codling wind park

Environmental Impact Assessment Report

Volume 3

Chapter 21 Onshore Biodiversity


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Abbreviations

Abbreviation	Term in full
AA	Appropriate Assessment
ABP	An Bord Pleanála
BC Ireland	Bat Conservation Ireland
BAP	Biodiversity Action Plan
BS	British Standard
CDP	City / County Development Plan
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CNL	Construction Noise Level
CWP	Codling Wind Park
CWPL	Codling Wind Park Limited
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DCC	Dublin City Council
DCCAE	Department of Communications, Climate Action and Environment
DECC	Department of the Environment, Climate and Communications
DEHLG	Department of the Environment, Heritage & Local Government
DPC	Dublin Port Company
EC	European Commission
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ESBN	Electricity Supply Board Networks
EU	European Union
FPO	Flora Protection Order
GIS	Geographic Information System
GSI	Geological Survey Ireland
HDD	Horizontal Directional Drilling

HWM	High water mark
IFI	Inland Fisheries Ireland
IAQM	Institute of Air Quality Management
INNS	Invasive non-native species
ISMP	Invasive Species Management Plan
IWT	Irish Wildlife Trust
KER	Key Ecological Receptors
NBDC	National Biodiversity Data Centre
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority
OPR	Office of the Planning Regulator
O&M	Operation and Maintenance
OSI	Ordnance Survey Ireland
OTI	Onshore Transmission Infrastructure
OWF	Offshore Wind Farm
PEA	Preliminary Ecological Appraisal
PBR	Potential Bat Roost
PRF	Potential Roost Feature
pNHA	Proposed Natural Heritage Area
SAC	Special Area of Conservation
SCI	Sites of Community Importance
SPA	Special Protection Area
TJB	Transition joint bays
WFD	Water Framework Directive
WWTP	Waste Water Treatment Plan
ZoI	Zone of influence

Definitions

Glossary	Meaning
the Applicant	The developer, Codling Wind Park Limited (CWPL)
baseline	Current state of the environment which is subject to an impact assessment as part of the EIA process.
Codling Wind Park (CWP) Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works.
Codling Wind Park Limited (CWPL)	A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project.
Compound A	A temporary construction compound, support area and storage facility for the landfall works, and to support the installation of the onshore export cables. It will operate as a hub for the onshore construction works as well as acting as a staging post and secure storage for equipment and component deliveries.
Compound B	A temporary construction compound / laydown area for general cable route and onshore substation construction activities.
Compound C	A temporary construction compound for the onshore substation site. Contractor welfare facilities will be located in this compound as well as some material storage space.
Compound D	A temporary construction compound and laydown area to facilitate the construction of the bridge over the cooling water channel.
Environmental Impact Assessment (EIA)	A systematic means of assessing the likely significant effects of a proposed project, undertaken in accordance with the EIA Directive and the relevant Irish legislation.
Environmental Impact Assessment Report (EIAR)	The report prepared by the Applicant to describe the findings of the EIA for the CWP Project.
ESB Networks (ESBN)	Owner of the electricity distribution system in the Republic of Ireland, responsible for carrying out maintenance, repairs and construction on the grid.
ESBN network cables	Three onshore export cable circuits connecting the onshore substation to the proposed ESBN Poolbeg substation, which will then transfer the electricity onwards to the national grid.
export cables	The cables, both onshore and offshore, that connect the offshore substations with the onshore substation.
Environmental Protection Agency (EPA)	National agency responsible for protecting and improving the environment of Ireland under the Environmental Protection Agency Acts 1992 to 2011.
high water mark (HWM)	The line of high water of ordinary or medium tides of the sea or tidal river or estuary.
horizontal directional drilling (HDD)	HDD is a trenchless drilling method used to install cable ducts beneath the ground through which onshore export cables from can be pulled.

	HDD enables the installation of cables beneath obstacles such as roads, waterways and existing utilities.
landfall	The point at which the offshore export cables are brought onshore and connected to the onshore export cables via the transition joint bays (TJB). For the CWP Project, the landfall works include the installation of the offshore export cables within Dublin Bay out to approximately 4 km offshore, where water depths are too shallow for conventional cable lay vessels to operate.
limit of deviation (LoD)	Locational flexibility of permanent and temporary infrastructure is described as a LoD from a specific point or alignment.
Natural Heritage Areas (NHA)	Sites of national significance that are legally protected from damage under Irish legislation in the form of the Wildlife (Amendment) Act 2000.
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service is a division of the Department of Housing, Local Government and Heritage which manages the Irish State's nature conservation responsibilities. As well as managing the national parks, the activities of the NPWS include the protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas.
offshore transmission infrastructure (OfTI)	The offshore transmission assets comprising the OSSs and offshore export cables. The EIAR considers both permanent and temporary works associated with the OfTI.
onshore export cables	The cables which transport electricity generated by the WTGs from the TJBs at the landfall to the onshore substation.
onshore development area	The entire footprint of the OTI and associated temporary works that will form the onshore boundary for the planning application.
onshore transmission infrastructure (OTI)	The onshore transmission assets comprising the TJBs, onshore export cables and the onshore substation. The EIAR considers both permanent and temporary works associated with the OTI.
onshore substation	Site containing electrical equipment to enable connection to the national grid.
onshore substation site	The area within which permanent and temporary works will be undertaken to construct the onshore substation.
onshore substation site boundary	The physical boundary of the onshore substation site.
onshore substation operational site	The area within the operational site boundary within which operational activities will occur.
operations and maintenance (O&M) activities	Activities (e.g., monitoring, inspections, reactive repairs, planned maintenance) undertaken during the O&M phase of the CWP Project.
O&M phase	This is the period of time during which the CWP project will be operated and maintained.
parameters	Set of parameters by which the CWP Project is defined and which are used to form the basis of assessments.
Phase 1 Project	Under the special transition provisions in the Maritime Area Planning Act 2021, as amended (the MAP Act), the Minister for the Department of Environment, Climate and Communications (DECC) has responsibility

	for assessing and granting a Maritime Area Consent (MAC) for a first phase of offshore wind projects in Ireland. The Phase 1 Projects include Oriel Wind Park, Arklow Bank II, Dublin Array, North Irish Sea Array, Codling Wind Park and Skerd Rocks. A MAC has since been granted by DECC for each of the Phase 1 Projects.
planning application boundary	The area subject to the application for development consent, including all permanent and temporary works for the CWP Project.
Poolbeg 220kV substation	This is the ESBN substation that the ESBN network cables connect into, from the onshore substation. This substation will then transfer the electricity onwards to the national grid.
Proposed Natural Heritage Areas (pNHA)	Sites of national significance that have been proposed but not yet formally designated and are subject to limited protection, including recognition of the ecological value of pNHAs by Planning and Licensing Authorities.
receptor	Environmental component that may be affected, adversely or beneficially, by the project.
revetment	A facing of impact-resistant material applied to a bank or wall in order to absorb the energy of incoming water and protect it from erosion.
Special Area of Conservation (SAC)	Special Areas of Conservation are established under the EU Habitats Directive (92/43/EEC) and are defined as a site of Community importance designated by the Member States through a statutory, administrative and / or contractual act where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and / or the populations of the species for which the site is designated.
Special Protection Area (SPA)	Special Protection Areas are established under the EU Birds Directive (2009/147/EC) and are defined as areas protected for listed rare and vulnerable species, regularly occurring migratory species, and wetlands, especially those of international importance.
species	A group of interbreeding organisms that seldom or never interbreed with individuals in other such groups, under natural conditions; most species are made up of subspecies or populations.
study area	Onshore Development area and any survey area that is required to comprehensively identify, evaluate and assess the potential significant effects of CWP OIW on a particular environmental factor.
temporary HDD compound 1	The area within Compound C that will house the ESBN network cable HDD entry or exit pits as well as associated plant, equipment and facilities.
temporary HDD compound 2	The area adjacent to the Poolbeg 200kV substation that will house the ESBN network cable HDD entry or exit pits as well as associated plant, equipment and facilities.
temporary tunnel compound 1	The area within Compound A, near the landfall, within which the Compound A tunnel launch shaft will be located.
temporary tunnel compound 2	The area within which the Shellybanks Road tunnel reception shaft will be located.

temporary tunnel compound 3	The area within the onshore substation site, within which the onshore substation tunnel launch shaft will be located.
transition joint bay (TJB)	This is required as part of the OTI and is located at the landfall. It is an underground bay housing a joint which connects the offshore and onshore export cables.
tunnel	The onshore export cables will be installed within a tunnel that extends from within Compound A, near the landfall, to the onshore substation site.
tunnel shaft	Located within the temporary tunnel compounds, the tunnel shafts will facilitate the two tunnel drives required to complete the construction of the tunnel.
zone of Influence (ZoI)	Spatial extent of potential impacts resulting from the project.

21 ONSHORE BIODIVERSITY

21.1 Introduction

1. Codling Wind Park Limited (hereafter 'the Applicant') is proposing to develop the Codling Wind Park (CWP) Project, a proposed offshore wind farm (OWF) located in the Irish Sea, approximately 13–22 km off the east coast of Ireland, in County Wicklow.

2. This chapter forms part of the Environmental Impact Assessment Report (EIAR) for the CWP Project. The purpose of the EIAR is to provide the decision-maker, stakeholders and all interested parties with the environmental information required to develop an informed view of any likely significant effects resulting from the CWP Project on biodiversity, as required by the European Union (EU) Directive 2011/92/EU (as amended by Directive 2014/52/EU) (the EIA Directive).

3. This EIAR chapter describes the potential impacts of the onshore transmission infrastructure (OTI) on onshore biodiversity during the construction, operation and maintenance (O&M) and decommissioning phases, with the exception of avifauna, which is assessed separately in **Chapter 10 Ornithology** and the marine environment, which is assessed separately in **Chapter 8 Subtidal and Intertidal Ecology**, **Chapter 9 Fish, Shellfish and Turtle Ecology**, **Chapter 11 Marine Mammals**, and **Chapter 13 Offshore Bats**.

4. The OTI is situated on the Poolbeg Peninsula and includes the transition joint bays (TJBs), onshore export cables, the onshore substation and the Electricity Supply Board Networks (ESBN) network cables to connect the onshore substation to the Poolbeg 220kV substation. This chapter will also describe the potential impacts of the works at the landfall (landward of the high water mark (HWM)), where the offshore export cables are brought onshore and connected to the onshore export cables at the TJBs (hereafter these works are referred to as the 'OTI').

5. In summary, this EIAR chapter:

   - Details the EIA scoping and consultation process undertaken and sets out the scope of the impact assessment for onshore biodiversity;
   - Identifies the key legislation and guidance relevant to onshore biodiversity, with reference to the latest updates in guidance and approaches;
   - Confirms the study area for the assessment and presents the impact assessment methodology for onshore biodiversity;
   - Describes and characterises the baseline environment for onshore biodiversity, established from desk studies, project survey data and consultation;
   - Defines the project design parameters for the impact assessment and describes any embedded mitigation measures relevant to the onshore biodiversity assessment;
   - Presents the assessment of potential impacts on onshore biodiversity and identifies any assumptions and limitations encountered; and
   - Details any mitigation and / or monitoring necessary to prevent, minimise, reduce or offset potentially significant effects identified in the impact assessment.

6. The assessment should be read in conjunction with **Appendix 21.1 Cumulative Effects Assessment**, which considers other plans, projects and activities that may act cumulatively with the CWP Project and provides an assessment of the potential cumulative impacts on biodiversity.

7. A summary of the cumulative effects assessment (CEA) for onshore biodiversity is presented in **Section 21.13**.

8. Additional information to support the assessment includes:

- **Appendix 21.1 Cumulative Effects Assessment**;
- **Appendix 21.2 Baseline Bat Report**;
- **Appendix 21.3 Ecological Survey of Supratidal Habitats at Poolbeg**.

21.2 Consultation

9. Consultation with statutory and non-statutory organisations is a key part of the EIA process. Consultation with regard to onshore biodiversity has been undertaken to inform the approach to and scope of the assessment.

10. The key elements to date have included EIA scoping, consultation events and meetings with key stakeholders. The feedback received throughout this process has been considered in preparing the EIAR. EIA consultation is described further in **Chapter 5 EIA Methodology**, the **Planning Documents** and in the **Public and Stakeholder Consultation Report**, which has been submitted as part of the planning application.

11. All relevant consultation responses have been fully taken into account in preparing this onshore biodiversity impact assessment. **Table 21-1** provides a summary of the key issues raised during the consultation process relevant to onshore biodiversity and details how these issues have been considered in the production of this EIAR chapter.

Table 21-1 Consultation responses relevant to biodiversity

Consultee	Comment	How issues have been addressed
Scoping responses		
Bat Conservation Ireland (BC Ireland) 14 June 2021	BC Ireland advised that they do not have the capacity to review planning applications but recommended that all bat surveys are undertaken according to best practice guidelines.	All bat surveys undertaken within the study area were carried out according to best practice guidelines.
National Parks and Wildlife Service (NPWS) 21 January 2022	No comments were received from NPWS on the EIA Scoping Report.	N/A
Inland Fisheries Ireland (IFI) 14 June 2021 and 18 June 2021	14 June 2021: An acknowledgement of receipt was issued by IFI. 18 June 2021: • Cumulative impacts should take cognisance of the Dublin Port Maintenance Dredging Programme & Strategic Infrastructure Projects planned. • Trenchless technique preferred for the cable installation. • Instream works in inland fisheries waters should only take place during the period July to September.	There are no surface water features within the onshore development area and therefore no associated instream works. Aspects raised on the EIA Scoping Report by the IFI have been addressed in **Chapter 7 Marine Water Quality** and **Chapter 9 Fish, Shellfish and Turtle Ecology**.

Consultee	Comment	How issues have been addressed
	• Detailed methods statement will reduce the risk to the local environment. • Queried whether it is anticipated to do some post works monitoring to show no impact of the works on the environment?	
Irish Wildlife Trust (IWT) 30 April 2021 14 June 2021	30 April 2021 and 14t June 2021: The IWT indicated that they do not have the capacity to respond to scoping / consultation requests at this time.	N/A
Topic specific meetings		
Dublin City Council (DCC) Biodiversity and parks 31 January and 1 June 2023	Key biodiversity-related comments from DCC at the meeting included: • Recognition of the importance of 'Goose Green', which forms part of the Dublin Bay SPA. • Proximity to the Irishtown Nature Park. • Seeking to understand the landscape reinstatement plans for the existing berm at landfall and also if there will be any planting restrictions. • Proximity to the onshore development area to an artificial badger sett was noted. • Mitigation proposals such as falcon enhancements, bat boxes and swift boxes should be considered.	• 'Goose Green' is addressed under **Chapter 10 Ornithology** • The reinstatement proposals for the onshore development area are addressed in **Section 21.11** of this chapter and in **Chapter 23 Landscape and Visual Impact Assessment, Figures 23.7–23.9**. • The impact assessment for badgers is detailed in **Section 21.11.1** and **Sections 21.11.2** of this chapter. • Irishtown Nature Park is considered in **Section 21.5.2** of this chapter. • The impact assessment for badgers is detailed in **Section 21.11.1** and **Sections 21.11.2** of this chapter. • Mitigation measures are detailed in **Section 21.11.1** and **Section 21.11.2** of this chapter. • Mitigation measures in relation to ornithology are provided in **Chapter 10 Ornithology**.
NPWS 5 October 2022 and 26 October 2022	Meetings were primarily focused on ornithological aspects of the CWP Project. However, onshore biodiversity related comments from NPWS at the meetings included: • Proximity of the onshore development area to a badger sett was noted and the potential for vibrational impacts. • Consideration of otter within the onshore study area.	• The impact assessment for badgers is detailed in **Section 21.11.1** and **Sections 21.11.2** of this chapter. • Otters are considered in **Section 21.11.1** and **Section 21.11.2** of this chapter.

21.3 Legislation and Guidance

21.3.1 Legislation

12. The main legislation that is applicable to the assessment of onshore biodiversity is summarised below. Further detail is provided in **Chapter 2 Policy and Legislative Context**.

- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, hereafter referred to as the EIA Directive;
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, hereafter referred to as the Habitats Directive;
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, hereafter referred to as the Birds Directive;
- Planning and Development Act 2000 (as amended);
- European Union (EU) (Planning and Development) (Environmental Impact Assessment) Regulations 2001 (as amended);
- EU Water Framework Directive (2000/60/EC) (WFD), transposed into Irish law in 2009 (S.I. 272 of 2009, European Communities Environmental Objective (Surface Waters) Regulations 2009 as amended; hereafter referred to as the WFD Regulations;
- European Communities (Water Policy) Regulations 2003, SI 722/2003;
- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) as amended;
- Wildlife Act (as amended), hereafter referred to as the Wildlife Act;
- Flora (Protection) Order, 2022 (S.I. No. 235 of 2022); and
- Inland Fisheries Acts (as amended), hereafter referred to as the Fisheries Acts.

21.3.2 Policy

13. The overreaching planning policy relevant to the CWP Project is described in EIAR **Chapter 2 Policy and Legislative Context**.

14. The assessment of the CWP Project against relevant planning is provided in the Planning Report. This includes planning policy relevant to onshore biodiversity.

21.3.3 Guidance

15. The principal guidance and best practice documents used to inform the assessment of potential impacts and the significance of effects on onshore biodiversity are summarised below:

- Environmental Protection Agency (EPA) (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines);
- Chartered Institute of Ecology and Environmental Management [CIEEM] (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1;
- Department of Environment, Community and Local Government (2018). Guidelines for Planning Authorities and An Bord Pleanála (ABP) on carrying out Environmental Impact Assessment (August 2018);
- Department of Communications, Climate Action and Environment & Sustainable Energy Authority of Ireland (2017). Guidance on EIS and NIS Preparation for Offshore Renewable Projects;

- European Commission (2017). Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report;
- National Roads Authority (2009) Guidelines for Assessment of Ecological Impacts of National Roads Schemes; and
- EPA (2003). Advice Notes on Current Practice in the Preparation of Environmental Impact Statements.

16. Please note that this list is not extensive and other specialised literature references exist for some species.

21.4 Impact assessment methodology

17. **Chapter 5 EIA Methodology** provides a summary of the general impact assessment methodology applied to the CWP Project, which includes the approach to the assessment of transboundary and inter-related effects. The approach to the assessment of cumulative impacts is provided in **Chapter 5, Appendix 5.1 CEA Methodology**.

18. The following sections confirm the methodology used to assess the potential impacts on biodiversity.

21.4.1 Study area and Zone of Influence

19. The OTI is located on the Poolbeg Peninsula, adjacent to both Dublin Bay and the River Liffey and east of the River Dodder and Grand Canal Dock. The site location is shown in **Chapter 4 Project Description**.

20. The study area comprises all lands located within the zone of influence (ZoI) of the onshore development area. The current guidance on ecological assessments (CIEEM, 2018) states that:

'The "zone of influence" for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries' and that *'The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change.'*

21. The ZoI has therefore been defined through a desk-based assessment with regard to the sensitivity of habitats and species possibly present / previously recorded in the locality of onshore development area, areas with connectivity (e.g. physical, hydrological or ecological) to the site and potential impacts which may arise.

22. The ZoI for various ecological receptors within which the CWP Project could have potential impacts is outlined in **Table 21-2** overleaf.

Table 21-2 Zone of influence informing the assessment for the OTI

Ecological feature	Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
Internationally Designated Sites (European sites)	Activities during the construction, O&M and decommissioning phases	• Habitat loss • Habitat fragmentation • Disturbance • Changes to key elements of the European site • Changes to population density and distribution	Individually assessed using the Source–Pathway–Receptor Model (OPR, 2021)	The Source–Pathway–Receptor model is a standard tool in environmental assessment, which allows the identification of impacts (the source), potential pathways (e.g. hydrological, physical or ecological) and receptors (e.g. qualifying interests and / or special conservation interests) which may be negatively impacted (OPR, 2021). In order for an effect to occur, all three elements of this model must be in place. Potential pathways are summarised hereunder: • Physical – physical connectivity (overlap) with European sites; • Hydrological – connectivity via water bodies; • Hydrogeological – connectivity via groundwater bodies; • Air – atmospheric and noise emissions;

Ecological feature	Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
				• Ecological – connectivity via species activity (e.g. foraging/commuting ranges). Pathways of effect below the HWM are not considered within this chapter. These are considered in **Chapter 8 Subtidal and Intertidal Ecology**. Pathways of effects to Special Protection Areas (SPAs) are considered within **Chapter 10 Ornithology**.
Nationally Designated Sites (e.g. Natural Heritage Areas and proposed Natural Heritage Areas[1])	Activities during the construction, O&M and decommissioning phases	• Negative impacts to the designated scientific interests	Individually assessed using the Source–Pathway–Receptor Model (OPR, 2021)	is a standard tool in environmental assessment, which allows The Source–Pathway–Receptor model the identification of impacts (the source), potential pathways (e.g. hydrological, physical or ecological) and receptors (e.g. qualifying interests and / or special conservation interests) which may be negatively impacted (OPR, 2021). For an effect to occur, all three elements of this model must be in place. Examples of pathways

[1] Accessed [January 2024] via: https://www.npws.ie/protected-sites/nha

Ecological feature	Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
				are as described above for European sites. Pathways of effect to Nationally designated sites below the HWM are not considered within this chapter. These are considered in **Chapter 8 Subtidal and Intertidal Ecology**. Pathways of effects sites designated for bird species are considered within **Chapter 10 Ornithology**.
All other sites of conservation concern (e.g. RAMSAR, Nature Reserves)	Activities during the construction, O&M and decommissioning phases	• Negative impacts to the designated scientific interests	Individually assessed using the Source–Pathway–Receptor Model (OPR, 2021)	The Source–Pathway–Receptor model is a standard tool in environmental assessment, which allows the identification of impacts (the source), potential pathways (e.g. hydrological, physical, or ecological) and receptors (e.g. qualifying interests and / or special conservation interests) which may be negatively impacted (OPR, 2021). For an effect to occur, all three elements of this model must be in place. Examples of pathways are as described above for European sites.

Ecological feature		Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
					Pathways of effect to other sites of conservation concern below the HWM are not considered within this chapter. These are considered in **Chapter 8 Subtidal and Intertidal Ecology**. Pathways of effects sites designated for bird species are considered within **Chapter 10 Ornithology.**
Habitats and flora	Loss of terrestrial habitats or plant species	Earthworks including vegetation clearance, development of infrastructure and access routes, removal of berms and removal of rock armour within the onshore development area.	Habitat loss	0 m for habitat loss (i.e. within the onshore development area only).	Habitat loss will only occur within the boundary of the onshore development area.
	Surface water dependent habitats or plant species	Water quality impacts during the construction, O&M and decommissioning phases	Habitat degradation from water quality impacts	There are no freshwater surface waterbodies hydrologically connected to the onshore development area.	N/A – water quality impacts scoped out as no freshwater surface water features occur within the ZoI.

