# LLŶR FLOATING OFFSHORE WIND PROJECT

## Llŷr Floating Offshore Wind Farm

## Environmental Statement

## Volume 6: Appendix 10C - Onshore Water Framework Directive Assessment

## August 2024

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FLOVENTIS ENERGY

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## Acronyms and abbreviations

| Acronym or abbreviation | Definition | Acronym or abbreviation | Definition |
|---|---|---|---|
| CEMP | Construction Environmental Management Plan | OCT | Open Cut Trenching |
| CJB | Cable Joint Bay | OEMP | Operation Environmental Management Plan |
| DCO | Development Consent Order | OnECC | Onshore Export Cable Corridor |
| ES | Environmental Statement | RBD | River Basin District |
| HDD | Horizontal Directional Drilling | RBMPs | River Basin Management Plans |
| LEMP | Landscape and Ecological Management Plan | TJB | Transition Joint Bay |
| MLWS | Mean Low Water Springs | WFD | Water Framework Directive |
| NRFA | National River Flow Archive | WMP | Water Management Plan |
| NRW | National Resources Wales | | |

## Glossary of project terms

| Term | Definition |
|---|---|
| The Applicant | The developer of the Project, Llŷr Floating Wind Limited. |
| Array | All wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the Array Area, as defined, when considered collectively, excluding the offshore export cable(s). |
| Array Area | The area within which the wind turbine generators, inter array cables, mooring lines, floating sub-structures and supporting subsea infrastructure will be located |
| Floventis Energy | A joint venture company between Cierco Ltd and SBM Offshore Ltd of which Llŷr Floating Wind Limited is a wholly owned subsidiary. |
| Landfall | The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays (TJB). |
| Llŷr 1 | The proposed Project, for which the Applicant is applying for Section 36 and Marine Licence consents. Including all offshore and onshore infrastructure and activities, and all project phases. |
| Marine Licence | A licence required under the Marine and Coastal Access Act 2009 for marine works which is administered by Natural Resources Wales (NRW) Marine Licensing Team (MLT) on behalf of the Welsh Ministers. |
| Offshore Development Area | The footprint of the offshore infrastructure and associated temporary works, comprised of the Array Area and the Offshore Export Cable Corridor, as defined, that forms the offshore boundary for the S36 Consent and Marine Licence application |
| Offshore Export Cable | The cable(s) that transmit electricity produced by the WTGs to landfall. |

| Term | Definition |
|---|---|
| Offshore Export Cable Corridor (OfECC) | The area within which the offshore export cable circuit(s) will be located, from the Array Area to the Landfall. |
| Onshore Development Area | The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore Substation, as defined, and including new access routes and visibility splays, that forms the onshore boundary for the planning application. |
| Onshore Export Cable(s) | The cable(s) that transmit electricity from the landfall to the onshore substation |
| Onshore Export Cable Corridor (OnECC) | The area within which the onshore export cable circuit(s) will be located. |
| Project | All aspects of the Llŷr development |
| Onshore Substation | Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption. |
| Section 36 consent | Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works. |

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# 10-C ONSHORE WATER FRAMEWORK DIRECTIVE ASSESSMENT

## 10.1 Introduction

### *10.1.1. Background*

1. Llŷr Floating Wind Ltd (hereafter referred to as the Applicant) is proposing to develop the Llŷr 1 Floating Offshore Wind Farm (hereafter referred to as the proposed Project), located approximately 35 km off the coast of Pembrokeshire in the Celtic Sea.
2. This Water Framework Directive (WFD) Impact Assessment has been produced in support of the onshore elements of the Environmental Statement (ES) for the proposed Project. A separate offshore WFD assessment has been prepared for the offshore proposed Project elements. This onshore WFD Assessment reviews both onshore water bodies and transitional/coastal water bodies in so far as they might be impacted by onshore activities.
3. The main elements of the proposed Project in relation to the onshore WFD comprise the following core elements:
    - Landfall;
    - Transition Joint Bay (TJB);
    - Onshore Cabling;
    - Cable Joint Bays; and
    - Onshore Substation.
4. The onshore proposed Project components are located wholly within the Onshore Development Area which comprises:
    - The Onshore Substation Compound: the area within which the Onshore Substation and associated infrastructure will be located. This is an area of up to 15,000 $m^2$ (excluding Sustainable Drainage Systems (SuDS)), located 1.5 km from the grid connection location.
    - The Onshore Export Cable Corridor (OnECC): the area within which the onshore export cable circuits will be located. The onshore export cables are connected to the offshore export cables via Transition Joint Bays (TJBs) at the landfall at Freshwater West. The OnECC runs from Mean Low Water Springs (MLWS) to the grid connection location at Pembroke Dock power station.
5. The Offshore and Onshore Development Areas are shown on **Volume 5: Figure 4-1** and **Figure 4-2** respectively.
6. The assessment has been undertaken by AECOM. Further details of the proposed Project Team's competency are provided in **Appendix 1A: Statement of Competence**.

