LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Volume 6: Appendix 8B – Preliminary Ecological Assessment (PEA) Report

August 2024

Prepared by: Llŷr Floating Wind Ltd.

FLOVENTIS ENERGY

Document Status

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Acronyms and abbreviations

Acronym or abbreviation	Definition	Acronym or abbreviation	Definition
ASNW	Ancient Semi-Natural Woodland	NRAP	Nature Recovery Action Plan for Pembrokeshire
BCT	Bat Conservation Trust	NRW	Natural Resources Wales
BoCC5	Birds of Conservation Concern 5	NVC	National Vegetation Classification
CEMP	Construction Environmental Management Plan	OS	Ordnance Survey
CRoW	Countryside and Rights of Way Act	PAWS	Plantation on Ancient Woodland Site
CSZ	Core Sustenance Zone	PEAR	Preliminary Ecological Appraisal Report
ECoW	Ecological Clerk of Works	PPG	Pollution Prevention Guidelines
EPSML	European Protected Species Mitigation Licence	PPW	Planning Policy Wales
GPPS	Guidance on Pollution Prevention	PRA	Preliminary Roost Assessment
HRA	Habitats Regulation Assessment	PSYM	Predictive System for Multimetrics
IASO	Invasive Alien Species Order	RAWS	Restored Ancient Semi-Natural Woodland
IEF	Important Ecological Features	RPZ	Root Protection Zone
INNPS	Invasive and Non-Native Plant Species	SCA	Special Area of Conservation
JNCC	Joint Nature Conservation Committee	SPA	Special Protection Area
LBAP	Pembrokeshire Local Biodiversity Action Plan	SSSI	Site of Special Scientific Interest
LSE	Likely Significant Effects	TANs	Technical Advice Notes
MAGIC	The Multi-Agency Geographic Information for the Countryside	TNs	Target Notes
MB	Mammal Burrows	WCA	Wildlife And Countryside Act
NBB	Net Benefits for Biodiversity	WTG	Wind Turbine Generators
NBWs	Nighttime Bat Walkovers	WWBIC	West Wales Biodiversity Information Centre
NNR	National Nature Reserve	ZoI	Zone of Influence

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 Limited is a wholly owned subsidiary.
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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Executive Summary

Site Details	AECOM was instructed by Llŷr Floating Wind Limited to carry out a Preliminary Ecological Appraisal (PEA) on land between Freshwater West and Pembroke Power Station in Pembrokeshire, south-west Wales (hereafter referred to as 'the onshore development area').
Scheme Details	Llŷr Floating Wind Limited is proposing to develop the Llŷr Project; the purpose of which is to provide a facility to demonstrate new models of floating offshore wind technology. The ecological constraints associated with the terrestrial cable route and potential substation location connected to the proposed Llŷr Floating Offshore Wind Project (hereafter referred to as 'the proposed Project') is this focus of this PEA Report (PEAR).
Ecological Features that may be affected by the proposed Project	• There are two internationally designated sites within the onshore development area boundary: Castlemartin Coast Special Protection Area (SPA) and the Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru Special Area of Conservation (SAC). The Pembrokeshire Marine / Sir Benfro Forol and West Wales Marine SAC are also present directly adjacent to the west of the south-western onshore development area. • There is one nationally designated site within the onshore development area; Broomhill Burrows Site of Special Scientific Interest (SSSI) located at the south-western end of the onshore development area. • One SAC and five SSSIs are located within 2 km of the onshore development area designated for their flora and fauna and a further one SAC and five SSSIs are located within 10 km of the onshore development area which are designated as supporting populations of bats. Depending on the final land take of the proposed Project, potential impacts to internationally and nationally designated sites are anticipated. Vegetation removal within the onshore development area could result in: • Temporary loss of badger foraging, commuting and sett creation habitat as well as impacts to active setts within the onshore development area. • Loss of bat foraging and commuting habitat as well as potential roosts within trees identified as having bat roosting potential. Five trees identified as PRF-I and one assessed as having PRF-M suitability. • Impacts to protected and notable bird species breeding/nesting within the woodland. • Impacts to protected and notable invertebrate species. • Impacts to reptiles and amphibians. • Impacts to hazel dormouse through habitat loss. • Loss of waterbodies P2 and P3 could impact the following: • Impacts to potentially notable macroinvertebrate and/or macrophyte assemblages within the water bodies.
Recommendations for further survey and assessment	Depending on the final land take of the proposed Project, further surveys and assessments should include: • A pre-commencement check for badger no more than 48 hours prior to the start of construction works for the proposed Project. • Targeted surveys for bats in trees identified as having bat roosting potential; T2 assessed as having PRF-M requires three aerial (close) inspections to establish roost presence or likely absence will be required if direct impacts are anticipated following the Bat Survey Guidelines[1].

[1] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

	• Full season of bat activity surveys • Hazel dormouse surveys of impacted hedgerows and scrub • Aquatic Macroinvertebrates/macrophytes - pond PSYM (Predictive SYstem for Multimetrics) surveys are recommended if ponds within the onshore development area are impacted. • A walkover for invasive and non-native plant species (INNPS) prior to works commencing.
Recommendations for Mitigation	Specific mitigation measures will be recommended following completion of the aforementioned surveys, and in their absence the following general mitigation recommendations are made: • Avoidance of vegetation clearance within designated sites, including the Broomhill Burrows SSSI, Limestone Coast of South West Wales SAC and Castlemartin Coast SPA; • Avoidance of works within 30 m of badger sett (reduced to 10 m if using hand tools) and the maintenance of habitat connectivity for badger within the Survey Area; • Timing of vegetation clearance to avoid the hibernation season for reptiles; • Timing of vegetation clearance outside of nesting bird season or undertake a nesting bird check to confirm absence prior to construction commencing; • The works should follow precautionary working methods outlined in a Construction Environmental Management Plan (CEMP) which will be prepared prior to the commencement of works and implemented during construction to prevent adverse impacts to areas of retained habitat; • Area of known INNPS should be avoided and/ or managed appropriately.

8-BINTRODUCTION

8.1 Background

1. This Preliminary Ecological Appraisal Report (PEAR) has been prepared by AECOM on behalf of Llŷr Floating Wind Limited (hereafter referred to as 'the Applicant'), to assess ecological constraints in connection with the terrestrial cable route and potential substation location associated with the proposed Llŷr Floating Offshore Wind Project (hereafter referred to as the 'proposed Project'). The proposed Project is located on land between the Freshwater West coast to the south-west and the Pembroke Power Station to the north-east, in Pembrokeshire, as shown in **Volume 5: Figure 8-1**. All land situated within this red line is hereafter referred to as the 'onshore development area'.

2. The assessment of ecological constraints has been undertaken with reference to current good practice[2] and forms part of the technical information commissioned by the Applicant in connection with the proposed Project. The PEAR addresses relevant wildlife legislation and planning policy as summarised in **Appendix A** and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development.*

3. Further ecological surveys and/ or ecological impact assessment (including detailed mitigation measures) may be required in connection with a planning application or to contribute to an Environmental Impact Assessment once the proposed Project details have been finalised and any required surveys have been completed.

8.1.1. The Proposed Project

4. The Applicant is proposing to develop the Llŷr 1 Floating Offshore Wind Farm (the proposed Project), located approximately 35 km off the coast of Pembrokeshire in the Celtic Sea.

5. 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.

6. This report outlines the results of the field survey undertaken by AECOM in 2023 and focusses on the onshore proposed Project infrastructure, including temporary construction compounds, cable routes and substations. This report identifies potential impacts and effects of the proposed Project on terrestrial ecological features during construction, operation and decommissioning. It also suggests mitigation and good practice measures to minimise the impacts of the proposed Project on terrestrial ecological features. Suitable monitoring measures are also suggested, where relevant. It is understood the proposed Project will require the temporary loss of habitats for the proposed cable route and permanent habitat loss for the potential substation. It is also understood that directional drilling of the proposed export cables will occur beneath the designated sites within the western portion of the onshore development area.

8.1.2. The Onshore Development Area

7. The onshore development area consists of a proposed cable route that runs from Freshwater West eastward to Pembroke Power Station and a potential substation (**Volume 5: Figure 8-1**). To the west at Freshwater West there are coastal habitats including a dune system and

[2] CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

internationally designated sites including the Castlemartin Coast Special Protection Area (SPA) and Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru Special Area of Conservation (SAC) which are located within the onshore development area. The habitats transition into arable and pasture farmland towards the east with hedgerow margins and small areas of woodland/scrub located throughout.

8. The wider landscape is dominated by farmland on the peninsula on which the onshore development area is situated. The town of Pembroke and the Pembroke River lie to the east, which drains into the Milford Haven waterway and estuary, with the town of Milford Haven to the north and the Pembrokeshire coast and open ocean to the west.

8.1.3. The Survey Area

9. The survey area utilised for this PEA included the onshore development area, where accessible, plus a 30 m buffer (hereafter referred to as the 'Survey Area'). A 'Study Area' is included to identify ecological receptors in proximity to the Survey Area. This included a search of designated sites, notable habitats[3] and protected notable species including invasive non-native plant species (INNPS)[4] within 2 km of the onshore development area. The Study Area was extended to 5 km for internationally designated sites and 10 km for sites designated for bats.

8.1.4. Purpose of the Preliminary Ecological Appraisal

10. This PEAR presents ecological information obtained during the following:

- A desk-study undertaken in May 2023, to obtain information regarding species and surrounding habitats within the Study Area, see **Appendix B** for further detail).

11. A walkover survey of accessible land within the Survey Area between 3 August 2023 and 13 October 2023, which included a Phase 1 walkover of all accessible land, a badger survey and a Preliminary Roost Assessment (PRA) of structures and trees for bats. The purpose of the PEAR is to provide a high-level ecological appraisal of the onshore development area, specifically to:

- Establish baseline conditions and determine the presence of Important Ecological Features (IEF)[5] (or those that could be present), as far as is possible;
- Identify potential ecological constraints for mitigation, where possible, including mitigation measures that will be required and those that may be required (depending on results of further surveys or final scheme design); and
- Establish any requirements for more detailed surveys.

12. In addition to the extended Phase 1 habitat survey outlined in this report, a full badger (*Meles meles*) survey of land and a Preliminary Roost Assessment (PRA) of structures and trees within

[3] Notable habitats are those considered to be of key significance to sustain and improve biodiversity in Wales and are listed under Section 7 of the Environment (Wales) Act 2016; habitats listed under the *Pembrokeshire Local Biodiversity Action Plan[3] (LBAP) July 2011*, and *Nature Recovery Action Plan for Pembrokeshire[3] (NRAP) June 2018;* hedgerows identified as being 'important' under the wildlife criteria of the *Hedgerow Regulations 1997*; ancient woodlands and veteran trees.

[4] Notable species are those considered to be of key significance to sustain and improve biodiversity in Wales and are listed under Section 7 of the Environment (Wales) Act 2016; any species listed in an IUCN Red Data Book; and any other species listed under the *Pembrokeshire Local Biodiversity Action Plan[4] (LBAP) July 2011*, and *Nature Recovery Action Plan for Pembrokeshire[4] (NRAP) June 2018*. As well as Invasive Non-native Plant Species (INNPS) as listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* and *Schedule 2 of the Invasive Alien Species Order (2019*).

[5] Important Ecological Features are habitats, species, ecosystems and their functions and processes that are of conservation importance and could potentially be affected by the Scheme.

the onshore development area was undertaken to assess their value for roosting bats, where necessary.

13. The methodology followed when undertaking the desk-study and field surveys is detailed in **Appendix B**, including any limitations to the assessment.

8.2 Legislation

14. The following legislation relating to biodiversity is potentially relevant to the proposed Project:

- Wildlife And Countryside Act (WCA) 1981 (as amended);
- Environment (Wales) Act 2016;
- Countryside and Rights of Way (CRoW) Act 2000;
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Protection of Badgers Act 1992;
- The Invasive Non-native Species (Amendment etc.) (EU Exit) Regulations 2019; and,
- The Hedgerow Regulations 1997.

15. The above legislation has been considered when planning and conducting this ecological assessment using the methods described in **Appendix B**, when identifying potential constrains to the proposed Project. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed Project.

8.3 Ecological Baseline, Constraints and Recommendations

16. The following sections detail the results of the desk and field-based studies undertaken to inform this PEAR. Where necessary, recommendations for mitigation measures to protect known IEFs, or further surveys to determine the presence or likely absence of likely IEFs, are provided.

17. With regard to background data, 'recent' records are considered to be those no older than 10 years from the date of the desk-study. Records outside of this period are historical and have only been reported where more recent records for a feature do not exist. Exceptions to this are detailed in the appropriate sections below.

8.4 Designated Sites

8.4.5. Desk Study

18. **Table 8B-1** summarises the statutory designated sites situated within the Study Area. These are also shown in **Volume 5: Figure 8-2**. No locally designated (non-statutory) sites were identified within 2 km of the onshore development area during the desk study.

19. There is no ancient woodland within the onshore development area, however there is one area of Restored Ancient Semi-Natural Woodland (RAWS) approximately 0.55 ha in size directly adjacent to the north of the onshore development area.

Table 8B-1. Designated sites within study area, including those designated for bats within 10 km of the onshore development area.

Designated Site	Reason for Designation[6]	Location of Designated Site[7]
Internationally Important Designations		
Castlemartin Coast SPA	An area of 'outstanding' marine habitat consisting of exposed limestone sea-cliffs, bare headlands, short-sward grasslands, maritime heaths and dune systems. The cliffs support a range of maritime plant communities. The site qualifies for 12- 14 pairs of breeding chough (*Pyrrhocorax pyrrhocorax*) (about 4% of the British population). Notable also are up to 2 pairs of peregrine (*Falco peregrinus),* and regionally important cliff-nesting seabird populations, principally at Elegug Stacks, including guillemot (*Uria aalge*), razorbill (*Alca torda*), kittiwake (*Rissa tridactyla*), and several pairs of puffin (*Fratercula arctica*). Small numbers of swift (*Apus apus*), and several small colonies of house martin (*Delichon urbica*), nest in the sea-cliffs.	Within the onshore development area in the west, south of the A4320 road and extends up to the Freshwater West coast.
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC	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 (*Gentianella anglica*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and Annex II species present as a qualifying feature include petalwort (*Petalophyllum ralfsii*).	Within the onshore development area in the west. The designated site extends from the coastal section of the onshore development area, north of the A4320 to the area immediately west of Newton.
Pembrokeshire Marine / Sir Benfro Forol SAC	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 (*Halichoerus grypus*) and sore dock (*Rumex rupestris*). 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 (*Alosa alosa*), twaite shad (*Alosa fallax*), river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*) and otter (*Lutra lutra*).	Present directly adjacent to the south west of the onshore development area. This designated site extends along the coast in both directions.
West Wales Marine SAC	This site is a marine statutory designation, for the presence of harbour porpoise (*Phocoena phocoena*). The site is located off the coast of Wales, extending from the Llyn peninsula in the north to Pembrokeshire in the south-west.	Directly adjacent to the western boundary of the onshore development area.

[6] Natural Resources Wales. Protected Areas of Land and Sea. Available online [Accessed 21 November 2023]
[7] Where designated sites are situated outside of the onshore development area, the distance and direction is given at the closest point of the designated site from the onshore development area.

Designated Site	Reason for Designation[6]	Location of Designated Site[7]
Internationally Important Designations		
	The conservation objective of this site is for the prevention of significant disturbance to harbour porpoise and the maintenance of the availability of prey. sect	
Pembrokeshire Bat Sites and Bosherton Lakes SAC	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 (*Rhinolophus hipposideros*).	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
Skomer, Skokholm and the Seas off Pembrokeshire SPA	A statutory site designated for the presence of 3500 breeding pairs of storm petrel (*Hydrobates pelagicus*), 4 pairs of breeding chough, 6 pairs of breeding short owl (*Asio flammeus*), 150,968 pairs of breeding manx shearwater (*Puffinus puffinus*) and 9500 pairs of breeding puffin (*Fratercula arctica*). During the breeding season, this site is known to regularly support at least 394,260 individual seabirds.	Approximately 4.3 km south of the western extent of the onshore development area.
Nationally Important Designations		
Broomhill Burrows SSSI	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 (*Vanellus vanellus*) breeding in the dune slacks, and adder (*Vipera berus*), grass snake (*Natrix natrix*), slow worm (*Anguis fragilis*) and common lizard (*Zootoca vivpara*). Palmate (*Lissotriton helveticus*) and common toad (*Bufo bufo*) are also present.	Within the onshore development area in the west. The designated site extends from the coastal section of the onshore development area, north of the A4320 to the area immediately west of Newton.
Milford Haven Waterway SSSI	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.	Approximately 0.1 km east of the onshore development area at its north-eastern end at the Pembroke Power Station.
Arfordir Penrhyn Angle / Angle Peninsula Coast SSSI	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.	Approximately 0.3 m west of the onshore development area at its south-western boundary along the Freshwater West coast.

Designated Site	Reason for Designation[6]	Location of Designated Site[7]
Internationally Important Designations		
Gweunydd Somerton Meadows SSSI	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 Dermoloma. The site also supports small breeding populations of two highly localised and declining invertebrates: the marsh fritillary butterfly (*Euphydryas aurinia*) and the shrill carder bee (*Bombus sylvarum*), as well as supporting a rich dragonfly (Odonata) fauna.	Approximately 0.4 km south of the central onshore development area, east of Wallaston Green.
Castlemartin Range SSSI	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.	Approximately 0.4 km south of the onshore development area at its southwestern boundary and east of Freshwater West.
Castlemartin Course SSSI	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 (*Potamogeton coloratus*).	Approximately 0.5 km south of the southwestern onshore development area and south of Newton.
Orielton Stable Block and Cellars SSSI	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 (*Plecotus auratus*), whiskered bats (*Myotis mystacinus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and noctule (*Nyctalus noctule*).	Approximately 2.8 km southeast of the onshore development area.
Scoveston Fort SSSI	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.	Approximately 4.2 km north of the onshore development area at its north-eastern extent, beyond the mouth of the estuary.
Stackpole SSSI	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 (*Myotis daubentonii*). The lakes are abundant with wildlife especially otters which are resident within and around the lake margins and have at least one breeding holt.	Approximately 5.8 km southeast of the onshore development area.