Ecological feature		Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
	Air quality impacts (dust impacts)	Dust impacts from excavation activities during the construction phase	Habitat degradation from dust impacts	50 m	The Institute of Air Quality Management (IAQM) guidelines (IAQM, 2024) indicate that an assessment will be required where there is 'an ecological receptor within 50 m of the boundary of a site; or 50 m of the route(s) used by construction vehicles.
Mammals	Breeding and resting sites	Vegetation clearance and disturbance from the construction, O&M and decommissioning related activities	Habitat loss	0 m (i.e. within the onshore development boundary only)	Habitat loss will only occur within the boundary of the onshore development area.
			Disturbance to breeding sites	150 m	The outer extent of the survey area for protected mammal species was defined with regard to the National Roads Authority (NRA) guidance related to badgers (*Meles meles*) (NRA, 2005) and guidance related to otters (*Lutra lutra*) (NRA, 2006), which state that noise impacts from construction works can impact breeding badger setts / otter holts within 150 m of a noise source. Other protected mammal species potentially present at the locality (e.g. hedgehog) are likely to have a smaller ZoI, as impacts are predominantly associated with

Ecological feature		Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
					habitat damage and will therefore be captured within the 150 m ZoI.
Bats	Roosting and foraging / commuting	Vegetation clearance and disturbance from construction, O&M and decommissioning related activities	Habitat loss and loss of roosting sites	0 m (i.e. within the onshore development boundary only)	Habitat loss will only occur within the boundary of the onshore development area.
			Disturbance from artificial lighting	Area of light spill from source	The ZoI for impacts associated with artificial lighting will be all illuminated areas within the onshore development area.
Amphibians and reptiles	Resting and foraging habitat	Vegetation clearance and disturbance from construction, O&M and decommissioning related activities	Direct injury / mortality of loss of habitat	0 m (i.e. within the onshore development boundary only)	Habitat loss or direct injury will only occur within the boundary of the onshore development area. There is no potential for impacts on these species outside the onshore boundary area.
Invertebrates	Resting and foraging habitat	Vegetation clearance and disturbance from construction, O&M and decommissioning related activities	Direct injury / mortality of loss of habitat	0 m (i.e. within the onshore development boundary only)	Habitat loss or direct injury will only occur within the boundary of the onshore development area. There is no potential for impacts on these species outside the onshore boundary area.
Aquatic species (freshwater flora and	Resting and foraging habitat	Vegetation clearance and disturbance from construction, O&M and	Habitat degradation from water quality	There are no freshwater surface waterbodies hydrologically	N/A – water quality impacts scoped out as no freshwater surface water features occur within the ZoI of the onshore development area.

Ecological feature		Source(s) of effect from the OTI	Potential effect	Distance from the onshore development area boundary	Rationale
fauna species)		decommissioning related activities		connected to the onshore development area	

21.4.2 Data and information sources

Preliminary ecological appraisal

23. As part of the scoping process, a Preliminary Ecological Appraisal (PEA) was carried out as a rapid assessment of the ecological features present, or potentially present, within the study area as per CIEEM 2018 Guidelines. This comprised of a desktop review and verification surveys carried out in February 2021, i.e. a general walkover and preliminary habitat mapping and identification of potential ecological constraints. The results of this assessment are provided in the EIA Scoping Report and were used to inform this impact assessment.

Desk study

24. As part of the assessment of the OTI and landfall, a desk study of available online databases was carried out to identify potential ecological constraints and to inform the assessment. The following databases were consulted to retrieve ecological data:

- Online data available on European sites, including habitat and species, Geographic Information System (GIS) datasets, and conservation objectives (and supporting) documents, as held by the NPWS2;
- Information on the status of EU protected habitats and species in Ireland (Article 17 Reports NPWS 2019a; 2019b; 2019c);
- National Biodiversity Data Centre (NBDC)3 records and mapping for the following 10 km square grids overlapping and / or surrounding the OTI: O13 and O23;
- Bat Conservation Ireland (BCI) database of roost records[4], ad hoc detector records and waterways surveys;
- Department of Agriculture Badger Setts of Ireland Database (data request to Department of Agriculture Food and Marine [DAFM]);
- Dublin County Council – Online Planning Portal[5] and Dublin City Planning Application Map[6];
- Invasive Alien Species in Ireland (https://invasives.ie/);
- Environmental information/data from Envision Online Environmental Map Viewer[7]; and
- Review of Ordnance Survey Ireland (OSI) mapping and aerial photography (Google Maps, Bing Maps, Oblique Imagery) for the CWP Project and its environs.

21.4.3 Field survey methods

25. A range of ecological field surveys were undertaken within the study area between 2021 and 2023, in order to inform the impact assessment. The data collected was robust and allowed TOBIN to draw accurate, definitive and coherent conclusions on the possible impacts of the OTI on ecological receptors. Details of the surveys carried out are summarised in **Table 21-3.**

[2] Accessed [January 2024] via https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17
[3] National Biodiversity Data Centre (NBDC) (2023). National Biodiversity Data Centre Mapping System. Available from: http://maps.biodiversityireland.ie/#/Home [Accessed: 30 September 2023].
[4] Accessed [January 2024] via https://www.batconservationireland.org/what-we-do/monitoring-distribution-projects/bat-record-maps
[5] Accessed [January 2024] via https://www.dublincity.ie/residential/planning
[6] Accessed [January 2024] via https://mapzone.dublincity.ie/MapZonePlanning/
[7] Accessed [January 2024] via https://gis.epa.ie/EPAMaps/

Table 21-3 List of survey types, dates and surveyor details

Survey		Survey date	Organisation
Habitat surveys	Habitat walkover and mapping	April, May and June 2021	TOBIN
	Habitat walkover and mapping	September 2021	Flynn Furney Environmental Consultants
	Supratidal habitat walkover and mapping survey	September 2021 and May 2024	AQUAFACT International Services Ltd
	Habitat walkover and mapping	June 2022	TOBIN
	Habitat walkover and mapping	May and June 2023	TOBIN
	Habitat walkover and mapping	April 2024	TOBIN
Invasive plant species survey	Invasive plant species survey	June 2022	TOBIN
		June 2023 and June 2024	INVAS Biosecurity
Non-volant mammal surveys	Terrestrial mammal survey	February 2021	TOBIN
		April, May and June 2021	TOBIN
		September 2021	Flynn Furney Environmental Consultants
		June 2022	TOBIN
		February 2023	
		June 2023	TOBIN
		February and April 2024	TOBIN
Bat surveys	Tree Potential Bat Roost (PBRs) inspection	April 2021	TOBIN
		August and September 2021 May and June 2022	Bat Eco Services
	Walked transects	August and September 2021	Bat Eco Services
	Walked transects	May and June 2022	
	Static detectors	August and September 2021	
	Static detectors	May and June 2022	
	Bat habitat and commuting routes mapping	August and September 2021 May and June 2022	

	Building inspection survey	May and June 2022	
	Dawn bat survey	May and June 2022	
	Bat surveys	April and May 2023	
Amphibians, invertebrates and reptiles	Target amphibian, invertebrates and reptile survey	April, May and June 2021	TOBIN
		June 2022	TOBIN
		June 2023	TOBIN

21.4.4 Habitats and flora surveys

26. Habitat surveys were undertaken during optimal survey seasons (April–September) between 2021 and 2023 to identify and assess the existing habitats within the onshore development area. The site was walked, and all representative habitats were classified, while recording their botanical species assemblage, following methodologies outlined within Smith *et al.* (2011) and NRA (2008) guidelines. All habitats encountered during the surveys were classified in accordance with Fossitt (2000) with reference made to the Interpretation Manual of EU Habitats (EC, 2013), as appropriate.

27. Plant identification and nomenclature principally followed Parnell et al. (2012) and Rose (1989). Species protected under Flora Protection Order (FPO), 2022 (S.I. No. 235/2022) or listed under the Irish Red Data List of Irish Plants were also searched for and recorded if found.

Invasive non-native species (INNS)

28. Invasive non-native species surveys were undertaken as part of the habitats and flora surveys. The surveys were carried out in order to identify and verify the presence of INNS of high and medium risk, including those listed in the Third Schedule of S.I. No. 477 of 2011, EC (Birds and Natural Habitats) Regulations 2011, and establish the distribution of these species within the study area. Where INNS were identified, the distribution and extent of the species was recorded and mapped.

29. No standard method exists for an INNS survey; therefore, the survey was based on an ecological walkover survey approach, whereby all accessible areas of the study area were walked by the surveyor during daylight hours, with a visual search for INNS species undertaken.

Supratidal habitat survey

30. A supratidal (i.e. area above the spring high tide line) habitat survey was carried out along the coastline at Poolbeg, at the landfall location, in September 2021 and again in May 2024 by AQUAFACT International Services Ltd.

31. The survey methodology included the characterisation of the plant species and biotopes in the supratidal area of the landfall, where the offshore export cables come onshore, to determine the habitats present. Five 1 m² relevés were selected along the southern and south-eastern boundary of the onshore development area, above the HWM. A copy of the report is included in **Appendix 21.3**.

21.4.5 Fauna surveys

32. Terrestrial mammal surveys were carried out within the study area following methods outlined in the NRA (2008) Guidance. Target surveys for specific protected species were also undertaken and are discussed hereunder.

Bats

33. Dr Aughney of Bat Eco Services carried out a range of bat surveys within the study area between August 2021 and September 2023 in order to assess the distribution and activity of bat species within the area. Bat surveys carried out are listed below:

- Daytime surveys:
- Tree Potential Bat Roost (PBR) inspection survey;
- Building inspection survey;
- Nighttime surveys:
- Walking transect survey;
- Dusk bat survey;
- Thermal imagery filming; and
- Passive static detector survey.

34. A brief summary of the survey methodologies is provided hereunder.

Daytime inspections

35. All suitable roost habitat located within the study area was assessed for bat roost potential. This included all trees, buildings and structures within the onshore development area boundary. The value of each feature was assessed according to its potential for use by bats for roosting, foraging or commuting. The field survey design was subsequently informed by these habitat classifications to identify target habitat areas and ensure sufficient survey effort across all habitats.

Trees inspections

36. Trees that may provide a roosting space for bats were classified using Bat Tree Habitat Key (BTHK, 2018) guidance and the classification system adapted from Collins (2016).[8]

37. Trees identified as PBRs were inspected during the daytime, where possible, for evidence of bat usage in the form of actual bats (visible or audible), bat droppings, urine staining, grease marks (oily secretions from glands present) and claw marks. In addition, the presence of bat fly pupae (bat parasite) also indicates bat usage of a crevice, and evidence of this was also checked for. Inspections were undertaken visually with the aid of a strong torch beam (LED Lenser P14.2) and endoscope (General DC5660A Wet / Dry Scope) during the daytime searching for Potential Roost Features (PRFs), if visible.

[8] Collins (2016) was the principal guidance document used to provide guidance for these bat surveys. While a fourth edition of the survey guidelines was published in September 2023, this was released after surveys were undertaken, and therefore for accuracy, reference has been made to Collins (2016). Any future surveying will be guided by Collins (2023).

Structures and buildings inspections

38. Structures, buildings and other artificial structures that may provide a roosting space for bats were also inspected during the daytime for evidence of bat usage. This inspection was carried out on four buildings within the study area.

39. Buildings 1, 2 and 3 were inspected on the 11 May 2022. The internal and external walls of Building 1 was inspected, while only the external walls of Building 2 and Building 3 were inspected. Building 4 was inspected in April 2023. The location and description of the buildings is provided in **Table 21-4** and illustrated on **Plate 21-1** below.

Table 21-4 Buildings surveyed for bats within the study area

Building code	Description	Grid reference (ITM)
Building 1	Large derelict warehouse building with large interior space containing crevices suitable for potential roosting spaces. Sections of the roof of this building were in poor condition.	720384,733784
Building 2	Large estate house with a slate roof, natural stone and cladding.	720339,733687
Building 3	Sheds made of mixed roof material and concrete walls.	720378,733679
Building 4	Shed made of mixed roof material and concrete walls.	719875, 733816

Plate 21-1 Locations of buildings (source: Bat Eco Services, 2023 – Appendix 21-2)

Walking transects

40. Walking transect surveys were completed prior to dawn surveys and involved the surveyor walking the survey area, noting the time, location and activity of any bat species encountered. The transect route was walked by two experienced bat specialists, with Surveyor 1 using a Anabat Walkabout Full Spectrum Bat Detector and Petersson D200 Heterodyne Bat Detector and Surveyor 2 using a Bat Logger M2Spectrum Bat Detector and Petersson D200 Heterodyne Bat Detector.

Dawn bat surveys

41. Dawn surveys were completed from 110 minutes before sunrise to 10 minutes after sunrise. The surveys were completed during mild and dry weather conditions with air temperature 8°C or greater. All bat encounters were noted and recorded during the surveys.

Filming

42. As part of the dawn surveys, a thermal imagery survey was carried out in Buildings 1–3 (refer to **Plate 21-1**) within the onshore development area, by two surveyors and two units of thermal imagery scopes

when all species were likely to be active and not in torpor.[9] The filming was deployed to capture potential emerging bats from the buildings. This was completed from 110 minutes before sunrise to 10 minutes after sunrise. Captured film was watched post-survey and any emerging bats were noted. The level of survey effort followed guidelines outlined in Battersby (2010) and Collins (2016). Footage was watched post-survey, and any emerging bats were noted.

Passive static bat detector survey

43. Passive static bat surveys were completed in 2021 (Static 1: 15/9/2021 to 20/9/2021), again in 2022 (Static 2 – 11/5/2022 to 16/5/2022) and Static 3 & 4 – 7/6/2022 to 12/6/2022) and in 2023 (Static 5–8 – 5/4/2023 to 11/4/2023). The locations of the deployed static detectors used during the surveys are shown on **Plate 21-2** below.

44. A passive static bat surveys involves leaving a static bat detector unit (with ultrasonic microphone) in a specific location and set to record for a specified period of time (i.e. a bat detector is left in the field, there is no observer present and bats which pass near enough to the monitoring unit are recorded and their calls are stored for analysis post surveying). The ultrasonic microphones are used as the ultrasonic calls produced by bats cannot be heard by human hearing.

45. The bat detector is used as a bat activity data logger and the habitat type of where the bat detector is location is noted to allow interpretation of the results (e.g. open, edge or closed habitat types). Static surveillance results in a far greater sampling effort over a shorter period of time.

46. The microphone of the unit was positioned horizontally to reduce potential damage from rain. Wildlife Acoustics Song Meter SM4 Bat FS and Mini Bat FS Platform Units use real-time recording as a technique to record bat echolocation calls and using specific software, the recorded calls are identified. It is these sonograms (2-d sound pictures) that are digitally stored on the SD card (or micro-SD cards depending on the model) and downloaded for analysis. The recordings were then analysed using Wildlife Acoustic Kaleidoscope Pro.

[9] Hibernation or extended period of sleep.

Plate 21-2 Passive static bat detector survey locations (source: Bat Eco Services, 2023)

Badger

47. Badger surveys were undertaken within the onshore development area, plus a 150 m buffer (where feasible) from the boundary to account for disturbance (refer to **Table 21-2**). The survey followed methodologies outlined in *Surveying Badgers* (Harris et al., 1989) and guidance outlined in the NRA guidance (NRA, 2005). Any evidence of badger activity such as setts, trails, latrines, snuffle holes and feeding signs were recorded.

48. Camera traps (Browning Strike Pro and Bushnell trail cameras) were set up in February 2023 (under Licence No. 32/2023) to record any badger activity at an existing artificial sett within the Irishtown Nature Park and to record any activity within the onshore substation site for a period of 48 hours. The footage of any activity was recorded and reviewed and used to inform the assessment.

Otter

49. Otter surveys were undertaken along suitable habitat within the onshore development area, plus a 150 m buffer (where feasible) following methodologies outlined within the NRA (2006) and Chanin (2003). Any evidence of otter such as tracks, spraints, couches, slides, feeding remains or holts, were recorded.

50. A camera trap (Bushnell trail camera) was set up in February 2023 (under Licence No. 32/2023) to record any otter activity at the onshore substation site for a period of 48 hours. The footage of any activity was recorded and reviewed and used to inform the assessment.

Other mammal species

51. No species-specific surveys were undertaken for other mammal species for which field signs are less frequent and / or reliable than other larger mammals. However, during all surveys, attention was paid to activity signs, such as searching soft muds for tracks, and to look for droppings as per methodologies outlined within the NRA (2008) guidelines. Other species likely to occur within the onshore development boundary include hedgehogs *(Erinaceus europaeus),* pygmy shrew *(Sorex minutus),* Irish stoat *(Mustela erminea ibernica)* and Irish hare *(Lepus timidus).*

Amphibians and reptiles

52. The common frog (*Rana temporaria*), the smooth newt (*Triturus vulgaris*) and the common lizard (*Lacerta vivipara*) are all protected species under the Wildlife Act (as amended) and have a widespread distribution in Ireland.

53. During the walkover surveys, suitable habitat to support the protected species was thoroughly searched and any species identified, were recorded. Survey methods followed guidelines within the NRA (2008) guidance.

Invertebrates

54. The onshore development area was also searched for the presence of protected invertebrate species such as protected butterfly following methodologies outlined in the NRA (2008) guidance. Any suitable habitat which could support protected invertebrate species was also recorded.

55. Targeted marsh fritillary (*Euphydryas aurinia*) surveys were also undertaken within the onshore development area following methodologies outlined in the NRA (2008) guidance. The survey included the search for suitable habitat for marsh fritillary, which is largely dependent on the presence of devil's bit scabious (*Succisa pratensis*), the species main food source (Phelan et al., 2021).

Aquatic species

56. There are no freshwater surface water features (drains, streams, rivers or lakes) situated within the onshore development boundary and therefore no river habitat surveys or fisheries assessments were undertaken. Marine aquatic species have been assessed within **Chapter 8 Subtidal and Intertidal Ecology** and **Chapter 9 Fish, Shellfish and Turtle Ecology**.

Survey limitations

57. Access was granted in all areas within the onshore development area, which was subsequently surveyed by TOBIN Ecologists and third-party specialists. However, some small areas of the site could not be fully surveyed on foot due to dense vegetation and / or permanently fenced areas. In accordance with best practice guidelines (CIEEM, 2018), these areas were instead surveyed and visually assessed from adjacent lands and / or from public roads, using binoculars if required, and were supported by information obtained from a review of aerial photography and desktop study data.

58. Notwithstanding the small areas of limitation, a comprehensive description of the baseline biodiversity of the study area, likely to be impacted by the CWP Project, was captured and is presented herein. Sufficient data was gathered to reliably inform the impact assessment.

21.4.6 Impact assessment – evaluation criteria

59. The significance of potential effects has been evaluated using a systematic approach, based upon identification of the importance / value of receptors and their sensitivity to the project activity, together with the predicted magnitude of the impact.

60. The terms used to define receptor sensitivity and magnitude of impact are evaluated following the NRA (2009) guidelines which sets out the importance of the receptors in a geographical context. These guidelines are consistent with the approach recommended in CIEEM (2018) guidance. These criteria have been adopted in order to implement a specific methodology for biodiversity.

Sensitivity of receptor

61. For each effect, the assessment identifies receptors sensitive to that effect and implements a systematic approach to understanding the impact pathways and the level of impacts on given receptors. To establish the value of an ecological receptors, regard was made to the ecological valuation examples set out in the NRA guidelines (NRA, 2009), using an importance scale ranging from international, national, county, local importance (high value), and local importance (low value) (refer to **Table 21-5** below).

62. Those features identified as being of high local importance or greater, are carried forward in the ecological evaluation as Key Ecological Receptors (KERs) when considering the potential for significant effects, as outlined in the NRA guidelines (NRA, 2009).

63. The ecological receptors tolerance, recoverability and population vulnerability was also considered when establishing the sensitivity.

Table 21-5 Criteria for determination of receptor sensitivity (source; NRA, 2009)

Sensitivity	Criteria
International importance	• 'European Site', including Special Area of Conservation (SAC), Sites of Community Importance (SCI), Special Protection Area (SPA), proposed Special Area of Conservation, or proposed Special Protection Area. • Site that fulfils the criteria for designation as a 'European Site'. • Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. Resident or regularly occurring populations (assessed to be important at the national level) of species of animal and plants listed in Annex II and / or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals,1979).

Sensitivity	Criteria
	• Sites hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • European Diploma Site under the Council of Europe. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988). • Major salmon river fisheries.
National importance	• Site designated as a Natural Heritage Area (NHA). • Undesignated site fulfilling the criteria for designation as an NHA; a Statutory Nature Reserve; a Refuge for Fauna and Flora protected under the Wildlife Act (as amended); and / or a National Park. • Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive. • Major trout river fisheries. • Commercially important coarse fisheries. • Waterbodies with high amenity value.
County importance	• Area of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan (CDP). • Resident or regularly occurring populations (assessed to be important at the County level) of the following: • Species of animal and plants listed in Annex II and / or IV of the Habitats Directive; • Species protected under the Wildlife Act (as amended); and / or • Species listed on the relevant Red Data list. • Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. • County important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a County context and a high degree of naturalness, or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (Higher Value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: • Species of animal and plants listed in Annex II and / or IV of the Habitats Directive; • Species protected under the Wildlife Act (as amended); and/or • Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality.

Sensitivity	Criteria
	• Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (Lower Value)	• Sites containing small areas of semi-natural habitats that are of limited local importance for wildlife. • Sites containing areas of highly modified habitats. • Sites containing local populations of species that are common and not of conservation value. • Sites that are used by protected species or species of conservation value as part of their territories, but which do not contain the breeding or resting places of these species. • Sites that do not maintain links or do not function as ecological corridors between key features of local value. • Sites or features containing non-native species that are of some importance in maintaining habitat links. • Waterbodies with no fisheries value and poor fisheries habitat.

Magnitude of impact

64. The criteria used for assessing the magnitude of impacts followed guidelines within EPA (2022) as is outlined in **Table 21-6** below. Via this approach, a scientific and repeatable method was applied whereby all aspects of a potential impact were considered.

65. The magnitude of potential impacts is characterised by a series of factors including the spatial extent of any interaction, the likelihood, quality (positive or negative), duration, frequency and reversibility of a potential impact. The criteria for consideration in characterising the magnitude of impacts in this chapter are outlined in **Table 21-6**.

Table 21-6 Criteria for determination of magnitude of impact (source: EPA, 2022)

Describing the extent and context of effects	**Extent** Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
	Context Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the probability of effects	**Likely effects** The effects that can reasonably be expected to occur because of the planned project if all mitigations measures are properly implemented.
	Unlikely effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented
Quality of effects	**Positive effects** A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

	Neutral effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative / adverse effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Duration and frequency of effects	**Momentary effects** Effects lasting from seconds to minutes.
	Brief effects Effects lasting less than a day.
	Temporary effects Effects lasting less than a year.
	Short-term effects Effects lasting one to seven years.
	Medium-term effects Effects lasting seven to fifteen years.
	Long-term effects Effects lasting fifteen to sixty years.
	Permanent effects Effects lasting over sixty years.
	Reversible effects Effects that can be undone, for example through remediation or restoration.
	Frequency of effects Once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually.

Significance of effects

66. In determining the significance of effects, reference was made to the NRA (2009) and CIEEM (2018) guidelines, which require the significance of an effect to be determined by effects on integrity or conservation status, regardless of the geographical level at which these would be relevant.

Integrity

67. The term integrity should be regarded as the *'coherence of ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued'* and '*impacts resulting in adverse changes to those ecological structures and functions would be considered to be significant*' (NRA, 2009).

