensation this would be considered a **minor adverse** and **non-significant effect**.

Commuting features and foraging habitats

138. There are a number of nationally important bat roosts within 10 km of the project as outlined in **Section 8.5.1**. The temporary loss of foraging habitat and severance of hedgerows used by foraging and commuting bats as described in **paragraph 74** is likely to cause a **moderate adverse, significant** effect on bat populations. Although with additional mitigation outlined in **paragraph 75** the resulting effect is considered to be **minor adverse** and **non-significant**
139. Additional bat surveys are recommended to confirm the species present, as well as their utilisation of the habitats, within and adjacent to the area identified for the construction of the onshore substation. This will enable the design of appropriate mitigation measures.

Otter

140. The population of otter within the onshore development area have been assessed as being of county importance.
141. Construction has the potential to cause the following impacts:
- Damage or destroy an otter breeding or resting site;
 - Disturb an otter whilst occupying a holt or resting place; and
 - Temporary loss of foraging and commuting habitat.
142. As described in **paragraph 93**, precautions will be implemented to reduce impacts on otter during construction. The proposed Project does not intersect any major watercourses; however, otter may use minor streams and wet ditches within the onshore development area to commute between the ponds and small lakes in the local area.
143. An update survey will be required to confirm whether otter holts remain absent from the onshore development area in advance of the works. All watercourses and habitats with suitability for resting and breeding sites creation should be surveyed following the good practice methodology (Chanin, 2003). Given the potential impacts and mitigation related to otter, including the potential requirement for the obtainment of an EPSML should otter holts be identified within the onshore development area, the proposed Project is anticipated to result in a **minor adverse** and **non-significant effect** on otter.

Other SPIs

144. The populations of other SPIs including polecat, weasel and hedgehog within the onshore development area have been assessed as being of site importance. Construction has the potential to kill or injure these species during vegetation clearance.
145. A precautionary method of work will be implemented for the duration of construction, as outlined in the CEMP, to minimise the risk of impacts on other SPIs. With mitigation, the resulting effect of the proposed Project on other SPIs is considered **negligible** and **non-significant**.



8.8.2. Operation and Maintenance (O&M) Effects

146. The operational phase of the proposed Project is when the proposed Project is in use following construction. Based on the nature of the proposed Project, the following impacts upon ecological features are anticipated to be associated with the operational phase.

- Degradation of habitats. A direct or indirect impact resulting in the reduction in the suitability of the habitat for the identified important receptor;
- Disturbance of species and sensitive habitats. An indirect impact resulting from a change in normal conditions (light, noise, and human activity) that would result in the important ecological feature changing its typical behaviour;
- Killing or injury of species. A direct impact on a population of a species associated with mortalities including from collisions with site vehicles, possible pollution incidents and management practices; and
- Spread of INNPS.

Designated Sites

Limestone Coast of South West Wales SAC:

147. The SAC boundary is located within the western extent of the onshore development area. As the cables will be installed through the use of HDD techniques, access to infrastructure beneath the SAC should not be required once the Project is operational. As such, no direct impacts on the habitats within the SAC during operation are anticipated.

148. Lighting is anticipated as a requirement for the onshore substation which is approximately 2.2 km from this SAC. The onshore substation will require lighting during operation, it is expected that 10 lux will be provided around the entry to the substation and a level of 2.2 lux will be required around the perimeter fencing. In a worst-case scenario this lighting will be operated for 24 hours although ideally these will only be used when required. Lighting in proximity to existing commuting routes would have a greater impact on bat populations (BCT & ILP, 2018). Continuous lighting creates barriers to commuting bat species (Fure, A. 2012). Significant impacts on lesser horseshoe bats have been recorded as low as 3.6 lux (Stone *et al.* 2012). Given that lighting is required within the CSZ for greater horseshoe bats (3 km; BCT, 2020), but given that the 10 lux lighting is only required for the entry to the substation and is anticipated to only be used when required. It is anticipated that there is potential for the operational stage of the Project to cause **minor adverse** and **non-significant** effects to greater horseshoe bat associated with the SAC.

149. It should be noted that if any works are required within the SAC, as identified at a later stage, the HRA should be updated to account for the change in methodology/ nature of the works.

Pembrokeshire Marine SAC (Onshore features only)

150. The SAC is directly adjacent to the onshore development area. Marine features will be assessed in Volume 3 of this Environmental Statement. Onshore features of the SAC that may be impacted are otter and shore dock. Once the proposed Project is operational impacts on the SAC are expected to result in **negligible** and **non-significant** effects as no access will be required to structures installed using HDD techniques. Maintenance activities in proximity to this SAC may include lighting and increased human presence within the landfall site. This is not considered likely to exceed that ordinarily encountered by members of the public visiting the area.