Designated Site	Reason for Designation[6]	Location of Designated Site[7]
Internationally Important Designations		
Stackpole Courtyard Flats and Walled Garden SSSI	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 (*Pipistrellus pipistrellus*), brown long-eared bat, Natterer's bat (*Myotis nattereri*), Daubenton's bat, and whiskered bat.	Approximately 6.5 km southeast of the onshore development area
Park House Outbuildings, Stackpole SSSI	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 (*Hirudo rustica*) also breed here.	Approximately 6.8 km southeast of the onshore development area

8.4.6. Overview of Key Constraints and Recommendations

20. The following internationally designated sites are within the onshore development area: Castlemartin Coast SPA and Limestone Coast of South West Wales SAC. The Pembrokeshire Marine SAC is situated directly adjacent to the onshore development area. These internationally designated sites are situated at the south-western boundary of the onshore development area in close proximity to the coast and designated in part for their marine interest but also their associated terrestrial habitats, protected flora and bat and bird assemblages in which this report will consider potential impacts on. These protected sites are of international importance and therefore the proposed Project proposes to directionally drill the cable beneath the area in which these designated sites are located, avoiding any direct impacts to the SPA and SACs within the onshore development area. Potential indirect impacts include pollution from run-off and disturbance impacts from noise, movement/visual and light pollution.

21. West Wales Marine SAC is also located directly adjacent to the onshore development area in the west. Given that this designation is for the presence of marine species, it is not considered any further as part of this PEAR for terrestrial ecology.

22. The onshore development area lies within the Core Sustenance Zone (CSZ) of the lesser and greater horseshoe bats (2 and 3 km CSZ respectively[8]) cited within the Castlemartin Coast SAC and Limestone Coast of South West Wales SAC, the Milford Haven Waterways SSSI and the Castlemartin Range SSSI. The onshore development area is also within the CSZ of the following species cited within the Orielton Stable Block and Cellars SSSI (part of the Pembrokeshire Bat Sites and Bosherton Lakes SAC) located within 2.8 km of the onshore development area: greater horseshoe bat, brown long-eared bat, soprano pipistrelle (all 3 km) and noctule (4 km).

23. Occupying the same area as the Limestone Coast of South West Wales SAC is the Broomhill Burrows SSSI, a site of national importance designated for its extensive and diverse dune habitat. Direct impacts resulting from the proposed Project will also be avoided, although indirect impacts from the proposed Project may include pollution from run-off and disturbance impacts from noise, movement/visual and light pollution.

24. Gweunydd Somerton Meadows SSSI is situated within 0.4 km of the onshore development area and is connected via woodland habitat and a watercourse that runs through this wooded valley. The site is designated in part for its habitat and floral communities as well as notable and protected invertebrate species. Due to the hydrological connectivity potential indirect impacts include pollution from run-off.

25. The Angle Peninsula Coast SSSI and Castlemartin Coast SPA, both forming part of the Pembrokeshire coastline are known to support breeding populations of chough. The onshore development area is located within the known breeding habitat of this species. Chough surveys were undertaken by AECOM in 2022[9] which did not record chough within the coastal section of the Castlemartin Coast SPA within the onshore development area. The full report is provided in **Appendix 8A: Chough Report**. This concluded the proposed Project is not likely to

[8] Bat Conservation Trust (2020) Core Sustenance Zones and habitats of principal importance for designing Biodiversity Net Gain for bats. Bat Conservation Trust, London. Available online at: https://www.bats.org.uk/resources/guidance-for-professionals/bat-species-core-sustenance-zones-and-habitats-for-biodiversity-net-gain

[9] AECOM (2022) Llŷr Floating Offshore Wind Project - *Chough Survey Report*

result in significant impacts to the species, should appropriate mitigation be outlined in the Construction Environmental Management Plan (CEMP) and followed throughout construction. Please refer to Birds **Section: 8.12** below for additional recommendations. The Castlemartin Course and Castlemartin Range SSSIs are located within 0.4 km and 0.5 km of the onshore development area, respectively, and are both designated in part for their habitats. There is connectivity between the onshore development area and both SSSIs via dune and grassland habitat. The proposed Project is not anticipated to cause direct or indirect impacts upon the SSSIs.

26. The Skomer, Skokholm and the Seas off Pembrokeshire SPA is within 5 km of the onshore development area. Given that this designation is for seabirds, this is considered no further within this PEAR for terrestrial ecology.

27. The onshore development area does not lie within the CSZ for greater horseshoe and lesser horseshoe bats, noctule, Natterer's bat, whiskered bat, Daubenton's bat, common pipistrelle and brown long-eared bat cited in the following designated sites: Scoveston Fort SSSI, Stackpole SSSI, Stackpole Courtyard Flats and Walled Garden SSSI and Park House Outbuildings, Stackpole SSSI. It is anticipated that the removal of hedgerows will be no more than 10 m at any one location, so connectivity for commuting bats will be retained. It is therefore not considered a significant loss of foraging habitat for bat populations associated with these SSSIs. Please refer to Bats **8.8** below for additional recommendations.

28. Given the presence of the internationally designated sites within 10 km of the onshore development area, and the potential impacts of the proposed Project outlined above, a Habitats Regulation Assessment (HRA) is required to examine the potential for adverse impacts on the integrity of the designated sites. A screening exercise should be undertaken, followed by an Appropriate Assessment, if required, to identify any Likely Significant Effects (LSEs) resulting from the proposed Project.

29. The works should follow precautionary working methods outlined in a CEMP which will be prepared and implemented during construction to prevent adverse impacts to areas of retained habitat.

30. Storage of works materials, equipment and plant must be on existing hardstanding or areas of bare ground where there are no important floral communities (see **Habitats Section 8.5**). Habitats suitable for species (marine/birds) listed within the SPA should be avoided and left undisturbed wherever possible, by the implementation of an appropriate buffer during the works.

8.5 Habitats

8.5.1. Desk Study

31. The Environment (Wales) Act Section 7 terrestrial Habitats of Principal Importance dataset[10] shows areas of lowland calcareous grassland and lowland fens and reedbeds, all of which are habitats of principal importance, within the western portion of the onshore development area. There is also an area of lowland heathland directly adjacent to the onshore development area in the east. These are shown in **Volume 5: Figure 8-5.**

[10] Natural Resources Wales (2023) Environment (Wales) Act Section 7 Terrestrial Habitats of Principal Importance. Available online: https://datamap.gov.wales/layergroups/geonode:nrw_terrestrial_sections_7_habitats [last accessed 28 November 2023]

8.5.2. Field Survey

32. Summary descriptions of the habitats within the Survey Area are provided below and shown on **Volume 5: Figure 8-6**, with specific features highlighted by Target Notes (TNs). TN descriptions are provided in **Appendix C** and habitat photographs are provided in **Appendix D**.

33. Of the accessible land within the Survey Area the habitats present are dominated by large, open agricultural fields, lined by hedgerows with pockets of woodland and scrub present throughout. Improved grassland is the most common habitat type present, the majority of this land being cut or grazed by livestock.

Improved grassland

34. Improved grassland is present across the entire Survey Area, with species present indicative of highly managed and nutrient enriched soils (**Photograph 1, Appendix C**). The majority of grassland within the Survey Area that is not planted with arable crop species is farmed as grazing pasture for livestock, therefore enriched with fertilisers and highly managed. Species typical of this habitat type observed within the Survey Area include the following: perennial rye-grass (*Lolium perenne*), annual meadow-grass (*Poa annua*), cock's-foot (*Dactylis glomerata*) and bent sp. (*Agrostis* sp.), red clover (*Trifolium pratense*), white cover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), yarrow (*Achillea millefolium*) and ragwort (*Jacobaea vulgaris*). Other species less frequent include, common mouse-ear (*Cerastium fontanum*), black medick (*Medicago lupulina*), white campion (*Silene latifolia*), red bartsia (*Odontites vernus*) and dove's-foot crane's-bill (*Geranium molle*) (**TN20, 0**).

Cultivated/disturbed land – arable

35. Arable fields are present across the entire Survey Area. Barley (*Hordeum vulgare*), stubble and fallow fields, with associated arable weeds within field margins were recorded. Species within arable fields excluding crop species include: marsh cudweed (*Gnaphalium uliginosum*) (**TN38 and 41, Appendix C**), common fumitory (*Fumaria officinalis*), crane's-bill sp. (*Geranium* sp.), shepherd's purse (*Capsella bursa-pastoris*), chamomile (*Chamaemelum nobile*), scarlet pimpernel (*Anagallis arvensis*), germander speedwell (*Veronica chamaedrys*), field madder (*Sherardia arvensis*), ribwort plantain (*Plantago lanceolata*), white clover, greater plantain (*Plantago major*), dandelion (*Taraxacum* sp.), ragwort, common sorrel (*Rumex acetosa*), sun spurge (*Euphorbia helioscopia*), rape (*Brassica napus*), knotgrass (*Polygonum aviculare* agg), redshank (*Persicaria maculosa*) and creeping buttercup.

Marsh/marshy grassland

36. Within the grassland adjacent to the wooded wet ditch in the centre of the Survey Area, there are unmown areas of damp grassland with species indicative of wet conditions (**Photograph 2, Appendix D).** Species recorded included: abundant meadowsweet (*Filipendula ulmaria*), purple-loosestrife (*Lythrum salicaria*), sharp-flowered rush (*Juncus acutiflorus*), compact rush (*Juncus conglomeratus*), common fleabane (*Pulicaria dysenterica*) and mare's-tail (*Equisetum arvense*) with grassland species present including common bent (*Agrostis capillaris*) and Yorkshire fog (*Holcus lanatus*) as well as the presence of an orchid species (Orchidaceae) and iris species (Irdeae).

Neutral grassland – semi-improved

37. Neutral semi-improved grassland is present in small areas adjacent to grassland fields and in field margins. Prevalent grass species include cocksfoot, Yorkshire fog, false oat-grass (*Arrhenatherum elatius*), perennial rye-grass, annual meadow-grass and Italian rye-grass (*Lolium multiflorum*). Herb species present include scentless mayweed (*Tripleurospermum inodorum*), bristly ox-tongue (*Helminthotheca echioides*), creeping cinquefoil (*Potentilla reptans*), creeping buttercup, common knapweed (*Centaurea nigra*), common bird's-foot trefoil (*Lotus corniculatus*) and crane's-bill species.

Poor semi-improved grassland

38. Areas of grassland adjacent to the roadside throughout the Survey Area show a general lack of diversity relative to the rest of the Survey Area. Recently cut roadside verges contain Yorkshire fog, annual meadow-grass and perennial rye-grass species. Other species include, ribwort plantain, greater plantain, yarrow, daisy (*Bellis perennis*), and hogweed (*Heracleum sphondylium*) with locally abundant silverweed (*Potentilla anserina*). Generally low diversity but some small areas support common knapweed, tufted vetch (*Vicia cracca*) and birds-foot trefoil where not managed as often.

39. Within the grassland area directly adjacent to the Freshwater West SAC, in the western extent of the Survey Area an area of poor semi-improved grassland with a distinct species composition compared to the wider paddock, is present (**TN12, Appendix C**). With an average sward height of 30 cm, the grassland as a whole contains a diverse range of species, however, lacks the species composition needed to categorise this grassland as other than poor. Species recorded included: wild thyme (*Thymus polytrichus*) (**TN11, Appendix C**), wild radish (*Raphanus raphanistrum*), white campion, hawks-beard species. (*Crepis* sp.), hawkbit species (*Leontodon* sp.), with abundant ribwort plantain, frequent ragwort, yarrow, dandelion, common storks-bill (*Erodium cicutarium*), dock species (*Rumex* sp.), and occasional nettle (*Urtica dioica*), scarlet pimpernel, chicory (*Cichorium intybus*) and lucerne (*Medicago sativa* subsp. *sativa*).

Other tall herb and fern – ruderal

40. Ruderal plant species are present alongside the area of running water within ash (*Fraxinus excelsior*) woodland in the centre of the Survey Area, north of the farm property and pond in garden, as well as west of the same property. There is also a patch of ruderal species present in the east of the Survey Area adjacent to an arable field. Species present include willowherb species. (*Epilobium* sp.) and bulrush (*Typha latifoli*) with reed sweet-grass (*Glyceria maxima*), dock species, and hogweed around spring. Hedge bindweed (*Heracleum sphondylium*), nettle and bramble (*Rubus fruticosus* agg.) are also present as well as common reed (*Phragmites australis*) plus some ornamental garden varieties.

Scrub – dense/continuous

41. Dense scrub is present across the Survey Area, with bramble being the most dominant form of scrub encroaching on arable and grassland fields at the margins and along the field boundaries. There is also an area of gorse (*Ulex europaeus*) scrub with willow (*Salix* sp.), ash, bracken (*Pteridium aquilinum*) and bramble within the central section of the Survey Area. Other species present within scrub habitat within the Survey Area include blackthorn (*Prunus*

spinosa), butterfly bush (*Buddleia davidii*), sycamore (*Acer pseudoplatanus*), rowan (*Sorbus aucuparia*) and silver birch (*Betula pendula*).

Scattered scrub

42. Scattered scrub distributed throughout the Survey Area, with sparse bramble scrub located in the eastern portion of the Survey Area encroaching over improved grassland, and scattered bramble along the northern fence line of the field adjacent to the road in the western area. There is a mown earth bank with bracken, bramble, hawthorn (*Crataegus monogyna*), blackthorn scrub with ivy (*Hedera* sp.), hart's-tongue (*Asplenium scolopendrium*) and cow parsley (*Anthriscus sylvestris*) present also in the field south of the reservoir in the eastern portion of the Survey Area.

Broadleaved parkland/ scattered trees

43. A row of mature trees is present within the central portion of the Survey Area (**Volume 5: Figure 8-6b**), some of which are up to 10 m in height. Trees species include willow, with hawthorn and blackthorn present. There is a dense bramble understory present and a wet ditch that travels beneath the scattered trees.

Standing water

44. Three areas of standing water were identified within the Survey Area. The first lies within cattle grazed pasture and is fed by a stream that runs through the field (P1) (**Photograph 3, Appendix D**). The area is disturbed and poached by cattle. There is limited emergent vegetation and duckweed present.

45. The second area of standing water, identified as a man-made pond, within the garden of a residential property present within the centre of the Survey Area (P2) (**Photograph 4, Appendix D**). There is limited macrophyte cover on the pond's surface, but abundant emergent vegetation around the perimeter. Species present and associated with the waterbody include common reed, willowherb species, willow species and hedge bindweed.

46. Standing body of water (P3) (**Volume 5: Figure 8-6b** and **Photograph 5, Appendix D)**, recorded within the central portion of the Survey Area, west of Wallaston Green. Marginal species recorded include, common club rush (*Schoenoplectus lacustris*), bulrush and water mint (*Mentha aquatica*). Nuttall's waterweed (*Elodea nuttallii*) was also recorded in pond margin; a Schedule 9 invasive non-native plant species (INNPS).

47. An area of dense vegetation restricted visibility and access to an area within the central portion of the Survey Area in which a potential pond is located within a wet depression (**see TN25, Appendix C**).

Mixed woodland – semi-natural

48. An area of mixed semi-natural woodland is present within the centre of the Survey Area bounded on two sides by improved grassland pastures (**Photograph 6, Appendix D**). Species present within woodland include alder (*Alnus glutinosa*), sycamore, ash, blackthorn and a species of pine tree (*Pinus* sp.).

Broadleaved woodland – semi-natural

49. Broadleaved woodland parcels are present across the Survey Area in the central and eastern regions, fragmented by agricultural fields (**Photograph 7, Appendix D**). The largest area of woodland is situated south of the hamlet of Newton and is a linear strip with a wet ditch

running through the middle. The woodland is dominated by grey willow (*Salix cinerea*), a high percentage of which appears to be dying. Species also present include honeysuckle species (*Lonicera* sp.) and black bryony (*Dioscorea communis*) and species observed within woodland include male fern (*Dryopteris filix-mas*), broad buckler fern (*Dryopteris dilatata*), lady-fern (*Athyrium filix-femina*), herb Robert (*Geranium robertianum*), and yellow iris (*Iris pseudacorus*). This habitat is classified as a wet woodland and as such designated as a habitat of principal importance (**Photograph 8, Appendix D**).

50. Approximately 0.4 km west of this woodland an ash woodland pocket was observed similarly with a watercourse running through trees. The trees present appear to be suffering from ash die back and understory species include willowherb species, hogweed, as well as bulrush and reed sweet-grass which are indicative of the spring fed stream running throughout. A section of woodland is also present in the east of the Survey Area of which a small corner of a larger ash dominated woodland valley lies along the Survey Area boundary. Trees present are covered by ivy and are all suffering with ash dieback with the understorey layer dominated by blackthorn scrub.

Introduced shrub

51. An area of ornamental planting within private garden is located centrally within the Survey Area. There are some scattered mature willow and oak trees also present throughout the residential grounds.

Dune grassland

52. Grassland within dune system at Freshwater West beach in the south-west of the onshore development area (**Volume 5: Figure 8-6a**), is dominated by marram (*Ammophila arenaria*) with sea-holly (*Eryngium maritimum*) present at the open sand dune transitional boundary. Area of grassland also extends north of the B4319 road alongside area of semi-improved and improved grassland.

Dune scrub

53. Dune scrub occurring on dune system in west of the onshore development area. Scrub extends north of footpath along headland and covers area fence off for conservation purposes.

Open sand dune

54. Area of open sand dune at early stage of succession associated with beach at Freshwater West in the south-western portion of the onshore development area (**Volume 5: Figure 8-6a**).