Conservation status

68. The definitions for conservation status given in the EU Habitats Directive 92/43/EEC, in relation to habitats and species, are also used in the CIEEM (2018) and NRA (2009) guidance:

- For natural habitats, conservation status means the sum of the influences acting on the natural habitat and its typical species, that may affect its long-term distribution, structure and functions, as well as the long-term survival of its typical species, at the appropriate geographical scale.
- For species, conservation status means the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations, at the appropriate geographical scale.

69. An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status.

70. In summary, according to the NRA (2009) and CIEEM (2018) guidelines, if it is determined that the integrity and / or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international).

71. In some cases, an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a species which is considered to be internationally important. However, an impact may occur at a local level on this internationally important species. In this case, the impact on an internationally important species is considered to be significant at only a local, rather than international level.

21.5 Existing baseline environment

72. The following sections provide a description of the baseline conditions of onshore biodiversity within the study area. This section is divided into the results of the Desktop Assessment (**Sections 21.5.1**, **21.5.2** and **21.5.3**) and the results of the Field Survey (**Sections 21.5.4** and **21.5.5**).

21.5.1 Output of desktop assessment

73. The following sections provide a description of the baseline conditions for onshore biodiversity within the study area.

21.5.2 Designated sites of nature conservation

European sites

74. SACs are designated under the Habitats Directive (92/43/EEC) as amended, which is transposed into Irish law through a variety of legislation including the Birds and Habitats Regulations and the Planning Acts, for the protection of habitats listed on Annex I and / or species listed on Annex II of the Directive. SPAs are designated under the Birds Directive (2009/147/EC) for the protection of protected bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds.

75. The Source–Pathway–Receptor model (OPR, 2021) was used to determine whether viable pathways for effects exists. All European sites within the potential ZoI of the onshore development area were identified and are listed below in **Table 21-7** and shown in **Figure 21-1**.

76. A potential impact pathway was identified between the onshore development area and South Dublin Bay SAC (000210). The South Dublin Bay SAC overlaps with the CWP Project at the landfall site, thus there is physical connectivity. This SAC is designated for four coastal habitats (**Table 21-7**). No source–pathway–receptor link was identified between the onshore development area and any other European site. However, European sites designated for protected bird species or located below the HWM are assessed separately in **Chapter 10 Ornithology** and **Chapter 8 Subtidal and Intertidal Ecology** respectively.

Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs)

77. NHAs are the basic wildlife designation in Ireland and are considered nationally important for the habitats present or species of plants and animals whose habitats needs protection. Under Irish legislation in the form of the Wildlife Act (as amended), NHAs are legally protected from damage from the date they are formally proposed for designation.

78. PNHAs are sites of national significance, published on a non-statutory basis in 1995, that have been proposed but not yet formally designated. Prior to statutory designation, pNHAs are subject to some protection, including recognition of the ecological value of pNHAs by Planning and Licensing Authorities.

79. There are no NHAs located within the ZoI of the onshore development area. The closest NHA is Skerries Island NHA (001218), which is located approximately 26 km north of the onshore development area. There is no source–pathway–receptor link between the onshore development area and the Skerries Island NHA, and thus it occurs outside the ZoI of the onshore development area.

80. Using the source–pathway–receptor model, as outlined in **Table 21-2** above, it was established that there is one pNHA, the South Dublin pNHA (000210), located within the ZoI of the onshore development area. The onshore development area boundary overlaps with the boundary of this pNHA resulting in physical connectivity (refer to **Figure 21-1**). No source–pathway–receptor link was identified between the onshore development area and any other pNHA.

81. However, National sites (NHAs and pNHAs) designated for birds or located below the HWM are assessed separately in **Chapter 10 Ornithology** and **Chapter 8 Subtidal and Intertidal Ecology** respectively.

Ramsar sites

82. Using the source–pathway–receptor model, as outlined in **Table 21-2** above, it was established that there are no Ramsar sites located within the ZoI of the onshore development area.

Nature reserves

83. Using the source–pathway–receptor model, as outlined in **Table 21-2** above, it was established that there are no Nature Reserves located within the ZoI of the onshore development area.

Irishtown Nature Park

84. The Irishtown Nature Park is a small man-made park located in the south-eastern part of the peninsula and consists of an elevated area sloping steeply to the sea on the southern and eastern edges. The northern edge is bounded by an area of amenity grassland that has been set aside for over-wintering light bellied Brent geese. Light bellied Brent geese using this area (referred to as Goose Green) have been considered within **Chapter 10 Ornithology** and within the NIS. The western edge of the park slopes down to an area of recolonising bare ground. An artificial badger sett is known to occur within the park (*pers. comm.* DCC) and is considered further in **Section 21.5.4** of this chapter.

85. The Nature Park is not formally designated under any conservation legislation and contains very few natural or semi-natural habitats. This is reflected in the make-up of the habitats and plant species present. The location of the Nature Park is illustrated in **Figure 21-1**.

Table 21-7 European, national and local sites within the ZoI of the onshore development area

Sites	Qualifying interest/ special conservation interests	Distance from the onshore CWP project site
South Dublin Bay SAC (000210) Distance: 0 m	• Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Salicornia and other annuals colonising mud and sand [1310] • Embryonic shifting dunes [2110]	The onshore development area overlaps with this SAC site boundary. Physical connectivity exists between this SAC and the CWP Project.
South Dublin pNHA (000210) Distance: 0 m	• No site synopsis available, however the site is likely to have similar conservation interests as South Dublin SAC	The onshore development area overlaps with this pNHA site boundary. Physical connectivity exists between this pNHA and the CWP Project.
Irishtown Nature Park	• N/A	The onshore development area is located approximately 30 m from the Irishtown Nature Park site boundary.

6°12'W

53°20'24"N

733,700

720,000

North Dublin Bay pNHA

Irishtown Nature Park

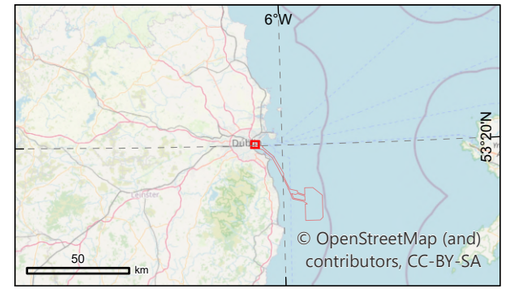
South Dublin Bay SAC and pNHA

N
W
E
S

0 0.25 0.5 1 km

Data sources: CWP, 2023; TOB, 2023; EPA, 2021; NPWS, 2015-2023; OSI, 2021
Background: ESRI orthophoto
Copyrights: ©OpenStreetMap

Maxar, Microsoft



Legend

- Planning application boundary
- Onshore substation boundary (operational)
- High water mark

Designated sites

- proposed National heritage areas (pNHAs)
- Special areas of conservation (SACs)

codling wind park

Project: Codling Wind Park

Contractor: TOBIN

Website: www.tobin.ie

Figure 21.1
Designated sites at Dublin Bay

CWP doc. number: CWP-TOB-ENG-08-01-MAP-0931

Internal descriptive code: DU.BAY - PAB..DESIGNATED.SITES - EIAR.FIG.21.01

Size: A3

Scale: 1:12,000

CRS: EPSG 2157

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	2024/08/15	SP	DM/EA	ES

21.5.3 Data from ecological stakeholders / NGOs

86. The desktop assessment included a review of available data from ecological stakeholders and the findings are summarised hereunder.

National Parks and Wildlife Service

87. EU Habitats Directive Annex I habitat datasets published by the NPWS every six-year period, in compliance with Article 17 of the EU Habitats Directive, were downloaded from the NPWS website[10] and overlain on the onshore development area boundary using GIS software to examine the recorded presence of any Annex I habitats within the boundary. The spatial data for Article 17 assessments give the known or best estimate distribution (either in 10 or 50 km grid squares).

88. A review of the data indicates that the following Annex I habitats (in 10 or 50 km grid square format) overlap with the onshore development area: sandbanks [1110], estuaries [1130], Mediterranean salt meadow [1410], Atlantic salt meadow [1330], tidal flats [1140], large shallow inlets [1160] and salicornia mud [1310]. These habitats were further investigated during baseline field surveys (**Section 21.5.4**).

89. In addition, records of protected and rare species previously recorded within the two 10 km Irish Grid squares; O13 and O23, which encompasses the onshore development area, were supplied by the NPWS Scientific Unit in March 2023. The records indicated the plant species, bur chervil (*Anthriscus caucalis*), lesser centaury (*Centaurium pulchellum*) and pale toadflax (*Linaria repens*), which are listed as Near Threatened on the Red List of Threatened Species and small-flowered catchfly dwarf mallow (*Silene gallica*), which is listed as Vulnerable, have previously been recorded in proximity to the onshore development area.

National Biodiversity Data Centre

90. A search of the NBDC database[11] was undertaken for protected flora and fauna species listed under the Wildlife Act (as amended) or EU Habitats Directive (refer to **Table 21-8**), as well as INNS listed under the Third Schedule of the Birds and Natural Habitats Regulations (2011) (refer to **Table 21-9**). within the two 10 km Irish Grid squares O13 and O23, which encompasses the onshore development area.

[10] NPWS Article 17 Data [Accessed June 2023] via https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17
[11] The National Biodiversity Data Centre database [Accessed June 2023] via https://biodiversityireland.ie/

Table 21-8 Previous records of protected fauna and flora species recorded within the two 10 km grid squares O13 and O23

Species	Grid square	Designation	Location in relation to the onshore development area
Amphibians and invertebrates			
Common Frog (*Rana temporaria*)	O13, O23	Wildlife Act	Numerous recordings within the two 10 km grid squares which encompasses the onshore development area.
Smooth Newt (*Lissotriton vulgaris*)	O13, O023	Wildlife Act	Previous recording at a site located ca. 2 km south of the onshore development area.
Reptiles			
Common Lizard (*Zootoca vivipara*)	O13 and O23	Wildlife Act	Six recordings within the 10 km grid squares which encompass the onshore development area. Closest recorded ca. 3.25 km south-west.
Mammals			
Eurasian Badger (*Meles meles)*	O13 and O23	Wildlife Act	A number of recordings within the O23 grid square which encompasses the eastern half of the onshore development area.
Eurasian Pygmy Shrew (*Sorex minutus*)	O13 and O23	Wildlife Act	A number of recordings within the O23 grid square which encompasses the eastern half of the onshore development area.
European Otter (*Lutra lutra*)	O13 and O23	Wildlife Act	A number of recordings within the O23 grid square which encompasses the eastern half of the onshore development area. In addition, records of otter were recorded ca. 600 m south of the onshore development area.
Eurasian Red Squirrel (*Sciurus vulgaris*)	O13 and O23	Wildlife Act	Closest previous recording located ca. 3.5 km west of the onshore development area.
Pine Marten (*Martes martes*)	O13 and O23	Wildlife Act	Closest previuos recording located ca. 950 m south of the onshore development area.
Brown Long-eared Bat (*Plecotus auritus*)	O13 and O23	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 2.4 km west of the onshore development area.
Daubenton's Bat (*Myotis daubentonii*)	O13	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 1.5 km west of the onshore development area.
Lesser Noctule (*Nyctalus leisleri*)	O13 and O23	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 1.1 km west of the onshore development area.
Nathusius's Pipistrelle (Pipistrellus nathusii)	O13	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 2.5 km west of the onshore development area.
Natterer's Bat (*Myotis nattereri*)	O13	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 3 km southwest of the onshore development area.
Pipistrelle *(Pipistrellus pipistrellus sensu lato)*	O13 and O23	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 5 m east of the the onshore development area.

Soprano Pipistrelle *(Pipistrellus pygmaeus)*	O13 and O23	Wildlife Act, EU Habitats Directive Annex IV	Closest previous recording located ca. 1.4 km west of the onshore development area.
Whiskered Bat (*Myotis mystacinus*)	O13	Wildlife Act, EU Habitats Directive Annex IV	A small number of recordings within the 10 km grid square which encompasses the onshore development area (3 recordings). All recordings are ca.6.3 km northwest of the onshore development area.
West European Hedgehog (*Erinaceus europaeus*)	O13 and O23	Wildlife Act	A number of recordings within the O23 grid square which encompasses the eastern half of the onshore development area.

Table 21-9 Previous records of invasive fauna and flora species recorded within the 10 km grid squares O13 and O23

Species	Grid square	Designation	Location in relation to the onshore development area
Brown Rat (*Rattus norvegicus*)	O13 and O23	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	A number of recordings within the O23 grid square which encompasses the eastern half of the onshore development area.
American Mink (*Mustela vison*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Previously recorded in the River Dodder located ca. 2 km southwest of the onshore development area.
Eastern Grey Squirrel (*Sciurus carolinensis*)	O13 and O23	High Impact Invasive Species, EU Regulation No. 1143/2014, Regulation S.I. 477 of 2011 (Ireland)	Numerous recordings within the O13 grid squares which encompasses the western side of the onshore development area. Closest previous recording ca. 880 m southwest of the onshore development area.
Feral Ferret (*Mustela furo*)	O13 and O23	High Impact Invasive Species	One previous recording located 6.5 km northwest of the onshore development area.
House Mouse (*Mus musculus*)	O13 and O23	High Impact Invasive Species	Numerous recordings within the 10 km grid squares which encompasses the onshore development area.
Canadian Waterweed (*Elodea canadensis*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Previously recorded ca. 2.6 km west of the onshore development area.
Cherry Laurel (*Prunus laurocerasus*)	O13 and O23	High Impact Invasive Species	Previously recorded ca. 3.5 km west of the onshore development area.
Common Cord-grass (*Spartina anglica*)	O23	High Impact Invasive Species,	Previously recorded ca. 4 km west of the onshore development area.

Species	Grid square	Designation	Location in relation to the onshore development area
		Regulation S.I. 477 of 2011 (Ireland)	
Fallopia japonica x sachalinensis = F. x bohemica	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Number of recordings within the onshore development area.
Giant Hogweed (*Heracleum mantegazzianum*)	O13 and O23	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca. 3.8 km south-west of the onshore development area.
Giant-rhubarb (*Gunnera tinctoria*)	O13 and O23	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca. 2.8 km south-west of the onshore development area.
Japanese Knotweed (*Fallopia japonica*)	O13 and O23	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Number of recordings within the onshore development area.
Rhododendron ponticum	O13 and O23	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca. 7.2 km south-west of the onshore development area.
Giant Knotweed (*Fallopia sachalinensis*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca.6 km west of the west of the onshore development area.
Indian Balsam (*Impatiens glandulifera*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Previous recordings along the River Dodder at Irishtown, 1.3 km southwest of the onshore development area.
New Zealand Pigmyweed (*Crassula helmsii*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca. 6.2 km west of the west of the onshore development area.
Nuttall's Waterweed (*Elodea nuttallii*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca. 1.6 km southwest of the onshore development area.

Species	Grid square	Designation	Location in relation to the onshore development area
Parrot's-feather (*Myriophyllum aquaticum*)	O13	High Impact Invasive Species, Regulation S.I. 477 of 2011 (Ireland)	Closest previous recording located ca.2.7 km southwest of the onshore development area.

Bat Conservation Ireland and Bat Landscape Tool

91. The desktop assessment indicated that the Poolbeg Peninsula is used by four of the nine species of bat confirmed to be resident in Ireland including; common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Leisler's bat (*Nyctalus leisleri*) and Daubenton's bat (*Myotis daubentonii)* (NDBC, 2022).

92. Records on the BC Ireland website[12] also show common pipistrelle located within 1 km of the onshore development area. This dataset consists of one night roost recorded in 2011 from a passive detector survey) and was located in the vicinity of the buildings included in the field surveys for the CWP Project.

93. There is potential that a number of these bat species, in particular Leisler's bat, may roost within existing buildings located within the Poolbeg Peninsula.

94. A review of the Bat Landscape Tool[3] was also utilised to determine the habitat suitability of the study area to support protected bat species. The bat 'habitat suitability' index is the research outcome of a study by Lundy et al. (2011) examining the relative importance of landscape and habitat associations across Ireland for bats. The 'habitat suitability' index ranges from 0 to 100 with 0 being least favourable and 100 being most favourable for various bat species. The results of the Bat Landscape Tool are shown in **Table 21-10** below. The habitat suitability score for all bat species for the onshore development area is 17.44 as indicated within the Bat Landscape Tool[3].

95. A score of 17.44 lies within the second lowest rating (13.000001 to 21.333300) of the habitat suitability index for all bat species. This rating suggests that there is limited suitable habitat and roosting sites for bats within the site. This, however, was further investigated and confirmed during field surveys.

Table 21-10 Results of the bat landscape tool

Species	Landscape suitability
All bat species	**17.44**
Soprano pipistrelle *(Pipistrellus pygmaeus)*	34
Brown long-eared bat *(Plecotus auratus)*	26
Common pipistrelle *(Pipistrellus pipistrellus)*	33
Lesser horseshoe bat *(Rhinolophus hipposideros)*	0

[12] Accessed (June 2023) via: https://www.batconservationireland.org/irish-bats

Lesser noctule *(Nyctalus leisleri)*	29
Whiskered bat *(Myotis mystacinus)*	11
Daubenton's bat *(Myotis daubentoniid)*	8
Nathusius's pipistrelle *(Pipistrellus nathusli)*	3
Natter's bat *(Myotis nattereri)*	13

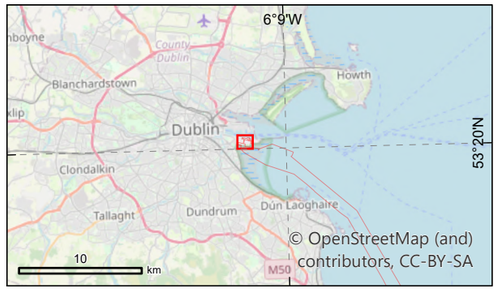
21.5.4 Output of field surveys

96. The findings of the ecological field surveys undertaken from 2021 to 2023 are detailed hereunder.

Terrestrial habitats and flora

97. The habitats recorded within the onshore development area are listed and fully described below and were categorised in accordance with Fossitt (2000). A number of habitat mosaics containing a mixture of two habitats were also recorded within the area. As noted, the ecological importance of each habitat is evaluated following methodologies outlined within the NRA (2009) guidelines, which sets out the importance of the resource / receptor in a geographical site-based context. The recorded habitats have been mapped and are illustrated on **Figure 21-2**.

6°12'30"W
6°12'W
6°11'30"W
53°20'35"N
53°20'20"N
53°20'5"N
734,014
733,608
733,202
719,490
719,900
720,310
N
W
E
S
0 50 100 200 Meters
Data sources: CWP, 2023; TOB, 2023; OSI, 2021
Background: Bluesky orthophoto
Copyrights: ©OpenStreetMap; © Bluesky International Ltd



Legend

- Planning application boundary

Habitats

- WL2 - Treelines
- BL3 - Buildings and artifical surfaces
- CC1 - Sea walls, piers and jetties
- ED1 - Exposed sand, gravel or till
- ED2 - Spoil and bare ground
- ED3 - Recolonising bare ground
- ED5 - Refuse and other waste
- GA2 - Amenity grassland (improved)
- GS2 - Dry meadows and grassy verges
- WD1 - (Mixed) broadleaved woodland
- WS1 - Scrub

Habitats mosaics

- ED5 - Refuse and other waste / BL3 - Buildings and artifical surfaces
- ED5 - Refuse and other waste / ED3 - Recolonising bare ground
- WS1 - Scrub / BL2 - Earth banks
- ED2 - Spoil and bare ground / WS1 - Scrub
- Orchid locations
- High water mark

codling wind park

Project: Codling Wind Park

Contractor: TOBIN
Website: www.tobin.ie

Figure 21.2
Onshore development area boundary: habitat map

CWP doc. number: CWP-TOB-ENG-08-01-MAP-0932

Internal descriptive code: POOLB - PAB..HABITATS - EIAR.FIG.21.02
Size: A3
Scale: 1:4,000
CRS: EPSG 2157

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	2024/08/15	SP	DM/EA	ES

Buildings and artificial surfaces (BL3)

98. This classification was mainly used to describe existing buildings, public and private roads including footpaths, carparks and concrete walls present throughout the onshore development area.

99. Typical plant species recorded within the habitat, colonising areas of artificial surfaces included: butterfly bush (*Buddleja davidii)*, common mouse-ear (*Cerastium fontanum*), rapeseed, ribwort plantain, nettle and ragwort (*Senecio squalidus)*.

100. A number of derelict buildings occur within the onshore development area. During the bat roost surveys, all buildings were assessed as having 'Negligible' suitability to support bats as per Collins (2016). Further details on the bat surveys are provided in **Section 21.5.5**.

101. This habitat was considered to be of Local Importance (Lower Value) due to its limited ecological value.

Sea walls, piers and jetties (CC1)

102. This category is used to describe all coastal constructions that are partially or totally inundated by sea water at high tide, or subject to wetting by sea spray or wave splash. It typically includes sea walls, piers, jetties, slipways, causeways and other structures associated with ports and docks in urban or rural areas.

103. Sea walls and rock armour (refer to **Plate 21-3**) occur around the perimeter of the onshore substation site and along the southern boundary of the landfall location. The rock armour has been put in place to counteract coastal erosion.

104. This habitat was considered to be of Local Importance (Lower Value) due to its limited ecological value.

Plate 21-3 Rock armour located around the perimeter of the onshore substation site

Exposed sand, gravel or till (ED1)

105. The construction compound A (Compound A) comprises coarse gravel and exposed sand. The site is currently used as a compound with machinery and vehicles regularly passing through the area. The area included some rare occurrences of butterfly bush, red valerian and purple toad flax (*Linaria purpurea*).

106. The habitat was assessed as being of Local Importance (Lower Value) due to its limited ecological value.

Spoil and bare ground (ED2) and Spoil and bare ground and scrub mosaic (ED2/WS1)

107. This habitat category includes heaps of spoil, gravels and rubble, and other areas of bare ground. Areas of bare ground were recorded within the centre of the onshore substation site.

108. Bare ground along the eastern and western boundary of the onshore substaion site has been heavily colonised with scrub vegetation. Evidence of badger foraging was recorded throughout the habitat.

109. The areas of bare ground were considered to be of local importance (Lower Value), however the bare ground, which has been heavily colonised by scrub vegetation, likely provides foraging habitat for badger and was therefore considered to be of Local Importance (Higher Value).

Recolonising bare ground (ED3)

110. Recolonising bare ground habitat was recorded within the onshore substation site and within the temporary construction compounds A and B (Compounds A and Compound B)and associated access route).

111. Several recolonising plant species were recorded within the habitat which included; butterfly-bush, bramble, goat willow (*Salix caprea*), purple toadflax (*Linaria purpurea*), yellow-wort (*Blackstonia perfoliata*), soapwort (*Saponaria officinalis*), downy birch (*Betula pubescens*), ragwort, large evening primrose (*Oenothera glazioviana*), valerian (*Valeriana Spp)*, perennial ryegrass, smooth hawks beard, creeping speedwell (*Veronica filiformis*), herb Robert (*Geranium robertianum*), ribwort plantain, red clover, white clover, kidney vetch (*Anthyllis vulneraria*), red valerian, dandelion, bush vetch (*Vicia sepium*), sea beet, red fescue, oxford ragwort, alexanders, pyramidal orchid (*Anacamptis pyramidalis*), ivy (*Hedera hibernica),* bush vetch, ivy rock sea-spurrey (*Spergularia rupicola*), rapeseed, teasel (*Dipsacus pilosus*) and hare's-tail.