*Castlemartin Coast SPA*

151. The Castlemartin Coast SPA is located south of the onshore development area, with the nearest section, an area of sand dunes located 150 m south of the onshore site boundary at its nearest point. The SPA is designated for its breeding chough.
152. Once the proposed Project is operational any impacts on the SAC are expected to result in **negligible** and **non-significant** effects. Disturbance from lighting and maintenance activities that may impact chough would not be likely to exceed that ordinarily encountered at the current level by members of the public visiting the area.

West Wales Marine / Corllewin Cymru Foral SAC

153. The West Wales Marine SAC is located adjacent to the onshore development area, marine features within this SAC will be assessed in **Volume 3** of this ES.

Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC

154. During operation, the Project will have minimal impact on species associated with this SAC as maintenance works are anticipated to be minimal. Given that the SAC is approximately 3.4 km from the onshore substation at its closest, the of lighting this area is considered to have **negligible** and **non-significant** effects on designating features of this SAC.

Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro SPA

155. This SAC is located approximately 4.3 km from the onshore development area, marine features including seabirds within this SAC will be assessed in **Volume 3: Marine Environment** of this ES.

Broomhill Burrows SSSI:

156. This SSSI lies within the western extent of the onshore development area and overlaps with part of the Limestone Coast of South West Wales SAC. It is designated for dune habitats, invertebrates, rare vascular plants and bryophytes.
157. The proposed landfall of the cable route is located adjacent to the SSSI. Once the proposed Project is operational, impacts on the SAC are expected to result in **negligible** and **non-significant** effects.

Milford Haven Waterway SSSI:

158. The SSSI is approximately 0.4 km north of the onshore development area. At this distance, no direct impacts on habitats or species present within the SSSI boundary are anticipated during operation and maintenance. The SSSI is designated in part for greater and lesser horseshoe bat and otter populations. There is potential for artificial lighting during the operational phase of the proposed Project, particularly in proximity to the onshore substation as described above, to impact on the greater and lesser horseshoe bats associated with the SSSI as the onshore substation is within 2 km of the SSSI and therefore within the CSZ of lesser horseshoe bats present within the SSSI (BCT, 2020). Impacts as a result of this permanent lighting around the onshore substation on the populations associated with the SSSI are considered to be **minor adverse** and **non-significant**.

Angle Peninsula / Arfordir Penrhyn Angle SSSI:

159. Angle Peninsula SSSI is approximately 0.3 km west of the onshore development area. At this distance, maintenance and operations activities associated with the Project will have a negligible impact on habitats present within the SSSI. The SSSI is designated in part for greater and lesser horseshoe bats and chough populations. Given that minimal maintenance and



operations activities are required, and the onshore development area provides minimal suitable habitat for chough, negligible impacts are anticipated on the population during this stage. As described above, there is potential for the lighting of the onshore substation to cause impacts to greater and lesser horseshoe bats within the SSSI.

160. Combined, the impacts associated with the proposed Project are anticipated to result in a **minor adverse** and **non-significant** effect on the designating features of the SSSI.
161. Gweunydd Somerton Meadows SSSI
162. This designation is approximately 0.4 km south of the onshore development area. Given the distance from the onshore development area and the designation for fungi and small breeding populations of marsh fritillary butterfly and shrill carder bees, impacts to this SSSI during operation and maintenance are considered to result in **negligible** and **non-significant** effects.

Castlemartin Range SSSI:

163. The Castlemartin Range SSSI is approximately 0.4 km from the onshore development area. At this distance impacts on the habitats with the SSSI are not considered likely. There is potential for artificial lighting during the operational phase of the proposed Project, particularly at the onshore substation as described above, to impact on the greater and lesser horseshoe bats associated with the SSSI. Given that the onshore substation is approximately 3.1 km north of this SSSI, impacts of this lighting are considered to result in **negligible** and **non-significant** effects.

Castlemartin Corse SSSI

164. The Castlemartin Corse SSSI is approximately 0.4 km from the onshore development area. The site is designated for habitats including swamp and calcareous fen meadow. At this distance impacts on the SSSI from the operation and maintenance works within the onshore development area are considered unlikely and any effects are considered **negligible** and **non-significant**.

Bat Sites

165. The following SSSIs are all designated wholly or in part for their populations of bats which are of national importance:
- Orierton Stable Block and Cellars SSSI;
 - Scoveston Fort SSSI;
 - Stackpole SSSI;
 - Stackpole Courtyard Flats and Walled Garden SSSI; and
 - Park House Outbuildings, Stackpole SSSI
166. Given that these bat sites are all greater than 3 km (the CSZ for greater horseshoe bats; BCT, 2020) from the onshore substation, lighting of this area is anticipated to result in **negligible** and **non-significant** effects on species associated with these SSSIs.

Habitats

167. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary loss of habitat and linear features. However, this would be anticipated to be very small scale, highly localised and of a short-term duration.
168. Operational phase impacts on habitats are considered to result in **negligible** and **non-significant** effects.