Hard standing

55. A gravel/ paved access track leading to a construction office compound is located in the east of the Survey Area, along the northern boundary of an arable field in the east of the Survey Area. The track splits at a junction along Goldborough Road and is divided into two tracks that run through the Survey Area alongside arable fields.

56. Tarmac, concrete and stone roads are present across the Survey Area.

Bare Ground

57. Bare ground with sparse cover of annual meadow grass is located within the central portion of the Survey Area (**Volume 5: Figure 8-6b**). Adjacent to hardstanding road and associated

with entrance to field and solar farm complex within field which extends beyond the Survey Area boundary.

Defunct hedge – species-poor

58. Present within the central portion of the onshore development area (**Volume 5: Figure 8-6b**). Example within central portion of onshore development area represents a small bank with hawthorn dominated vegetation on top. Flailed and poorly managed through irregular cutting.

Hedge with trees – native, species-rich

59. Present within the eastern portion of the onshore development area (**Volume 5: Figure 8-6c**). Example within eastern portion of the onshore development area contains mature trees and represents an unmanaged hedgerow with trees approximately 4-5 m in height. Trees species present include hawthorn, blackthorn and willow, with marginal vegetation including nettle, dock species, bittersweet (*Solanum dulcamara*) and a rose species (*Rosa* sp.). These hedgerows within the onshore development area are classified as Habitats of Principal Importance.

Intact hedge – species-poor

60. Present throughout the central and eastern portion of the Survey Area (**Volume 5: Figure 8-6b and 6c**). Example of species-poor hedge in the east of the Survey Area: a 3 m wide hedge, with 2 m a bramble scrub margin. Species include hawthorn, blackthorn, bramble, willow and bracken. These hedgerows within the onshore development area are classified as Habitats of Principal Importance.

Intact hedge – native, species-rich

61. Present throughout the eastern portion of the Survey Area (**Volume 5: Figure 8- 6b and 6c**). Example of species-rich hedge in the east of the Survey Area: Species include hazel, with evidence of coppicing present, hawthorn, blackthorn, elder (*Sambucus nigra*) and elm (*Ulmus* sp.) with marginal species including hart's tongue fern, bittersweet and red campion (*Silene dioica*). These hedgerows within the onshore development area are classified as Habitats of Principal Importance.

Swamp

62. Section of swamp habitat at margin of larger eutrophic waterbody P3. Species recorded include common club rush, bulrush and water mint.

Marginal and inundation – marginal vegetation

63. Associated with waterbody P3, species present include soft rush (*Juncus effusus*), common club-rush, water mint, purple loosestrife, great willowherb (*Epilobium hirsutum*) and brooklime (*Veronica beccabunga*).

Running water

64. Multiple flowing watercourses were identified within the Survey Area and are present across the Survey Area from the west within an agricultural field, and in the centre and eastern portion of the Survey Area running through shallow woodland valleys and ditches (**Photograph 9, Appendix D).** Most are spring fed streams which travel through scrub and woodland pockets adjacent to field margins or within hedgerows between fields. Aquatic plants recorded within watercourses include rush species (*Juncus* sp.), water mint, soft rush,

fool's-water-cress (*Helosciadium nodiflorum*), and species along watercourse margins include hemlock water-dropwort (*Oenanthe crocata*), great willowherb and purple loosestrife.

Buildings

65. Six buildings/ structures were identified within the Survey Area, with three being associated with a farm in the western portion of the onshore development area (**Volume 5: Figure 8-6a**), two metal structures associated with solar power panels within the central portion of the onshore development area (**Volume 5: Figure 8-6b**) and one within the 30 m buffer in the east of the onshore development area (**Figure 6b**). See **Table 8B-2** for more information.

Earth bank

66. Within the western portion of the Survey Area (**Volume 5: Figure 8-6a**) associated within land near residential property and waterbody W2; possibly spoil heap from pond creation.

Dry ditch

67. One ditch recorded within western portion of the Survey Area (**Volume 5: Figure 8-6a**) running parallel to dense scrub at field boundary. Waterbody W1 runs into the same ditch where W1 bisects the ditch.

68. Another dry ditch located in eastern portion of Survey Area appears to be a disturbed area within a shallow ditch. This ditch may seasonally fill with water and is cattle poached. Species include great willowherb, purple loosestrife, thistle, nettles and bramble.

Fence

69. Multiple fences were recorded throughout the survey area. These act as boundary markers to fields and private property.

8.5.3. Constraints and Recommendations

70. There is a risk of habitat loss and/ or habitat degradation/ fragmentation across the Survey Area through works within the onshore development area.

71. Section 7 Habitats of Principal Importance within the onshore development area include:

- Lowland Mixed Deciduous Woodland (broadleaved woodland – semi-natural);
- Coastal Sand Dunes (dune grassland, dune scrub and open sand dune); and,
- Hedgerows (hedge with trees – native, species-rich, intact hedge – species-poor and intact hedge – native, species-rich).

72. There is potential for the standing water habitats to qualify as Section 7 Habitats of Principal Importance. Further assessment is required to determine this, through detailed Predictive System for Multimetrics (PSYM) survey as described in the Aquatic Species Section below.

73. The proposed Project will directly impact Habitats of Principal Importance as well as watercourses throughout the Survey Area and directly bisects four running watercourses and one dry ditch which has potential to seasonally hold water. Four other watercourses were identified within the onshore development area including one dry ditch. A further three watercourses appear to be present within land not accessed during the survey. If possible, the cable should be directionally drilled under these watercourses and works must follow best

practice Pollution Prevention Guidelines (PPGs)[11]/Guidance on Pollution Prevention (GPPS)[12] and the CIRIA C715 Environmental Good Practice on Site handbook[13] to prevent environmental run-off and degradation of the surrounding habitats.

74. Net Benefits for Biodiversity (NBB) should be demonstrated by following the mitigation hierarchy[14]. The hierarchy outlines the sequential steps towards achieving NBB: avoidance; minimisation; rehabilitation/ restoration; and offset. Habitats of principal importance should be avoided where possible, and measures should be undertaken to minimise impacts where they are unavoidable. Restoration and rehabilitation work seeks to return the area to its pre-impact state, or to restore basic ecological functions, respectively, and the final stage of the hierarchy, offsetting, compensates for any persistent negative impacts of the development. This may include the restoration or rehabilitation of off-site land that is degraded or is likely to experience biodiversity loss. NBB should be demonstrated within a Green Infrastructure Statement.

75. In addition, it is recommended that precautionary working methods are included within the CEMP which should be prepared prior to commencement of works and implemented during works within the onshore development area to prevent adverse impacts to habitats within, and adjacent to, the onshore development area.

8.6 Plants

8.6.1. Desk Study

76. The desk study identified 13 species of protected/notable flowering plants within the Study Area. Details regarding the species and locations are summarised in **Table 8B-2**. No protected or notable flora was recorded during the PEA conducted to inform the Greenlink Project in 2019[15]. Early gentian is a cited feature of the Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC which overlaps the boundary of the onshore development area in the west.

[11] Pollution Prevention Guidelines. Environment Agency, Northern Ireland Environment Agency, Scottish Environment Protection Agency. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx. Please note, while the PPGs have been officially withdrawn, they are still widely applied as best practice and are applicable for the works proposed.

[12] Guidance for Pollution Prevention. Available at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/

[13] Law and D'Aleo. (2016) PUB C762 Environmental good practice on site pocketbook. 4th edition. Ciria, London

[14] CSBI (2015). A cross-sector guide for implementing the mitigation hierarchy. Prepared by the Biodiversity Consultancy on behalf of IPIECA, ICMM and the Equator Principles Association: Cambridge UK.

[15] Greenlink Interconnector Ltd (2019) Greenlink Environmental Statement – Onshore Wales [Appendix 6.1] – *Preliminary Ecological Appraisal (PEA) Report*.

Table 8B-2. Records of protected plants within 2 km of the onshore development area

Species	Location and Description
Squinancy-wort (Asperula cynanchica subsp. Occidentalis)	Within the onshore development area at Freshwater west.
Dune fescue (Vulpia fasciculata)	Within the onshore development area at Freshwater west.
Weasel's snout (*Misopates orontium*)	Adjacent to the onshore development area to the north of Trebowen Farm.
Hoary ragwort (*Jacobaea erucifolia*)	Adjacent to the onshore development area to the north of Trebowen Farm.
Corn marigold (*Gelbionis segetum*)	Approximately 400 m south of the onshore development area.
Least lettuce (*Lactuca saligna*)	Approximately 700 m north of the onshore development area.
Henbane (*Hyoscyamus niger*)	Approximately 1 km south of the onshore development area.
Marsh-mallow (*Althaea officinalis*)	Approximately 1.6 km north of the onshore development area.

8.6.2. Field Survey

77. No protected or priority plant species were recorded during the field survey. However, given that the onshore development area supports a range of habitats and not all areas could be accessed for thorough survey, there is potential for the onshore development area to support protected and notable plant species.

8.6.3. Constraints and Recommendations

78. Due to the potential presence of protected and notable plant species within the onshore development area, detailed botany surveys, including National Vegetation Classification (NVC) surveys, are recommended to identify the potential location and extent of said species. This should include a targeted search of the footprint of the proposed Project pre-construction, during the flowering season of plants potentially present.

79. Early gentian grows in areas of lowland chalk grassland, in areas with thin grazed soil and patches of bare ground. The majority of the onshore development area is dominated by improved grasslands, a habitat in which early gentian is unlikely to successfully compete with other more rigorous species, and is therefore unlikely to be present. Within the onshore development area, early gentian is only likely to be present within the Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC, an area in which works are to be conducted via directional drilling, thus avoiding impacts on the habitats and flora within the SAC. Should this remain the case, impacts on early gentian potentially present within the onshore development are considered unlikely to occur.

8.7 Badger

8.7.1. Desk Study

80. During the desk study, 27 recent records of badger were returned within the 2 km Study Area. The closest of these records is associated with a dead individual within the onshore development area in the west. There is one record of a sett approximately 2 km south of the onshore development area.

81. Two setts were recorded during a PEA undertaken in 2020 during the Erebus onshore cable route surveys[16] and a further 27 confirmed active badger setts were recorded during a badger survey for the same project in 2021[17].

8.7.2. Field Survey

82. **Table 8B-3** summarises the evidence of badger presence recorded within the Survey Area.

83. Habitat features in **Table 8B-3** are shown in **Volume 5: Figure 8-6** and badger field signs including setts in confidential **Volume 5: Figure 8-9**.

Table 8B-3. Badger survey Results

Feature	Description	Relevant TNs
Active badger sett and field signs	Several active badger setts were recorded within the Survey Area. Details of these setts and all badger field signs recorded during walkover surveys of the Survey Area are listed in confidential **Appendix G.**	**Appendix G.**
Mammal burrows and paths	There are mammal paths across the grassland habitats throughout the Survey Area and there are mammal burrows, not distinctly badger though possible, throughout the dune system at the western end of the Survey Area.	Mammal Paths (MP), Mammal Burrows (MB)**, Volume 5: Confidential Figure 8-9.**
Woodland habitats	The semi-natural broadleaved woodland and mixed woodland that typically follow watercourses throughout the eastern and central portions of the onshore development area provide suitable habitat for badger sett creation, commuting and foraging badger.	N/A
Scrub habitat, tall ruderal and grassland habitats	The variety of habitats throughout the Survey Area, in particular the dense scrub adjacent to woodland pockets and hedgerow, as well as the tall ruderal and grassland habitats found throughout the onshore development area provides suitable habitat for commuting and foraging badger and in some instances where the vegetation is denser, sett creation.	N/A

8.7.3. Constraints and Recommendations

84. Multiple active badger setts were recorded within the onshore development area. The variety of habitats within the onshore development area provide suitable habitat for both foraging badgers and for sett creation.

85. Unmitigated, should works occur adjacent to confirmed setts, or within or adjacent to suitable habitat, the following indicative potential impacts are anticipated:

- Habitat loss, severance and fragmentation;
- Loss of breeding and resting sites of badgers; and,

[16] Hudson J. and Sutton M. (2020) Erebus Project – *Preliminary Ecological Assessment of potential cable routes and substation locations near Angle and Rhoscrowther, Pembrokeshire*

[17] ITPEnergised (2021) Project Erebus: Onshore Cable Route – *Technical Appendix 20.4: Protected Species Report*. Report prepared for BlueGem, June 2021

- Disturbance, injury or killing of badgers during clearance and construction works.

86. Badger tunnels can extend up to 30 m from the entrance holes and are located between 0.2 m and several metres below the surface, depending on the soil and topography. Any works, in particular those involving heavy machinery and ground-breaking works, that take place within 30 m of an active badger sett have the potential to cause the collapse of a sett and disturb, harm, or kill a badger. Light work, such as hand digging, has the potential to cause disturbance within 10 m of a sett.

87. Works likely to damage or destroy a badger sett will require a licence from Natural Resources Wales (NRW) to close the sett prior to works commencing. Should a badger main sett be destroyed as part of the works then mitigation measures may include the creation of new setts within linked habitat in the case of a main sett closure. A pre-commencement badger survey will also be required to confirm continued absence in advance of ground-breaking works. If an active sett is identified during the pre-works check, works within 30 m of the sett will not be able to proceed until further assessment is undertaken to determine the use of the sett and sett type. This may require the use of camera traps to identify badgers potentially utilising the sett entrance.

8.8 Bats

8.8.1. Desk Study

88. During roost surveys carried out in 2018 for the Greenlink project[18] (Greenlink Interconnector Ltd., 2020), 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 proposed Project boundary, including the landfall area for the cable.

89. 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 (*Barbastella barbastellus*), Leisler's bat (*Nyctalus leisleri*), Nathusius' pipistrelle (*Pipistrellus nathusii*), serotine (*Eptesicus serotinus*) and long-eared bat (*Plecotus spp.)*.

90. The desk study returned 27 recent records of bats within 2 km of the Study Area, summarised in **Table 8B-4.**

Table 8B-4. Bat foraging and roosting records within the 5 km study area

Species	Foraging/Commuting Records and Location[19]	Roosting Records and Location[19]	Species Core Sustenance Zone (CSZ)[20] radius
Whiskered bat/ Brandt's bat (*Myotis*	Two records 1.6 km southeast of the onshore development area with connectivity via farmland and hedgerows.	N/A	1 km

[18] Greenlink Interconnector Ltd (2019) Greenlink Environmental Statement – Onshore Wales [Appendix 6.7] – *Bat Survey Report*.
[19] Where records are situated outside of the onshore development area, the distance and direction is given at the closest point of the feature from the onshore development area.
[20] Bat Conservation Trust (2016). Core Sustenance Zones. Available at: https://www.bats.org.uk/our-work/landscapes-for-bats/core-sustenance-zones (Accessed: 30/09/21)

Species	Foraging/Commuting Records and Location[19]	Roosting Records and Location[19]	Species Core Sustenance Zone (CSZ)[20] radius
mystacinus/ brandtii)			
Common pipistrelle (*Pipistrellus pipistrellus*)	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	Two records, the closest is 1.2 km south east of the onshore development area with connectivity via farmland and hedgerows	2 km
Daubenton's bat (*Myotis daubentonii*)	One record 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	2 km
Lesser horseshoe bat (*Rhinolophus hipposideros*)	One record 1.7 km southeast of the onshore development area with connectivity via farmland and hedgerows.	One record 1.6 km south of the onshore development area connected via farmland and hedges	2 km
Pipistrelle species (*Pipistrellus sp.*)	Two records, the closest is 1.6 km south of the onshore development area connected by farmland and hedges	N/A	2-3 km
Brown long-eared bat (*Plecotus auritus*)	One record, 1.2 km southeast of the onshore development area with connectivity via farmland and hedgerows	One record 1.6 km south of the onshore development area with connectivity via farmland and hedgerows.	3 km
Greater horseshoe bat (*Rhinolophus ferrumequinum)*	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	One record 0.6 km southeast of the onshore development area connected via farmland hedgerows and woodland	3 km
Soprano pipistrelle (*Pipistrellus pygmaeus*)	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	3 km
Natterer's bat (*Myotis nattereri*)	One record 0.5 km southeast of the onshore development area with connectivity via farmland and hedgerows, and woodland	One record 1.6 km south of the onshore development area connected via farmland and hedges	4 km
Noctule (*Nyctalus noctula*)	Three records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	4 km
Serotine (*Eptesicus serotinus*)	N/A	One record, 1.2 km south east of the onshore development area with	4 km

Species	Foraging/Commuting Records and Location[19]	Roosting Records and Location[19]	Species Core Sustenance Zone (CSZ)[20] radius
		connectivity via farmland and hedgerows	
Long-eared bat species (*Plecotus sp.*)	One record 1.7 km east of the onshore development area with connectivity via farmland woodland and hedgerows.	N/A	3 km
Unknown species (*Chiroptera sp.*)	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	Unknown

91. The onshore development area is within the Core Sustenance Zone (CSZ) of known roosts for brown long-eared bat, common pipistrelle, greater horseshoe bat, lesser horseshoe bat, Natterer's bat and serotine and offers suitable foraging, commuting and roosting habitat for these species. The CSZ refers to the area around bat roosts in which the availability of habitat of suitable quality is likely to have a significant influence on the status of the roost. Developments within this area may impact bats commuting and foraging from the identified roost.

8.8.2. Field Survey

92. **Table 8B-5** summarises both the evidence of bats being present within the Survey Area, and the potential for features and habitats within the Survey Area to support bats.

93. The onshore development area encompasses a range of habitats with potential to support foraging and commuting bats, including woodland, scrub and hedgerows. Running water is also present within and adjacent to the onshore development area, providing a valuable resource for bats and their invertebrate prey species. Overall, the onshore development area supports High suitability habitat for foraging and commuting bats, a breakdown of each of the assessed habitats is provided in **Table 8B-6.**

94. **Table 8B-6.** summarises the potential suitability of habitats across the onshore development area for bats.