112. The habitat had a good species diversity and is likely to be an important habitat for invertebrates such as bees and butterflies. Evidence of badger activity was also recorded within the habitat.

113. This habitat was considered to be of Local Importance (Higher Value) due to the high species diversity and is rare in the surrounding area which generally comprises of artificial surfaces and built structures.

Plate 21-4 Recolonised bare ground on the western boundary of the onshore substation

Refuse and other waste (ED5) and Recolonising bare ground and refuse and other waste mosaic (ED3/ED5)

114. This habitat, refuse and other wastes describes any areas where domestic, industrial, agricultural and other waste is stored, treated or disposed. It includes rubbish dumps, tip heads, landfill sites, sewage plants, slurry pits and heaps of manure. These areas are usually characterised by high nutrient levels and / or the presence of scavengers. This habitat was recorded within the onshore substation site and contained construction materials, concrete piping, plastic piping, hardcore, pallets, metal railings, rubble, steel storage containers, concrete slabs and disused gravels. Also, within the study area includes two of the six stormwater tanks associated with the Ringsend Waste Water Treatment Plan (WWTP).

115. The mosaic of recolonising bare ground and refuse and other waste habitat was recorded within the onshore substation site (refer to **Plate 21-4** and **Plate 21-5**). Evidence of badger activity was also recorded within the habitat.

116. The areas of refuse and other waste (ED5) was considered to be of Local Importance (Lower Value); however, the habitat mosaic of refuse and other waste and recolonising bare ground likely provides foraging habitat for badgers and was therefore considered to be of Local Importance (Higher Value).

Plate 21-5 Mosaic of spoil and bare ground and refuse and waste habitat within the onshore substation site

Amenity grassland (improved) (GA2)

117. Amenity grassland (improved) habitat was recorded immediately south of the Ringsend WWTP storm water tanks, along the road verges and within the CWP Project site.

118. This type of grassland is improved and species-poor and is managed for purposes other than grass production. The areas of amenity grassland also appeared to be regularly maintained with very short swards.

119. This habitat was considered to be of Local Importance (Lower Value) due to the low ecological value.

Dry meadows and grassy verges (GS2)

120. Dry meadows and grassy verges habitat was mostly recorded along the boundary of public walkways and adjacent to public roads within the site. Species recorded within this habitat included; cock's-foot grass, lyme grass (*Leymus arenarius*), Yorkshire-fog, dock, perennial ryegrass, red fescue, white clover, ribwort plantain, dandelion, thistle, kidney vetch, smooth meadow grass, birdfoot trefoil, marram grass, creeping cinquefoil (*Potentilla reptans*), creeping bent-grass (*Agrostis stolonifera*), false oatgrass, crested dog's-tail (*Cynosurus cristatus*), common Hogweed (*Heracleum sphondylium*), black medic (*Medicago lupulina*) and butterfly bush. Herbaceous dicotyledons included winter heliotrope (*Petasites fragrans*), coltsfoot (*Tussilago farfara*), dandelion, yarrow and two species of ragwort (*Senecio jacobaea* and *S. squalidus*).

121. The habitat was assessed as being of Local Importance (Lower Value).

Plate 21-6 Dry meadows and grassy verge habitat along the public walkway

Mixed broadleaved woodland (WD1)

122. Mixed broadleaved woodland was recorded in patches within the onshore development area. A large patch occurs within the Poolbeg 220kV substation site. Tree species included holm oak (*Quercus ilex*), rowan (*Sorbus aucuparia*), white poplar (*Populus alba*), ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*) and sycamore (*Acer pseudoplantanus*). The trees ranged between 5 to 15 m in height. The understory within the areas of woodland comprised of bramble, cock's-foot grass, Yorkshire-fog, nettle, elder, creeping thistle (*Cirsium arvense*), ash, grey alder (*Alnus incana*), ragwort and hogweed.

123. The habitat was assessed as being of Local Importance (Higher Value).

Scrub (WS1) and scrub and earth bank mosaic (WS1/BL2)

124. Scrub habitat occurs in patches throughout the onshore development area. A large area of very dense scrub, which has colonised over a large earth bank, occurs at the landfall site. The dense scrub at this location is approximately 45 m x 300 m in size and is heavily dominated with butterfly bush and bramble, and also included an infestation of Japanese knotweed (*Fallopia japonica*) in areas. Other areas of scrub were recorded at the western and eastern boundary of the onshore substation site and adjacent to sections of roads.

125. Typical species recorded within this scrub habitat included: bramble, goat willow, cock's-foot grass, Yorkshire-fog, dock, hedge bindweed, butterfly-bush, nettle, dogrose (*Rosa canina*), elder, ribwort plantain, perennial ryegrass, winter heliotrope (*Petasites pyrenaicus*), black medic, red valerian, smooth hawks beard, sycamore, willow, creeping thistle (*Cirsium arvense*), ash, grey alder (*Alnus incana*), bush vetch, ragwort, hogweed, cleavers (*Galium aparine*) and rapeseed.

126. The scrub habitat recorded within the CWP Project site was assessed as being of Local Importance (Higher Value).

Plate 21-7 Scrub habitat on the embankment at the landfall location

Treelines (WL2)

127. A small number of treelines were recorded within the onshore development area. The treelines were predominantly found along the internal boundaries of the Compound B (Compound B) and along the Shellybanks and Pigeon House Roads. Tree species included ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplantanus),* willow (*Salix spp.*), silver poplar (*Populus alba*), silver birch (*Betula pendula*) and Scots pine (*Pinus sylvestris*). The understory of some of the treelines contained hawksbeard, marram grass, red valerian, ribwort plantain, yarrow, perennial ryegrass and bramble.

128. Overall, these treelines were considered to be of Local Importance (Higher Value).

Plate 21-8 Treeline located along the Shellybanks Road

Rare and protected plant species

129. No Annex I habitats or Annex II plant species protected under the EU Habitat Directive were identified within the onshore development area. Although the onshore development area boundary overlaps with the boundary of South Dublin Bay SAC, the habitats within this area were confirmed to not correspond with Annex I habitats as per the EU Habitats Interpretation Manual for Annex I Habitats (European Commission 2013). Refer to the Supratidal Habitat Report contained in **Appendix 21.3**.

130. In addition, no plant species listed under the Flora Protection Order, 2022 (S.I. No. 235/2022) were recorded within the onshore development area.

131. A number of bee orchids (*Ophrys apifera*) and pyramidal orchids were recorded within the onshore substation site and within the Compound B. A large patch (over 20 flowers) of bee orchids were recorded within Compound B. The locations of the orchids are illustrated in **Figure 21-2**.

132. Bee orchids are considered relatively rare with strong holds in the Burren and on Bull Island. The orchid is listed as Least Concern within Ireland but are currently protected in Northern Ireland.

Plate 21-9 Patch of bee orchids located in Compound B

Invasive non-native species

133. A total of seven INNS were recorded within the onshore development area during field surveys. Of the six INNS recorded, three species, Japanese knotweed, bohemian knotweed (*Fallopia x bohemica*), three cornered leek (*Allium triquetrum*) and sea buckthorn (*Hippophae rhamnoides*), are high risk species and are listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011.

134. The Japanese knotweed and bohemian knotweed, hereafter referred to as 'knotweed' were recorded in five main areas within the onshore development area (refer to **Figure 21-3**).

135. The biggest infestation of knotweed was recorded at the berm at the landfall location (coordinates: 53.336408, -6.202905). These are dense infestations and form impenetrable stands in close proximity to dense scrub vegetation. A large infestation was also recorded adjacent to the pedestrian path towards the Great South Wall, growing from the top of the berm down to the edge of the pathway.

136. Knotweed infestations were also recorded in an overgrown section to the north of the Uisce Éireann (formerly Irish Water) storm water tanks (coordinates: 53.341080, -6.194323). There were two large areas of infestations, with two smaller outlier stands recorded between the tanks and the north boundary fence. The infestations are recorded less than 7 m from the site boundary, but at present they do not extend beyond the existing fence line. The presence of dead canes in some areas close to the ponds indicate that herbicide treatment may have taken place in the past to prevent knotweed rhizome growth from impacting the adjacent structures.

137. Sporadic minor regrowth and evidence of previous knotweed growth was also recorded east of the Ringsend WWTP (coordinates: 53.338360, -6.193027). Knotweed infestations were also recorded near Bisset Engineering, Kilsaran Concrete and to the north of the sites along the South Bank Road (coordinates: 53.338419, -6.207446).

138. The final area of infestation was on the west of the South Bank Road (coordinates: 53.339797, -6.201648) adjacent to the Dublin Waste to Energy (DWtE) facility.

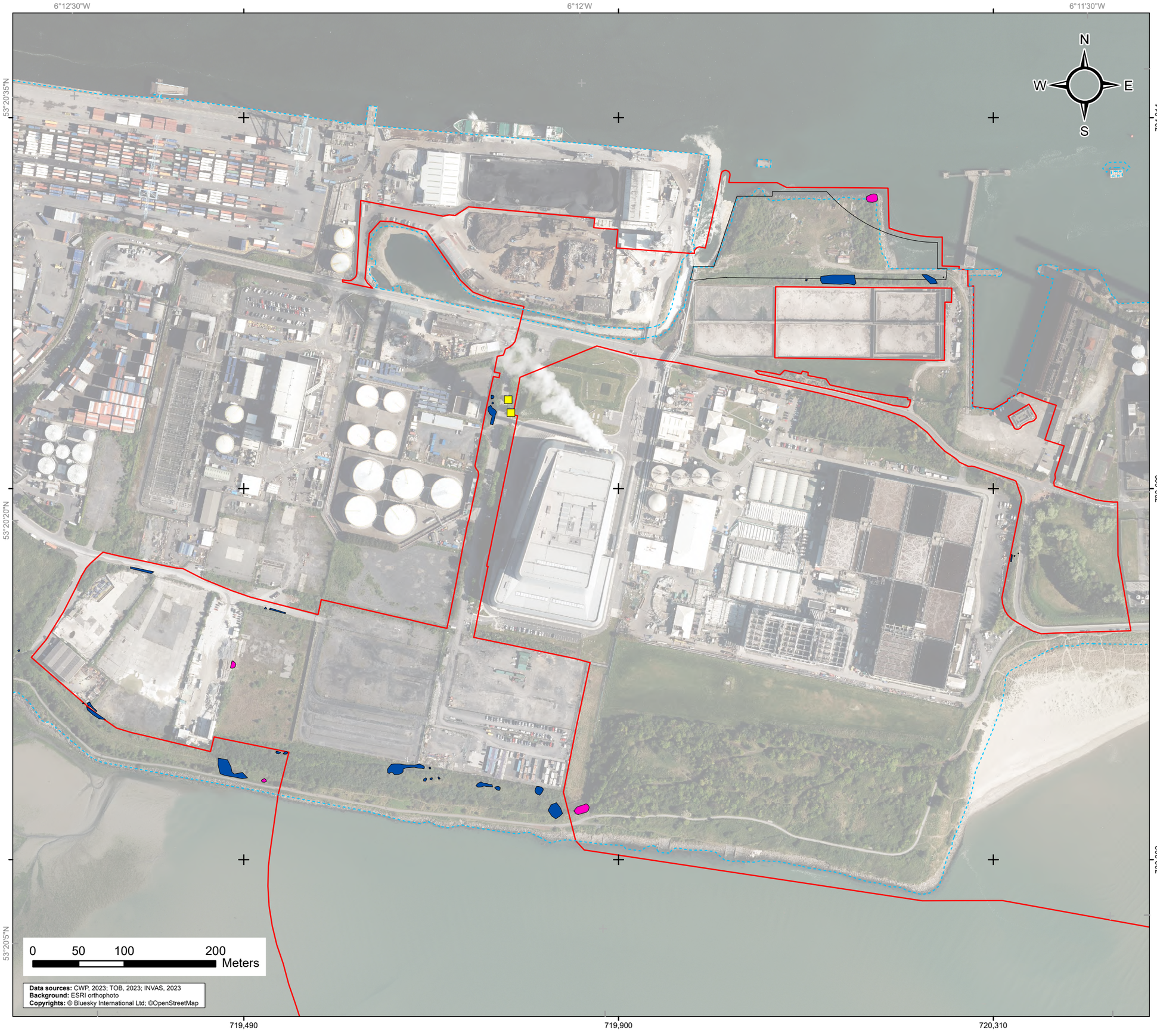
139. Two small infestations of three-cornered leek were recorded on the road verge of Shellybanks Road.

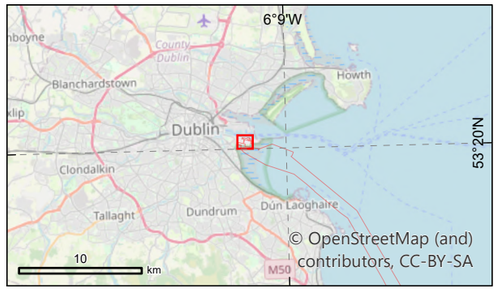
140. Sea buckthorn was recorded in the north of the onshore substation site and adjacent to the Kilsaran Concrete site. The infestation at the onshore substation site is located in an area proposed as a future turning circle for Dublin Port Company (DPC). Two other notable infestations were recorded in areas outside of the onshore development area but in close proximity to the boundary, along the pedestrian footpath from Bisset Engineering to Irishtown Nature Park.

141. Article 49(2) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 notes, '*any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence'*.

142. The other three species, butterfly bush, winter heliotrope and old man's beard (*Clematis vitalba*), are medium risk species and are not listed on the Third Schedule; therefore, their distribution is not regulated.

Plate 21-10 Examples of knotweed (left plate) and sea buckthorn (right plate) recorded within the onshore development area





Legend

- Planning application boundary
- Onshore substation boundary (operational)
- High water mark

Invasive species

- Three Cornered Leeks
- Sea buckthorn
- Knotweed species

codling wind park

Project: Codling Wind Park

Contractor: **TOBIN**

Website: www.tobin.ie

Figure 21.3
Invasive non-native species

CWP doc. number: CWP-TOB-ENG-08-01-MAP-1571

Internal descriptive code: PB - PAB..SS.PP.PL - HWM..S.INVASIVE - (SAT..EIAR.FIG.21.03)

Size: A3

Scale: 1:4,000

CRS: EPSG 2157

Rev.	Updates	Date	By	Chk'd	App'd
00	Final for issue	2024/08/15	SP	DM/EA	ES

21.5.5 Terrestrial fauna

143. Results of the protected fauna species recorded during the field surveys are provided hereunder.

Bats

144. All Irish bats are protected under Annex IV of the EU Habitats Directive, under the Wildlife Act (as amended) and under Appendix II of the Bern Convention, as species requiring strict protection.

Tree inspection survey results

145. During the surveys no trees with PBRs were identified. All trees were assessed as having 'negligible' suitability as per Collins (2016).

Buildings / structure inspection survey results

146. Buildings 1, 2, 3 and 4 (refer to **Table 21-4** for the coordinates of the four buildings) were inspected during the surveys. These buildings are located in a highly industrial zone with a limited amount of tall vegetation present. As a consequence, the suitability of the area for foraging and commuting bats is greatly reduced and therefore the suitability of the buildings, to provided bat roosting sites, is reduced. No bats, evidence of bat usage or bat roosts were recorded in any of the four buildings. Buildings 1 was assessed as having 'Low' to 'Moderate' roost suitability, Buildings 2 and 3 were assessed as having 'Low' roost suitability and Building 4 was assessed as having 'Negligible' roost suitability.

Walking transect survey results – 2021

147. A walking transect was undertaken along the southern boundary of the onshore development area boundary, in proximity to suitable habitat, on 16 September 2021. Three bat species were recorded during this transect; soprano pipistrelle, common pipistrelle and Leisler's bat. Common pipistrelle was the most frequently recorded bat species, with encounters noted along the majority of the transect route. While Leisler's bat and soprano pipistrelles were recorded, they were encountered infrequently along the transect. No other species of bat were recorded during the survey.

Dawn and walking transect surveys results – 2022

148. In 2022 dawn and walking transect surveys were undertaken around Buildings 1–3 on 10 and 11 May 2022. No bats were detected commuting or foraging in the area during the survey and no bats were detected returning to roost in the building surveyed (**Table 21-11**). The lack of bat encounters during the 2022 walking transects reflects the fact that the area has little tall vegetation for commuting and foraging bats and bat activity is variable from season to season.

Table 21-11 Results from use of thermal imagery and bat detector on buildings / structures

Building code	Roost type & location	Bat species (No. of bats)	Access points	Vegetation / lighting arrangement
Building 1	No bat roost recorded	Not applicable	Not applicable	No vegetation, outdoor lighting present
Building 2	No bat roost recorded	Not applicable	Not applicable	No vegetation, outdoor lighting present
Building 3	No bat roost recorded	Not applicable	Not applicable	No vegetation, outdoor lighting present

Walking transect survey results – 2023

149. A walking transect along the southern boundary of the onshore development boundary and along local road networks was undertaken on 5 April 2023. Two species of bat were encountered during the survey: common pipistrelle (16 bat encounters) and soprano pipistrelle (8 bat encounters). The number of bats encountered during the three-hour survey was considered to be a low level of bat activity.

Passive static bat detector survey results 2021 and 2022

150. Four static detectors (1–4) were deployed at four separate locations during three surveillance periods in 2021 and 2022. The location of the static detectors is shown in **Plate 21-11**. The location of the static units varied from stations inside buildings to determine if roosts were present, to statics units erected on trees to record bat activity for specific areas with potentially suitable foraging and commuting habitat for local bat populations.

151. Static detectors were deployed for a total of five nights in 2021 and 15 nights in 2022. The results from the static detectors show three bat species were recorded on Static 1, located within the Irishtown Nature Park (soprano pipistrelle, common pipistrelle and Leisler's bat). No bats were recorded on the three other static units. A total of 162 passes were recorded by Static 1 in 2021.

152. The level of bat activity recorded on Static 1 reflects that there is commuting and foraging habitat present in this area and that there is connectivity to other parkland areas west of the onshore development area and along South Dublin Bay. Common pipistrelle was the most frequently recorded bat species but overall, the level of bat activity recorded was low. Leisler's bats were recorded briefly during each surveillance night, while soprano pipistrelles were recorded on four of the five surveillance nights. Both of these bat species were recorded in a low level of bat activity. The lack of bat encounters on Static 2–4, again reflects the fact that this area has little tall vegetation for commuting and foraging bats which was similarly found during the walking transects, as reported above.

Passive static bat detector survey results 2023

153. Another four statics (5–8) were deployed in 2023 over a seven-night period. Static 5 and Static 7 were located in buildings, while Static 6 and Static 8 were located in potential bat habitat areas.

154. Two bat species were recorded on Static 6 and Static 8 (soprano pipistrelle and common pipistrelle). Common pipistrelle was only recorded on the static unit located in Building 1 (Static 7) while no bats were recorded on the static unit located in Building 4 (Static 5). In relation to the static unit located in

Building 1 (Static 7), only one bat pass for a common pipistrelle was recorded and therefore indicates a single bat flying near or briefly in the structure. It is not indicative of a roosting individual.

155. A greater number of bat passes was recorded on the static units located in nearby bat habitat (Static 6 and Static 8). Common pipistrelle was the more frequently encountered bat species during the surveillance in 2023. This encounter rate for common pipistrelle was greater in 2023 than that recorded in the 2021 static surveillance (Static 1), which was located in a similar area to Static 6.

156. However, no Leisler's bats were recorded in 2023 while a low encounter rate was recorded in 2021. A similar soprano pipistrelle encounter rate was recorded in 2023 and 2021. A lower level of bat activity was recorded on Static 8 compared to Statics 6 in 2023. Static 8 was located in a similar position to Static 2 (2022 Static Surveillance). However, in 2022, no bat activity was recorded on Static 2.

Plate 21-11 Location of static units deployed during static surveillances

Overall summary of bat survey results

157. Low levels of activity of three bat species (soprano pipistrelle, common pipistrelle and Leisler's bat) were recorded during the bat surveys undertaken between 2021 and 2023 within the study area. These are considered to be the three most common bat species in Ireland. The three bat species were recorded foraging and commuting primarily in the southern section of the onshore development area.

158. None of the buildings or trees surveyed were recorded as bat roosts during the array of surveys undertaken in 2021, 2022 and 2023.

159. The local bat population was assessed as being of Local Importance (Higher Value).

Badger

160. Badgers are listed on Appendix III of Council Decision 82/72/EEC, the Convention on the Conservation of European Wildlife and Natural Habitats 1982 (Bern Convention, 1982) as a species to be protected and whose exploitation must be regulated. This species is also protected in Ireland under the Wildlife Act (as amended).

161. Frequent evidence of badger was recorded during the field surveys conducted within the onshore development area. Recording of tracks, latrines and snuffle holes were recorded at a number of locations, which included at the onshore substation site and within the scrub vegetation at the landfall site.

162. An artificial badger sett was identified at the north-west corner of the Irishtown Nature Park (53.3367582, -6.1998886), approximately 40 m east of the onshore development area boundary. The artificial sett contained four entrances and was fenced off to the public. To confirm if the artificial sett was in use, a trail camera was set up (under Licence No. 32/2023) for a period of 48 hours. The footage was then reviewed, and the artificial sett was confirmed to be in use by at least one badger (refer to **Plate 21-12**) in February 2023.

163. No other setts (natural or artificial) were recorded within the study area.

164. A number of mammal burrows were recorded towards the eastern boundary of the onshore substation site. The burrows appeared disused due the presence of leaf litter at the entrances, however trail cameras were installed at the burrows to establish if the burrows were in use. The trail cameras were installed for two periods: 05/03/2024–15/03/2024 and 21/03/2024–04/04/2024. A review of the footage indicated that the burrows are not in use by any mammals, including badgers. Badgers were however recorded on the cameras walking past the burrows. It's likely that the badgers forage and commute through the onshore substation site, however no badger setts are present within the area.

165. The local badger population was assessed as being of Local Importance (Higher Value).

Plate 21-12 Trail camera footage at the artificial sett (left) and badger print recorded in the onshore substation site (right)

Otter

166. Otter and their breeding sites are protected in Ireland under the Wildlife Act (as amended) and are listed on the Irish Red Data book as 'Internationally Important'. The otter is also protected under Annex II and IV of the Habitats Directive, giving it strict protection as a species of community interest whose conservation requires EU nations to designate SACs. In addition, the otter is listed in Appendix II of the Bern Convention (1982) which has been ratified by Ireland.

167. Otter are likely to forage and commute along the estuaries around the Poolbeg Peninsula. No evidence of otter was recorded using the onshore development area during surveys. However, during onshore bird surveys, in June 2022, an otter was recorded twice on the shoreline at low tide along the north side of the onshore substation site. It was noted to be foraging / searching on exposed mud and in rock armour. An otter was also recorded outside of the onshore development area, near the ESB Dolphin used by a breeding tern colony within Dublin Port. This is located c. 250 m from the eastern boundary of the onshore substation site.