Protected and Notable Species

Notable Plants and Fungi

169. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary vegetation removal. However, this would be anticipated to be very small scale, highly localised and of a short-term duration.
170. Operational phase impacts on notable plants and fungi are considered to result in **negligible** and **non-significant** effects.

INNPS

171. To ensure compliance with legislation, any operational phase works that have the potential to spread INNPS must follow best practice. All INNPS within the onshore development area will be subject to a Management Plan, to be drafted and approved by the LPA in advance of construction works associated with the Project. Any measures described within this should be also implemented during the operation and maintenance works and would result in **negligible** and **non-significant** effects.

Hazel Dormouse

172. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary vegetation removal. However, this would be anticipated to be very small scale, highly localised and of a short-term duration.
173. Permanent lighting from the substation may illuminate hedgerows, scrub and woodland adjacent to the substation. There is limited evidence on how artificial lighting impacts dormouse. If hedgerows, scrub and woodland are likely to experience high levels of artificial lighting, mitigation such as a sensitive lighting plan will be required.
174. Operational phase impacts on dormouse are expected to result in **negligible** and **non-significant** effects. In exceptional circumstances, should larger areas of dormouse habitat need to be removed, this will be completed following appropriate surveys and mitigation, under licence from NRW if necessary.

Badger

175. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary vegetation removal. However, this would be anticipated to be very small scale, highly localised and of a short-term duration.
176. Permanent lighting at the onshore substation may cause some disturbance to badger, however given the availability of alternative habitat and the species' adaptability, this impact is not considered significant.
177. To ensure compliance with legislation, if signs indicative of badger presence are found near working areas, works must stop until an ecologist has been consulted. Should a badger sett be identified during the works, a licence may be required to close the sett to allow works to proceed in the area. Methodology to be followed during subsequent works in proximity to the sett will be agreed with NRW in advance of the sett closure and must be complied with for the duration of the works.
178. Overall, maintenance and operations works associated with the Project are considered to result in a **negligible** and **non-significant** effect on badger.



Bats

179. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary loss of habitat and linear features. However, this would be anticipated to be very small scale, highly localised and of a short-term duration.
180. If maintenance activities are necessary during the operational phase that require excavations or the clearance of hedgerows, trees and/ or areas of scrub, such works will only take place following adequate protected species surveys to determine any licence requirements and mitigation measures.
181. Permanent lighting is anticipated at the onshore substation location, as described above. This has the potential to cause light spill onto adjacent habitats in use by foraging and commuting bats. Significant impacts have been recorded from as low as 3.6 lux (Stone *et al.*, 2012) for lesser horseshoe bats. It is anticipated that security lighting of up to 10 lux will be required at the entrance to the onshore substation, thus potentially preventing bats from using the linear feature entirely and effectively severing it. Given that this illumination is required in a small area and screen planting will be created to prevent this spilling into adjacent habitats, the impact is considered to result in a **minor adverse** and **non-significant** effect.

Otter

182. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary vegetation removal. However, this would be anticipated to be very small scale, highly localised and of a short-term duration. Should additional lighting be required to facilitate these works, this will not be directed onto watercourses. Operational phase impacts on otter are considered to result in a **negligible** and **non-significant** effect.

Other SPIs

183. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary vegetation removal. However, this would be anticipated to be very small scale, highly localised and of a short-term duration. As such, operational phase impacts on other SPIs are considered to result in a **negligible** and **non-significant** effect.

8.8.1. Decommissioning Impacts

184. Impacts of decommissioning are of a similar nature to construction impacts, but the future baseline is difficult to define given the 30-year operational lifetime of the proposed Project. It is anticipated that upon decommissioning the onshore cable would be left in-situ and, as such, there would not be any impact resulting from excavations, which is where most effects associated with the onshore cable originate from.
185. Any impacts would likely be as a result of the demolition of the substation and TJB, both of which are located in what are considered to be low value habitats. As protected species may have established within the enhanced habitats surrounding the substation, prior to any demolition taking place, all mitigation proposed for the construction phase would be adhered to. This would include pre-demolition surveys (for protected species and breeding birds) as well as the good practice works measures. Licencing requirements would need to be informed by the pre-demolition surveys in advance of any works commencing.
186. For works in proximity to designated sites, such as SSSIs and SACs, statutory consultation would be required and update HRAs undertaken.