95. Locations of buildings and trees assessed during the field survey and presented in **Table 8B-5** are shown in **Volume 5: Figure 8-6.** For tree and building photographs see **Appendix D**.

Table 8B-5. Building and tree features assessed as having suitability to support roosting bats

Reference Point	Estimated Classification	Description	Photograph and relevant TN
T1	NONE	Single ash tree identified as having no suitable features for roosting bats. Located within intact species-poor hedgerow in the central portion of the onshore development area (**Volume 5: Figure 8-6B)**.	N/A
T2	PRF-I	Situated adjacent to the onshore development area at Wallaston Green, three ash trees covered with dense ivy (*Hedera* sp.) were identified as having suitability for roosting bats.	N/A
T3	PRF-M	Situated within woodland in the eastern portion of the onshore development area (**Volume 5: Figure 8-6C**). A single dead ash tree with a large cavity between the split in its crown. The feature faces north, however other features may be obscured by ivy.	**Photograph 10, Appendix D**
T4	PRF-I	Situated on edge of woodland in the eastern portion of the onshore development area (**Volume 5: Figure 8-6C**). Single ash tree identified as having a Low suitability to support roosting bats. There are two knotholes that are present on the trees southern side. One knothole is approximately 5m and the other approximately 6m high. The features do not appear deep or with large cavities.	N/A
T5	PRF-I	Situated within woodland in the eastern portion of the onshore development area (**Volume 5: Figure 8-6C**). A single ash tree with at least two knotholes that provide possible features for single opportunistic bats. Features are approximately 10 m high on its western side. Woodland consists of ash trees with dieback and covered in ivy. Likely to be other trees and features obscured.	N/A
T6	PRF-M	A single willow tree located within the eastern portion of the onshore development area within an area of dense scrub (**Volume 5: Figure 8-6C**). The tree (possibly veteran) is approximately 4-5 m tall and has two trunks that are split in the middle. The trunk is hollow and the split has created a cavity that has the potential to support multiple bats with several small access entrances. The tree was assessed as not having the potential to support a maternity roost.	**Photograph 11, Appendix D**
BN1	Precautionary Low	Structure associated with farm located in the western portion of the onshore development area (**Volume 5: Figure 8-6a**). The structure was only visible from one side due to access restriction. The structure has a concrete wall with flat roof.	**Photograph 12, Appendix D**
BN2	Low	Open-sided metal structure with gable roof used as shelter for cattle associated with farm located in the western portion of the onshore development area (**Volume 5: Figure 8-6A**). The structure was only visible from one side due to access restriction.	**Photograph 13, Appendix D**
BN3	Low	Metal structure with corrugated metal roofing used as shelter for cattle. Located associated with farm located in the western portion of the onshore development area **(Volume 5: Figure 8-6A**). The structure was only visible from one side due to access restriction, however holes identified within roof allow internal access.	**Photograph 14, Appendix D**
BN4	Negligible	Well-sealed green metal shipping container structure approximately 3 m x 2.5 m at base and 2.5 m tall with satellite dish on top.	**Photograph 15, Appendix D**

Reference Point	Estimated Classification	Description	Photograph and relevant TN
BN5	Negligible	Well-sealed green single metal sheeted structure approximately 2.5 m x 5 m at base and 3 m tall with very little inclined roof for drainage. Building associated with solar power panels within field adjacent to the onshore development area. Building surrounded by debris including pipes and wood.	**Photograph 16, Appendix D**
BN6	Precautionary Low	Building identified within Survey Area buffer. Building not inspected due to access restriction, however, corrugated roof was observed and some gaps identified under flashing. Needs full inspection if likely to be impacted.	TN6

96. The onshore development area encompasses a range of habitats with potential to support foraging and commuting bats, including woodland, scrub and hedgerows. Running water is also present within and adjacent to the onshore development area, providing a valuable resource for bats and their invertebrate prey species. Overall, the onshore development area supports High suitability habitat for foraging and commuting bats, a breakdown of each of the assessed habitats is provided in **Table 8B-6.**

Table 8B-6. Potential suitability for habitat within the onshore development area to support bats

Feature	Potential Suitability	Description
Broadleaved woodland – semi-natural	High	Broadleaved semi-natural woodland offers high quality habitat that is well connected to the wider landscape and that is likely to be used regularly by foraging bats. The onshore development area is close to and connected to known roosts.
Mixed woodland	High	High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats. The onshore development area is close to and connected to known roosts.
Dense scrub	High	High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. The onshore development area is close to and connected to known roosts.
Species-rich Hedge	High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths.
Defunct/ species-poor Hedge	Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths. Habitat that is connected to the wider landscape that could be used by bats for foraging.
Dune Habitat	High	High quality habitat (dune scrub and dun grassland) that is well connected to the wider landscape that is likely to be used regularly by foraging bats. The onshore development area is close to and connected to known roosts along the Pembrokeshire coastline and those cited within the Limestone Coast of South West Wales SAC.
Grassland Habitat	High	High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats. The onshore development area is close to and connected to known roosts.

8.8.3. Constraints and Recommendations

Tree Assessment

97. Full PRAs of mature woodland and trees were not undertaken during the field survey as it is understood that the habitat is to be avoided by the proposed Project. In the first instance, it is recommended that woodland habitat is avoided within the proposed Project. If woodland habitat must be removed or otherwise impacted by the proposed Project, a full PRA within woodland habitat will be required.

98. Potential impacts to standalone trees or those within woodland within the onshore development area include the direct removal or damage of trees, any illumination by external lighting, or damage to the root protection zones (RPZ) of any tree. No further surveys are required for trees assessed as having PRF-I within the Survey Area if no impacts are anticipated.

99. Further surveys will be required for T2 assessed as having PRF-M roosting suitability if to be directly impacted by the proposed Project. To establish roost presence or likely absence up to three aerial (close) inspections are required to be completed following the Bat Survey Guidelines[21].

100. If trees assessed as having bat roosting suitability are to be removed due to the proposed Project, then precautionary working methods should be followed which should include soft-felling of trees with a bat licensed ecologist present acting as an Ecological Clerk of Works (ECoW).

Buildings and Structures

101. The buildings and structures within the Survey Area could not be assessed in detail due to access limitations or for safety reasons. Where there is potential for buildings and/or structures to be impacted by works by the proposed Project, a full PRA of the building or structure should be undertaken prior to works commencing.

102. Any buildings or structures assessed as having suitability to support roosting bats that will be impacted upon by the proposed Project will require further survey. Further survey may include an internal endoscopic inspection (if safe to do so), hibernation survey, and/ or emergence/re-entry surveys. If a roost is confirmed within the buildings, and the roost will be impacted by the proposed Project, provision of mitigation will be required along with a European Protected Species Mitigation Licence (EPSML) for bats from NRW.

Foraging and Commuting Bats

103. Given that the onshore development area is of High Suitability for foraging and commuting bats, further surveys are required to determine the species and level of presence of bats. Impacts on bat activity may arise from the installation of temporary or permanent lighting, habitat loss or severance, or the introduction of machinery and traffic along bat commuting corridors. Night time bat walkovers (NBWs) should be conducted at the proposed onshore substation location to inform the lighting design, comprising of one site visit per month between April and October, inclusive. The NBWs should be supported by the deployment of automatic static bat detectors deployed each month.

8.9 Hazel Dormouse

8.9.1. Desk Study

104. There are no recent records of hazel dormouse (*Muscardinus avellanarius*) within the Study Area. Hazel dormouse surveys undertaken in 2018 during the Greenlink cable route surveys[22] identified probable dormouse nests within hedgerows to the north of Green Hill Reservoir. A total of 10 tubes were found to contain confirmed or probable nests of hazel dormice during

[21] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

[22] Greenlink Interconnector Ltd (2019) Greenlink Environmental Statement – Onshore Wales [Appendix 6.4] – *Dormouse Survey Report*

the course of the surveys. The closest of these is approximately 250 m north of the onshore development area and connected via an intact species-poor hedgerow.

8.9.2. Field Survey

105. **Table 8B-7** summarises the potential for features and habitats within the Survey Area to support hazel dormouse.

106. Features and habitats in **Table 8B-7** are shown on **Volume 5: Figure 8-6**.

Table 8B-7. Summary of hazel dormouse presence/ potential presence within the survey area

Feature	Description
Broadleaved woodland – semi-natural	The semi-natural broadleaved woodland present within the Survey Area is well developed with mature trees, as well as understory shrub species including honeysuckle and bramble, all of which provide a year-round food source for dormouse.
Mixed woodland	An area of mixed woodland within the central portion of the onshore development area. This habitat is of low suitability for hazel dormouse as is bounded by grassland habitat and has limited connectivity to the wider landscape via hedgerows. The tree species present provide a food source and the size and structure of the woodland indicate the habitat may be utilised by dormice moving between larger areas of more suitable habitat.
Dense scrub	Areas of dense scrub throughout the Survey Area provide suitable hazel dormouse habitat. Dense scrub may be utilised as commuting corridors between larger areas of more suitable habitat, or for nesting within the denser areas of scrub that provide structure and availability of food sources. An example of this is within the south and east of the onshore development area, with direct connectivity to suitable habitat within the wider landscape.
Hedgerow habitats	Hedgerows within the onshore development area provide suitable commuting corridors for hazel dormice across the Survey Area. The dense, species rich hedgerows provide high suitability habitats for dormice as these habitats provide shelter for dormice passing between other more suitable habitats and also provide a year-round food source with species present including hazel, hawthorn and bramble.

8.9.3. Constraints and Recommendations

107. There are areas of suitable habitat for hazel dormouse within the onshore development area. These habitats have connectivity with further areas of suitable habitat within the wider landscape. Clearance of areas of semi-natural broadleaved or mixed woodland, areas of dense scrub and/ or hedgerows for the proposed Project may result in disturbance, killing or injuring of dormice, the direct loss of suitable dormouse habitat as well as fragmentation of connecting habitat for the species within the wider area.

108. It is recommended that dormouse surveys are undertaken at the onshore development area pre-construction to inform the application of an EPSML. These surveys should be undertaken between April and November and follow the protocols outlined in the Dormouse Conservation Handbook[23]. If dormouse are found to be present then an EPSML for dormouse from NRW would be required, and any mitigation outlined as part of the licence must be followed.

[23] Bright, P., Morris, P., and Mitchell-Jones, T. (2006) The Dormouse Conservation Handbook: Second Edition. English Nature. Peterborough, UK.

8.10 Amphibians

8.10.1. Desk Study

109. The desk study returned 68 records of common toad; two of which are located less than 0.1 km south of the onshore development area within dunes system at Freshwater West. All records have connectivity to the onshore development area, and two records are of spawn rather than individuals.

110. There are no recent records of great crested newt (*Triturus cristatus*) within the Study Area. Great crested newt are considered absent from Pembrokeshire and will not be considered further in this report.

111. There are at least 30 ponds within 500 m of the onshore development area including two within the onshore development area identified using OS mapping boundary, although it is possible that some ponds are present within the Study Area that are not visible on OS mapping. There is also an extensive network of streams and ditches throughout the 500 m Study Area – many of which extend into the onshore development area.

8.10.2. Field Survey

112. **Table** summarises the features that have the potential to support amphibian species.

113. Features in **Table 8B-8** are shown in **Volume 5: Figure 8-6**. Descriptions of each TN and photographs are provided in **Appendix C** and **Appendix D**, respectively.

Table 8B-8. Summary of features with potential to support notable amphibians

Feature	Description of Feature and Location[24]	Relevant TNs
Standing water	Pools of standing water were present within the onshore development area. P1 is shallow and connected to a following watercourse however this may seasonally dry. The pond is cattle poached. P2 and P3 three are deep with marginal and emergent plants within. Invertebrate assemblages at these ponds provide suitable foraging resources and the ponds are well connected to suitable terrestrial habitats within the wider onshore development area.	P1 – P3
Woodland habitats	There are mixed and broadleaved semi-natural woodland habitats within the Survey Area that provide suitable terrestrial and hibernation habitat for amphibian species.	N/A
Grassland, tall ruderal and scrub habitats	The marsh/ marshy grassland, tall ruderal and scrub habitat within the Survey Area, particularly that which is in close proximity to watercourses/ waterbodies within the onshore development area provide suitable terrestrial habitat for amphibian species. Improved and semi-improved grassland within the onshore development area and Survey Area provides sub-optimal terrestrial habitat for amphibian species.	N/A
Rubble piles and spoil	A total of five potential refugia/ hibernacula were recorded within Survey Area, which included brash piles, rubble piles and a pile of tyres. These provide suitable habitat for amphibian hibernation (**Photographs 17, 18 and 19, Appendix D**).	TN23, TN39, TN40

[24]Where features are situated outside of the onshore development area, the distance and direction is given at the closest point of the feature from the onshore development area.

8.10.3. Constraints and Recommendations

114. Due to the presence of suitable aquatic and terrestrial habitat within the onshore development area, the following indicative potential impacts are anticipated if works for the proposed Project proceed unmitigated:

- Habitat loss, severance and fragmentation; and,
- Injury or killing of notable amphibians during clearance and construction works.

115. Precautionary working methods for undertaking vegetation clearance should be outlined in a CEMP and should be followed during all clearance of all vegetation with suitability of amphibians.

8.11 Common Species of Reptile

116. Common species of reptile refers to adder (*Vipera berus*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*) and slow-worm (*Anguis fragilis*).

8.11.1. Desk Study

117. There are 36 recent records of common reptiles within the Study Area:

- Four records of adder closest are adjacent to the onshore development area at Freshwater West with connectivity to onshore development area (location not exact; may be within Site in the dunes or further away);
- 28 records of common lizard (between one and seven individuals per record). Eleven of the records were observed within the onshore development area at Freshwater West (within the sand dunes) (record locations aren't all accurate, several are in the sea – may be more within the onshore development area);
- A single record of grass snake 2 km south east and connected by farmland is of ~ 20 eggs recorded in a compost heap; and
- Three records of slow-worm within 2 km of the onshore development area, the closest record being approximately 1.1 km north at Pwllcrochan. The remaining records are approximately 1.3 and 2 km south respectively. Each record has connectivity to the onshore development area via farmland habitat.

118. The nearby Erebus development onshore cable route which travels in close proximity to the onshore development area outlined in this report, identified 22 areas of Medium to High suitability habitat for reptiles during surveys undertaken in 2021[25].

8.11.2. Field Survey

119. **Table 8B-9** summarises the features that have the potential to support common species of reptile.

120. Features in **Table 8B-9** are shown on **Volume 5: Figure 8-6** and reptile habitat suitability is shown in **Volume 5: Figure 8-8**. Descriptions of each TN and photographs are provided in **Appendix C and Appendix D**, respectively.

[25] ITPEnergised (2021) Erebus: Onshore Cable Route – *Technical Appendix 20.4: Protected Species Report*

Table 8B-9. Summary of features with potential to support reptiles

Feature	Description	Relevant TNs
Grassland habitats	Areas of shorter, tightly mown grassland provide suitability for basking reptiles, and areas of longer grassland, especially transitional habitats along field margin for example, provide Moderate suitability reptile habitat where species can bask adjacent to areas of cover when sheltering from predation.	TN43
Woodland habitat	Woodland habitats provide suitable habitat for foraging, sheltering and hibernating reptile species.	N/A
Standing and running water	Ponds and running water within the Survey Area provide suitable habitat for grass snake.	P1-3
Potential refugia	A total of five potential refugia/hibernacula were recorded within the Survey Area, which included brash piles, rubble piles and a pile of tyres, as well as an earth mound, noted for its suitability for basking reptiles. **(Photographs 17, 18 and 19, Appendix D**) These provide suitable habitat for reptile hibernation, as well as sheltering and basking.	TN7, TN13, TN22, TN23, TN28, TN39, TN40, TN42 and TN46,
Dune Habitat	Dune systems provide High suitability reptile habitat, due to variety of bare sand, short grassland and taller vegetation offers pockets of warmer air suitable for basking with enough cover provided for protection from predation.	

8.11.3. Constraints and Recommendations

121. The habitats within the Survey Area outlined in **Table 8B-9** provide High to Moderate suitability for common reptile species as shown on **Volume 5: Figure 8-8**.

122. Given that the suitable reptile habitat within the onshore development area is ecologically connected to habitat to be retained during the construction and operation of the proposed Project, and the proposed Project will result in temporary habitat loss only, targeted reptile surveys are not required. Should reptiles be present within the footprint of the works, they should be allowed to disperse to neighbouring retained habitats. Vegetation removal should be undertaken following precautionary working methods (i.e. clearance undertaken directionally towards retained habitat and ensuring that no habitat suitable for reptiles becomes isolated) outlined in the CEMP with an ecological watching brief during the reptile active season (May-September, inclusive), so any reptiles present can be actively displaced into adjacent, retained habitats.

8.12 Birds

8.12.1. Desk Study

123. There are recent records for 109 notable bird species within the Study Area. These include 19 species listed on Annex 1 of the EC Birds Directive, 35 species listed on Schedule 1 of the Wildlife and Countryside Act (WCA) 1981 (as amended), 30 species listed on Section 7 of the Environment (Wales) Act 2016, 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 Pembrokeshire County Council Local Biodiversity Action Plan.

124. Castlemartin Coast SPA located within the onshore development area and the Angle Peninsula Coast SSSI located approximately 100 m south of the onshore development area within the Study Area are designated for their breeding populations of chough. Chough surveys were undertaken by AECOM in 2022[26], where four transect routes were followed along the Pembrokeshire Coast to determine the current distribution of chough nesting and foraging sites in relation to the proposed Project. It was concluded that the proposed Project is unlikely to impact this species if mitigation outlined in the CEMP is followed.

125. Species listed on Schedule 1 of the WCA 1981 are listed in full and their protections are listed in **Appendix E**.

8.12.2. Field Survey

126. **Table 8B-10** summarises the features that have the potential to support birds, either individual notable[27] species or assemblages of birds.