168. No otter holts or resting sites / couches were recorded within the study area during surveys. Although none found, the rock armour around the perimeter of the onshore substation site may provide suitable resting sites for otter.

169. The closest European site designated for otter is the Wicklow Mountains SAC (002122). The SAC is located approximately 25 km upstream of the onshore development area. Otter's territory ranges in Ireland have been recorded to range between 6–15 km along rivers (Reid *et al*., 2013; Bailey & Rochford, 2006). Given the significant upstream distance (ca. 25 km), the proposed onshore works area or the surrounding intertidal area, is not considered to be an ex-situ site for the population of otter designated within the Wicklow Mountains SAC.

170. The local otter population was therefore assessed as being of County Importance.

Other small mammal species

171. A number of other small mammal species were recorded during the surveys and are discussed hereunder.

172. A live sighting of the grey squirrel was recorded in the woodland of Irishtown Nature Park during surveys. Grey squirrel is listed under Article 19 of Invasive Alien Species Regulation (1143/2014).

173. Wood mouse (*Apodemus sylvaticus*) was recorded within the artificial sett enclosure during the camera trap surveys. In addition, evidence of fox, which included scat and tracks were regularly recorded throughout the study area. Wood mice and foxes are not protected under European or National law, however there is an obligation to protect biodiversity within Ireland under the Convention on Biological Diversity.

174. No evidence of any other protected mammal species was recorded during the field surveys. There is potential, however, that the onshore development area may support other small, protected mammal species such as hedgehogs *(Erinaceus europaeus),* pygmy shrew *(Sorex minutus),* Irish stoat *(Mustela erminea ibernica)* and Irish hare *(Lepus timidus)* due to the suitable habitat for these species present within the area.

175. The small mammal population was assessed as being of Local Importance (Higher Value).

Amphibians and reptiles

176. The Wildlife Act provides protection to Ireland's only reptile, common lizard (*Zootoca vivipara*) and two amphibian species, common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*).

177. Common lizard is a common species but difficult to observe, and occurs in a range of habitats, especially on moors and rocky habitats (NRA, 2008). Common lizard were not recorded during the surveys. There is no suitable habitat present for the protected reptile within the onshore development area.

178. Smooth newts are known to use a variety of water body types, such as garden ponds, natural pools, drainage ditches and quarry ponds (Meehan, 2013). No suitable habitat to support the protected species was identified within the onshore development area. In addition, there have been no previous recordings of the species within the 2 km grid square (O13W) which encompasses the onshore development area. Considering the lack of suitable habitat and previous recordings within the onshore development area, smooth newt are not considered further within this assessment.

179. No common frog were recorded during surveys. Although common frog occur across many types of habitats (bogs, fens, wet grassland, oligotrophic lakes, heath etc.) (Reid *et al*., 2013), no suitable habitat to support the protected species occurs within the onshore development area.

180. None of the protected amphibian and reptile species were considered KERs within the ZoI of the onshore development area.

Invertebrates

181. The marsh fritillary butterfly is the only Irish insect listed on Annex II of the Habitat Directive. The protected butterfly occurs in colonies in different habitats including sand dunes, calcareous grassland, heath and bog habitat, and will generally lay eggs within and feed on the plant species devil's bit scabious (*Succisa pratensis)* (Phelan *et al.*, 2021). Although survey efforts focused on the identification of suitable habitat within the sand dune habitat along the coastline, no devil's bit scabious was recorded within the study area. In addition, no marsh fritillary, in any form of its life cycle (i.e. nest, larvae, caterpillar or butterfly), was recorded. Therefore, marsh fritillary are not considered a KER and are not considered further within this assessment.

182. Other insect species which were recorded during the field surveys are summarised hereunder. These species are not protected but contribute to overall biodiversity within the area.

183. A number of bee species were recorded present within the area. This included the large red tailed bumble bee (*Bombus lapidaries)*. This species is listed as 'Not Threatened' under Ireland Regional Red List of Bees (Fitzpatrick *et al*., 2006). Also recorded was the buff tailed bumblebee (*Bombus terrestris*) which is listed as 'Least Concern' under Ireland Regional Red List of Bees (Fitzpatrick et al., 2006). The Northern colletes bee (*Colletes floralis*) was recorded along the coastline, to the east of onshore development area. This species is a ground-nesting solitary bee that is restricted to flower-rich coastal habitats such as dunes and machair. This species is listed as Vulnerable under Ireland Regional Red List of Bees (Fitzpatrick *et al*., 2006).

184. A number of butterfly species were also recorded. Species recorded during the surveys included meadow brown (*Maniola jurtina*) and common blue (*Polyommatus icarus*). These are common species found on the coast. These species are listed as Least Concern under the Ireland Red List of Butterflies (Regan *et al*., 2010).

185. One yellow-tail moth caterpillar (*Euproctis similis*) was recorded within the onshore development area, near the eastern boundary, along Shellybanks Road. The caterpillar is the larvae of yellow-tail moth, which is listed as Least Concern under the Ireland Red List of Moths (Allen *et al*., 2016).

186. The local invertebrate population was assessed as being of Local Importance (Lower Value).

Aquatic ecology

187. There were no freshwater watercourses recorded within the onshore development area at Poolbeg; therefore, no river habitat surveys, or fisheries assessments were carried out. As mentioned, **Chapter 9 Fish, Shellfish and Turtle Ecology** provides details on the aquatic ecology of the marine and estuarine habitats.

21.6 Summary of ecological evaluation

188. Following a review of the existing environment presented above, KERs within the study area were evaluated in accordance with the evaluation criteria set out in **Table 21-5** and **Table 21-6**. Consideration of the existing baseline condition / population stability, conservation status, rarity and legal protection of the KERs was undertaken. A summary of the ecological valuation and identification of KERs is provided in **Table 21-12** below.

189. In line with the NRA guidance (NRA, 2009), identified ecological features which are assessed as being below Local Importance (Lower Value) were not selected as KERs. Impacts to local importance (low value) receptors would not result in significant effects in EIA terms.

Table 21-12 Evaluation of key ecological receptors

Site / feature	EIA receptor sensitivity	KER	Rationale for inclusion / exclusion as KER
Designated sites			
South Dublin Bay SAC (000210)	International	Yes	A source–pathway–receptor link (physical connectivity) exists between the onshore development area and this SAC.
All other European sites (*Note SPAs are considered within **Chapter 10 Ornithology** and	International	No	No source–pathway–receptor link exists (i.e. no connectivity) between the onshore development area and any other SAC.

Site / feature	EIA receptor sensitivity	KER	Rationale for inclusion / exclusion as KER
European sites below the HWM are considered in **Chapter 8 Subtidal and Intertidal Ecology**).			
South Dublin Bay pNHA (000210)	National	Yes	A source–pathway–receptor link (physical connectivity) exists between the onshore development area and this pNHA.
All other national sites and designated areas (*Note national sites designated for birds are considered within **Chapter 10 Ornithology**, and National sites below the HWM are considered in **Chapter 8 Subtidal and Intertidal Ecology**).	National	No	No source–pathway–receptor link exists (i.e. no connectivity) between the onshore development area and any other nationally designated site.
Habitats			
Building and artificial surfaces (BL3)	Local Importance (Lower Value)	No	An area of artificial surfaces will be temporarily lost to facilitate the OTI and landfall. The habitat was assessed as being of lower ecological value and will not be considered further.
Sea walls, piers and jetties (CC1)	Local Importance (Lower Value)	No	An area of the habitat will be lost to facilitate the OTI. The habitat was assessed as being of high Local Importance.
Exposed sand, gravel and till (ED1)	Local Importance (Lower Value)	No	An area of the habitat will be lost to facilitate the OTI. The habitat was assessed as being of high Local Importance.
Spoil and bare ground (ED2)	Local Importance (Lower Value)	No	An area of the habitat will be lost to facilitate the OTI. The habitat was assessed as being of high Local Importance.
Recolonising bare ground (ED3)	Local Importance (Higher Value)	Yes	An area of the habitat will be lost to facilitate the OTI. The habitat was assessed as being of high Local Importance.
Refuse and other waste (ED5)	Local Importance (Lower Value)	No	An area of this habitat will be lost to facilitate the OTI. The habitat was assessed as being of lower ecological value and will not be considered further.
Amenity grassland (improved) (GA2)	Local Importance (Lower Value)	No	An area of this habitat will be lost to facilitate the OTI. The habitat was assessed as being of lower ecological value and will not be considered further.
Dry meadows and grassy verges (GS2)	Local Importance (Lower Value)	No	An area of this habitat will be lost to facilitate the OTI. The habitat was assessed as being of lower ecological value and will not be considered further.

Site / feature	EIA receptor sensitivity	KER	Rationale for inclusion / exclusion as KER
Scrub (WS1)	Local Importance (Higher Value)	Yes	An area of the habitat will be lost to facilitate the OTI. The habitat was assessed as being of Local Importance (Higher Value).
Habitat mosaic of refuse and other waste (ED5) and buildings and artificial waste (BL3)	Local Importance (Lower Value)	No	The habitat will not be lost to facilitate the OTI.
Mosaic of scrub (WS1) and earth bank (BL2)	Local Importance (Higher Value)	Yes	Some of this habitat will be lost to facilitate the OTI. The habitat was assessed as being of Local Importance (Higher Value).
Habitat mosaic of spoil and bare ground (ED2) and scrub (WS1)	Local Importance (Higher Value)	Yes	An area of habitat will be lost to facilitate the OTI. Evidence of badger (tracks and snuffle holes) were identified regularly throughout the habitat. This habitat is likely to be used as a foraging site. The habitat was assessed as being of Local Importance (Higher Value).
Habitat mosaic of refuse and other waste (ED5) and recolonising bare ground (ED3)	Local Importance (Higher Value)	Yes	An area of the habitat will be lost to facilitate the OTI. The habitat was assessed as being of high Local Importance.
Mixed broadleaved woodland (WD1)	Local Importance (Higher Value)	No	The habitat will not be lost to facilitate the OTI.
Treelines (WL2)	Local Importance (Higher Value)	Yes	An area of treeline will be lost to facilitate the OTI. The habitat was assessed as being Local Importance (higher value).
Flora species			
FPO listed plant species	N/A	No	None were identified within the onshore development area.
Invasive non-native species (INNS)	N/A	No	A number of INNS (plant species) were identified within the onshore development area and will be disturbed during the construction phase. INNS are not considered KERs, but mitigation measures with regard to their management and control have been recommended in **Section 21.11** of this chapter.
Fauna			
Badger	Local Importance (Higher Value)	Yes	Protected under the Wildlife Act. There is potential for disturbance / displacement during the construction and decommissioning phases.
Otter	County Importance	Yes	Protected under Annex II and Annex IV of the Habitats Directive and the Wildlife Act. There is potential for disturbance / displacement during the construction and decommissioning phases.

Site / feature	EIA receptor sensitivity	KER	Rationale for inclusion / exclusion as KER
Bat Species	Local Importance (Higher Value)	Yes	Bat species identified within the study area during desk and field-based surveys are protected under Annex IV of the Habitats Directive and the Wildlife Act. There is potential for disturbance / displacement during the construction O&M and decommissioning phases.
Other mammal species	Local Importance (Higher Value)	Yes	Protected under the Wildlife Act. There is potential for disturbance / displacement during the construction and decommissioning phases.
Freshwater fish species	Local Importance (Higher Value) to International Importance	No	No source–pathway–receptor link exists.
Amphibian and reptile species	Local Importance (Higher Value)	No	Protected amphibian and reptile species were found unlikely to occur within the onshore development area due to the lack of suitable habitat.
Invertebrates (insect species)	Local Importance (Lower Value)	No	No protected invertebrate species were recorded within the study area.
All other protected species	Local Importance (Higher Value) to International Importance	No	No evidence of other protected species, or habitat to support same, was recorded within the study area.
Invasive mammal species	N/A	No	N/A

21.7 Predicted future baseline and climate change and natural trends

190. If the CWP Project does not take place (the do-nothing scenario), the existing baseline conditions detailed within **Section 21.5.4** will largely remain the same. The existing vegetation is likely to continue recolonising in areas, with some changes to the baseline over time as a result of natural variation and weather events.

191. Biodiversity is at the forefront of climate change impacts globally (DCHG, 2019). In relation to the existing baseline conditions of the onshore environment within the onshore development area, it is the coastal fauna and flora that would be impacted most due to the rise in sea level and coastal erosion. Climate change has also been highlighted as having a major impact on the distribution and spread of invasive species (DCHG, 2019).

192. The above events and trends have the potential over time to alter the baseline conditions detailed within **Section 21.5.4**. However, in the absence of any detailed, quantifiable information it has been assumed that the baseline conditions will remain largely as they are for the purpose of the assessment (with the exception of other developments, where known, which are considered in the Cumulative Impact section (see **Section 21.13**).

21.8 Scope of the assessment

193. An EIA Scoping Report for the OTI was published on the 6 May 2021. The Scoping Report was uploaded to the CWP Project website and shared with regulators, prescribed bodies and other relevant consultees, inviting them to provide relevant information and to comment on the proposed approach being adopted by the Applicant in relation to the onshore elements of the EIA.

194. Based on responses to the Scoping Report, and further consultation and refinement of the CWP Project design, potential impacts to onshore biodiversity were scoped into the assessment and are listed below in **Table 21-13.**

Table 21-13 Potential impacts scoped into the assessment

Impact no.	Description of impact	Notes
Construction		
Impact 1	Permanent and temporary loss of habitat.	The main construction phase impacts associated with the OTI include habitat loss, habitat degradation and the disturbance of protected species and loss of their foraging / commuting habitat.
Impact 2	Habitat degradation as a result of the introduction / spread of INNS.	
Impact 3	Habitat degradation as a result of air quality impacts (dust).	
Impact 4	Permanent / temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species.	
Impact 5	Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species / other mammal species during construction phase activities.	
Operation and maintenance		
Impact 1	Disturbance / displacement (noise, vibration, human presence and / or lighting) to protected terrestrial species / other mammal species during operation and maintenance activities.	The main impacts during the O&M associated with the OTI include the disturbance of protected species.
Decommissioning		
Impact 1	Permanent and temporary loss of habitat.	The decommissioning phase impacts will include habitat degradation and the disturbance of protected species. The decommissioning impacts are expected to be of a similar type and magnitude to those anticipated during the construction phase, but generally of a shorter duration and scale.
Impact 2	Habitat degradation as a result of the introduction / spread of INNS.	
Impact 3	Habitat degradation as a result of air quality impacts (dust).	
Impact 4	Permanent / temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species.	

Impact 5	Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species / other mammal species during decommissioning phase activities.	

195. Based on responses to the Scoping Report, further consultation and refinement of the CWP Project design, potential impacts to freshwater bodies have been scoped out of the assessment and are listed below in **Table 21-14**.

Table 21-14 Potential impacts scoped out of the assessment

Description of impact	Justification for scoping out
Water quality impacts – construction, O&M and decommissioning phases	No freshwater bodies occur within the onshore development area[7]. There is no potential for water quality impacts on freshwater waterbodies (no source–pathway–receptor), thus this impact has been scoped out of this assessment. Water quality impacts on the marine environment have been assessed separately within **Chapter 7 Marine Water Quality** and **Chapter 8 Subtidal and Intertidal Ecology**.
Vibration – O&M phase	There will be no vibration emissions from the operation of the OTI. Consequently, the consideration of vibration impacts during the O&M phase has been scoped out of the assessment.

21.9 Assessment parameters

21.9.1 Background

196. Complex, large-scale infrastructure projects with a terrestrial and marine interface, such as the CWP Project, are consented and constructed over extended timeframes. The ability to adapt to a changing supply chain, policy or environmental conditions, and to make use of the best available information to feed into project design, promotes environmentally sound and sustainable development. This ultimately reduces project development costs and therefore electricity costs for consumers and reduces CO_2 emissions.

197. In this regard, the approach to the design development of the CWP Project has sought to introduce flexibility where required, among other things, to enable the best available technology to be constructed and to respond to dynamic maritime conditions, whilst at the same time to specify project boundaries, project components and project parameters wherever possible, whilst having regard to known environmental constraints.

198. **Chapter 4 Project Description** describes the design approach that has been taken for each component of the CWP Project. Wherever possible, the location and detailed parameters of the CWP Project components are identified and described in full within the EIAR. However, for the reasons outlined above, certain design decisions and installation methods will be confirmed post-consent, requiring a degree of flexibility in the planning consent.

199. Where necessary, flexibility is sought in terms of:

- Up to two options for certain permanent infrastructure details and layouts such as the wind turbine generator (WTG) layouts.

- Dimensional flexibility, described as a limited parameter range, i.e. upper and lower values for a given detail such as cable length.
- Locational flexibility of permanent infrastructure; described as Limit of Deviation (LoD) from a specific point or alignment.

200. The CWP Project had to procure an opinion from ABP to confirm that it was appropriate that this application be made and determined before certain details of the development were confirmed. ABP issued that opinion on 25 March 2024 (as amended in May 2024) and it confirms that the CWP Project could make an application for permission before the certain permanent infrastructure described in **Section 4.3** of **Chapter 4 Project Description** is confirmed.

201. In addition, the application for permission relies on the standard flexibility for the final choice of installation methods and O&M activities.

202. Notwithstanding the flexibility in design and methods, the EIAR identifies, describes and assesses all of the likely significant impacts of the CWP Project on the environment.

21.9.2 Options and dimensional flexibility

203. Where the application for permission seeks options or dimensional flexibility for infrastructure or installation methods, the impacts on the environment are assessed using a representative scenario approach. A representative scenario is a combination of options and dimensional flexibility that has been selected by the author of this EIAR chapter to represent all of the likely significant effects of the project on the environment. Sometimes, the author will have to consider several representative scenarios to ensure all impacts are identified, described and assessed.

204. For Biodiversity the infrastructure design and installation techniques with potential to give rise to biodiversity impacts have been confirmed in the planning application and consequently the assessment is confined to a single scenario for all construction and O&M phase impacts.

21.9.3 Limit of deviation (LoD)

205. Locational flexibility of permanent infrastructure is described as LoD from a specific point or alignment. The LoD is the furthest distance that a specified element of the CWP Project can be constructed.

206. LoD within the onshore development area (landward of the high-water mark) are noted below in **Table 21-15**. This chapter assesses the specific preferred location for permanent infrastructure, however, the potential for the LoD to give rise to any new or materially different effects compared to those presented in **Section 21.11-21-13** of this chapter has been considered.

207. For onshore biodiversity, a conclusion is provided in **Table 21-16** which confirms that the LoDs for the permanent infrastructure relevant to onshore biodiversity will not give rise to any new or materially different effects. The LoDs are therefore not considered further within this assessment

Table 21-15 Design parameters relevant to assessment of onshore biodiversity

Impact	Details	Value	Notes / assumptions
Construction			
Impact 1: Permanent and temporary loss of habitat	**Landfall**		This impact relates to temporary and permanent habitat loss associated with the construction and decommissioning phases.
	Temporary infrastructure		
	Dimensions of temporary access ramp (including route from main compound) (L x W) (m)	60 x 10	
	Typical duration of temporary access ramp (months)	24	
	Duration of temporary footpath diversion (weeks)	8	
	Installation methods and effects		
	Area of site clearance at the TJBs (m^2)	2,200	
	Area of site clearance between TJBs and the HWM (m^2)	2,200	
	Area of site clearance between for temporary access ramp (m^2)	600	
	Total area of clearance for the open cut landfall (m^2)	5,000	
	Onshore export cables		
	Temporary infrastructure		
	Number of tunnel shafts and temporary tunnel compounds	3	

	Temporary tunnel compound 2 (reception) area: (m^2) (*the one located outside of Compound A and onshore substation area*)	3,240
	Combined area for temporary tunnel compounds for the onshore export cable route (m^2)[13]	20,215
	Installation methods and effects	
	Total tunnel length (m)	740
	First tunnel drive length (m)	330
	Second tunnel drive length (m)	410
	Tunnel internal diameter (ID) (m)	3.0
	Tunnel invert (m ODM)	-25.3
	Overall duration to complete tunnel construction and cable duct installation (months)	21
	Onshore substation	
	Installation methods and effects	
	Total footprint of temporary site clearance of the onshore substation site inc. access roads (m^2)	20,090
	ESBN network cables	
	Installation methods and effects	
	Number of temporary HDD compounds	2

[13] Noted that temporary tunnel compounds 1 & 3 are located within Compound A and the onshore substation site respectively.

	Combined area for temporary HDD compounds f (m^2)[14]	3,434	
	Number of open cut sections	1	
	Number of HDD sections	1	
	Total length of open cut / HDD trenching (m)	400	
	Total length of HDD section (m)	135	
	Total length of open cut section (m)	265	
	Depth of cover along the open cut section (m)	1.2	
	Construction compounds	Applicable to all options	
	Compound A area (m^2)	19,800	
	Compound B area (m^2)	32,300	
	Compound C area (m^2)	3,350	
	Compound D area (m^2)	360	
Impact 2: Habitat degradation as a result of the introduction / spread of INNS	Refer to **Impact 1** for details.		This impact relates to habitat degradation associated with the introduction/spread of INNS.
Impact 3: Habitat degradation as a result of air quality impacts (dust)	Refer to **Impact 1** for details.		This impact relates to habitat degradation associated with the

[14] Noted that temporary HDD compound 1 & 2 are located within Compound C and the Poolbeg 220kV substation sites respectively.

			generation and deposition of dust during the construction phase.
Impact 4: Permanent / temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species	Refer to **Impact 1** for details.		This impact relates to the permanent / temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species.
Impact 5: Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species / other mammal species during construction phase activities.	**Landfall**		This noise assessment represents the maximum noise levels which will be generated during the construction phase at the onshore landfall site.
	Installation method		
	Open cut excavation including piling at the temporary cofferdam: Noise, Combined Sound Power (Lw) dB (A)	120	
	TJB piling works: Noise, Combined Sound Power (Lw) dB (A)	116	
	Mechanical excavation and piling activities ($mm \cdot s^{-1}$)	Less than 3 mm/s at distances of 5–50 m from the associated construction activity.	
	Total piling duration for temporary cofferdam [weeks]	2	
	Duration of temporary cofferdam once constructed [weeks]	4	
	Piling duration for the TJB excavations (days)	3	

	Onshore export cables		
	Installation methods and effects		This noise assessment represents the maximum noise levels which will be generated during the construction phase associated with onshore export cables.
	Tunnel – underground shaft: Combined Sound Power (Lw) dB (A)	113	
	Mechanical excavations activities (mm·s^{-1})	Less than 3 mm/s at distances of 10–50 m from the associated construction activity.	
	Overall duration to complete construction and installation (months)	21	
	ESBN network cables		
	Installation methods and effects		This noise assessment represents the maximum noise levels which will be generated during the construction phase associated with the ESBN network cables.
	ESBN networks cable – HDD installation: Noise, Combined Sound Power (Lw) dB (A)	115	
	ESBN networks cable – HDD installation: vibration levels relative to artificial badger sett (mm·s^{-1})	0.05mm·s^{-1} at 150 m from the sett, 0.04 mm·s^{-1} at 50m from the sett and 0.04mm·s^{-1} at the sett	
	Overall duration to complete construction and installation (months)	6	

	Lighting for construction activities		
	Localised task lighting will be required during the construction phase. This is required for the safety and productivity of construction workers and for construction works to be undertaken properly. Additionally, once commenced, certain activities will operate continuously over 24-hr periods. This would include activities such as tunnelling activities for the onshore export cable and HDD activities for the ESBN network cables. It is expected that lighting would generally be in the form of mounted flood lights, which will be cowled and directional to minimise light splay from the working areas		
Operational			
Impact 1: Disturbance / displacement (noise and lighting) to protected terrestrial species during operation and maintenance activities.	**Onshore substation**		During the operational phase, lighting and noise disturbance generated from the onshore substation may disturb ecological receptors. All onshore substation operational plant items are included in the noise model and are assumed to be operating simultaneously.
	Permanent infrastructure		
	Noise levels associated with the onshore substation (dB L_{Aeq})	38 dB at the artificial badger sett	
	Lighting at the onshore substation	External lighting of the onshore substation during the O&M phase will be only required for the following purposes: • Access and egress; • Security lighting; • Car park lighting; and • Repair / maintenance.	