### *10.1.2. Study Area*

7. For the purposes of this assessment, and consistent with **Chapter 10: Terrestrial Water Environment** of the ES, a general Study Area (zone of influence) of approximately 1 km from the Onshore Development Area has been considered to identify water bodies that are hydrologically connected to the proposed Project and have the potential to be directly impacted by the activities associated with it. Given that all watercourses in the 1 km study area discharge to coastal waterbodies (Pembrokeshire South, Milford Haven Inner and Milford Haven Outer WFD water bodies) which are also within 1 km of the proposed Project, these are considered the furthest downstream water bodies that could conceivably be impacted.

8. The Onshore Development Area extends to the Mean Low Water Springs and includes the footprint of the Onshore Infrastructure and associated temporary works, comprised of the OnECC and the Onshore Substation, and including new access routes and visibility splays, that form the onshore boundary for the planning application. This is shown on **Volume 5: Figure 10-1: Onshore Water Environment Study Area** and for assessment beyond the Mean Low Water Springs, refer to **Appendix 10D: Offshore WFD Assessment**. The WFD assessment herein considers potential effects on offshore water receptors in so far as they could be impacted by onshore activities, such as runoff of sediment or pollutants from construction works. Potential effects to offshore water receptors that will be derived from activities in the marine environment are considered in **Appendix 10D: Offshore WFD Assessment**.

9. The majority of the Study Area is outside any WFD water body (cf. **Volume 5: Figure 10-2: Offshore WFD Assessment**). Some small parts of the Study Area overlap parts of the following water body catchments (NRW, 2024):

    - Castlemartin Corse - headwaters to tidal limit (GB110061025000) – River;
    - Milford Haven Inner (GB531006114100) – Transitional;
    - Milford Haven Outer (GB641008220000) – Coastal; and
    - Pembrokeshire South (GB611008590003) – Coastal.

10. There are also numerous tributaries of these water bodies present within the Study Area; these are predominantly unnamed agricultural ditches, drains and springs. It should be noted that WFD requirements apply equally to all watercourses regardless of whether they are Environment Agency reportable reaches.

11. Most of the proposed Project is not within a river WFD water body, with only a total of 7.7% of the Onshore Development Area within one. Therefore no WFD classification, status or objectives are available for parts of the study area. Despite certain watercourses not being specifically attributed water bodies, the watercourses lie within the area of the Coastal Streams of South Pembs and South Milford Haven - Pendine to Landshipping Operational Catchment. Accordingly, the principles of the WFD and assessment methodology have been applied to avoid impacts to the water environment.

12. The Study Area is also underlain by one WFD groundwater body:

    - Cleddau and Pembrokeshire (GB41002G200400).

13. For a more detailed report of the baseline conditions for the Study Area refer to **Chapter 10: Terrestrial Water Environment**.

## 10.2 Methodology

*10.2.1. Introduction to the Water Framework Directive*

14. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, commonly referred to as the Water Framework Directive (WFD), aims to protect and enhance the water environment.

15. The WFD takes a holistic approach to sustainable management of the water environment by considering interactions between surface water, groundwater and water-dependent ecosystems. Ecosystem conditions are evaluated according to interactions between classes of biological, chemical, physico-chemical and hydromorphological elements known as 'Quality Elements'.

16. Under the WFD, 'water bodies' are the basic management units, defined as all or part of a river system or aquifer. Waterbodies form part of a larger 'river basin district' (RBD), for which 'River Basin Management Plans' (RBMPs) are used to summarise baseline conditions and set broad improvement objectives. RBMPs are produced every six years, in accordance with the river basin management planning cycle. The current RBMPs are Cycle 3 that were published in 2021.

17. In Wales, National Resources Wales (NRW) is the competent authority for implementing the WFD, although objectives are delivered in partnership with other public bodies and private organisations, for example local planning authorities, water companies, rivers trusts, and private landowners and developers.

18. NRW is also responsible for managing flood risk and other activities on Main Rivers. Local planning authorities or drainage boards are typically responsible for consenting activities on Ordinary Watercourses. Local planning authorities are typically responsible for highways drains, and landowners are typically responsible for ditches and watercourses within their property including piped watercourses and culverts. While NRW is ultimately responsible for enforcing the WFD on any water body, local authorities are required to plan and consent WFD related activities on Ordinary Watercourses.

19. As part of its regulatory and statutory consultee role on planning applications and environmental permitting (under the Environmental Permitting Regulations (England and Wales) 2016), NRW and WFD-partnering organisations, must consider whether proposals for new developments have the potential to:

- Cause a deterioration of any quality element of a water body from its current status or potential; and / or
- Prevent future attainment of good status or potential where not already achieved.