8.9 Summary of Additional Mitigation Measures

187. In addition to embedded mitigation outlined in **Section 8.7** the following additional mitigation measures will be incorporated into the proposed Project as specified in the CEMP:

- Where the removal of a hedgerow is required, this should be undertaken in the winter months when bats are hibernating (i.e. November-March). Suitable alternative commuting routes must be available for bats once they arise from hibernation in the spring (April). Where works are still required, or replanting is not yet fully established, this may include temporary measures such as the use of heras fencing and barrels mounted with vegetation to be placed into any gaps overnight. Night-time working should be avoided as far as possible to limit the impact of disturbance on bats present within the onshore development area. Where night working and associated lighting cannot be avoided, screening must be provided to direct bats to intact flyways (retained woodland and hedgerows). Where large areas of works are required, such as during the construction of the onshore substation and TJB, temporary screening should be implemented to direct foraging and commuting bats away from the works area. This should include the use of fencing and screens with green mesh or willow screens attached. Where possible, dead or temporary hedging should be implemented to reinforce the flight line and encourage bats to use them. Dead hedging may be incorporated to this, by stacking removed vegetation, including woody material where appropriate, into sections a similar height and width to the removed hedgerow.
- Scrub and tree planting will be created around the perimeter of the onshore substation. This planting will include a diverse range of suitable locally native species with dormouse suitability. This habitat will link into the existing hedgerow to maintain connectivity.
- Where works are required within a watercourse, fencing utilised to direct otters onto new watercourse route and away from the works area will be provided. Any lighting will be managed to prevent spill onto watercourses, or temporary fencing retaining dark corridors will be provided to allow otter to continue to move throughout the landscape.
- A pre-construction survey for chough will be conducted to identify any breeding individuals. Should they be present, disturbance impacts will be avoided through the implementation of an exclusion zone in which no works will take place until after all young have fledged.
- Dormouse surveys of habitat with suitability will be undertaken, including a EPSML if dormouse are identified.
- A full season of bat activity surveys will be undertaken to inform appropriate mitigation for chosen substation location in advance of the commencement of works.
- Removal of woodland, scrub and hedgerows will take place following a two-stage process, whereby the first stage would reduce vegetation to 300 mm above ground in the winter months. Remaining vegetation removed or translocated in the spring (April/May) to avoid impact to dormouse potentially hibernating within the habitat.

8.9.1. Monitoring

188. An Ecological Clerk of Works role or Environmental Champion role during construction will provide monitoring of mitigation during work, for example checking otter fencing is intact, checking bat screening is intact and being correctly installed and that any buffer zones are being respected.
189. Monitoring the success of new planting, including replacement of failed plants, will be undertaken in line with best practice with a minimum 5-year landscape and ecological management plan.



- 190. The need for any EPSML monitoring (dormouse) will be confirmed following surveys.
- 191. The need for any bat activity monitoring will be confirmed following surveys.

8.10 Summary of Effects and Conclusions

- 192. **Table 8-15** below summarises the residual significant effects of the proposed Project on all ecological receptors following the implementation of mitigation.



Table 8-15. Assessment summary

Ecological Receptor	Importance	Potential Impact	Construction/ Operation	Embedded Mitigation and Additional Mitigation	Significance of Effect
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC	International	None – all impacts avoided through the utilisation of HDD techniques	N/A	Pollution control measures Avoidance of works within SAC	Negligible
Pembrokeshire Marine / Sir Benfro Forol SAC	International	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Construction Operation	Implementation of a CEMP, including directional lighting, screening where required and maintenance of dark corridors.	Minor adverse
Castlemartin Coast SPA	International	Habitat loss Disturbance to breeding chough	Construction Operation	Implementation of works exclusion zones following pre-works survey for breeding chough.	Negligible
West Wales Marine / Corllewin Cymru Foral SAC	International	None – no works required in proximity to SPA	N/A	N/A	Negligible
Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlum Sir Benfro a Llynnoedd Bosherton SAC	International	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Construction Operation	Implementation of a CEMP, including directional lighting, screening where required and maintenance of dark corridors.	Minor adverse
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a moroedd Benfro SPA	International	None – no works required in proximity to SPA	N/A	N/A	Negligible
Castlemartin Range SSSI	National	Habitat damage as a result of changes to ground water flow from de-watering activities.	Construction	Groundwater Risk Assessment will assess potential for groundwater ingress and outline the dewatering strategy to be adopted. Implementation of a CEMP	Negligible