		At night substation lighting will be switched off as the substation will be unmanned. Lights will only be used during periods where and when work is to be carried out (i.e. maintenance) and lights will be positioned to suit the work.	

Decommissioning	
Impact 1: Permanent and temporary loss of habitat. **Impact 2**: Habitat degradation as a result of the introduction / spread of INNS. **Impact 3**: Habitat degradation as a result of air quality impacts (dust). **Impact 4**: Permanent/temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species. **Impact 5**: Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species / other mammal species during decommissioning phase activities.	It is recognised that legislation and industry best practice change over time. However, for the purposes of the EIA, at the end of the operational lifetime of the CWP Project, it is assumed that all OTI will be removed where practical to do so. In this regard, for the purposes of an assessment scenario for decommissioning impacts, the following assumptions have been made: • The TJBs and onshore export cables (including the cable ducting) shall be completely removed. • The landfall cable ducts and associated cables shall be completely removed. • The underground tunnel, within which the onshore export cables will be installed shall be left in situ and may be re-used for the same or another purpose. • The onshore substation buildings and electrical infrastructure shall be completely removed. • The reclaimed land, substation platform, perimeter structures and the new access bridge at the onshore substation site will remain in situ and may be re-used for the same or another purpose. • The ESBN network cables (including the cable ducting) shall be completely removed. The general sequence for decommissioning is likely to include: • Dismantling and removal of electrical equipment; • Removal of ducting and cabling, where practical to do so; • Removal and demolition of buildings, fences and services equipment; and • Reinstatement and landscaping works.

	Closer to the time of decommissioning, it may be decided that removal of certain infrastructure, such as the TJBs, landfall cable ducts and associated cables, onshore export cables and ESBN networks cables, would lead to a greater environmental impact than leaving the components in situ. In this case it may be preferable not to remove these components at the end of their operational life. In any case, the final requirements for decommissioning of the OTI, including landfall infrastructure, will be agreed at the time with the relevant statutory consultees. It is anticipated that, for the purposes of an assessment scenario, the impacts will be no greater than those identified for the construction phase.

Table 21-16 Limit of deviation summary relevant to onshore biodiversity

Project component	Limit of deviation	LoD impact summary
TJBs	0.5 m either side (i.e. east / west) of the preferred TJB location	No potential for new or materially different effects
Landfall cable ducts	Defined LoD boundary (see **Chapter 4 Project Description**)	No potential for new or materially different effects
Location of onshore substation revetment perimeter structure	Defined LoD for sheet piling at toe of the revetement	No potential for new or materially different effects

21.10 Primary mitigation measures

208. Throughout the evolution of the CWP Project, measures have been adopted as part of the evolution of the project design and approach to construction, to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures are referred to as 'primary mitigation'. They are an inherent part of the CWP Project and are effectively 'built in' to the impact assessment.

209. Primary mitigation measures relevant to the assessment of Biodiversity are set out in **Table 21-17**. Where additional mitigation measures are proposed, these are detailed in the impact assessment (**Sections 21.11 – 21.13**). Additional mitigation includes measures that are not incorporated into the design of the CWP Project and require further activity to secure the required outcome of avoiding or reducing impact significance.

Table 21-17 Primary mitigation measures

Project element	Description
Construction phase – construction works associated with the landfall and works within Compound A	To minimise the potential for disturbance to the artificial badger sett located within the Irishtown Nature Park, construction phase activities along the eastern boundary of Compound A will be limited and will predominantly include the laydown / storage of material and the movement and parking of vehicles.
Ecological Clerk of Works (ECoW)	A suitably qualified and experienced ECoW will be appointed by the Contractor. The ECoW will oversee all construction works and monitor any possible sources of impacts for the duration of the construction programme.

21.11 Impact assessment

21.11.1 Construction

210. The potential environmental impacts arising from the construction of the CWP Project are listed in **Table 21-13** along with the parameters against which each construction phase impact has been assessed. A description of the potential effect on onshore biodiversity KERs caused by each identified impact is provided below.

Habitats

Impact 1: Permanent and temporary loss of habitat

Receptor sensitivity

211. All habitats recorded within the onshore development area were assessed as being of Local Importance as per the criteria outlined in **Table 21-5**. No habitats were identified as being of County,

National or International Importance. Although the onshore development area overlaps with South Dublin Bay SAC and South Dublin pNHA, no Annex I habitats protected under the EU Habitats Directive occur within the onshore boundary (refer to **Appendix 21.3**). Habitat loss within the European and National sites is discussed further in **Section 21.12.1** and **21.12.2**.

Magnitude of impact

212. The CWP Project will result in permanent and temporary habitat loss to facilitate the OTI (e.g. landfall works area, TJBs, onshore export cables, ESBN network cables and the onshore substation). Temporary habitat loss relates to areas of habitat which will be temporarily lost to facilitate elements of the construction works such as the temporary construction compounds, temporary access routes / ramps and the cables routes which will require site clearance before excavations. All these areas will be reinstated following the completion of the construction phase. Permanent habitat loss relates to habitat which will be permanently removed to facilitate infrastructure such as the onshore substation. Permanent habitat loss also relates to habitat which will be removed, and which won't be reinstated.

213. A total of ca. 84,347 m^2 of habitat and 110m of linear habitat (treeline) will be lost (either temporarily or permanently) within the onshore development area. Out of this total, approximately 32,439 m^2 of these habitats plus the 110m of treeline are considered to be of Local Importance (Higher Value). **Table 21-18** presents the total extents of habitat that will be temporarily or permanently lost during the construction phase. As per the NRA (2009) guidelines, only habitats with a value of Local Importance (Higher Value) and higher have been considered in this impact assessment.

214. There will be a total temporary habitat loss of 18,697 m^2 within the onshore development area for a duration of approximately 36 months. Following the completion of the works, the disturbed areas will be reinstated. There will be a combined permanent habitat loss of 13,742 m^2 within the onshore development area, predominantly associated with the development of the onshore substation, plus the permanent loss of 110m of treeline along Shellybanks Road. These habitats are generally common habitats across the country; however, they are considered rare in the surrounding area as the wider landscape predominantly comprises industrial buildings, structures and artificial surfaces.

Table 21-18 Temporary and permanent habitat loss

	Scrub (WS1)	Mosaic of scrub (WS1) and earth banks (BL2)	Mosaic of spoil and bare ground (ED2) and scrub (WS1) habitat	Recolonising bare ground (ED3)	Mosaic of refuse and waste (ED5) and recolonising bare ground (ED3)	Treeline (WL2)
	Infrastructure resulting in temporary habitat loss (m^2)					Infrastructure resulting in permanent linear habitat loss (m)
Compound A	-	20	-	7,214	-	-
Compound B	-	-	-	1,026	-	-
Compound C	83	-	-	1,839	-	-
Landfall works above the HWM (open-cut trenching works)	-	2,915	-	379	-	-
Temporary access onto the Pigeon House Road (for the onshore substation site)	91	-	-	5	-	-
Temporary access ramp onto the intertidal works (from Compound A)	-	1,558	-	106	-	-

Temporary access route for Compounds A and B	-	-	-	870	-	-
Temporary tunnel compound 2 (reception) (onshore export cables)	1,434	-	-	-	-	-
ESBN network cable (HDD)	374	-	-	783	-	-
Infrastructure resulting in permanent habitat loss (m^2)						**Infrastructure resulting in permanent linear habitat loss (m)**
Onshore substation boundary	1,629	-	5,810	3,318	2,985	-
Temporary tunnel compound 2 (reception) (onshore export cables)	-	-	-	-	-	110
Total	**3,611**	**4,493**	**5,810**	**15,540**	**2,985**	**110**

Significance of the effect

Temporary habitat loss

215. It is considered that the overall temporary habitat loss associated with the OTI during the construction phase will **not result in a likely significant effect** on the conservation status of the habitat types, at any geographical scale.

Permanent habitat loss

216. Considering the limited availability of similar habitats within the wider surrounding area, the areas of permanent habitat loss **would result in likely significant effects** on the conservation status of that habitat types, at a local geographical scale.

Additional mitigation measures

217. To reduce the impacts on habitat loss, the following measures will be implemented:

218. Where possible, vegetation clearance will be kept to a minimum. The proposed construction work areas will be demarcated prior to the construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas. Construction vehicles will be restricted to designated areas and access tracks to avoid impacting adjacent habitats, and to ensure that soil compaction is restricted to these tracks. All disturbed ground will be fully reinstated following the completion of the works.

219. The replanting of vegetation (ca. 7,856 m^2) will be undertaken within the onshore development area following the completion of the works. The replanting will include the planting of native woodland (ca. 4098 m^2), native shrub (ca. 2,708 m^2) and wildflower beds (ca. 1,050 m^2) at the landfall site, along Shellybanks Road and Pigeon House Road (refer to **Figures 23.7**, **23.8** and **23.9** in **Chapter 23 Landscape and Visual Impact**). All planted species will be certified native stock and from an approved supplier of the Green, Low-Carbon Agri-Environmental Scheme (GLAS). Further details are provided in the Landfall Landscape Reinstatement Plan contained in **Figure 23.7**, **23.8 and 23.9** of **Chapter 23 Landscape and Visual Impact**. The replanting will include a variety of plant species which will increase the species diversity, particularly at the landfall site, which currently comprises dense bramble and invasive plant species.

220. Although they are not protected, the bee and pyramidal orchids which were recorded at the onshore substation site and in Compound B will be carefully dug out and transplanted to a designated translocation site within the CWP Project site boundary, prior to the construction works commencing.

221. The orchids will be translocated in June or July (as they are easily identified then) and a deep soil profile is excavated with the orchids to ensure that enough soil, containing mycorrhizal soil fungi, essential to orchid survival, is transferred along with the plants themselves. The orchids will then be replanted within the designated translocation area in either autumn or early spring.

Residual effect

222. The replanting of approximately 7,856 m^2 of new vegetation at the landfall site and along Shellybanks Road and Pigeon House Road will compensate some of the permanent habitat loss, however there will be a net loss of habitat to facilitate the OTI. The proposed replanting will, however, result in the planting of higher quality habitats (i.e. mixed broadleaved woodland) and an increase of native species diversity with the area, which will benefit biodiversity with the area. This aligns with the

recommendations in CIEEM's Briefing Paper – *Biodiversity Enhancement for New Developments in Ireland* (CIEEM, 2023) which indicate a preference of qualitative approach over a quantitative approach.

223. Following the adoption of the additional mitigation, the significance of residual effects for the loss of habitat is predicted to be **Not Significant** at a local geographical scale, which is not significant in EIA terms.

Impact 2: Habitat degradation as a result of the introduction / spread of INNS

Receptor sensitivity

224. A number of INNS were identified within the onshore development area during surveys. Habitats within the onshore development area which may be negatively impacted by the INNS were assessed as being of Local Importance (Higher Value).

225. The INNS at the landfall site are also located in close proximity to the South Dublin SAC and South Dublin pNHA. Impacts from the INNS to designated sites are discussed further in **Sections 21.12.1** and **21.12.2**).

Magnitude of impact

226. The disturbance of INNS during the construction phase can result in the further spread of the INNS into the wider environment. The construction works associated with the landfall, onshore export cable, onshore substation and ESBN network cables all have the potential to result in the disturbance of INNS which were identified within the onshore development area.

227. INNS, like knotweed have the potential to negatively impact habitats by shading and competitively excluding native plant species, providing less favourable habitats for native fauna (TII, 2020).

Significance of the effect

228. The disturbance of INNS within the onshore development area and the potential introduction of new INNS**, will result in likely significant effects** on conservation status from a local to international geographical scale.

Additional mitigation measures

229. To avoid significant effects and to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the INNS located within the onshore development area, which will be directly impacted, will be removed prior to the construction works commencing. An **Onshore Invasive Species Management Plan (Onshore ISMP)** has been prepared and is included within the Planning Application. The ISMP outlines control measures which will be put in place in order to control and manage the INNS.

230. The **Onshore ISMP** includes details of:

- Survey observations and photographs illustrating invasive species infestation;
- Control, treatment and management options for each type of invasive species identified; and
- Biosecurity standard operating procedures for personnel and equipment.

231. The **Onshore ISMP** be implemented by the Applicant and its appointed contractor(s) and will be secured through conditions of the development consent. It will be a live document which will be updated and submitted to the relevant authority, prior to the start of construction.

Residual effect

232. Following the adoption of the additional mitigation and monitoring measures (outlined in **Section 21.16**), the significance of residual effect is therefore predicted to be **Not Significant** at any geographical scale, which is not significant in EIA terms.

Impact 3: Habitat degradation as a result of air quality impacts (dust)

Receptor sensitivity

233. Excavation activities, the movement of vehicles and the storage of material can result in the generation of dust. The deposition of dust can negatively impact plants and vegetation by effecting photosynthesis respiration and transpiration (Farmer, 1993). As stated in **Chapter 25 Air Quality and Climate**, designated sites within 50 m of the boundary of the site or within 50 m of the OTI used by construction vehicles on public highways up to a distance of 250 m from a construction site entrance can be affected according to the IAQM Guidance (IAQM, 2024). The sensitivity of the area to ecological impacts are considered using the sensitivity criteria outlined in **Table 21-19**.

Table 21-19 Sensitivity of the area to ecological impacts

Receptor sensitivity	**Distance from source (m)**	
	<20	**<50**
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Magnitude of impact

234. Both the South Dublin Bay SAC and South Dublin Bay pNHA overlap with the onshore development area. These are high sensitivity receptors, and therefore the sensitivity is considered high, as per the guidelines (IAQM, 2024). Despite the close proximity of the designated sites, the sites do not contain habitats which are considered to be sensitive to dust (further details are provided in **Sections 21.12.1** and **21.12.2**). All terrestrial habitats within 50 m of the construction boundary are of Local Importance higher to lower value and are not sensitive to dust impacts. The short-term deposition of dust on habitats located within the ZoI of the onshore development area will not have negative impacts on habitats.

Significance of the effect

235. Impacts from dust will be **not result in significant effects** on the conservation status of nearby habitats or sites, at any geographical scale.

Additional mitigation measures

236. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation measure outlined below will also be implemented during the construction phase of the OTI, as this is considered appropriate best practise.

237. In order to ensure that no dust nuisance occurs a series of measures will be implemented, drawing on best practice guidance from the IAQM Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024). The proposed dust control measures are described in detail **Chapter 25 Air Quality and Climate** and also captured within the **Construction Environmental Management Plan (CEMP)**.

Residual effect

238. Following the adoption of the additional mitigation, the significance of residual effect is predicted to be **Not Significant** at any geographical scale, which is not significant in EIA terms.

Fauna

239. Potential construction phase impacts on fauna within the receiving environment are discussed hereunder.

Badger

Impact 4: Permanent/temporary loss of breeding/resting places or commuting and / or foraging habitat for protected terrestrial species

Receptor sensitivity

240. Badger and their breeding and resting places are protected under the Wildlife Act (as amended) and it is an offence under that legislation to intentionally kill or injure a badger or to wilfully interfere with or destroy their breeding or resting places (setts). The local badger population have been assessed as being of Local Importance (Higher Value).

Magnitude of impact

241. An artificial badger sett was recorded at the north-western boundary of the Irishtown Nature Park, approximately 30 m east of Compound A. The sett was monitored using trail cameras (under Licence No.: 32/2023) and was confirmed to be actively in use by at least one badger.

242. The construction works will not result in the direct loss of the sett as it occurs outside the footprint of the onshore development area; thus, there will be no loss of known badger setts as a result of the construction works.

243. There is potential, however, that badgers may establish new setts within the onshore development area, in the interim of the baseline surveys and prior to the construction works commencing. The potential of this occurring has been considered within the mitigation section below.

244. Evidence of badgers foraging and commuting activity within the study area was recorded during surveys (e.g. tracks, latrines and snuffles holes were recorded). The CWP Project will result in permanent habitat loss of 13,742.50 m^2, of which 90% was found to be used as foraging habitat by badgers. There is limited suitable habitat available within the wider environment, as the surrounding areas predominantly comprises built structures and artificial surfaces. Therefore, the loss of the foraging habitat is likely to negatively impact the local badger population.

245. Although the total area of habitat is considered relatively small, there is limited availability of suitable alternative habitat within the study area. The loss of potential foraging habitat to facilitate the CWP Project will result in a likely, permanent, impact on the local badger population.

Significance of the effect

246. The loss of potential foraging and commuting habitat associated with the construction phase **will result in likely significant effects** on the conservation status of the local badger population, at a local geographical scale.

Additional mitigation measures

247. In the event that the construction phase of the CWP Project is delayed more than 12 months after the initial baseline surveys, pre-construction badger surveys will be undertaken prior to the construction works commencing to establish whether there has been any change to the receiving environment, particularly in relation to the establishment of new badger setts.

248. The pre-construction surveys will be undertaken by an experienced and qualified Ecologist and will take place no more than 10 to 12 months in advance of construction works commencing as per the NRA (2005) guidelines. The pre-construction survey will assess the status of the existing artificial badger sett and identify any newly established setts in advance of the construction works commencing. In the event a new badger sett is identified during the pre-construction surveys, within the ZoI of the OTI and landfall, the appointed contractor(s) will follow the guidelines outlined within the NRA (2005) document, and ensure appropriate measures are implemented.

249. In the event a new badger sett is identified within the ZoI of the OTI, the appointed Contractor will implement the following measures, as outlined within the NRA (2005) guidance:

- Camera traps will be installed at the sett to establish the level of activity.
- If required, a one-way badger gate will be fitted over each entrance.
- Gates will be closed after three days and will be monitored every three days for 21 days in total before the sett is then deemed inactive.
- Monthly monitoring of the closed sett will be undertaken to ensure there has been no interference with the closure and no mammals have attempted to dig back into the sett.
- Once the sett has been confirmed to be inactive, the sett will be destroyed.
- Sett exclusion / sett closure works will be undertaken prior to the commencement of the badger breeding season (December to June).
- No sett interference will therefore occur between December and June inclusive when dependant young could be present.

250. As discussed in **Section 21.11.1**, replanting of the berm at the landfall will increase plant diversity in that area and likely provide new foraging habitat for the local badger population.

Residual effect

251. Following the implementation of the above mitigation measures, and the proposed replanting which will improve the biodiversity within the area, the significance of residual effect on the local badger population is predicted to be **Not Significant** at a local geographical scale, which is not significant in EIA terms

Impact 5: Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species during construction phase activities

Receptor sensitivity

252. Badgers and their breeding and resting places are protected under the Wildlife Act (as amended) and it is an offence under that legislation to intentionally kill or injure a badger or to wilfully interfere with or destroy their breeding or resting places (setts). The local badger population have been assessed as being Local Importance (Higher Value).

Magnitude of impacts

Construction works can result in the disturbance of badger breeding sites located within a 150 m buffer of a works area (NRA, 2005). The disturbance in proximity to setts can result in badgers abandoning setts (Smal, 1995).

253. An artificial badger sett, which was confirmed to be active (using trail cameras), was recorded at the north-western boundary of the Irishtown Nature Park, approximately 30 m east of Compound A and approximately 155 m east of the temporary tunnel compound and shaft (within Compound A). There is potential for disturbance of the sett and foraging activity during the construction phase.

254. Disturbance of a breeding sett can result in badgers abandoning a sett and cub mortality (NRA, 2005). Increased levels of activity during the construction phase may also result in the disturbance of badgers from foraging sites, as badger may avoid certain areas.

Noise

255. Construction noise levels (CNL) have been calculated at the artificial sett using the BS 5228-1Methodology from British Standard (BS) 5228 (2009 +A1 2014) Code of Practice for noise and vibration control of construction and open sites – Part 1: Noise. In terms of the calculations, BS 5228 – 1 (BSI 2014a) sets out sound pressure levels for a wide range of plant items normally encountered on construction sites, which in turn enables the prediction of indicative noise levels at distances from the works.

256. Using the typical noise levels for items of construction plant set out in BS 5228 – 1 (BSI 2014a), CNLs at specific distances have been calculated to determine a range of potential noise levels representative of the key construction activities located within closest proximity to the badger buffer zones, i.e. those works at the landfall and Compound A.

257. **Table 21-20** indicates that noise levels at the artificial badger sett will range between 43–64 dB L_{Aeq}. There is no guidance which indicates noise levels which badgers can tolerate. However, baseline noise monitoring has previously been carried out on behalf of the Applicant (refer to **Chapter 24 Noise and Vibration**) at several locations including within the Irishtown Nature Park. Monitoring location AT5 was located approximately 200 m from the artificial badger sett, and noise monitoring was also undertaken at the western boundary of Compound A (monitoring location AT2).

258. The overall average L_{Aeq} at AT5 was 44 dB L_{Aeq} and the overall average L_{Aeq} at AT2 was 63 dB L_{Aeq} (refer to **Table 25-22 Chapter 24 Noise and Vibration**). These recorded noise levels indicate the existing baseline levels currently within the area. There is no evidence that the current baseline noise levels are disturbing the artificial badger sett and the local population, as the badger survey indicated that the Irishtown Nature Park and wider area is regularly and widely used by badgers.

Table 21-20 Predicted noise levels at the artificial sett

Noise impact source *Impact numbering aligned with impacts assessed in **Chapter 24 Noise and Vibration***	**Activity and combined sound power levels**	**Predicted construction noise level, dB LAeq,T (no screening assumed)**		
		150 m buffer from sett	**50 m buffer from sett**	**Artificial sett location**
Impact 1a	Open cut excavation including piling works at the temporary cofferdam (120 db)	68	64	62
Impact 2	Piling works to facilitate installation of the TJBs (116 db)	53	44	43
Impact 4 a	Tunnel for the onshore export cable: underground shaft – launch site (at Compound A) (113 db)	77	66	64
Impact 6 ESBN network cables	HDD works associated with the installation of the ESBN network cables (115 db)	50	51	43

Vibration

259. Elements of the construction phase works such as the piling, HDD drilling and mechanical excavation will result in some level of vibrations. Consideration was given to vibration levels associated with the piling rigs in the intertidal area for the temporary cofferdam and for the TJB installation, HDD drilling for the ESBN network cables and the vibration associated with the mechanical excavation at the landfall, relative to the location of the artificial badger sett.