127. Features in **Table 8B-10** are shown in **Volume 5: Figure 8-6**. Descriptions of each TN and photographs are provided in **Appendix C** and **Appendix D**, respectively.

Table 8B-10. Summary of features with potential to support birds

Feature	Description	Relevant TNs
Incidental bird sightings	Within the west of the onshore development area, incidental sightings of the following birds were observed during walkover: wheatear (*Oenanthe oenanthe*), chough, meadow pipit (*Anthus pratensis*), linnet (*Linaria cannabina*) and skylark (*Alauda arvensis*). A red kite was observed flying over P3, and a bird's nest comprised a dense cluster of sticks observed within an ash tree adjacent to the same waterbody (**Photograph 20, Appendix D**). Two inactive *Corvid* species nests were also recorded on the walkover within a willow tree in the central portion of the array area. In the eastern portion of the incidental sightings of yellowhammer (*Emberiza citrinella*) and stonechat (*Saxicola rubicola*) were recorded during the walkover surveys.	TN4, TN13, TN15 TN32 TN33, TN37, TN44 and TN45.
Woodland habitats and scattered trees	Woodland and standalone trees provide habitat for breeding birds. Woodland suitable for breeding birds, including species listed on Schedule 1 is present within the Survey Area.	N/A
Dense scrub	Scrub habitats within the onshore development area provide suitable habitat for breeding birds	N/A
Grassland habitat	Grassland within the dune system in the west of the onshore development area was identified during the walkover survey as having potential suitability for ground nesting birds amongst tussocks.	TN13 and TN15

[26] AECOM (2022) Llŷr Floating Offshore Wind Project - *Chough Survey Report*

[27] Notable bird species are taken as those listed: on Annex I of the EC Birds Directive (2009/147/EC); on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); those considered to be of key significance to sustain and improve biodiversity in Wales and listed under Section 7 of the Environment (Wales) Act 2016; as Red or Amber in the Birds of Conservation Concern (BoCC) 5 (Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747); bird species or groups listed under the Pembrokeshire Local Biodiversity Action Plan (LBAP) July 2011

Feature	Description	Relevant TNs
	Short arable grassland within the Survey Area, provides nesting habitat for species such as skylark and meadow pipit which nest in open, bare-ground.	
Standing and running water	The ponds and streams within the onshore development area provide suitable habitat for waterfowl and also provide habitat for invertebrate species which many bird species prey upon.	P1-3
Hedgerows and lines of trees	The hedgerows and lines of trees provide suitable habitat for a common assemblage of breeding birds.	N/A

8.12.3. Constraints and Recommendations

128. The onshore development area provides suitable habitat for breeding birds and there are records of Schedule 1 birds, which utilise these habitats, such as raptors within the Study Area.

129. All birds and their nests are protected by the Wildlife and Countryside Act 1981 (as amended) during the breeding season. Chough and other species identified within the desk study such as goshawk (*Accipter gentilis*), peregrine (*Falco peregrinus*) and barn owl (*Tyto alba*), are all Schedule 1 species and it is an offence to intentionally or recklessly disturb at, on or near an 'active' nest.

130. Castlemartin Coast SPA and Broomhill Burrows SSSI are within the onshore development area and are designated for notable breeding bird assemblages. Listed species include peregrine and lapwing of which here is suitable habitat for these species within the onshore development area.

131. Without mitigation, and dependent on the final land take of the proposed Project during construction and operation, the following indicative potential impacts are anticipated:

- Habitat loss, severance and fragmentation;
- Loss and/or disturbance of breeding and resting sites of birds; and,
- Disturbance, injury or killing of birds during clearance and construction works.

132. Due to the proximity of designated sites with birds cited within their designations and the suitability of habitats within the onshore development area, a pre-construction check for breeding birds and their nests will be undertaken.

133. Removal or maintenance of habitats that have the potential to support breeding birds should take place outside of the breeding bird season (removal between September and February inclusive). If works cannot be avoided during the bird nesting season (generally regarded as March to August inclusive), the habitats or building should be inspected by an ecologist prior to works being undertaken. Feral pigeons are known to breed throughout the year and outside of the breeding bird season, therefore an ecologist should also check for signs of nesting birds prior to the works being undertaken outside of the breeding bird season. If a nest is found at any point during the works, all works must stop in that area until the birds have fledged.

134. There is a potential for a clash between the removal of vegetation to avoid impacts on birds and impacts on reptiles. This will need to be managed and planned once timings are known.

135. Mitigation measures will mean avoiding vegetation clearance in the breeding season and provision of alternative breeding habitat for those species likely to be displaced by the works

which can be determined once the results of the breeding bird survey and scheme design have been progressed.

136. The proposed Project should aim to minimise the loss of suitable habitat for foraging bird species and ensure connectivity of retained habitat with the surrounding landscape.

137. It is concluded that the proposed Project is unlikely to impact chough species and/ or other bird species if mitigation outlined in the CEMP is followed.

8.13 Terrestrial Invertebrates

8.13.1. Desk Study

138. There are records of 68 species of notable[28] terrestrial invertebrates within the Study Area consisting of two species of beetle (Coleoptera), ten species of butterfly (Lepidoptera), one species of cockroach (Dictyoptera): the dusky cockroach (*Ectobius lapponicus*), one species of dragonfly (Odonata): the hairy dragonfly (*Brachytron pratense*), ten species of bee (Hymenoptera) and 44 species of moth (Lepidoptera). These species and their protections are listed in **0**. Four of these species are listed on Schedule 5 of the Wildlife and Countryside Act: marsh fritillary (*Euphydryas aurinia*), silver-studded blue (*Plebejus argus argus*), small blue (*Cupido minimus*) and white-letter hairstreak (*Satyrium w-album*). A summary of the location of these records with the distance from the onshore development area is provided in **Table 8B-11.**

Table 8B-11. Summary of schedule 5 terrestrial invertebrates records returned by desk study

Species	Location and description of record
Silver-studded blue	Approximately 300 m north of the onshore development area. Count of 347 adults in 2018
Marsh fritillary	Approximately 750 m south of the onshore development area. Count of 2 adults in 2013
Small blue	Approximately 1.4 km north of the onshore development area. Count of 40 adults in 2018
White-letter hairstreak	Approximately 1.5 km north of the onshore development area. Count of 2 adults in 2020

8.13.2. Field Survey

139. **Table 8B-12** summarises the features identified within the onshore development area that have the potential to support terrestrial invertebrates, either individual notable[29] species or assemblages of terrestrial invertebrates.

140. Features in **Table 8B-12** are shown in **Volume 5: Figure 8-6**. Descriptions of each TN and photographs are provided in **Appendix C** and **Appendix D**, respectively.

[28] Notable terrestrial invertebrates are taken as principal species for the conservation of biodiversity listed under Section 7 of the Environment (Wales) Act 2016; any invertebrate listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); any invertebrate listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); any invertebrate listed in the IUCN Invertebrate Red Data Book (1991); and any invertebrate listed within the Pembrokeshire Local Biodiversity Action Plan (LBAP) July 2011

[29] Notable bird species are taken as those listed: on Annex I of the EC Birds Directive (2009/147/EC); on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); those considered to be of key significance to sustain and improve biodiversity in Wales and listed under Section 7 of the Environment (Wales) Act 2016; as Red or Amber in the Birds of Conservation Concern (BoCC) 5 (Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747); bird species or groups listed under the Pembrokeshire Local Biodiversity Action Plan (LBAP) July 2011

Table 8B-12. Summary of features with potential to support terrestrial invertebrates

Feature	Description of Feature and Location
Grassland habitats	The grassland habitats provide suitable habitat for terrestrial invertebrates that favour open spaces and meadows
Running and standing water	Standing water and streams provide suitable habitat for terrestrial invertebrates, such as hunting habitat for dragonfly and damselfly species.
Patches of scattered scrub and tall ruderal	The scattered scrub and tall ruderal habitats within the Survey Area provides suitable habitat for a variety of invertebrate species.
Woodland habitats and dense scrub	The woodland habitat and dense scrub provide suitable habitat for invertebrate species that favour dead wood, shade, and enclosed spaces.
Marsh/marshy grassland	This habitat type is located within the central portion of the onshore development area (**Volume 5: Figure 8-6b**) and provides suitable habitat for a variety of invertebrate species occupying a broad range of niches.

8.13.3. Constraints and Recommendations

141. The habitats within the onshore development area are considered to be common within the wider landscape. Given the temporary nature of the majority of the proposed works further assessment is not required if habitat loss is minimal, and if habitat heterogeneity and connectivity can be effectively maintained within the proposed Project.

8.14 Aquatic Species

8.14.1. Desk Study

142. There are no recent records of freshwater fish or recent records of notable[30] aquatic invertebrates within the Study Area.

8.14.2. Field Survey

143. P1 within the western portion of the onshore development area is unlikely able to support fish, notable macrophytes, or macroinvertebrates due to its size and the potential temporary nature of the pond. The larger, deeper ponds within the onshore development area (P2 and P3) are suitable for fish species, however this suitability is limited by a lack of colonisation pathways. P2 and P3 are suitable for a range of notable macrophytes and/or aquatic macroinvertebrates.

144. The running watercourses that flow through the onshore development area have the potential to support freshwater fish and aquatic macroinvertebrate populations. Many are shallow and fast moving.

8.14.3. Constraints and Recommendations

145. If P1, P2 and P3 are to be directly impacted by the construction of the proposed Project mitigation and further surveys will be required pre-construction due to their habitat suitability for aquatic macroinvertebrates and macrophytes, as well as a potential population of fish.

[30] Notable aquatic invertebrates are taken as principal species for the conservation of biodiversity listed under Section 7 of the Environment (Wales) Act 2016; any invertebrate listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); any invertebrate listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); any invertebrate listed in the IUCN Invertebrate Red Data Book (1991); and any invertebrate listed under the Carmarthenshire Nature Recovery Plan 2020 – 2030

146. If impacted it is recommended that a Pond PSYM[31] surveys are undertaken on P1, P2, and P3. Pond PSYM is a standard method which provides an assessment of the biological quality of a pond up to five hectares in size based on a range of environmental data and metrics derived from its macrophyte and macroinvertebrate assemblages (Pond Action, 2002).

147. Pond PSYM surveys are seasonally constrained to the summer season (June, July, August), and the method involves the collection of environmental data, macroinvertebrate samples and macrophyte recording. Therefore, it also identifies any notable or protected macroinvertebrate and macrophyte species within a pond, including Invasive Non-Native Species (INNS), as well as a measure of overall 'pond quality'.

148. The streams within the onshore development area should be retained during the works. Impacts to them and any associated fish populations should be avoided by following standard PPGs during the construction phase of the proposed Project. If impacts to the streams are anticipated, further survey may be required.

8.15 Otter

8.15.1. Desk Study

149. There are four recent records of otter within the Study Area, the closest of which is within 0.2 km west of the onshore development area at Freshwater West.

150. Surveys undertaken for the Greenlink project in 2018[32] identified two potential otter holts and three couches associated with a waterbody and watercourse in the northeast of the onshore development area adjacent to the Pembroke Power Station. A further potential holt was identified during the 2018 surveys along a watercourse north of Vine Cottage, near Hoplass and multiple field signs including spraint, footprints, and feeding remains were identified throughout the area.

151. Surveys undertaken in 2021 for the Erebus onshore cable route[17] recorded 21 areas of habitat with high potential for otter holt/resting sites, four spraints, seven slides and one set of feeding remains.

8.15.2. Field Survey

152. **Table 8B-13** summarises both the evidence of otter presence within the Survey Area, and the potential for features and habitats within the Survey Area to support otter.

153. Features and habitats in **Table 8B-13** are shown in **Volume 5: Figure 8-6**.

[31] Pond Action (2002) A guide to monitoring the ecological quality of ponds and canals using PSYM https://freshwaterhabitats.org.uk/wp-content/uploads/2019/12/PSYM-MANUAL-AUG-2019.pdf

[32] Greenlink Interconnector Ltd (2019) Greenlink Environmental Statement – Onshore Wales [Appendix 6.5] – *Riparian Mammals Survey Report*.

Table 8B-13. Summary of otter presence/ potential presence within the survey area

Feature	Description
Running water	The Survey Area is well connected with multiple running watercourses flowing across the onshore development area and connected to woodland pockets and interconnecting waterbodies. These streams within the Survey Area are likely too shallow for commuting otter except during periods of heavy rainfall, however otter may utilise overland methods of commuting. The streams may also be too shallow to provide high quality foraging habitat; see Aquatic Species section.
Standing water	P2 and P3 provide suitable foraging habitat for otter, however P1 appears too small to support fish populations and provide foraging habitat for otter. P2 and P3 are well connected to other habitats within the onshore development area which allows otter to commute between habitats and utilise these standing waterbodies as a feeding resource within the wider landscape. The banks at P3 are steep and suitable for otter holt creation (**TN31, Appendix C**).
Woodland habitats	The mixed and broadleaved semi-natural woodland habitats within the Survey Area provide suitable habitat for otter holts and couches. The broadleaved woodland habitats within the onshore development area have watercourses flowing through them which provides good commuting habitat for otter. The mixed woodland however has limited connectivity to a nearby watercourse and therefore limits its suitability.
Marsh/ marshy grassland	This habitat type is located within the central portion of the onshore development area (**Volume 5: Figure 6b**) and provides suitable habitat for commuting otter, notably where they connect to a running watercourse and/or suitable terrestrial habitat for holts or natal dens (such as woodlands).

8.15.3. Constraints and Recommendations

154. Further pre-construction survey for otter is recommended prior to works due to the suitability of the habitats within the onshore development area for otter and the confirmed recent records of otter within the Study Area, unless a buffer of 200 m can be maintained around all areas of suitable habitat to avoid the risk of disturbance.

155. The watercourses, waterbodies and suitable terrestrial habitat within the Survey Area should be surveyed for couches, holts, and natal dens that may be impacted by the proposed Project, and for further field signs of otter presence within the onshore development area. Where potential resting or breeding sites are recorded, these may require further camera trap monitoring to confirm their use.

156. If otter holts, resting places, or couches are confirmed within 30 m of working areas proposed within the proposed Project, an assessment of potential impacts should be undertaken and a EPSML applied for from NRW, if required. This buffer may extend up to 100-200 m where a natal den/breeding holt is identified.

157. Pollution prevention measures, as detailed in the Habitat section of this report should be followed to prevent environmental run off into habitat suitable for otter. When working near watercourses, work should be avoided at dawn, night-time and at dusk, to minimise disturbance to otter.

8.16 Water Vole

8.16.1. Desk Study

158. There are no recent records of water vole (*Arvicola amphibius*) within the Study Area.

159. Non conclusive water vole field signs were observed during the 2018 surveys for the Greenlink project, and the surrounding habitat was classified as Low quality for water vole[33].

160. Water vole is considered absent from Pembrokeshire.

8.16.2. Field Survey

161. There are three waterbodies and multiple running watercourses through the Survey Area. There is abundant marginal vegetation at P2 and P3 with suitability for water vole. The watercourses throughout the Survey Area provide opportunity for water vole dispersal, however low quality foraging for water vole due to lack of emergent vegetation. Watercourses provide suitable burrowing habitat for water vole with suitable bankside substrate for burrowing and sufficient cover from predation (**TN34, Appendix C**).

162. Within farmland in the west of the onshore development area the habitat along a watercourse flowing through the centre of a grazed pasture provides suitable bankside substrate for water vole burrowing and some cover from predation in the form of bankside vegetation. The watercourse is however very shallow, with negligible flow at time of survey and minimal emergent vegetation was present in the form of a rush species and water mint. A dry ditch appears to run into the same watercourse alongside the eastern side of the field. Distinct mammal runs were observed within this ditch however no distinct water vole field signs were observed during the field survey.

8.16.3. Constraints and Recommendations

163. Standing water and running water within the Survey Area has suitability for water vole. Although water vole are considered absent from the Pembrokeshire, as such no further surveys will be required.

8.17 Invasive and Non-native Plant Species (INNPS)

8.17.1. Desk Study

164. A total of 20 records were returned of nine flowering INNPS, three of which are Schedule 9: Himalayan balsam (*Impatiens glandulifera*), montbretia (*Crocosmia pottsii x aurea = C. x crocosmiiflora*), and Japanese knotweed (*Reynoutria japonica*).

- Closest record of Himalayan balsam is approximately 1.4 km south of the onshore development area at its closest point;
- Multiple instances of Japanese knotweed, the closest record is approximately 1 km west of the onshore development area at its closest point; and
- Closest record of Montbretia is approximately 2 km northwest of the onshore development area at its closest point.

8.17.2. Field Survey

165. Multiple INNPS were recorded as present within the onshore development area. Species recorded were montbretia located adjacent to a residential property in Neath and a farm access track at Broomhill (**M1-4, Appendix C and Photograph 21, Appendix D**), Japanese rose (*Rosa rugosa*) along hedgerow/ residential property boundary (**JP1, Appendix C and**

[33] Greenlink Interconnector Ltd (2019) Greenlink Environmental Statement – Onshore Wales [Appendix 6.5] – *Riparian Mammals Survey Report*.

Photograph 22, Appendix D), and Nuttall's waterweed within P3 at pond margin (**NW1, Appendix C and Photograph 23, Appendix D**).

166. These species are all listed on Schedule 9 of the Wildlife and Countryside Act (as amended), and Nuttall's waterweed is on Schedule 2 of the Invasive Alien Species Order (2019).

8.17.3. Constraints and Recommendations

167. It is illegal to cause the spread of Schedule 9 species in the wild. The proposed Project should avoid areas with known INNPS where possible as they must not be disturbed or allowed to spread within or beyond the onshore development area.

168. As INNPS can spread quickly, and their presence is confirmed within the onshore development area, a walkover should be undertaken by a suitably experienced individual once the final proposed Project layout is confirmed and prior to any vegetation clearance to confirm no change in status of INNPS species and to detail their full extent within the onshore development area.