Ecological Receptor	Importance	Potential Impact	Construction/ Operation	Embedded Mitigation and Additional Mitigation	Significance of Effect
Castlemartin Corse SSSI	National	Habitat damage as a result of pollution from de-watering activities or changes to ground water flow from de-watering.	Construction	Groundwater Risk Assessment will assess potential for groundwater ingress and outline the dewatering strategy to be adopted. Implementation of a CEMP	Negligible
Stackpole SSSI	National	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Construction Operation	Implementation of a CEMP, including directional lighting, screening where required and maintenance of dark corridors.	Negligible
Stackpole Courtyard Flats and Walled Garden SSSI	National	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Construction Operation	Implementation of a CEMP, including directional lighting, screening where required and maintenance of dark corridors.	Negligible
Park House Outbuildings, Stackpole SSSI	National	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Construction Operation	Implementation of a CEMP, including directional lighting, screening where required and maintenance of dark corridors.	Negligible
Habitats	Site – International	Damage and destruction	Construction	Implementation of CEMP to keep habitat loss to a minimum, to include reinstatement of all habitats following the completion of works.	Minor adverse
Notable plants	Site - International	Damage and destruction of suitable habitat	Construction	Implementation of CEMP to keep habitat loss to a minimum, to include reinstatement of all habitats following the completion of works.	Minor adverse
Fungi and Bryophytes	Local - National	Damage and destruction of suitable habitat	Construction	Habitat restoration protocols to be outlined in CEMP and PWM	Minor adverse
Terrestrial Invertebrates	Site - National	None – suitable habitat within the onshore development area is limited	Construction	Habitat restoration protocols to be outlined in CEMP and PWM	Negligible



Ecological Receptor	Importance	Potential Impact	Construction/ Operation	Embedded Mitigation and Additional Mitigation	Significance of Effect
Great crested newt and other amphibians	Site	Temporary habitat loss and fragmentation Killing of individuals	Construction	Habitat restoration and phased habitat clearance protocols to be outlined in CEMP and PWM	Negligible
Reptiles	Local – County	Temporary habitat loss and fragmentation Killing of individuals	Construction	Habitat restoration and phased habitat clearance protocols to be outlined in CEMP and PWM	Negligible
Birds (excluding chough)	Local	None – works to be timed to avoid breeding bird season or implement species-specific buffers should breeding birds be identified during pre-works surveys	Construction	Implementation of CEMP to avoid impacts to birds within the onshore development area.	Negligible
Chough	Local	None – works to avoid impacts to breeding birds through the implementation of works exclusion zones	Construction	Implementation of no works exclusion zones to be informed by the pre-works survey for breeding chough	Negligible
Hazel dormouse	County	Temporary habitat loss and fragmentation Killing and disturbance of individuals	Construction	Phased habitat clearance protocols	Minor adverse
Water vole	N/A	None – water vole considered extinct from Wales, minimal suitable habitat present within the onshore development area	Construction	None required	Negligible
Badger	Local	Temporary loss of foraging habitat Disturbance to badgers in a sett Destruction and damage to badger setts	Construction	Works to follow methodology outlined in PWM, including pre-works survey for badger sett	Minor adverse



Ecological Receptor	Importance	Potential Impact	Construction/ Operation	Embedded Mitigation and Additional Mitigation	Significance of Effect
Bats	Greater and lesser horseshoe - International All other bat species - Local.	Temporary and permanent loss of foraging and commuting habitat through the removal and illumination of hedgerows. Disturbance to bats potentially roosting in structures and trees within and adjacent to the onshore development area	Construction Operation	Landscaping to provide buffering from noise, light and human presence within the onshore substation during operation. Implementation of a CEMP to maintain a dark corridor to encourage foraging and commuting bats away from construction zones. Temporary structures to be utilised to maintain connectivity of commuting features.	Minor adverse
Otter	County	Disturbance to otter within a holt Disturbance to foraging and commuting otter within a watercourse	Construction	Implementation of a CEMP to avoid impacts as far as possible, to be informed by a pre-works survey for otter holts. Fencing to be used to direct otters to new watercourse routes where works cannot be avoided. Light spill to be managed to maintain dark corridors.	Minor adverse
Other SPIs	Site	Killing individuals	Construction	CEMP will include measures to carry out pre-works surveys, landscaping will reinstate all habitats subject to temporary loss.	Negligible
INNPS	As INNPS have no nature conservation value they cannot be valued using the same approach as the other ecological features.	Spread throughout the site and to adjacent areas	Construction Operation	INNPS Management Plan to be implemented, including methodology to avoid further spread	Negligible



8.11 Cumulative Effects of the Project

8.11.1. Introduction

193. Cumulative effects are those effects upon receptors arising from the proposed Project alongside all existing, and / or reasonably foreseeable projects, plans and activities that result in cumulative effects with any element of the proposed Project. Existing projects are generally considered as part of the baseline and as such are considered within the impact assessment presented in **Section 8.8** above.
194. This Section assesses potential cumulative effects on terrestrial ecology from identified projects, plans and activities that have the potential to act cumulatively with the proposed Project.
195. PINS Advice 17: Cumulative Effects Assessment (2019) suggests that CEA follows a four-stage process. The aim of this approach is to accurately determine relevant projects and associated relationships with scoped in receptors identified in the ES, to be included within the interproject CEA.
196. The approach to the assessment of cumulative effects is detailed in **Appendix 5B: Approach to Cumulative Effects Assessment** and is also summarised in **Table-8-166**.