260. Vibration energy levels dissipate significantly with distance as a result of geometrical spreading of the vibration energy and its dissipation by soil viscosity and / or friction. The construction works identified above are all in excess of 150 m away from the artificial badger sett.

261. **Chapter 24 Noise and Vibration** takes account of recommended PPV vibration thresholds relative to buildings and notes the lowest threshold of 3 mm/s for '*identified potentially vulnerable structures and buildings with low vibration threshold'*.

262. Predicted calculations for HDD vibration levels associated with the ESBN network cables are 0.05 $mm \cdot s^{-1}$ at 150 m from the sett, 0.04 $mm \cdot s^{-1}$ at 50 m from the sett and 0.04 $mm \cdot s^{-1}$ at the sett.

263. **Chapter 24 Noise and Vibration** also references relevant guidance and previous construction trials undertaken by AWN Consulting Ltd when considering vibration energy levels associated with the piling and mechanical excavation works. It was noted that expected vibration energy levels due to piling and mechanical excavations would be expected to be below 3 mm/s generally within 5–50 m of the associated construction activity.

264. As indicated above, considering the separation distance between the works and the badger sett, the vibration levels will dissipate to significantly low levels at the sett and would not result in any impacts to the sett.

Lighting

265. Construction works for the OTI are expected for a period of 36 months with general lighting used when needed. The overall duration to complete the tunnel construction and cable duct installation will be 21 months. Works within this period such as the tunnel boring and excavation of the shafts will be undertaken on a 24/7 continuous period, and which will therefore require nighttime lighting. Similarly, HDD activities for the ESBN networks cables will operate on a 24/7 cycle, on commencement of the drilling activities. Construction works are all located away from the artificial sett.

Significance of the effect

266. Overall, disturbance (noise, vibrations and lighting) to badgers and their setts during the construction phase will **not result in likely significant effects** on the conservation status on the local population of badger at any geographical scale.

Additional mitigation measures

267. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the construction phase of the OTI as this is considered appropriate best practice.

268. Measures to avoid or otherwise minimise disturbance to ecological receptors are described in the CEMP. Measures included in the CEMP that are specific to the protection of badger are detailed below:

- No construction works will occur outside the CWP Project planning application boundary.
- All construction site personnel will be made aware of the location of the artificial sett to ensure there is no accidental damage to the sett during the construction phase.
- To further reduce the potential for disturbance to the artificial sett, the following will be undertaken:
    - 2.6 m localised screening will be erected around noisy plant sources associated with the open cut excavation including piling works at the temporary cofferdam, tunnel excavation works (within the Compound A) and the HDD installation of the ESBN networks cables; and
    - 2.6 m hoarding will be erected around the perimeter of the temporary tunnel compound, located in Compound A and the temporary HDD compound located in Compound C.
    - These screening proposals will reduce predicted construction noise levels at the sett, to within 39–58 db. These levels are below and within existing baseline levels of the surrounding area.
- It is noted that a 2.6 m high perimeter hoarding will also be erected around the boundaries of Compound A and Compound C.
- Large excavations, particularly those associated with the tunnel works, HDD works and cable duct installation, will either be covered (with plywood), fenced or have an escape ramp installed overnight to prevent badgers, or other wildlife, from falling into them and becoming trapped.
- All temporary lighting used during the construction works will be cowled and directed away from the existing artificial sett and away from foraging sites (areas of scrub, grasslands and woodlands).
- The artificial sett will be monitored by the ECoW when constructions works are being undertaken at the landfall and for tunnelling works at the southern section of the onshore export cable, to ensure the sett is not being disturbed. The sett will be monitored using trail cameras (under licence)

and visual inspections. In the event the badger sett is being disturbed by the construction works, all works will be temporarily halted until alternative, sufficient protective measures are put in place.

269. In the event that the construction phase of the CWP Project is delayed more than 12 months after the initial baseline surveys, pre-construction badger surveys will be undertaken prior to the construction works commencing, to establish whether there have been any changes to the receiving environment, particularly in relation to the establishment of new badger setts.

270. The pre-construction survey will be undertaken by an experienced and qualified Ecologist and will take place no more than 10 to 12 months in advance of construction works commencing as per the NRA (2005) guidelines. The pre-construction survey will assess the status of the existing artificial badger sett and identify any newly established setts.

271. In the event a new badger sett is identified within the ZoI of the OTI, the measures outlined above under Impact 4, will be implemented

Residual effect

272. Following the adoption of the additional mitigation measures, the significance of residual effect is predicted to be **Not Significant**, at any geographical scale, which is not significant in EIA terms.

Otter

Impact 4: Permanent/temporary loss of breeding/resting places or commuting and / or foraging habitat for protected terrestrial species

Receptor sensitivity

273. Otter are listed on Annex II and Annex IV of the EU Habitat Directive and are protected under the Wildlife Act. It is an offence to intentionally kill or injure an otter or to wilfully interfere with or destroy their breeding or resting places (holts / couches). The local otter population was assessed as being of County Importance.

Magnitude of impacts

274. No otter holts or couches / resting sites were recorded within the study area during surveys. The CWP Project will not result in the loss of any known otter holts. There is potential, however, that otter may establish new holts or couches within the ZoI of the onshore development area, in the interim of the baseline surveys and prior to the construction works commencing. The potential of this occurring has been considered within the mitigation section below.

275. Otter are principally piscivorous, preying predominately on fish, but will also hunt opportunistically on land, preying on frogs, small mammals and birds. A 10 m terrestrial buffer above the high-water mark (HWM) is considered to be potential otter foraging habitat (NPWS, 2009). The CWP Project will result in the permanent loss of approximately 4,266.42 m^2 of habitat within 10 m of the HWM. This is largely associated with the onshore substation site and its perimeter. The habitat, which will be permanently lost within 10 m of the HWM, comprises artificial surfaces, sea walls, scrub, recolonising bare ground and spoil and bare ground. Approximately 1,350 m^2 of new revetment / rock armour is proposed on the western and northwestern corner of the substation site. The revetment may provide suitable resting and foraging habitat for otters within the area.

276. There will also be temporary habitat loss at the landfall site. However, the stone revetment and the pedestrian footpath will be reinstated at the landfall, next to the HWM, following the completion of the construction works.

277. Considering the small area of foraging habitat which will be lost and the availability of alternative shoreline habitats within the wider landscape, the temporary loss of habitat will not negatively impact the conservation status of otter.

Significance of the effect

278. The loss of terrestrial foraging habitat due to the CWP Project will **not result in likely significant effects** on the conservation status of the local otter population, at any geographical scale.

Additional mitigation measures

279. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation measures outlined below will also be implemented during the construction phase of the OTI as this is considered appropriate best practice.

280. Measures to avoid or otherwise minimise disturbance to ecological receptors are described in the CEMP.

281. In the event that the construction phase of the development CWP Project is delayed more than 12 months after the initial baseline surveys, a pre-construction otter survey will be undertaken within suitable habitat within ZoI of the onshore development area. The pre-construction survey will be conducted no more than 10 to 12 months in advance of the construction works as per the NRA (2006) guidelines. In the event that a new holt is identified within the ZoI of the proposed works, a derogation licence will be sought from NPWS, and appropriate measures will be implemented.

Residual effect

282. Following the adoption of the additional mitigation and monitoring measures, the significance of residual effects is predicted to be **Not Significant**, at any geographical scale, which is not significant in EIA terms.

Impact 5: Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species during construction phase activities.

Receptor sensitivity

283. Otter are listed on Annex II and Annex IV of the EU Habitat Directive and are protected under the Wildlife Act. It is an offence to intentionally kill or injure an otter or to wilfully interfere with or destroy their breeding or resting places (holts / couches). The local otter population have been assessed as being of County Importance.

Magnitude of impacts

284. The NRA (2006) guidelines indicate that otter breeding holts can be disturbed within 150 m of a construction works area. No otter holts or resting sites / couches were identified within 150 m of the onshore development area. There is no potential for the disturbance of known breeding / resting sites.

285. Due to the suitable habitat present, there is potential that otter may establish new holts / resting areas within the ZoI of the CWP Project, in the interim of the surveys being undertaken and the construction phase commencing, particularly if the construction phase is delayed.

286. Otter are crepuscular species (mainly active at dawn and dusk) and are likely to avoid the main construction activity periods undertaken at the onshore substation and landfall site. They were recorded foraging along the shoreline which forms the northern boundary of the onshore substation site. Some construction works at the onshore substation (such as the tunnelling activities) will be undertaken over 24/7 working hours. Construction lighting would be required for some of these works.

287. The noise and lighting associated with the night works may result in the disturbance of foraging and commuting otter within the immediate area. However, considering the limited recordings of otter within the study area, and the availability of alterative suitable foraging habitat within Dublin Bay, any disturbance is likely to result in minimal impacts on the local otter population.

Significance of the effect

288. Disturbance to otter foraging within proximity to the study area will **not result in likely significant effects** on the conservation status of the local population, at any geographical scale.

Additional mitigation measures

289. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the construction phase of the OTI as this is considered appropriate best practice.

290. In the event that the construction phase of the development CWP Project is delayed more than 12 months after the initial baseline surveys, a pre-construction otter survey will be undertaken within suitable habitat within ZoI of the CWP Project. The pre-construction survey will be conducted no more than 10 to 12 months in advance of the construction works as per the NRA (2006) guidelines. In the event that a new holt is identified within the ZoI of the proposed works, a derogation licence will be sought from NPWS.

291. The placing of the construction lighting will be done in consultation with the ECoW.

292. Temporary construction lighting required at the onshore substation will be cowled and directed away from the shoreline.

293. During the initial site works at the landfall (such as berm clearance, footpath diversion and installation of the ducts), if temporary construction lighting is required it will be directed away from the shoreline. Once the vegetated berm is reinstated at the landfall, lighting required for any remaining TJB works or works within Compound A will be naturally screened.

Residual effect

294. Following the adoption of the additional mitigation measures outlined above, the significance of residual effect is predicted to be **Not Significant** at any geographical scale, which is not significant in EIA terms.

Bats

Impact 4: Permanent / temporary loss of breeding / resting places or commuting and/or foraging habitat for protected terrestrial species

Receptor sensitivity

295. All bat species and their roost sites are protected under the Wildlife Acts and Annex IV of the EU Habitats Directive (and Annex II in the case of Lesser Horseshoe Bat). The Wildlife Act state that it is an offence to intentionally kill or injure bats or to wilfully interfere with or destroy their breeding or resting places. The local bat population were assessed as being of Local Importance (Higher Value).

Magnitude of impacts

296. No bat roosts were recorded within the onshore development area. During surveys, all trees (including the 110 m of treeline which will be felled along Shellybanks Road) and buildings were assessed as having 'Negligible' bat roost potential, as per Collins (2016). There is no potential for the development of the OTI to result in the loss of known roosting sites or suitable roosting habitat.

297. Three bat species (soprano pipistrelle, common pipistrelle and Leisler's bat) were recorded during bat surveys undertaken within the onshore development area. The berm, located at the landfall site, which comprises dense scrub vegetation, was the primary area that bats were recorded foraging and commuting along.

298. Approximately 2,914.80 m^2 of the scrub and earth bank habitat will be temporarily removed to facilitate the open cut and cable duct installation at the landfall site. The berm will be reinstated once the construction works are completed at this location. The direct loss of foraging habitat will have an adverse negative effect on the individual bats using the site.

Significance of the effect

299. The loss of the foraging/commuting routes **will result in a likely significant effect** on the conservation status of the local bat population, **at a local geographical scale**.

Additional mitigation measures

300. In order to avoid significant effects on the local bat population, the following mitigation measures will be implemented.

Replanting of vegetation

301. The berm will be reinstated once the construction works are completed. A mix of native tree species will be planted at the landfall location. The mix of native trees species will include bat-friendly scented species such as dog rose (*Rosa canina*), guilder rose (*Viburnum opulus*) and hazel (*Corylus avellana*), which will attract and benefit bat species (refer to **Figure 23.7** in **Chapter 23 Landscape and Visual Impact Assessment**).

Bat boxes

302. Four bat boxes (Schwegler Woodcrete 1FF bat box or equivalent) will be erected on mature trees or poles at the landfall site. The bat boxes will be erected prior to the construction works commencing and the exact siting of the bat boxes will be undertaken in consultation with a bat specialist.

303. The bat boxes will be installed in line with the following guidelines:

- Straight limb trees (or telegraph pole) with no crowding branches or other obstructions for at least 1 m above and below position of bat box. The diameter of tree should be wide and strong enough to hold the required number of boxes.
- The bat boxes will be installed in areas where bats are known to forage or adjacent to suitable foraging habitats.
- The bat boxes must be installed in locations sheltered from prevailing winds.
- The bat boxes will be erected at a height of 4–5 m, to avoid predation and vandalism.

Plate 21-13 Example of bat box mounted on a pole

Residual effect

304. Following the adoption of the additional mitigation and monitoring measures outlined above, the predicted significance of the residual effect is **Not Significant** at any geographical scale, which is not significant in EIA terms.

Impact 5: Disturbance/displacement (noise, vibration and lighting) to protected terrestrial species during construction phase activities

Receptor sensitivity

305. All bat species and their roost sites are protected under the Wildlife Acts and Annex IV of the EU Habitats Directive (and Annex II in the case of Lesser Horseshoe Bat). The Wildlife Act state that it is an offence to intentionally kill or injure bats or to wilfully interfere with or destroy their breeding or resting places. The local bat population were assessed as being of Local Importance (Higher Value).

Magnitude of impacts and the significance of the effect

No bat roosts were recorded during the surveys; all trees and buildings were assessed as having 'Negligible' bat roost potential, as per Collins (2016). There is no potential for the disturbance of bat roosting sites.

306. As noted, three bat species (soprano pipistrelle, common pipistrelle and Leisler's bat) were recorded foraging and commuting along suitable habitat during the surveys. Temporary construction lighting will be required during the construction phase. Lighting has the potential to result in the illumination of habitats which may displace commuting/foraging bats from the habitat, and disturb bats feeding behaviours (Bat Conservation Ireland, 2010).

307. Construction works for the OTI are expected for a period of 36 months with general lighting used when needed. The overall duration to complete the tunnel construction and cable duct installation will be 21 months. Works within this period such as the tunnel boring and excavation of the shafts will be undertaken on a 24/7 continuous period and will therefore require nighttime lighting. Similarly, HDD activities for the ESBN networks cables will operate on a 24/7 cycle, on commencement of the drilling activities.

Significance of the effects

308. The disturbance of bats during the construction phase **will not result in likely significant effects** on the conservation status of bats, at any geographical scale.

Additional mitigation measures

309. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the construction phase of the OTI as this is considered appropriate best practice.

310. To reduce lighting disturbance, all temporary lighting associated with the construction works will be placed strategically by the appointed Contractor following consultation with the ECoW to ensure that

illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No light will be directed towards the vegetated berm at the landfall site.

Residual effect

311. Following the adoption of the additional mitigation and monitoring measures outlined above, the predicted significance of residual effect is to be **Not Significant** at any geographical scale, which is not significant in EIA terms.

Other mammal species

Impact 4: Permanent/temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species

Receptor sensitivity

312. There is potential that the onshore development area may support other small, protected mammal species, such as hedgehog, pygmy shrew, Irish stoat and pine marten, at least on occasion. These species are protected under the Wildlife Act and are commonly found throughout the country. The local small mammal population were assessed as being of Local Importance (Higher Value).

Magnitude of impact

313. No breeding sites for the above listed species were identified within the onshore development area during surveys. There is no potential for the loss of known breeding sites.

314. The CWP Project will likely result in the loss of potential foraging habitat for the above-mentioned species. However, considering the availability of similar habitat within the surrounding environment and the lack of evidence of these species present within the site, it is considered that the onshore development area is unlikely to be an important site supporting significant numbers of these protected mammal species. Nevertheless, the construction works have the potential to result in the loss of habitat and disturbance of such species, if they are present.

Significance of the effect

315. The loss of habitat to facilitate the construction phase has the potential **to result in likely significant effects** on the conservation status on other mammal species, at a local geographical scale.

Additional mitigation measures

316. To compensate the habitat loss associated with the development of the OTI, the replanting of vegetation (ca. 7,856 m^2) will be undertaken at the proposed landfall site following the completion of the works. A mix of native tree species will be planted at the landfall location which will create a higher value habitat and increase the natural diversity of plant species within the area, which will be beneficial to protected mammal species within the vicinity.

Residual effect

317. Following the adoption of the additional mitigation measures outlined above, the predicted significance of residual effect is **Not Significant** at any geographical scale, which is not significant in EIA terms.

Impact 5: Disturbance/displacement (noise, vibration and lighting) to other mammal species during construction phase activities

Receptor sensitivity

318. There is potential that the onshore development area may support other small, protected mammal species, such as hedgehog, pygmy shrew, Irish stoat and pine marten, at least on occasion. These species are protected under the Wildlife Act and are commonly found throughout the country. The local small mammal population were assessed as being of Local Importance (Higher Value).

Magnitude of impact

319. There is potential that the construction works may result in the short-term disturbance of the above-mentioned species during the construction phase. However, given the mobile nature of the species and the lack of evidence of large populations utilising the site, any disturbance is unlikely to negatively impact the protected species.

Significance of the effect

320. Disturbance associated with the construction phase **will not result in likely significant effects** on the conservation status of other mammal species, at any geographical scale.

Additional mitigation measures

321. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the construction phase of the OTI as this is considered appropriate best practice.

322. Measures to avoid or otherwise minimise disturbance to ecological receptors are described in the CEMP. With regards to the protection of other mammal species, to reduce disturbance, all temporary lighting associated with the construction works will be placed strategically by the appointed contractor following consultation with the appointed ECoW to ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No light will be directed towards the vegetated berm at the landfall site.

Residual effect

323. Following the adoption of the additional mitigation measures outlined above, the predicted significance of residual effect is **Not Significant** at any geographical scale, which is not significant in EIA terms.

21.11.2 Operation and maintenance

Impact 1: Disturbance / displacement (noise and / or lighting) to protected terrestrial species / other mammal species during operation and maintenance activities

Noise

324. The onshore substation will be unmanned and operated remotely for the majority of the time. O&M staff will visit the site to undertake maintenance and inspections works, which is expected to be approximately 1 visit per week. Only occasional night works are anticipated, such as in the event of an emergency maintenance requirement.

325. As outlined in **Chapter 24 Noise and Vibration**, an assessment has been made in accordance with the guidance contained in BS4142:2014+A1:2019 to determine noise emissions associated with the operation of the onshore substation.

326. The increase in noise levels during the O&M phase may result in the disturbance of protected mammal species such as badger, bats and otter, and the assessment of significant effects for each species is provided hereunder.

Lighting

327. Permanent external lighting at the onshore substation will only be required for the following purposes: access / egress, security lighting, car park lighting and repair / maintenance. At night, the onshore substation lighting will be switched off as the onshore substation will be unmanned. Lights will only be used during periods, when work is required to be carried out (i.e. maintenance). Lights will be positioned to suit the work. Luminaires will be selected to ensure reduction in spill light and glare.

328. No lighting will be required at the landfall, or along the onshore export cables or the ESBN network cables during the O&M phase.

329. The increase in lighting levels at the onshore substation during the O&M phase may result in the disturbance of protected mammal species including badger, bats and otter.

Badger

Receptor sensitivity

330. Badger and their breeding and resting places are protected under the Wildlife Act (as amended) and it is an offence under that legislation to intentionally kill or injure a badger or to wilfully interfere with or destroy their breeding or resting places (setts). The local badger population were assessed as being of Local Importance (Higher Value).

Magnitude of impact

Noise

331. Noise levels at the artificial sett location are predicted to be 38 dB. Baseline noise monitoring has indicated that average baseline noise levels at AT5 (approximately 200 m from the artificial badger sett) was 44 dB L_{Aeq} and at AT2 (western boundary of Compound A) was 63 dB $L_{Aeq.}$ Therefore, the

predicted operational noise associated with the onshore substation will be below the existing baseline noise levels. Considering the low noise levels there is no potential for disturbance impacts to the local badger population.

Lighting

332. At night substation lighting will be switched off as the substation will be unmanned. Lights will only be used during periods where work is carried out (i.e. emergency maintenance) and lights will be positioned to suit the work.

333. Disturbance at night when badgers are active, as a result of operational activity, will be limited considering the minimal activity which will be undertaken during these times. In addition, the known artificial sett is located approximately 530 m south of the onshore substation location.

Significance of the effect

334. Noise disturbance and lighting during the O&M phase **will not result in likely significant effects** on the conservation status of badger, at any geographical scale.

Additional mitigation measures

335. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the O&M phase as this is considered appropriate best practice.

- All lighting will be designed to ensure light spill is minimised; and
- Good site practice measures for the selection of mechanical and electrical plant will be implemented during the O&M phase as described in **Chapter 24 Noise and Vibration**.

Residual effect

336. Following the adoption of the additional mitigation measures outlined above, the predicted significance of residual effect to the local badger population is **Not Significant** at any geographical scale, which is not significant in EIA terms.

Bats

Receptor sensitivity

337. All bat species and their roost sites are protected under the Wildlife Acts and Annex IV of the EU Habitats Directive (and Annex II in the case of Lesser Horseshoe Bat). The Wildlife Act state that it is an offence to intentionally kill or injure bats or to wilfully interfere with or destroy their breeding or resting places. The local bat population were assessed as being of Local Importance (Higher Value).

Magnitude of impact

338. The onshore substation will be unmanned and operated remotely for the majority of the time. O&M staff will visit the site to undertake works on a regular basis (expected to be once per week) with only occasional night works anticipated (in the event of an emergency maintenance requirement).

339. At night substation lighting will be switched off as the substation will be unmanned. Lights will only be used during periods where work is carried out (i.e. emergency maintenance) and lights will be positioned to suit the work.

340. External artificial lighting will be limited but would still result in a slight increase in artificial lighting for a long-term period. Lighting has the potential to result in the illumination of habitats which may displace commuting / foraging bats from the habitat, and disturb bats feeding behaviours (Bat Conservation Ireland, 2010).

341. However, no bat roosts or potential roost sites, or important foraging / commuting routes were recorded within the ZoI of the onshore substation.

Magnitude of impact and significance of effect

342. An increase in artificial lighting during the operational phase **will not result in likely significant effects** on the conservation status of the local bat population, at any geographical scale.

Additional mitigation measures

343. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the O&M phase as this is considered appropriate best practice.

344. All new lighting at the onshore substation site will be designed following regard of the Bat Conservation Trust Guidelines (2018) and will include the following:

- All luminaires used will lack UV/IR elements.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and have dimming capability.
- A warm white spectrum (<2700 Kelvins, i.e. 2200 Kelvins) will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats.
- Column heights will be carefully considered to minimise light spill and the shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1 min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

Residual effect

345. Following the implementation of the mitigation measures outlined above, the predicted significance of residual effect on the bat population is **Not Significant** at any geographical scale, which is not significant in EIA terms.

Otter

Receptor sensitivity

346. Otter are listed on Annex II and Annex IV of the EU Habitat Directive and are protected under the Wildlife Act. It is an offence to intentionally kill or injure an otter or to wilfully interfere with or destroy their breeding or resting places (holts / couches). The local otter population have been assessed as being of County Importance.