169. If areas with INNPS cannot be avoided within the proposed Project, an INNPS Biosecurity Risk Plan must be produced to prevent their spread. Any cleared vegetation must be disposed of under a registered waste exemption or environmental permit or sent to authorised landfill sites via a registered waste carrier.

8.18 Other Notable Species

170. Polecat (*Mustela putorius*) – A single record of polecat was returned during the desk study and recorded approximately 0.8 km southeast of the onshore development area and with direct ecological connectivity. There is suitable foraging habitat for this species at the onshore development area. Methods for undertaking vegetation clearance should follow a precautionary working method and should be followed during all vegetation to facilitate the Proposed Works outlined in this report.

171. Weasel (*Mustela nivalis*) – Two records of weasel (listed on Local Biodiversity Action Plan), closest record is 0.98 km south east of the onshore development area, of two individuals, with direct connectivity to the onshore development area. There is suitable commuting and foraging habitat for this species at the onshore development area. Methods for undertaking vegetation clearance should follow a precautionary working method and should be followed during all vegetation to facilitate the Proposed Works outlined in this report.

172. Hedgehog (*Erinaceus europaeus*) – 25 records of hedgehog closest is 0.8 km south east of the onshore development area. There is suitable foraging habitat for this species within the onshore development area. Methods for undertaking vegetation clearance should follow a precautionary working method and should be followed during all vegetation to facilitate the Proposed Works outlined in this report. During construction, excavations should remain covered overnight, and a sensitive lighting scheme should be implemented.

8.19 Conclusion

Table 8B-14. Summary of recommendations

Feature	Recommendation	Timing
Designated Sites	Avoidance of vegetation clearance within designated sites, including the Broomhill Burrows SSSI, Limestone Coast of South West Wales SAC and Castlemartin Coast SPA. An HRA is required to determine the Likely Significant Effects of the proposed Project.	Throughout construction of the proposed Project
Habitats	The proposed Project will directly impact watercourses throughout the Survey Area and directly bisects four running watercourses and one dry ditch which has potential to seasonally hold water. Four other watercourses were identified within the onshore development area including one dry ditch.	N/A
Badger	A pre-works walkover of suitable habitat is recommended to check for signs of badger presence. Avoidance of works within 30 m of badger sett (reduced to 10 m if using hand tools) and the maintenance of habitat connectivity for badger within the Survey Area.	Prior to works commencing Throughout construction of the proposed Project
Bats	T2 assessed as having PRF-M requires three aerial (close) inspections to establish the presence or likely absence of bat roosts if direct impacts are anticipated following the Bat Survey Guidelines.	Prior to the commencement of works, including felling of T2
Dormouse	Surveys for hazel dormouse are required if any impacts on hedgerows, woodland or dense scrub are anticipated.	Prior to works commencing, between April and November
Amphibians	Precautionary working methods for undertaking vegetation clearance should be outlined in the CEMP and should be followed during all clearance of all vegetation with suitability of amphibians.	Throughout construction of the proposed Project
Reptiles	Vegetation removal should be undertaken following a precautionary working methods outlined in a CEMP with an ecological watching brief during the reptile active season (May – September), so any reptiles present can be actively displaced into adjacent, retained habitats.	Throughout construction of the proposed Project
Birds	Mitigation measures will mean avoiding vegetation clearance in the breeding season.	Throughout construction of the proposed Project
Terrestrial Invertebrates	Given the temporary nature of the majority of the proposed works further assessment is not required if habitat loss is minimal, and if habitat heterogeneity and connectivity can be effectively maintained within the proposed Project.	Throughout construction of the proposed Project.
Aquatic Habitats and Species	If impacted pond PSYM surveys should be undertaken on ponds (P1, P2, P3) within the onshore development area to provide an assessment of the	Prior to works commencing June – August

Feature	Recommendation	Timing
	ponds including macroinvertebrate and macrophyte communities.	
Otter	Further survey for otter is recommended prior to works within the Survey Area due to the suitability of the habitats within the onshore development area for otter and the confirmed recent records of otter within the Study Area, unless a buffer of 200 m can be maintained around all areas of suitable habitat to avoid the risk of disturbance.	Prior to works commencing
Water Vole	If development, or ground-breaking works, are anticipated within 5 m of the banks of either the waterbodies and/ or watercourse further surveys for water vole is recommended.	Prior to works commencing, two visits with one in Spring and one in Autumn.
INNPS	A walkover should be undertaken to confirm no change in status of INNPS species and to detail their full extent within the onshore development area. If areas with INNPS cannot be avoided within the proposed Project, an INNPS Biosecurity Risk Plan must be produced to prevent their spread.	Prior to works commencing; optimal timing for between June and August
Notable species	Precautionary working methods should be implemented and followed throughout the entire construction of the proposed Project. During construction, excavations should remain covered overnight, and a sensitive lighting scheme should be implemented.	Throughout works
Construction Environmental Management Plan (CEMP)	CEMP to be prepared and implemented during construction to prevent adverse impacts to Habitats of Principal Importance and designated sites.	Prior to works commencing

173. Impacts to Habitats of Principal Importance and habitats suitable for protected species should be avoided, where possible. The proposed Project should aim to retain habitats and maintain connectivity to the wider landscape, affording an appropriate buffer from the proposed Project.

174. Consideration will need to be given to retention of the most valuable habitat features and to avoid areas where protected species are identified. Connectivity across the onshore development area will need to be retained post development and the provision of unlit corridors will be essential.

8.20 Re-Survey

175. Due to the mobility of animals and the potential for colonisation of the onshore development area, it is recommended that an ecologist assesses the validity of the data and an updated ecological survey may be required prior to the redevelopment of the onshore development area should this not occur within 18 months of the date of the field survey.

Appendix A : Relevant Legislation and Planning Policy

Legislation

Designated Sites

176. A variety of sites are designated in the UK, under Conventions, Directives and Regulations for their nature conservation importance and interest. The general aim of these designations is to conserve and protect ecological resources, as well as raising awareness and understanding. Other non-statutory sites are afforded some protection through local plans. The table below outlines the most common statutory and non-statutory designations.

Table 8B-15. Statutory and non-statutory designations

Designation	Brief Description
Special Areas of Conservation (SAC)	SACs are sites selected to conserve the natural habitat types and species of wild flora and fauna as stated in the Conservation of Habitats and Species Regulations. They are the best areas to represent the range and variety of habitats and species within the European Union (EU).
Special Protection Area (SPA)	SPAs are strictly protected sites for the most important habitats for rare and migratory birds within the EU.
Ramsar sites	Ramsar Sites are wetlands of international importance. Ramsar Sites are protected, through the planning system, under the Wildlife and Countryside Act 1981 (as amended), and the Countryside and Rights of Way (CRoW) Act 2000 through their notification as SSSIs and through other regulatory systems addressing water, soil and air quality.
National Nature Reserve (NNR)	NNRs are nationally important areas of wildlife habitat and geological formations in Britain. NNRs are designated and protected under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). They receive additional protection under the CRoW Act 2000. They are managed for the benefit of nature conservation.
Site of Special Scientific Interest (SSSI)	A SSSI is a site of at least national importance for nature conservation designated under the Wildlife and Countryside Act 1981 (as amended) due to its special interest in terms of flora, fauna or geological or physiographical features. Protection afforded to SSSI's was strengthened by the CRoW Act 2000. It should be noted that under the CRoW Act 2000 owners of SSSIs must give Natural Resources Wales (NRW) written notice before they begin any of the operations listed in the notification as likely to damage the special interest features, or if they allow others to carry out these activities. None of the listed operations can be carried out without NRW's consent.
County Wildlife Site (Local site)	A County Wildlife Site is a non-statutory site designated by a local authority as being of local nature conservation value.
Ancient Woodland Inventory	Ancient Woodland is a term applied to woodlands which have existed from at least Medieval times to the present without ever having been cleared for uses other than wood or timber production. A convenient date used to separate ancient and secondary woodland is about the year 1600. In special circumstances semi-natural woods of post-1600 but pre-1900 origin are also included.
Wildlife Trust Reserve	These non-statutory sites are managed by the Wildlife Trusts with the purpose of conserving wildlife.

Protected Species

Plants and Invertebrates

177. Certain plants and invertebrates are protected under the *Wildlife and Countryside Act 1981* (as amended). Protected plant and invertebrate species are listed under Schedule 8 and Schedule 5 of the Act, respectively. With regards to Protected plants, it is an offence to intentionally uproot any wild plant without the landowner's consent, and to intentionally pick, uproot or destroy them, unless it could not be reasonably avoided (an incidental result of a lawful action).

178. With regards to Protected invertebrate species, depending on the species, it is an offence to kill, injure or take such an invertebrate; damage, destroy, or obstruction of access to any structure or place which such an invertebrate uses for shelter or protection; or disturb any such invertebrate while it is occupying a structure or place which it uses for that purpose.

Bats / Hazel Dormouse / Otter / Great Crested Newt

179. These species, known as European Protected Species, are protected under Regulation 43 of *the Conservation of Habitats and Species Regulations 2017* (as amended). This makes it an offence to deliberately capture, injure or kill an animal; deliberately disturb an animal; or damage or destroy a breeding site or resting place used by an animal.

180. Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing. Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.

181. Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from NRW can be obtained to facilitate the works that would otherwise be illegal.

182. These species are also protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an animal in such a place.

183. Lower levels of disturbance not covered by the *Conservation of Habitats and Species Regulations 2017* (as amended) remain an offence under the *Wildlife and Countryside Act 1981* although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Water Vole

184. Water voles are protected under the *Wildlife and Countryside Act 1981* (as amended). There are no licensing purposes that explicitly cover development or other construction activities which could have an impact on water voles.

185. When development work is proposed in or near an area which is either known to or likely to contain water voles, then the developer will need to implement suitable mitigation to prevent impacts to water voles. The preferred mitigation option is to leave water voles in situ, with the development works adopting avoidance measures through redesign of the proposals.

186. Where impacts cannot be avoided, operations aimed at displacing water voles from a development site are now no longer covered by the "incidental result of an otherwise lawful

action" defence in the *Wildlife and Countryside Act 1981* (as amended). Displacement of water voles now needs to be undertaken under a licence.

187. In Wales, small scale (limited to continuous lengths of bank not exceeding 50 m) displacement of water voles can be carried out at certain times of the year (February to April) for the purposes of conservation under a Class Licence by a registered person. For larger scale displacements or displacements outside of this period, displacement can be undertaken under a site-specific conservation licence.

188. Where it is considered that the best outcome for water voles is capture and translocation to a different location then this action is considered by NRW to be outside the scope of the defence as the intentional capture of water voles is unlikely to be considered 'incidental'. In these circumstances there may be genuine grounds for issuing a conservation licence for the purpose of translocating the water vole population to suitable alternative habitat.

Nesting Birds

189. All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended), with some species afforded greater protection under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended). In addition to the protection from killing or taking that all birds receive; Schedule 1 birds and their young must not be disturbed at the nest.

190. There are no licensing purposes that explicitly cover development activities affecting wild birds.

Common Species of Reptile (common lizard, slow worm, grass snake and adder)

191. Common species of reptile are protected against intentional killing and injury under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). There is no requirement for a licence where development works affect common species of reptiles. Instead, where reptiles are present, they should be protected from any harm that might arise during the development works through appropriate mitigation.

Badger

192. Badgers and their setts are protected under the Protection of Badgers Act 1992 (as amended). This makes it an offence to wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett.

193. It is not illegal to carry out disturbance activities near setts that are not occupied, i.e. those that do not show signs of current use.

194. Where required, licences for development activities involving disturbance or sett interference or closure are issued by NRW. Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process.

195. NRW provide guidance on working close to badger setts and the methods that can be employed to avoid or minimise impacts to active badger setts[34].

196. Licences are normally not granted from December to June inclusive (the badger breeding season) because dependent cubs may be present within setts.

[34] *Badgers – A Guide for Developers*. Natural Resources Wales. January 2018.

Species and Habitats of Principal Importance for the Conservation of Biodiversity

197. Section 7 of the *Environment (Wales) Act 2016* replaces the duty in section 42 of the *Natural Environment and Rural Communities Act 2006* in England. The Welsh Ministers will publish, review and revise lists of living organisms and habitats in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales.

198. The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and habitats included in any list published under this section and encourage others to take such steps.

199. Section 7 species and habitats must be considered during development to maintain and enhance biodiversity. The Welsh Ministers must take all reasonable steps to maintain and enhance the living organisms and habitats included in any list published under this section and encourage others to take such steps.

200. Species on Section 7 include, among others, water vole, west European hedgehog, otter, hazel dormouse, noctule, common pipistrelle. soprano pipistrelle, slow-worm, common toad, common lizard, grass snake, great crested newt and adder. The Section 7 species list also includes 51 species of bird, 188 species of invertebrate, and 177 species of vascular plant.

201. Habitats on Section 7 include, among others, specific types of broadleaved, mixed and yew woodland, calcareous grassland, and standing open waters and canals, as well as hedgerows, arable field margins, coastal and floodplain grazing marsh, lowland meadows and rivers.

202. Part 1 of the Act, including Sections 6 and 7, came into force on May 21, 2016.

Hedgerows

203. Under the *Hedgerows Regulations 1997*, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. In general, permission will be required before removing hedges that are at least 20 metres in length, over 30 years old and contain certain species of plant. The local planning authority will assess the importance of the hedgerow using criteria set out in the regulations.

Non-native Invasive Plant Species

204. INNPS of particular concern are listed under Schedule 9 Part 2 of the *Wildlife and Countryside Act 1981* (as amended) and more recently, species of special concern and Schedule 2 species, as per *the Invasive Alien Species (Enforcement and Permitting) Order 2019*. This legislation makes it an offence to cause plant species to grow in the wild.

205. Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the *Environmental Protection Act 1990*.

Planning Policy

National Planning Policy Framework

Planning Policy Wales (12th Ed. February 2024)

206. The Planning Policy Wales[35] sets out the Governments planning policies for Wales and how these are expected to be applied by Local Authorities within their Local Development Plans

[35] Welsh Government (2024) Planning Policy Wales Edition 12. Available online: https://www.gov.wales/planning-policy-wales [Last accessed 23 February 2024]

(LDP). Chapter 6 of Planning Policy Wales 'Distinctive and Natural Places' sets out the requirements to consider biodiversity in planning decisions. The latest edition includes a stronger emphasis on a proactive approach to green infrastructure, strengthened protections for SSSIs, and increased protections for irreplaceable habitats. Further clarity is provided in relation to securing Net Benefit for Biodiversity through the application of the stepwise approach, including the acknowledgement of off-site compensation, and the need to consider enhancement opportunities and long-term management strategies at each step.

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

207. The Planning Policy Wales (PPW) is supplemented by a series of Technical Advice Notes. TAN 5 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 protected or priority habitats and species.

208. 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 decisions.

Local Planning Policy

209. **Table** provides a summary of relevant local planning policies found in the Pembrokeshire County Borough Council Local Development Plan[36] (Adopted February 2013) and the Pembrokeshire Coast National Park Local Development Plan 2[37] (Adopted September 2020). For the precise wording of each specific policy please refer to the source documents.

Table 8B-16. Summary of local planning policy

Document	Planning Policy	Summary of Policy Text
Pembrokeshire County Borough Council Local Development Plan (Adopted February 2013)	SP.1. Sustainable Development	An overarching strategic policy that relates to all proposals. It aims to ensure that all development is sustainable.
	Sp.11. Waste	Production of waste and its impact on the environment will be minimised and the use of waste as a resource maximised, through re-use, recovery for materials or energy and, where this cannot be achieved, safe disposal, using the best practicable environmental option.
	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.

[36] Pembrokeshire County Council (2013) Local Development Plan (for the County excluding the area of Pembrokeshire Coast National Park) Accessed online at: Adopted Local Development Plan - Pembrokeshire County Council

[37] Pembrokeshire Coast National Park (2020) Local Development Plan 2 (Replacement) – end date 2031. *Adopted Local Development Plan September 2023.* Accessed online at: Draft Community Involvement Statement (July 05) (pembrokeshirecoast.wales)

Document	Planning Policy	Summary of Policy Text
	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.
	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.
Pembrokeshire Coast National Park Local Development Plan 2 (Adopted September 2020)	Policy 1. National Park Purposes and Duty	The overarching policy of the Plan fundamental to conserving and enhancing the wildlife National Park.
	Policy 8. Special Qualities	Identifies the need for development to positively enhance the National Park's ecosystems and components that underpin them. Links between sites are important
	Policy 9. Light Pollution	Seeks to ensure the minimal impact of lighting on the night sky.
	Policy 10. Sites and Species of European Importance	Development likely to have a significant effect on a European Site, when considered alone or in combination with other projects or plans will only be permitted where: a) The proposal is directly connected with or necessary for the protection, enhancement and positive management of the site for conservation purposes; or b) Following an appropriate assessment, the proposal will not adversely affect the integrity of the site; or c)there is no alternative solution and there are reasons of overriding public interest and appropriate compensatory measures are secured. Development likely to have an adverse effect on a European protected species will only be permitted where: a) there are reasons of overriding public interest. b) there is no satisfactory alternative; and c) the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their nature range.
	Policy 11. Nationally Protected Sites and Species	Development likely to have an adverse effect either directly or indirectly on the conservation value of nationally protected sites will only be permitted where it is demonstrated that: a) There is no suitable alternative to the proposed development; and b) It can be demonstrated that the benefits from the development clearly outweigh the special interest of the site; and c) Appropriate compensatory measures are secured; or d) The proposal contributes to the protection, enhancement or positive management of the site. Development likely to have an adverse effect on nationally protected species will only be permitted where it is demonstrated that:

Document	Planning Policy	Summary of Policy Text
		a) The population range and distribution of the species will not be adversely impacted. b) There is no suitable alternative to the proposed development. c) The benefits of the development clearly outweigh the adverse impacts on the protected species; and d) Appropriate avoidance, mitigation and compensation measures are provided.
	Policy 12. Local Sites of Nature Conservation	Protection of areas of local importance – including habitats and species of principal importance to Wales, areas providing connectivity.
	Policy 29. Sustainable Design	All proposals for development will be expected to demonstrate an integrated approach to design and construction and will be required to be well designed in terms of: a) Place and local distinctiveness b) Environment and biodiversity c) Community cohesion and health d) Accessibility e) Efficient use of energy f) Energy generation g) Materials and resources h) Water and drainage i) Waste j) Resilience to climate change.
	Policy 32. Surface Water Drainage	Development will be required to incorporate sustainable drainage systems for the disposal of surface water on site.