Table-8-166 PINS Advice 17 Stages of the CEA process

CEA Stage	Activity
<i>Stage 1</i>	Determine a zone of influence (Zol) via desk study for each topic receptor scoped into the ES. This will enable a <i>long list</i> of projects within each Zol that will be shortlisted in Stage 2. This list of plans and projects/activities is drawn up through a desk study of planning applications, development plan documents, relevant development frameworks and any other available sources to identify ‘other development’ within the Zol. Information on each project (location, development type, status, etc.) is documented, along with the certainty or tier assigned to the ‘other development’ (i.e. confidence it will take place in the current form and when it will take place in relation to the project). PINS notes that the project should then consult with the relevant planning authority/ authorities and statutory consultees regarding the long list.
<i>Stage 2</i>	Screening of the long list identified in Stage 1, to establish a short list for the CEA. Screening is based on the criteria presented in the scoping report and subsequent comments by the regulator and statutory consultees. PINS has provided inclusions/ exclusion threshold criteria, against which the potential for ‘other development to give rise to significant cumulative effects by virtue of overlaps in temporal scope, the scale and nature of the ‘other developments’ and / or receiving environment, or any other relevant factors is assessed. From this assessment, a shortlist of ‘other developments’ to be included in the CEA is produced. It is noted that documented information on each of the ‘other developments’ is likely to be high level at this stage, outlining the key issues to take forward.
<i>Stage 3</i>	Gathering of all information available on short listed projects generated in Stage 2. At this stage all available data and information about the shortlisted projects that will be included in the CEA is collected to inform the assessment. This should utilise the most current information for each project in the public domain and assess the assumptions and limitations of the information collected on each shortlisted project.
<i>Stage 4</i>	Each of the shortlisted projects are reviewed in turn by the different topics to assess whether cumulative effects may arise and the nature of those effects (i.e. beneficial or adverse). The significance of the effects on environmental receptors



CEA Stage	Activity
	is established within each ES technical chapters. Where significant adverse cumulative effects are identified, mitigation measures are also considered within the CEA alongside the mechanism to secure that mitigation, e.g. consent condition requirements.

8.11.2. *Scope of Terrestrial Ecology Cumulative Effects Assessment*

- 197. The following impacts have been scoped into the CEA for terrestrial ecology. Cumulative effects on terrestrial ecology and biodiversity may arise from the interaction of impacts from the proposed Project during the construction and operational phase and impacts from other planned or consented projects in the wider vicinity of the proposed Project. The primary cumulative effects anticipated affect bats and hazel dormice.
- 198. A Cumulative Effects Assessment has been made based on existing and proposed developments in the Study Area, following the approach described in **Appendix 5B: Cumulative Effect Approach**.
- 199. Where no significant impacts have been identified for other habitats or species in other projects, cumulative effects are not anticipated and have been scoped out of this assessment. Only the ecological receptors (designated sites, bats and dormice) where other projects have been determined to have significant adverse impacts pre- mitigation measures, have been considered.
- 200. As detailed in **paragraphs 74 and 148**, the greatest risk of impact to bats from the proposed Project is related to loss of habitat connectivity and artificial lighting during the construction and operational phases of the development. Accordingly, the greatest risk for cumulative impacts would be expected to relate to these effect pathways. The maximum spatial extent of potential effects (ZOI) identified within this assessment are determined by the core sustenance zones (CSZs) for different bat species, which has been determined by the Bat Conservation Trust (BCT) through a thorough literature review. Hence, plans or projects with potential to overlap spatially with these CZSs have been subject to the cumulative assessment.
- 201. As detailed in **paragraph 125**, the greatest risk of impact to dormice from the proposed Project is through hedgerow loss during the construction phase of the development. The greatest risk for cumulative impacts would be expected to be related to habitat fragmentation. Hence, plans or projects with potential to overlap spatially/temporally or within connected hedgerow and woodland habitat with this Zone of Influence have been subject to the cumulative assessment.
- 202. **Table 8-17 and Volume 5: Figure 8-11** presents the short list of projects identified and included within the CEA for terrestrial ecology.

Table 8-17 List of projects considered for the terrestrial ecology cumulative effects assessment

Project Name/Developer	Project Type	Tier and Status	Approx. distance from the proposed Project
Erebus/Blue Gem Wind	Offshore wind	Consent Authorised	<i>Within onshore development area</i>
Valorous/Blue Gem Wind	Offshore wind	Scoping opinion issued	<i>Within onshore development area</i>



Project Name/Developer	Project Type	Tier and Status	Approx. distance from the proposed Project
Greenlink Interconnector/ Greenlink Interconnector Limited	Interconnector	Under construction	<i>Within onshore development area</i>
Pembroke Power Station Hydrogen Electrolyser	Energy	Scoping opinion issued	<i>Within onshore development area</i>
Battery energy storage system at Pembroke Power Station	Energy storage	Scoping opinion issued	<i>Within onshore development area</i>
Proposed Battery Energy Storage System Hundleton	Energy storage	Scoping opinion issued	<i>Within onshore development area</i>

8.11.3. *Cumulative Effect Assessment*

Designated Sites

Bat Sites:

203. The following sites are all designated wholly or in part for their populations of bats which are of international or national importance:

- Limestone Coast of South West Wales SAC
- Pembrokeshire Bat Sites and Bosherton Lakes SAC, which encompasses:
 - Orielson Stable Block and Cellars SSSI;
 - Scoveston Fort SSSI;
 - Stackpole SSSI;
 - Stackpole Courtyard Flats and Walled Garden SSSI; and
 - Park House Outbuildings, Stackpole SSSI.