Magnitude of impact

347. At night substation lighting will be switched off as the substation will be unmanned. Lights will only be used during periods where work is carried out (i.e. emergency maintenance) and lights will be positioned to suit the work.

348. Therefore, disturbance at night when otter are active will be minimal. No otter holts were recorded in the ZoI of the onshore substation.

Significance of the effect

349. Disturbance and lighting during the O&M phase **will not result in likely significant effects** on the conservation status of otter, at any geographical scale.

Additional mitigation measures

350. Based on the predicted significance of effect, mitigation is not required beyond the primary mitigation described in **Section 21.10**. However, the additional mitigation outlined below will also be implemented during the O&M phase as this is considered appropriate best practice.

351. To mitigate the residual lighting, all external lighting will be designed to ensure light spill is minimised and lighting will not be directed towards the shoreline.

Residual effect

352. Following the implementations of the mitigation measures outlined above, there is no potential for likely significant negative residual effects to the local otter population. Residual effects are considered **Not Significant**, at any geographical scale which is not significant in EIA terms.

Other mammal species

Receptor sensitivity

353. There is potential that the onshore development area may support other small, protected mammal species, such as hedgehog, pygmy shrew, Irish stoat and pine marten, at least on occasion. These species are protected under the Wildlife Act and are commonly found throughout the country. The local small mammal population were assessed as being of Local Importance (Higher Value).

Magnitude of impact

354. The onshore substation will be unmanned and operated remotely for the majority of the time. O&M staff will visit the site to undertake works on a regular basis (expected to be once per week) with only occasional night works anticipated (in the event of an emergency maintenance requirement).

355. At night substation lighting will be switched off as the substation will be unmanned. Lights will only be used during periods where work is carried out (i.e. emergency maintenance) and lights will be positioned to suit the work.

356. No breeding or resting sites for other mammal species were recorded in the ZoI of the onshore substation.

Significance of the effect

357. Disturbance and lighting during the O&M phase **will not result in likely significant effects** on the conservation status of other protected mammal species, at any geographical scale.

Residual effect

358. Following the implementations of the mitigation measures outlined above, there is no potential for likely significant negative residual effects to other mammal species. Residual effects are considered **Not Significant**, at any geographical scale, which is not significant in EIA terms.

21.11.3 Decommissioning

359. It is recognised that legislation and industry best practice change over time. However, for the purposes of the EIA, at the end of the operational lifetime of the CWP Project, it is assumed that all OTI will be removed where practical to do so. In this regard, for the purposes of an assessment scenario for decommissioning impacts, the following assumptions have been made:

- The TJBs and onshore export cables (including the cable ducting) shall be completely removed.
- The landfall cable ducts and associated cables shall be completely removed.
- The underground tunnel, within which the onshore export cables will be installed shall be left in situ and may be re-used for the same or another purpose.
- The onshore substation buildings and electrical infrastructure shall be completely removed.
- The reclaimed land, substation platform, perimeter structures and the new access bridge at the onshore substation site will remain in situ and may re-used for the same or another purpose.
- The ESBN network cables (including the cable ducting) shall be completely removed.
- The general sequence for decommissioning is likely to include:
- Dismantling and removal of electrical equipment;
- Removal of ducting and cabling, where practical to do so;
- Removal and demolition of buildings, fences, and services equipment; and
- Reinstatement and landscaping works.

360. Closer to the time of decommissioning, it may be decided that removal of certain infrastructure, such as the TJBs, landfall cable ducts and associated cables, onshore export cables and ESBN networks cables, would lead to a greater environmental impact than leaving the components in situ. In this case it may be preferable not to remove these components at the end of their operational life. In any case, the final requirements for decommissioning of the OTI, including landfall infrastructure, will be agreed at the time with the relevant statutory consultees.

361. Decommissioning impacts are expected to be of similar type and magnitude to those anticipated during the construction phase, but generally of a shorter duration and scale. Activities associated with decommissioning are not predicted to exceed those assessed for the construction phase. Furthermore, in most cases the impacts in terms of terrestrial biodiversity will be much lower than during construction.

Additional mitigation measures

362. Impacts during the decommissioning phase are expected to be of a similar type and magnitude to those anticipated during the construction phase, but generally of a shorter duration. Therefore, the same mitigation measures implemented during the construction phase, will be applied during the decommissioning works.

Residual effect

363. Following the implementation of the mitigation measures outlined above, residual effects are considered **Not Significant**, at any geographical scale, which is not significant in EIA terms for the decommissioning phase.

21.12 Impacts to designated sites

364. This section describes and assesses the potential for the OTI to result in likely significant effects on designated sites and accounts for the ZoI associated with onshore impacts of the CWP Project (during the construction, O&M and decommissioning phases). Impacts to designated sites protected for birds have been addressed within **Chapter 10 Ornithology**, and designated sites within the marine environment will be assessed within **Chapter 8 Subtidal and Intertidal Ecology**.

365. In relation to the nationally designated sites (NHAs and pNHAs) this assessment considered whether the integrity of a site would be affected by the OTI (during the construction, O&M and decommissioning phases) with reference to the ecological features for which the site is designated. Similarly, nationally designated sites which are important for bird species will be addressed within **Chapter 10 Ornithology**, and sites within the marine environment will be assessed within **Chapter 8 Subtidal and Intertidal Ecology**.

366. A summary of impacts to European sites and National sites is provided hereunder.

21.12.1 European sites

Receptor sensitivity

367. An Appropriate Assessment (AA) screening report, followed by a Natura Impact Statement (NIS) were prepared by the Applicant which investigated the potential for the CWP Project (construction, O&M and decommissioning phases) to give rise to likely significant effects on European site(s) (in the case of the AA screening report), and then assessed the potential for the CWP Project to result in adverse effects on the integrity of all European sites within the ZoI (in the case of the NIS).

368. A source–pathway–receptor link was identified between the onshore elements of the CWP Project site and South Dublin Bay SAC as there is a physical overlap between the SAC and the onshore development area, at the landfall site. The SAC is designated for four coastal habitats (Mudflats and

sandflats not covered by seawater at low tide [1140], Annual vegetation of drift lines [1210], Salicornia and other annuals colonising mud and sands [1310], and Embryonic shifting dunes [2110]).

369. European sites are protected under the Birds and Habitats Directive and are considered to be of international significance. South Dublin Bay SAC was considered to be within the ZoI of the onshore development area. The SAC is of International Importance.

Magnitude of impact - construction and decommissioning phase impacts

Permanent and temporary loss of habitat

370. Excavation and clearance works will occur within the SAC boundary, above the high-water mark. The excavation and clearance works will result in the temporary loss of habitat within the SAC boundary. A specialist habitat survey was undertaken by AQUAFACT within the area of the SAC which overlaps with the onshore development area, above the high water mark and confirmed that none of the qualifying interest habitats occur within the area which will be disturbed (refer to **Appendix 21.3**). Habitats which will be impacted during the construction and decommissioning phases (in the event the cables are removed) comprise grassy verges (GS2), rock armour (CC1) and artificial surfaces (BL3). These habitats do not correspond to any Annex I habitats and are not a qualifying interest(s) of the SAC. Following completion of the construction and decommissioning works, the area will be fully reinstated. The loss of habitat, associated with the construction and decommissioning, will not result in impacts on the integrity / conservation status of the SAC.

Habitat degradation as a result of the introduction / spread of INNS

371. As discussed in **Section 21.11.1**, INNS were recorded within the onshore development area. Knotweed was recorded along the southern boundary of the onshore development area, approximately 10 m from the SAC boundary. The excavation and clearance works associated with the landfall works and onshore export cable have the potential to result in the disturbance of the INNS and the potential introduction of the INNS into the SAC boundary. The INNS such as knotweed have been shown to be saline tolerant and if conditions are suitable can colonise the terrestrial and intertidal habitats within the SAC. Evidence of the infestation of Japanese knotweed has been recorded within coastal and saline habitats (Richards et al., 2008; Walls 2010). The spread of INNS within the SAC could negatively impact the integrity / conservation status of the SAC.

Habitat degradation as a result of air quality impacts

372. As discussed in **Section 21.11.1**, the South Dublin Bay SAC overlaps with the onshore development area. These are high sensitivity receptors, and therefore the sensitivity is considered high, as per the guidelines (IAQM, 2024). Despite the close proximity of the SAC, the site does not contain habitats which are considered to be sensitive to dust. All habitats within 50 m of the construction boundary are of Local Importance lower to higher value. The potential deposition of dust within the SAC during the construction and decommissioning phases, will not result in impacts on the integrity / conservation status of the SAC.

Magnitude of impact - operational and maintenance phase impacts

373. All O&M activities associated with the OTI will be carried out within the onshore development area. No activities will be carried out within the SAC site boundary. There is no potential for impacts on the integrity / conservation status of South Dublin Bay SAC during the O&M phase, above the HWM.

Significance of the effect

374. Impacts associated with the spread of INNS within the SAC site boundary during the construction and decommissioning phases above the HWM could result in likely significant effects on the integrity / conservation status of the SAC, at an international scale. Further details on impacts to the European sites is provided in the NIS.

Additional mitigation measures

375. Mitigation measures which will be implemented during the construction and decommissioning phases are outlined within **Section 21.11**. In relation to INNS, an **Onshore ISMP** has been prepared and is included within the Planning Application. The **Onshore ISMP** outlines control measures which will be put in place in order to control and manage the INNS.

Residual effects

376. With the implementation of the mitigation measures outlined above, it is considered that impacts from the CWP Project on South Dublin Bay SAC will be avoided / minimised. There will be **no significant residual effects, at any geographical scale**.

21.12.2 National sites

Receptor sensitivity

377. PNHAs, although not formally designated, are considered to be of national significance. South Dublin Bay pNHA is considered to be within the ZoI of the onshore development area. There is no site synopsis available for the site, however the site is likely to have similar conservation interests as South Dublin SAC. The pNHA is of National Importance.

Magnitude of impact - Construction and decommissioning phase impacts

378. A source–pathway–receptor link was identified between the OTI and South Dublin Bay pNHA as there is a physical overlap between the pNHA and the onshore development area, in in proximity to the ESBN network cables, on the Pigeon House Road. Despite the overlap in boundaries, no excavation activities or clearance will occur within the pNHA site boundary.

Permanent and temporary loss of habitat

379. Construction and decommissioning works associated with the onshore development area will not occur within the boundary of the South Dublin Bay pNHA. There is no potential for impacts on the site.

Habitat degradation as a result of the introduction / spread of INNS

380. As discussed in **Section 21.11.1**, INNS were recorded within the onshore development area. Knotweed was recorded along the southern boundary of the onshore development area, approximately 50 m from the pNHA boundary. The excavation and clearance works associated with the landfall and onshore export cable have the potential to result in the disturbance of the INNS and the potential introduction of the INNS into the pNHA site. The INNS such as knotweed have been

shown to be saline tolerant and if conditions are suitable can colonise the terrestrial and intertidal habitats within the pNHA. Evidence of the infestation of Japanese knotweed has been recorded within coastal and saline habitats (Richards *et al*., 2008; Walls 2010). The spread of INNS within the pNHA could negatively impact the integrity / conservation status of the pNHA.

Habitat degradation as a result of air quality impacts

381. As discussed in **Section 21.11.1**, the South Dublin Bay pNHA overlaps with the CWP Project site boundary. These are high sensitivity receptors, and therefore the sensitivity is considered high, as per the guidelines (IAQM, 2024). Despite the close proximity of the pNHA, the site does not contain habitats which are considered to be sensitive to dust. All habitats within 50 m of the construction boundary are of Local Importance lower to higher value. The potential deposition of dust within the pNHA during the construction and decommissioning phases, will not result in impacts on the integrity / conservation status of the pNHA.

Magnitude of impact - operational and maintenance phase impacts

382. All O&M activities associated with the OTI will be carried out within the onshore development area. No activities will be carried out within the pNHA site boundary. There is no potential for impacts on the integrity of South Dublin Bay pNHA during the O&M phase, above the HWM.

Significance of the effect

383. Impacts associated with the spread of INNS within the pNHA site boundary during the construction and decommissioning phases above the HWM could result in likely significant effects on the integrity of the site, at a national scale.

Additional mitigation measures

384. Mitigation measures which will be implemented during the construction and decommissioning phases are outlined within **Section 21.11**. In relation to INNS, an **Onshore ISMP** has been prepared and is included within the Planning Application. The **Onshore ISMP** outlines control measures which will be put in place in order to control and manage the INNS.

Residual effects

385. With the implementation of the mitigation measures outlined above, it is considered that impacts of the CWP Project on the South Dublin Bay pNHA will be avoided / minimised, resulting in no significant residual effects, at any geographical scale.

21.13 Cumulative impacts

386. A fundamental component of the EIA is to consider and assess the potential for cumulative impacts of the CWP Project with other projects, plans and activities (hereafter referred to as ‘other development’).

387. **Appendix 21.1** presents the findings of the CEA for onshore biodiversity, which considers the residual effects presented in this assessment, alongside the potential effects of other proposed and reasonably foreseeable developments. A summary of the CEA for biodiversity is presented below.

388. A review of other developments with the potential to result in cumulative impacts on biodiversity with the CWP Project was undertaken, across the construction, O&M and decommissioning phases. From the developments initially screened, a total of four projects were found to be within the ZoI and were screened through for further consideration, given their proximity and connectivity of the CWP Project.

389. During the construction phase, the assessment considered potential residual effects associated with the permanent habitat loss, loss of breeding / resting places or commuting and / or foraging habitat and a short-term increase in disturbances / displacement.

390. During the O&M phase, the assessment considered potential residual effects associated with the include increases in disturbances / displacement.

391. The assessment concluded that for both the construction and O&M phases, the addition of the CWP Project with the other developments, would not result in significant residual cumulative effects.

21.14 Transboundary impacts

392. There are no transboundary impacts with regards to biodiversity as the onshore development area would not be sited in proximity to any international boundaries. Transboundary impacts are therefore scoped out of this assessment and are not considered further.

21.15 Inter-relationships

393. The inter-related effects assessment considers the potential for all relevant effects across multiple topics to interact, spatially and temporally, to create inter-related effects on a receptor group. This includes incorporating the findings of the individual assessment chapters to describe potential additional effects that may be of greater significance when compared to individual effects acting on a receptor group.

394. The term ‘receptor group’ is used to highlight the fact that the proposed approach to the inter-relationships assessment has not assessed every individual receptor considered in this chapter, but instead focuses on groups of receptors that may be sensitive to inter-related effects.

395. **Chapter 5 EIA Methodology** provides a matrix to show at a broad level where across the EIAR interactions between effects on different receptor groups have been identified.

396. The potential inter-related effects that could arise in relation to biodiversity are presented in **Table 21-21**.

Table 21-21 Inter-related effects (phase) assessment for biodiversity

Impact / receptor	Related chapter	Phase assessment
Impact: Permanent and temporary loss of habitat	**Chapter 19 Land, Soils and Geology**; and **Chapter 23 Landscape Visual and Impact Assessment**	Land clearance and soil excavations during the construction phase could result in habitat loss, vegetation clearance and the spread of INNS which could negatively impact ecological receptors. The greatest level of land clearance and soil excavations will occur during the construction phase. However, mitigation measures to minimise the impacts to soils are presented in **Chapter 19 Land, Soils**

Impact / receptor	Related chapter	Phase assessment
		and Geology. As a result of these mitigation measures the assessment predicts no significant effects on the land, soils and geology environment. Additionally, **Chapter 23 Landscape and Visual** presents landscape mitigation for lands within the onshore development area. An **Onshore ISMP** is being implemented as part of the CWP Project and is submitted with the Planning Application. Therefore, it is not anticipated that any inter-related effects to ecological receptors will be produced that are of a greater significance than those already identified.
Impact: Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species during construction phase activities	**Chapter 24 Noise and Vibration**	Increase in noise levels and vibrations during all phases could negatively impact ecological receptors. The greatest increase in noise levels and vibration are expected during the construction phase, however mitigation measures to reduce and avoid impacts to ecological receptors are presented within this chapter (i.e. screening of noisy plant and localised screening of temporary compounds). Therefore, it is not anticipated that any inter-related effects to ecological receptors will be produced that are of a greater significance than those already identified.
Impact: Habitat degradation as a result of air quality impacts	**Chapter 25 Air Quality**	Habitat degradation as a result of the generation of dust could negatively impact ecological receptors. However, this assessment has outlined that habitats within the onshore development area are not considered sensitive to dust. There are levels of dust generation anticipated during the construction phase, however mitigation measures to reduce and avoid impacts from nuisance dust are presented within this chapter and within **Chapter 25 Air Quality**. Therefore, it is not anticipated that any inter-related effects to ecological receptors will be produced that are of a greater significance than those already identified.

21.16 Potential monitoring requirements

397. The assessment of impacts on onshore biodiversity as a result of the construction, O&M and decommissioning phases of the CWP Project are predicted to be not significant in EIA terms. While there were no predicted significant effects, in line with best practice, the following monitoring will be implemented during the O&M phase.

21.16.1 Bat monitoring

398. Bat monitoring is proposed post-construction works. This monitoring will involve the following aspects:

- Inspection and monitoring of the installed bat boxes will be undertaken within one year of erection.
- Monitoring will be carried out for a minimum period of two years.
- The bat boxes will be registered with the Bat Conservation Ireland bat box scheme.

21.17 Impact assessment summary

399. This chapter of the EIAR assessed the potential environmental impacts on onshore biodiversity from the construction, O&M and decommissioning phases of the CWP Project. Cumulative impacts, transboundary impacts and inter-relationships were also considered. Where significant impacts were identified, additional mitigation was considered and incorporated into the assessment.

400. This section, including **Table 21-22** below, summarises the impact assessment undertaken and confirms the significance of any residual effects, following the application of additional mitigation.

401. The aim of this assessment was to obtain ecological data, record the baseline conditions within the study area, to determine the ecological value and sensitivity of the identified ecological receptors. The assessment was undertaken following guidance within the NRA (2009), EPA (2022), and CIEEM (2018) guidelines.

402. Ecological receptors were identified through a robust desktop assessment and through a range of ecological surveys. Consultation was also undertaken with key stakeholders.

403. Key ecological receptors identified within the onshore development area included habitats of Local Importance (Higher Value) such as mixed broadleaved woodland, scrub and recolonising bare ground. Protected fauna species recorded within the study area included: badger, bats, otter and other smaller mammal species. The South Dublin Bay SAC and the South Dublin Bay pNHA were also identified as KERs, as the onshore development area overlaps with the two designated sites, resulting in physical connectivity.

404. Once the KERs were identified, an assessment of the significance of effects, which may result from the construction, O&M and decommissioning phases of the CWP Project on the receptors, was carried out.

405. All residual effects, post mitigation, were identified. The CWP Project will not give rise to significant negative residual effects on onshore biodiversity with the implementation of the mitigation measures.

Table 21-22 Summary of potential impacts and residual effects

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
Construction						
Impact 1: Temporary habitat loss	Habitats	Local Importance (Higher Value)	Negative, Short term	No significant effects (not significant)	Refer to **Section 21.11.1**	No significant residual effects (not significant)
Impact 1: Permanent and temporary habitat loss	Habitats	Local Importance (Higher Value)	Negative, Permanent	Likely significant effects on conservation status, at a local geographical scale (significant)	Refer to **Section 21.11.1**	No significant residual effects (not significant)
Impact 2: Habitat degradation as a result of the introduction / spread of INNS	Habitats	Local Importance (Higher Value)	Negative, Long term	Likely significant effects on conservation status, from a local to international geographic scale (significant)	Refer to **Section 21.11.1**	No significant residual effects (not significant)
Impact 3: Habitat degradation as a result of air quality impacts	Habitats	Local Importance (Higher Value)	Negative, Short term	No significant effects (not significant)	Refer to **Section 21.11.1**	No significant residual effects (not significant)
Impact 4: Permanent /temporary loss of breeding / resting places	Badger	Local Importance (Higher Value)	Negative, Permanent	Likely significant effects on conservation status, at a local geographic scale (significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
or commuting and/or foraging	Otter	County Importance	Negative, Permanent	No significant effects (not significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)
	Bats	Local Importance (Higher Value)	Negative, Short term	Likely significant effects on conservation status, at a local geographic scale (significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)
	Other Mammal Species	Local Importance (Higher Value)	Negative, Permanent	Likely significant effects on conservation status, at a local geographic scale (significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)
Impact 5: Disturbance /displacement (noise, vibration and lighting) to protected terrestrial species / other mammal species during construction phase activities	Badger	Local Importance (Higher Value)	Negative, Short term	No significant effects (not significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)
	Otter	County Importance	Negative, Short term	No significant effects (not significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)
	Bats	Local Importance (Higher Value)	Negative, Short term	No significant effects (not significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)
	Other Mammal Species	Local Importance (Higher Value)	Negative, Short term	No significant effects (not significant)	Refer to **Section 21.11.2**	No significant residual effects (not significant)

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
Operation and maintenance						
Impact 1: Disturbance /displacement (noise and /or lighting) to protected terrestrial species / other mammal species during operation and maintenance activities	Badger	Local Importance (Higher Value)	Negative, Long-term	No significant effects (not significant)	Refer to **Section 21.12**	No significant residual effects (not significant)
	Bats	Local Importance (Higher Value)	Negative, Long-term	No significant effects (not significant)	Refer to **Section 21.12**	No significant residual effects (not significant)
	Otter	County Importance	Negative, Long-term	No significant effects (not significant)	Refer to **Section 21.12**	No significant residual effects (not significant)
	Other mammal species	Local Importance (Higher Value)	Negative, Long-term	No significant effects (not significant)	Refer to **Section 21.12**	No significant residual effects (not significant)
Decommissioning						
Impact 1: Permanent and temporary loss of habitat.	Decommissioning impacts are expected to be of similar type and magnitude to those anticipated during the construction phase, but generally of a shorter duration and scale. Activities associated with decommissioning are not predicted to exceed those of the assessment scenario criteria assessed for the construction phase. Furthermore, in most cases impact magnitude in terms of terrestrial biodiversity will be much lower than during construction and therefore not significant in EIA terms.					
Impact 2: Habitat degradation as a result of the introduction / spread of INNS.						
Impact 3: Habitat degradation as a result of air quality impacts (dust).						

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
Impact 4: Permanent / temporary loss of breeding / resting places or commuting and / or foraging habitat for protected terrestrial species.						
Impact 5: Disturbance / displacement (noise, vibration and lighting) to protected terrestrial species / other mammal species during decommissioning phase activities						
Construction, Operation & maintenance and decommissioning						
European sites	South Dublin Bay SAC	International importance	Negative, short term	Construction and decommissioning phases: Likely significant effects on the integrity / conservation status of the site, at an international geographical scale. O&M phase: No potential for significant effects to South Dublin Bay SAC, above the HWM.	Refer to **Section 21.14**	No significant residual effects (not significant)

Potential impact	Receptor	Receptor sensitivity	Magnitude of impact	Significance of effect	Mitigation measures	Residual effect
Designated sites	South Dublin Bay pNHA	National importance	Negative, short-term	Construction and decommissioning phases: Likely significant effects on the integrity / conservation status of the site, at a national geographical scale. O&M phase: No potential for significant effects to South Dublin Bay pNHA above the HWM.	Refer to **Section 21.14**	No significant residual effects (not significant)

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