Local Biodiversity Action Plan

210. **Table** provides a summary of relevant local biodiversity action plans in Pembrokeshire. For the precise wording of each specific policy please refer to the source documents *Pembrokeshire Local Biodiversity Action Plan*[38] *(LBAP) July 2011*, and *Nature Recovery Action Plan for Pembrokeshire*[39] *(NRAP) June 2018*.

[38] Pembrokeshire Nature Partnership (2018) Nature Recovery Acton Plan for Pembrokeshire - Accessed online at: Plans and Guidance - Pembrokeshire County Council
[39] Pembrokeshire Biodiversity Partnership (2011) A Local Biodiversity Action Plan for Pembrokeshire Part 1 - Accessed online at: Plans and Guidance - Pembrokeshire County Council

Table 8B-17. Summary of biodiversity action plans

Document	Summary of Policy Text
Pembrokeshire Local Biodiversity Action Plan (LBAP) July 2011	The main function of the Pembrokeshire LBAP is to provide a framework to conserve and enhance biodiversity in Pembrokeshire, taking account of local and national priorities. The LBAP is made up of two parts: Part one which provides the background to the biodiversity within Pembrokeshire and also the role of the Pembrokeshire Biodiversity Partnership. Part two details habitat and species action plans for key features in Pembrokeshire. The LBAP outlines nine grouped habitat action plans and eight grouped species action plans with a further nine specific species action plans. The following Action Plans have been produced: 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, Marsh Fritillary, Brown Hairstreak, Southern Damselfly, Chough, Kestrel, Native Oyster, Dormouse, Purple Broomrape N.B. Plans marked with * are not available to view on the pembrokeshire.gov.uk Website.
Nature Recovery Action Plan for Pembrokeshire (NRAP) June 2018	The Nature Recovery Action Plan (NRAP) plan is intended to highlight the key pressures on nature in Pembrokeshire and direct partners to suggested themes of action to address them, set within the legislative context. It can be used to stimulate project ideas, direct conservation effort, or provide a rationale for local action to achieve national objectives.

Appendix B Methods

Desk Study

211. The PEA includes a desk study to obtain ecological records relevant to a Site and the proposed Project. The data obtained provides contextual information for the scope of field surveys, to aid the evaluation of field survey results, and to provide supplementary information where complete field survey coverage is not possible.

212. The Study Area is dependent upon the nature, timing and scale of the proposed Project, as well as the location of and the surrounding landscape. These variables all contribute to what is referred to as the Zone of Influence (ZoI) of the proposed Project, which is the area over which ecological features may be affected by biophysical changes because of the works and associated activities.

213. In May 2023 the West Wales Biodiversity Information Centre (WWBIC) was contacted to obtain the following ecological data:

- Records of non-statutory designated sites within 2 km of the onshore development area;
- Records of legally protected and notable species (fauna and flora) within 2 km of the onshore development area, including Species of Principal Importance for the Conservation of Biodiversity listed under Section 7 of the *Environment (Wales) Act 2016*.

214. The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for the following information:

- Designated sites of nature conservation importance (statutory sites only) within 2 km of the onshore development area. This was extended to 10 km for internationally designated sites designated for bat species; and,
- Notable habitats within or adjacent to the onshore development area, these being areas of ancient woodland and 'Habitats of Principal Importance for the Conservation of Biodiversity' included in Section 7 of *the Environment (Wales) Act 2016*.
- Ancient Semi-Natural Woodland (ASNW), Plantation on Ancient Woodland Site (PAWS), Restored Ancient Woodland Site (RAWS) or Ancient Woodland Site of Unknown category (AWSU) within or adjacent to the onshore development area using Forestry Commission Wales 2021 Ancient Woodland Inventory data set downloaded from the Lle website (NRW, 2021).
- Aerial photographs and Ordnance Survey (OS) maps were reviewed to identify features of ecological interest surrounding the onshore development areaincluding nearby areas of ecological interest and features connecting these habitats (hedgerows, watercourses, railway lines).

Field Survey

Extended Phase 1 Habitat Survey

215. The preliminary ecological assessment includes a walkover survey of the Survey Area (all land within the onshore development area), where accessible, broadly following the Phase 1 habitat survey methodology as set out in Joint Nature Conservation Committee guidance (JNCC, 2010)[40]. This survey method records information on habitat types and is 'extended' to record any evidence of and potential for protected or notable species to be present. Plant names recorded during the survey follow Stace (2019)[41].

216. During the walkover survey, the following protected or notable species were considered:

- **Hazel dormouse**: the survey involves assessing the potential of habitats within the Survey Area to support hazel dormouse, following English Nature guidance (2006)[42];
- **Otter**: the survey involves assessing the potential of watercourses and water bodies, and adjacent terrestrial habitat within the Survey Area to support otter, following RSPB (1994)[43] and Chanin, P. (2003)[44] guidance;
- **Water vole**: the survey involves assessing the potential of watercourses and water bodies within the Survey Area to support water vole, following The Mammal Society (2016)[45] guidance;
- **Birds**: the survey involves assessing 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;

[40] Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey - a technique for environmental audit*.
[41] Stace, C E (2019) *New Flora of the British Isles, 4t^h^ edition*. Cambridge University Press.
[42] English Nature (2006). *The Dormouse Conservation Handbook*, 2nd edition.
[43] Ward, D. Holmes, N. Jose, P. (1994). *The New Rivers and Wildlife Handbook*. Royal Society for the Protection of Birds. Bedfordshire.
[44] Chanin, P (2003b). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No 10. English Nature, Peterborough.
[45] Dean, M. Strachan, R. Gow, D. Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Guidance Series).* Eds Fiona Mathews and Paul Chanin. The Mammal Society. London.

- **Reptiles**: the survey involves assessing the potential of habitats within the Survey Area to support reptiles (typically adder, grass snake, common lizard and slow worm only, though in some locations and habitat types (most notably heathland) may also include smooth snake and sand lizard), following Froglife (1999)[46] and JNCC (2003)[47] guidance;
- **Notable species of invertebrate**: the survey involves assessing the potential of habitats within the Survey Area to support notable species of invertebrates, both terrestrial and aquatic (including white-clawed crayfish);
- **Protected or notable species of plants**: the survey involves recording protected or notable plant species;
- **Other notable species**: the survey involves assessing the potential of habitat within the Survey Area to support other Notable Species, such as hedgehog, brown hare, polecat or common toad;
- **Non-native invasive plant species**: the survey involves recording evidence of the presence of invasive plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and subject to strict legal control.

Badger Survey

217. Badger surveys detailed in this report were undertaken between 3 August 2023 and 13 October 2023 by a suitably experienced AECOM ecologist and assistant during suitable weather conditions. The entire Survey Area (including the onshore development area and a 30 m buffer), where accessible, was surveyed, focusing on woodland to the north and south as well as areas of grassland, hedgerows and scrub edges.

218. During the survey, the location of any evidence of badger presence/usage of the Survey Area was recorded. Potential evidence of badger usage/presence includes:

- Setts: comprising either single isolated entrances or a series of entrances and their associated underground chambers. The number present, in addition to other criteria determines the sett category as either main, annexe, subsidiary or outlier (**refer to Table 8B-18 for details**);
- Faeces: latrines are regularly placed along paths on the boundary of their territory;
- Well-worn mammal paths: which usually lead to setts or feeding areas;
- Claw marks: on the bark of trees, stones or scrapes in soil;
- Hair: usually with a white root, black band, white tip (often found on fences and rough wood near mammal paths);
- Snuffle holes: formed during foraging and comprising characteristically disturbed soil and ground vegetation; and,
- Footprints.

219. Mammal paths and snuffle holes were assumed to be created by badgers if the character of the path or hole (in terms of size) was appropriate and/or if any other field signs were in close proximity.

[46] Froglife (1999). *Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.
[47] Joint Nature Conservation Committee (2003). *Herpetofauna Workers Manual*.

220. Setts are classified according to the criteria used in the National Badger Surveys (Harris et al, 1989 [48]and Wilson et al, 1998)[49] outlined in **Table 8B-18.**

Table 8B-18. Badger sett descriptions

Category of Sett	Description
Main	These are breeding setts and will often have breeding activity apparent between February and June, including discarded bedding and play areas. They usually have a large number of entrances (average of 12) with large spoil heaps, the sett generally looks well used. There will be well-used paths to and from the sett and between sett entrances. Although normally the breeding sett and in continuous use, it is possible to find a main sett that has become disused.
Annexe	Often close to the main sett, usually within 15 to 150 m, and are usually connected to the main sett by one or more obvious well-worn paths. They usually have several entrances (average of 5) but may not be in use all the time if main sett is active.
Subsidiary	These are usually at least 50 m from the main sett and do not have an obvious path connecting them with another sett. They usually have multiple entrances (average of 4) with spoil heaps and are often used seasonally.
Outlier	These usually only contain one to two entrances with small or absent spoil heaps and no obvious path connecting them to the main sett. They are only used sporadically. When not in use by badgers, they can be taken over by rabbits/foxes, but should still be recognisable as badger setts.

221. Any setts found were assessed for current activity levels. The three levels of activity used are as shown in **Table 8B-19.**

Table 8B-19. Levels of activity used for recording purposes

Activity Level	Description
Well used	Entrances are clear of any debris or vegetation, are obviously in regular use, and may or may not have been excavated recently.
Partially used	Entrances are not in regular use and have debris such as leaves or twigs in the entrance or have moss and or other plants growing in or around the entrance. Partially used entrances could be in regular use after a minimal amount of clearance.
Disused	Entrances have not been in use for some time, are partially or completely blocked, and cannot be used without considerable amount of clearance. If the entrance has been disused for some time, all that may be visible is a depression in the ground where the hole used to be, and the remains of the spoil heap, which may be covered by moss and plants.

Bat Surveys

Bat Habitat Suitability Assessment

222. An appraisal was made of the potential suitability of the habitats present to support during the survey conducted by AECOM between 3 August and 13 October 2023 with reference to the habitat suitability categories outlined by the Bat Conservation Trust (BCT) guidelines[50] detailed in **Table 8B-20** below.

48 Harris, S., Cresswell, P. & Jefferies, D. (1989) – Surveying Badgers. Occasional Publication no.9. The Mammal Society, London.

49 Wilson, C, J and Symes, R, G., (1998). The Management of Problems Involving Badgers (Meles meles). Natural Chartered Institute of Ecology and Environmental Management, (2013). Technical Guidance Series – Competencies for Species Survey: Badger.

50 Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

Table 8B-20. Suitability of habitat features to support roosting bats

Habitat Suitability	Description
None	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitat that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).
Negligible	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	Habitat that could be used by small numbers of bats as flight-paths such as gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Source: Category descriptions drawn from Collins, J. (ed.) (2023)[51] to be applied using professional judgement.

Preliminary Bat Roost Assessment

223. An appraisal was made of the potential suitability of structures and trees present to support during the survey conducted by AECOM between 3 August and 13 October 2023 with reference to the habitat suitability categories outlined by the Bat Conservation Trust (BCT) guidelines[52] detailed in **Table 8B-21** and **Table 8B-22.**

[51] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

[52] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

Table 8B-21. Suitability of structures to support roosting bats

Suitability	Description of Potential Roosting Features
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by large numbers of bats (i.e., unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation statis, which is established after presence is confirmed)
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.

Source: Category descriptions drawn from Collins, J. (ed) (2023) [53] to be applied using professional judgement

Table 8B-22. Suitability of trees to support roosting bats

Suitability	Description of Potential Roosting Features
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony.
NONE	No PRFs identified or highly unlikely to be any present.
FAR	Further assessment required to establish if PRFs are present.

Source: Category descriptions drawn from Collins, J. (ed) (2023) [54] to be applied using professional judgement

Limitations and Assumptions

- The aim of a desk study is to help characterise the baseline context of a proposed development and provide valuable background information that would not be captured by a single survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitats or species does not necessarily mean that the habitats or species do not occur in the Study Area. Likewise,

[53] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6
[54] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed development.

- Similarly, biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate; however, if assessed in conjunction with a Phase 1 Habitat survey, they can contribute to a robust ecological assessment of a site.
- Where habitat boundaries coincide with physical boundaries recorded on OS maps the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held GPS. Where areas of habitat are given, they are approximate and should be verified by measurement on site where required for design or construction. While indicative locations of trees are recorded this does not replace requirements for detailed specialist arboricultural survey to British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction.
- Access permission was not granted to some areas, these are marked on **Volume5: Figure 8-6.** In these cases, aerial imagery, observations from the roadside and previous survey data from publicly accessible Phase 1 mapping in the area was used to assess the habitats present. In these locations, there is potential for evidence of protected species to have gone unrecorded.

Appendix C Target Notes

Target Note	Description
TN1	Area of open grassland with wild thyme, eyebright (*Euphrasia officinalis*) and sea thrift present.
TN2	Following species present in local area: Fescues, marram grass, bramble, dandelion, trefoil, eyebright and common centaury.
TN3	Locally abundant thyme and trefoil
TN4	Incidental bird sightings – wheatear and chough recorded overhead.
TN5	Sea holly present on sandier dunes
TN6	Field margin fenced off and left unmanaged. Mosaic of improved grassland and bramble scrub with hardstanding
TN7	Area of hardstanding and a rubble pile, suitability as reptile hibernaculum
TN8	Locally abundant bitter dock
TN9	Locally abundant rush sp.
TN10	Mole hills present within improved grassland
TN11	Thyme and birds foot trefoil more locally abundant
TN12	Following species present in local area: Fescue sp., cocks-foot grass, bent sp., perennial ryegrass, wild thyme, ragwort, hawksbit and buttercup sp.
TN13	Tussocky grassland provides suitability for ground nesting birds and reptiles however there are few basking spots.
TN14	Large rock boulders present within grassland field (The Devil's Quoit Burial Chamber – OS mapping)
TN15	Incidental bird sightings - chough, skylark, meadow pipit and linnet.
TN16	Sandy and scrubby area with bare ground and some sea rocket present
TN17	Bare ground with thyme and trefoil present
TN18	Locally abundant thyme and trefoil
TN19	Culvert/drain diverting water under gravel driveway
TN20	Locally dominant cranesbill species
TN21	Northeast corner of field planted with nitrogen fixing clover species (*Trifolium* sp.) cover crop; possibly sweet clover species (*Melilotus* sp.)
TN22	An earth mound, suitable for basking reptiles
TN23	A tyre pile, suitable for reptiles and amphibians
TN24	Unoccupied harvest mouse nest, likely disturbed by mowing field as not in typical location
TN25	Wet depression, possibly a pond but obscured by vegetation with no access
TN26	Hedgerow present upon hedge bank.
TN27	Hedgerow present upon hedge bank over semi-improved grassland bank.
TN28	Agricultural machinery and piles of materials over grassland
TN29	Unmanaged margin of grassland with sward height approx. 10 to 40 cm. Species include hogweed, false oat grass, common nettle, cleavers (*Galium aparine*) and Yorkshire fog.
TN30	Margin of poor semi-improved grassland (approx. 1 m in width) due to greater abundance of Yorkshire fog
TN31	Lake is suitable for otter with banks for holt building with some scrub and steep sides. Connectivity is suboptimal as there are streams, but they are likely too shallow except with heavy rain.
TN32	Incidental bird sightings - red kite flying over lake
TN33	Birds nest - dense cluster of sticks observed in ash tree.
TN34	Water vole potential as streams close to lake and long grass nearby in some sections but dense vegetation prevented a thorough assessment.
TN35	Tall ruderal margin to dense scrub. Dominated by nettle with some bramble, purple loosestrife and hemlock water dropwort,

Target Note	Description
TN36	Gap in hedge with bare ground. Assume caused by cattle
TN37	Birds nest - two inactive *Corvid* sp. nests in willow tree
TN38	Marsh cudweed present
TN39	A brash pile, suitability as reptile and amphibian hibernaculum
TN40	A brash pile, suitability as reptile amphibian hibernaculum
TN41	Arable field margin with cudweeds. Identified as marsh cudweed.
TN42	Site storage areas with piles of rubble and gravel
TN43	Vista of inaccessible land. Grassland rougher, sward height average 30 cm. Suitable for reptiles and foraging barn owl
TN44	Incidental bird sightings - yellowhammer noted flying along hedgerow
TN45	Incidental bird sightings - stonechat
TN46	A dry-stone wall present beneath hedgerow.
JR1	Japanese rose hedge along residential property garden boundary; a Schedule 9 INNPS
M1	A montbretia sp. a Schedule 9 INNPS
M2	A montbretia sp. a Schedule 9 INNPS
M3	A montbretia sp. a Schedule 9 INNPS
M4	A montbretia sp. a Schedule 9 INNPS
NW1	Several Nuttall's waterweed plants present; an IASO Schedule 9 INNPS

Appendix D Photographs

Photograph 1: Typical view of improved grassland field within the central portion of the onshore development area. Other areas of improved grassland cut for hay/ silage.

Photograph 2: Marsh/ marshy grassland within field of improved grassland situated within the central portion of the onshore development area.

Photograph 3: Waterbody P1 within improved grassland field in the western portion of the onshore development area. Watercourse flows through field and fills P1 and is poached by cattle.