204. There is potential for cumulative impacts upon bat populations associated with these designated sites, which is discussed in the bat section below.

Protected Species

Bats

Construction

205. During the construction phase of the proposed Project there is potential for temporary and permanent loss of habitat and linear features. It is considered likely that similar clearance activities will be required for the Erebus, Valorous, Greenlink Interconnector, Pembroke Power Station Hydrogen Electrolyser, Battery energy storage system at Pembroke Power Station and Proposed Battery Energy Storage System Hundleton projects. In combination with the proposed Project, this could result in larger landscape scale hedgerow losses. Works during construction are to take place in the daytime, and won't require additional artificial lighting, construction lighting is therefore not considered.



206. All of the developments featured in the short-list were assessed to have negative impacts on foraging and commuting bats pre-mitigation measures, either through destruction of linear flight corridors or artificial lighting. However, it was considered post-mitigation measures such as replanting of hedgerows, screening, and the implementation of sensitive lighting plans that no residual impact on bats remained.
207. Given that the distances between these developments and the proposed Project are within the CSZs for some of the bat species detected in ecology surveys of these other developments, it is likely that the same population of bats, which may form part of the Pembrokeshire Bat Sites and Bosherton Lakes SAC designation, would be subject to similar impacts including disruption to flight lines, illumination of foraging and commuting habitats and roost loss or disturbance. No additional roosts are anticipated to be lost as part of the proposed Project. It is anticipated that instatement of hedgerows and other habitats, included as mitigation for the Erebus, Valorous and Greenlink Interconnector, Pembroke Power Station Hydrogen Electrolyser, Battery energy storage system at Pembroke Power Station and Proposed Battery Energy Storage System Hundleton projects may need to be removed, depending on the time frame of the projects, during the construction of the proposed Project. This removal would increase the time frame of the recorded temporary impacts associated with these projects. However, appropriate mitigation to maintain commuting routes will be used during the construction of the proposed Project (as outlined in **paragraph 75**), such as the use of Heras fencing and barrels mounted with vegetation to be placed into any gaps overnight. This additional impact is anticipated to result in a **minor adverse** and **non-significant** effect on bat populations.

Operation

208. During the operational phase of the proposed Project where occasional repair and maintenance works are required on the substation or the onshore cable, there is some potential for temporary loss of habitat and linear features. However, it is anticipated to be very small scale, highly localised and of a short-term duration. It is considered likely that similar maintenance activities will be required for the Erebus, Valourous and Greenlink Interconnector projects. In combination with the repair works associated with the proposed Project, this could result in small temporary losses of hedgerows. In combination this is anticipated to result in **negligible** and **non-significant** effects on bat populations.
209. At the onshore substation of the proposed Project, permanent lighting may adversely impact bats by illuminating hedgerows and scrub used for foraging and commuting. The Erebus, Valorous and Greenlink Interconnector projects will require similar constructions with similar lighting schemes. The locations of these projects is illustrated in **Volume 5: Figure 8-10**. Given that the combined lighting of these substations is still considered small scale the impacts associated with the lighting is anticipated to result in a **minor adverse** and **non-significant** effect on bat populations in the local area.

Hazel Dormice

Construction

210. Dormice are presumed to be present across the onshore development area and may be affected by habitat loss and severance between habitats, and could potentially injure or kill individual dormice, during the construction phase. Where the removal of hedgerows, woodland and scrub cannot be avoided, this loss is anticipated to be temporary as all habitats not associated with the onshore substation and TJB will be reinstated. The only permanent habitat loss is anticipated to be a small section of hedgerow for the access track to the onshore



substation. This loss of permanent habitat is anticipated to be compensated for through the creation of scrub and trees surrounding the substation. If this habitat connects to the existing hedgerow habitat connectivity would be retained.