Photograph 4: Waterbody P2, situated within the central portion of the onshore development area within the grounds of a private residential garden.

Photograph 5: Eutrophic waterbody P3 within the central portion of the onshore development area. Image shows marginal habitat which surrounds the entire pond/ lake.

Photograph 6: Mixed woodland pocket located within central portion of the onshore development area, isolated and surrounded by improved grassland on all sides.

Photograph 7: Broadleaved woodland – semi-natural. Image shows ash dominated woodland within blackthorn scrub understory within the central portion of the onshore development area.

Photograph 8: Broadleaved woodland – semi-natural habitat in central portion of the onshore development area. Classified as 'wet woodland' this area is a Habitat of Principal Importance.

Photograph 9: View of stream which flows across the entire width of the onshore development area within the central portion near Wallaston Green.

Photograph 10: Tree T4 assessed as having Moderate bat roost suitability. Dead ash tree within woodland in eastern portion of the onshore development area.

Photograph 11: Tree T7 assessed as having Moderate bat roost suitability. Single willow tree within area of dense scrub in eastern portion of the onshore development area.

Photograph 12: Farm structure BN1 assessed as having Precautionary Low bat roost suitability due to restricted access. Appears to be cattle feed storage area.

Photograph 13: Farm building BN2 assessed as having Low bat roost suitability. Corrugated metal structure at farm in western portion of the onshore development area.

Photograph 14: Farm building BN3 assessed as having Low bat roost suitability. Corrugated metal structure at farm in western portion of the onshore development area.

Photograph 15: Metal structure BN4 offering negligible bat roost suitability. Located within central portion of the onshore development area, associated with solar farm.

Photograph 16: Metal structure BN5 offering negligible bat roost suitability. Located within central portion of the onshore development area, associated with solar farm.

Photograph 17: Brash pile within field in eastern portion of the onshore development area. Brash pile may act as a hibernaculum for reptile and amphibian species.	Photograph 18: Rubble pile within field in western portion of the onshore development area. Rubble pile may act as a hibernaculum for reptile and amphibian species.
	
Photograph 19: Pile of tyres within field in western portion of the onshore development area. Tyre pile may act as a hibernaculum for reptile and amphibian species.	Photograph 20: Birds nest situated within ash tree directly adjacent to waterbody P3 in the central portion the onshore development area. Nest consists of a dense cluster of sticks.
	
Photograph 21: Montbretia plant adjacent to the onshore development area in the central region, adjacent to farmland and residential property. Listed as a Schedule 9 INNPS.	Photograph 22: Japanese rose hedgerow/ property boundary along the western end of the onshore development area; a Schedule 9 INNPS

	
Photograph 23: Nuttall's waterweed present within waterbody P3. Identified within ponds marginal vegetation. Species listed as an IASO	Photograph 24: Harvest mouse nest situated in improved grassland field in central portion of the onshore development area. Possibly disturbed by mowing in field as found in atypical location.

Appendix E Desk Study Bird Species

Common Name	Scientific Name	Birds Directive Annex 1	Wildlife and Countryside Act Schedule 1	Section 7 Species of Principal Importance	BoCC5 Red (Wales)	BoCC5 Amber (Wales)
Black Redstart	*Phoenicurus ochruros*		ü			ü
Black-necked Grebe	*Podiceps nigricollis*		ü			ü
Black-tailed Godwit	*Limosa limosa*		ü			ü
Brambling	*Fringilla montifringilla*		ü			
Cetti's Warbler	*Cettia cetti*		ü			
Chough	*Pyrrhocorax pyrrhocorax*	ü	ü	ü		ü
Common Loon	*Gavia immer*		ü			
Common Scoter	*Melanitta nigra*		ü	ü		ü
Eurasian Bittern	*Botaurus stellaris*	ü	ü	ü		
Eurasian Whimbrel	*Numenius phaeopus*		ü			ü
Fieldfare	*Turdus pilaris*		ü			ü
Garganey	*Spatula querquedula*		ü			ü
Goldeneye	*Bucephala clangula*		ü			ü
Goshawk	*Accipiter gentilis*		ü			ü
Green Sandpiper	*Tringa ochropus*		ü			ü
Greenshank	*Tringa nebularia*		ü			
Hen Harrier	*Circus cyaneus*	ü	ü	ü	ü	
Hobby	*Falco subbuteo*		ü			
Lapland Bunting	*Calcarius lapponicus*		ü			ü
Little Ringed Plover	*Charadrius dubius*		ü			
Long-tailed Duck	*Clangula hyemalis*		ü		ü	
Mediterranean Gull	*Ichthyaetus melanocephalus*	ü	ü			ü
Merlin	*Falco columbarius*	ü	ü		ü	
Peregrine	*Falco peregrinus*	ü	ü			
Pintail	*Anas acuta*		ü			ü
Purple Sandpiper	*Calidris maritima*		ü		ü	
Red Kite	*Milvus milvus*	ü	ü			
Redwing	*Turdus iliacus*		ü			

Ruff	*Calidris pugnax*	ü	ü			ü
Slavonian Grebe	*Podiceps auritus*	ü	ü		ü	
Snow Bunting	*Plectrophenax nivalis*		ü			ü
Western Barn Owl	*Tyto alba*		ü			
Western Marsh Harrier	*Circus aeruginosus*		ü			ü
Whooper Swan	*Cygnus cygnus*	ü	ü			
Wryneck	*Jynx torquilla*		ü			ü

Appendix F Desk Study Terrestrial Invertebrate Species

Common Name	Scientific Name	Group	Section 7 Species of Principal Importance	Red List*	LBAP	Wildlife and Countryside Act Schedule 5
black-oil beetle	*Meloe proscarabaeus*	Beetle (*Coleoptera*)	ü			
N/A	*Cryptocephalus aureolus*	Beetle (*Coleoptera*)		NB		
brown argus	*Aricia agestis*	Butterfly (Lepidoptera)			ü	
dark green fritillary	*Speyeria aglaja*	Butterfly (Lepidoptera)			ü	
dingy skipper	*Erynnis tages*	Butterfly (Lepidoptera)	ü	VU	ü	
grayling	*Hipparchia semele*	Butterfly (Lepidoptera)	ü	VU	ü	
marsh fritillary	*Euphydryas aurinia*	Butterfly (Lepidoptera)	ü	VU	ü	ü
silver-studded blue	*Plebejus argus*	Butterfly (Lepidoptera)	ü	VU	ü	ü
small blue	*Cupido minimus*	Butterfly (Lepidoptera)	ü	NT	ü	ü
small heath	*Coenonympha pamphilus*	Butterfly (Lepidoptera)	ü	NT		
wall	*Lasiommata megera*	Butterfly (Lepidoptera)	ü	NT	ü	
white-letter hairstreak	*Satyrium w-album*	Butterfly (Lepidoptera)	ü	EN	ü	ü
dusky cockroach	*Ectobius lapponicus*	Cockroach (*Dictyoptera*)		S		
hairy dragonfly	*Brachytron pratense*	Dragonfly (*Odonata*)			ü	
brown-banded carder-bee	*Bombus humilis*	Bee (*Hymenoptera*)	ü		ü	
buff-tailed bumblebee	*Bombus terrestris*	Bee (*Hymenoptera*)			ü	
common carder bee	*Bombus pascuorum*	Bee (*Hymenoptera*)			ü	
early bumblebee	*Bombus pratorum*	Bee (*Hymenoptera*)			ü	
garden bumblebee	*Bombus hortorum*	Bee (*Hymenoptera*)			ü	
moss carder-bee	*Bombus muscorum*	Bee (*Hymenoptera*)	ü		ü	

red-tailed (hill) cuckoo bee	*Bombus rupestris*	Bee (*Hymenoptera*)		Nb	ü	
red-tailed bumblebee	*Bombus lapidaries*	Bee (*Hymenoptera*)			ü	
shrill carder bee	*Bombus sylvarum*	Bee (*Hymenoptera*)	ü	Nb	ü	
white-tailed bumblebee	*Bombus lucorum*	Bee (*Hymenoptera*)			ü	
annulet	*Charissa obscurata*	Moth (Lepidoptera)			ü	
autumnal rustic	*Eugnorisma glareosa*	Moth (Lepidoptera)	ü		ü	
beaded chestnut	*Agrochola lychnidis*	Moth (Lepidoptera)	ü		ü	
blood-vein	*Timandra comae*	Moth (Lepidoptera)	ü	ü		
buff ermine	*Spilosoma lutea*	Moth (Lepidoptera)	ü		ü	
cinnabar	*Tyria jacobaeae*	Moth (Lepidoptera)	ü		ü	
coronet	*Craniophora ligustri*	Moth (Lepidoptera)			ü	
crescent	*Helotropha leucostigma*	Moth (Lepidoptera)	ü			
dark-barred twin-spot carpet	*Xanthorhoe ferrugata*	Moth (Lepidoptera)	ü		ü	
dot moth	*Melanchra persicariae*	Moth (Lepidoptera)	ü		ü	
dusky brocade	*Apamea remissa*	Moth (Lepidoptera)	ü		ü	
dusky dart	Euxoa tritici	Moth (Lepidoptera)	ü		ü	
ear moth	Amphipoea oculea	Moth (Lepidoptera)	ü		ü	
feathered gothic	Tholera decimalis	Moth (Lepidoptera)	ü			
flounced chestnut	Agrochola helvola	Moth (Lepidoptera)	ü		ü	
gallium carpet	Epirrhoe galiata	Moth (Lepidoptera)	ü		ü	
garden dart	Euxoa tritici	Moth (Lepidoptera)	ü		ü	
garden tiger	Arctia caja	Moth (Lepidoptera)	ü		ü	

ghost moth	*Hepialus humuli*	Moth (Lepidoptera)	ü		ü	
grass rivulet	*Perizoma albulata*	Moth (Lepidoptera)	ü		ü	
green-brindled crescent	*Allophyes oxyacanthae*	Moth (Lepidoptera)	ü		ü	
Haworth's minor	*Celaena haworthii*	Moth (Lepidoptera)	ü		ü	
heath grass-veneer	*Crambus ericella*	Moth (Lepidoptera)		Nb		
knot grass	*Acronicta rumicis*	Moth (Lepidoptera)	ü		ü	
lackey	*Malacosoma neustria*	Moth (Lepidoptera)	ü		ü	
long-legged China-mark	*Dolicharthria punctalis*	Moth (Lepidoptera)		Nb		
mottled rustic	*Caradrina morpheus*	Moth (Lepidoptera)	ü		ü	
mullein wave	*Scopula marginepunctata*	Moth (Lepidoptera)	ü		ü	
narrow groundling	*Caryocolum alsinella)*	Moth (Lepidoptera)		N		
pied grey	*Eudonia delunella*	Moth (Lepidoptera)		Nb		
rosy minor	Litoligia literosa	Moth (Lepidoptera)	ü		ü	
rosy rustic	*Hydraecia micacea*	Moth (Lepidoptera)	ü		ü	
round-winged muslin	*Thumatha senex*	Moth (Lepidoptera)			ü	
rustic	*Hoplodrina blanda*	Moth (Lepidoptera)	ü		ü	
sallow	*Cirrhia icteritia*	Moth (Lepidoptera)	ü		ü	
sand dart	*Agrotis ripae*	Moth (Lepidoptera)			ü	
shaded broad-bar	*Scotopteryx chenopodiata*	Moth (Lepidoptera)	ü		ü	
shoulder-striped wainscot	*Leucania comma*	Moth (Lepidoptera)	ü		ü	
small emerald	*Hemistola chrysoprasaria*	Moth (Lepidoptera)	ü		ü	

small phoenix	*Ecliptopera silaceata)*	Moth (Lepidoptera)	ü		ü	
small square-spot	*Diarsia rubi*	Moth (Lepidoptera)	ü		ü	
white colon	*Sideridis turbida*	Moth (Lepidoptera)			ü	
white ermine	*Spolosoma lubricipeda*	Moth (Lepidoptera)	ü		ü	

**NT = Near Threatened; VU: Vulnerable*

Appendix G Confidential – Badger Sett Locations and Details

224. During the 2023 badger (Meles meles) activity surveys (**Appendix B** for methods) multiple signs of badger activity were recorded across the onshore development area, the majority of which were located in the eastern and western portions of the Survey Area. Field signs including setts, snuffle holes, mammal paths and burrows as well as numerous latrines and droppings were recorded, details of which can be found in **Table 8B-23.**.

225. During the bat activity survey undertaken on 30 August 2023, two live badgers (B1) were recorded and observed within an agricultural field adjacent to woodland/ scrub in the east of the onshore development area. An active badger main sett (Sett 9) with four observed entrances was identified in the same location (**Volume 5: Confidential Figure 8-9).** The two individuals were observed exiting the field via the adjacent scrub. In the neighbouring agricultural field, a single disused sett entrance (S5) and a further two possible sett entrances (S6 and S7) were identified within the scrub, however the dense vegetation made it difficult to confirm the sett classification.

226. The details of badger setts within the onshore development area, and their locations are summarised in **Table 8B-23..** These setts are shown below in **Volume 5: Confidential Figure 8-9.**

Table 8B-23. Confidential – Summary of badger field signs within the survey area

Feature	Description	Reference Point (Volume: Figure 8-9)	Photograph
Live Badger	Two badgers, likely sub-adult, observed during evening bat emergence survey. Badger associated with active sett (S8). Badgers moved into foliage adjacent to arable field and went into foliage adjacent. Appeared to be juvenile present.	B1	
Outlier sett - Partially used	Badger sett with single sett entrance. Appears to be recently excavated with some vegetation debris within entrance.	S1	
Outlier sett - Active	Badger sett with three entrances. Two entrances appear to be clear, with the other covered by overgrown vegetation. Mammal paths are present within marram grass leading away from sett, with snuffle holes present in abundance and fresh latrines also observed in close proximity.	S2	
Outlier sett - Partially used	Sett recorded within scrub with visible mammal paths leading into adjacent	S3	

Feature	Description	Reference Point (Volume: Figure 8-9)	Photograph
	field. Visible sett entrance not obstructed by vegetation suggests recent use, with snuffle holes present in close proximity to the sett.		
Outlier sett - Partially used	Within hedge atop earth bank. One sett entrance observed and not actively used. Partially used as appears could be re-excavated with minimal amounts of clearance	S4	
Outlier sett - Disused	Single badger sett entrance, within proximity of the main sett (approx. 250 m) however visible depression within ground would require considerable amounts of clearance to re-excavate.	S5	
Possible Sett Entrance	Possible badger sett entrance in blackthorn scrub hedge and ivy. Lots of exploratory digging. Within approximately 150 m of the main sett identified suggesting active foraging grounds or an annexe/ subsidiary sett within scrub.	S6	
Possible Sett Entrance	Possible badger sett entrance in blackthorn scrub hedge and ivy. Lots of exploratory digging. Within approximately 160 m of the main sett identified suggesting active foraging grounds or an annexe/ subsidiary sett within scrub.	S7	
Main Sett – Well used	Active sett determined by the presence of badger observed during evening bat emergence survey (B1). There are four visible sett entrances, three of which were determined to be well used, however likely more entrances obstructed by vegetation directly adjacent. Presence of juvenile badger suggests breeding activity within this sett, suggesting main sett classification.	S8	

Feature	Description	Reference Point (Volume: Figure 8-9)	Photograph
Outlier sett - Partially used	Single entrance. No signs of recent activity. Small moss covered spoil ($1m^3$).	S9	
Outlier sett - Partially used	Large mammal hole, very steep, large enough for badger	S10	
Outlier sett - Partially used	Large mammal hole - veg growing inside partially used sett potentially, large enough for badger	S11	
Outlier sett - Partially used	Single mammal burrow entrance, partially active	S12	
Outlier sett - Partially used	Probable badger hole in scrubby bank. Hole shape and dimensions fit badger, but no field signs that confirm. Possible pile of old grass bedding near entrance	S13	
Outlier sett - Partially used	Mammal burrow.	S14	
Snuffle Hole	Badger snuffle holes	SH1	
Snuffle Hole	Badger snuffle holes and run under fence / hedgerow	SH2	
Snuffle Hole	Badger scat and scrapes at base of hedge	SH3	
Mammal Burrow	Large burrow in sand bank visible from fence line - possible badger	MB1	
Mammal Path	Marram grass becomes dominant with a network of defined mammal paths	MP1	
Mammal Path	Mammal run, leads under fence to large bare area. Likely badger and possible set in scrub beyond fence	MP2	
Mammal Path	Mammal path into scrub/ hedgerow. too small for badger	MP3	

Feature	Description	Reference Point (Volume: Figure 8-9)	Photograph
Mammal Path	Abundant Badger foraging activity and paths into dense scrub suggesting main sett in scrub	MP4	
Mammal Path	Mammal path and push under into scrub, large enough for badger	MP5	
Mammal Path	Mammal path through Sward approx. 20cm wide and roughly parallel to the scrub line. At least two paths heading to stream and across field towards lake. Could be otter path	MP6	
Mammal Path	Under fence into construction site	MP7	
Mammal Path	Abundant badger foraging activity and paths into dense scrub suggesting main sett in scrub	MP8	
Mammal Path	Badger path and latrine	MP19	
Mammal Path	Mammal path	M10	
Mammal Path	Mammal path	MP11	
Mammal Path	Mammal path	MP12	
Latrine	Badger latrine	L1	
Latrine	Two fresh latrines	L2	
Latrine	Badger latrine	L3	
Latrine	Badger latrine	L4	
Latrine	Badger latrine	L5	
Latrine	Badger latrine on the edge of arable field	L6	
Latrine	Badger latrine on end of run	L7	

Feature	Description	Reference Point (Volume: Figure 8-9)	Photograph
Latrine	Badger latrine	L8	
Latrine	3 latrines with path through hedge	L9	
Latrine	9 Badger latrines	L10	
Dropping	Single badger dropping	D1	
Dropping	Single badger dropping	D2	
Push Under		PU1