211. Projects Erebus, Valourous and Greenlink Interconnector also assumed that dormice were present throughout their respective study areas. In all three projects it was concluded that the removal of sections of hedgerow would fragment dormouse habitat and potentially injure or kill individual dormice.
212. The Erebus project plans to undertake construction and vegetation clearance sectionally, with open trenching of discrete sections at any one time. They determined that impacts will therefore be restricted to small working areas and the short-term duration of such operations will be limited, and have committed to replace lost hedgerows, trees and areas of scrub but to reinstate defunct and fragmented hedgerow habitat that lies adjacent to the onshore cable corridor along the route. When proposed mitigation measures are considered, Erebus concluded that impacts on dormice were negligible. Greenlink made a similar assessment and concluded with mitigation that resultant effect would be not significant. Valourous have not published a detailed dormouse assessment or mitigation plan, at time of writing. Though it can be assumed that a similar approach to Erebus and Greenlink will be undertaken, as these are standard mitigation measures.
213. Whilst the other three projects conclude that the impacts on dormice will be not significant, as each individual project will only result in localised areas of habitat loss, when considered in combination with each other, and Pembroke Power Station Hydrogen Electrolyser, Battery energy storage system at Pembroke Power Station and Proposed Battery Energy Storage System Hundleton, and this proposed Project widespread disturbance, habitat loss and fragmentation is likely to occur which is considered a permanent, **moderate adverse** and **significant impact** on dormice.

Operation

214. Where occasional repair works are required on the substation or the onshore cable, there is some potential for temporary vegetation removal. However, this would be anticipated to be very small scale, highly localised and of a short-term duration. Operational phase effects on dormice are considered **negligible**.
215. Projects Erebus, Valourous and Greenlink Interconnector are also likely to require localised, temporary vegetation clearance to facilitate maintenance and repairs. Whilst the other three projects also conclude that the impacts on dormice will be **negligible**, as each individual project will only result in localised areas of habitat loss, when considered in combination with each other and this proposed Project habitat loss will still be small in extent and temporary. As such, it is considered to result in a **negligible** and **non- significant** effect on dormice.

Recommendations

216. Pembrokeshire County Council should also be consulted to determine a timeline of development for the other projects in the area. In collaboration with the other projects every effort should be made to ensure that habitat losses are not simultaneous, to avoid a large area of suitable dormouse habitat being destroyed at once. It may be possible and favourable to combine some of the vegetation clearance if cable routes are shared, as this would minimise disturbance. If mitigation and construction timeframes can be combined, then it may be possible to reduce the significance of effects.



8.12 Inter-related Effects of the proposed Project

217. The term 'Inter-related' takes into account the environmental interactions ('inter-relationships') with other receptors within the proposed Project. These are referred to in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 and further described in **Chapter 31 – Inter-related Effect Assessment**.
218. As set out in PINS Advice Note 17 (PINS), 2019, *inter-related -project effects*, or 'interrelationships between topics', derive from combinations of different project specific impacts which, when acting together on the same receptor, could result in a new or different effect, or an effect of greater significance than the project effects, when considered in isolation.
219. Inter-related effects comprise the following:
220. *Project lifetime effects*: effects that have the potential to occur during more than one phase of the proposed Project (i.e. construction, operation and maintenance and decommissioning) and also to interact in a way that could potentially create a more significant effect than if it was assessed in isolation.
221. *Receptor-led effects*: effects that have the potential to interact, spatially and temporally, to create inter-related effects on a receptor.
222. **Chapter 31: Inter-related Effects Assessment** details the approach to the inter-related effects assessment and includes a description of the likely inter-related effects that may occur as a result of the proposed Project on terrestrial ecology.
223. The assessment of inter-related effects on terrestrial ecology has been scoped out of the inter-related effects assessment. The impacts and effects set out and assessed in this chapter inherently take into consideration potential inter-relationships between impacts and effects on terrestrial ecology and other chapters assessed for this ES. This included the assessment for the following chapter:
- **Chapter 7: Seascape, Landscape and Visual;**
 - **Chapter 10: Water Environment;**
 - **Chapter 12: Agriculture and Soils;**
 - **Chapter 14: Air Quality; and**
 - **Chapter 15: Noise and Vibration.**

8.13 Transboundary Effects

224. A transboundary effect refers to the impacts or effects of a project that extend beyond the boundaries of the United Kingdom and have the potential to affect the environment of other countries within the European Economic Area (EEA). These effects can occur either from the proposed Project on its own or when combined with the effects of other projects or activities in the wider geographical area.
225. In terms of the impacts on terrestrial ecology receptors, impacts will be localised to the extent of the onshore Study Area. Given the intervening distance to neighbouring European Economic Area (EEA) states, there is no potential for transboundary impacts and resultant effects to occur.



8.14 References

- Bat Conservation Trust (BCT), 2020. Core Sustenance Zones and habitats of importance for designing Biodiversity Net Gain for bats. Bat Conservation Trust, London. Available at <https://cdn.bats.org.uk/uploads/pdf/Bat-Species-Core-Sustenance-Zones-and-Habitats-for-Biodiversity-Net-Gain.pdf>. [Accessed: 06 February 2024].
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