20. Regulation 33 of the Water Environment Regulations 2017 (i.e. the WFD) states that public bodies "must, in exercising their functions so far as affecting a river basin district, have regard to - (a) the river basin management plan for that district as approved under regulation 31, and (b) any supplementary plan prepared under regulation 32." The Applicant must therefore reflect water body improvement priorities as outlined in the Western Wales RBMP.

21. In determining whether a proposed project is compliant or non-compliant with the WFD objectives for a water body, NRW and partnering organisations must also consider the conservation objectives of any Protected Areas (e.g. Natura 2000 sites or water dependent Sites of Special Scientific Interest) and adjacent WFD water bodies, where relevant.

### *10.2.2. WFD Methodology*

22. There are no fixed methods for WFD assessment. The nature of the water environment and the breadth of the legislation mean that assessments are tailored to proposals on a case-by-case basis.

23. The following general guidance is available which has been followed for this assessment:

- Environment Agency (2016a). Water Framework Directive risk assessment. How to assess the risk of your activity;
- Environment Agency (2016b). Protecting and improving the water environment. Water Framework Directive compliance of physical works in rivers; and
- The Planning Inspectorate (2017). Advice Note eighteen: The Water Framework Directive.

24. A stepwise approach consisting of screening, scoping and impact assessment phases is generally followed to: (a) rationalise the levels of WFD assessment and impact mitigation that are required; and (b) verify that proposals meet the requirements of the WFD. The general approach is described by The Planning Inspectorate (2017) and briefly summarised below. It should be noted that this staged process is separate to the EIA screening, scoping and assessment process. Refer to **Chapter 10: Terrestrial Water Environment** for further details of the EIA approach.

**Stage 1: Screening**

25. Screening identifies the zone of influence of a proposed Project, and whether proposed activities pose a risk to the water environment. It is used to identify if there are activities that do not require further consideration for WFD objectives, for example activities which have been ongoing since before the current RBMP plan cycle and which have thus formed part of the baseline.

**Stage 2: Scoping**

26. Scoping is used to identify any potential impacts of the proposed activities to specific WFD receptors and their water quality elements. This involves a review of WFD impact pathways, shortlisting which WFD water bodies and quality elements could or could not be affected by proposed activities, and collecting baseline information from the relevant RBMP on the status and objectives for each water body.

**Stage 3: Impact Assessment**

27. This involves a rationalised assessment of water bodies and quality elements that could be affected by proposed activities, to identify any areas of WFD non-compliance. Proposed activities are reviewed in terms of both positive and negative impacts, and the baseline mitigation measures, enhancements, and contributions to the WFD objectives are described in the RBMP. Any proposed activities with potentially deleterious impacts are reviewed simultaneously with their corresponding mitigation proposals, to determine a net effect on WFD objectives. Impacts are reviewed in this report based on information currently available.

**Mitigation Commitments**

28. Proposed mitigation activities relied upon to demonstrate compliance at any of the stages referred to above must be appropriately defined and sufficiently secured. Mitigation could be secured through planning licence conditions, commitments within the EIA process or planning application, or other legally binding methods.

**Further Assessment if WFD Derogation is to be Considered by the Applicant**

29. WFD Regulation 17 and Regulation 19 set out 'last resort' planning and legal processes for WFD derogation that are not part of this report. Case review of any proposed justification by an applicant would be a matter for the Secretary of State and is likely to require a substantial body of multi-disciplinary evidence.

30. Where the potential for deterioration of water bodies is identified, and the 'body of water is so affected by human activity or its natural condition is such that the achievement of the environmental objectives set would be infeasible or disproportionately expensive', it is possible for an applicant to present further assessments in the context of WFD Regulation 17. Derogation has not been considered herein as it is not deemed necessary.

31. For WFD context, WFD Regulation 17 covers part of the procedures for WFD derogation, including but not limited to that 'the environmental and socio-economic needs served by such human activity cannot be achieved by other means which are a significantly better environmental option not entailing disproportionate costs'.

32. Where it is identified that there is the potential for failure of a project against WFD objectives and the 'failure is the result of new modifications to the physical characteristics of the body of surface water or alterations to the level of the body of groundwater', it is possible for an applicant to present further assessments in the context of WFD Regulation 19. Regulation 19 is also still commonly referred to as Article 4.7 of the original EU Directive. Derogation has not been considered herein and has not been deemed necessary. For WFD context, WFD Regulation 19 covers part of the procedures for WFD derogation, including but not limited to:

- *'All practicable steps are taken to mitigate the adverse impact on the status of the body of water'.*
- *'The reasons for the modifications or alterations, or for the sustainable development activities, are of overriding public interest'.*
- *'The benefits to the environment and to society of achieving the environmental objectives are outweighed by the benefits of the new modifications or alterations, or of the sustainable development activities, to human health, to the maintenance of human safety, or (in the case of modifications or alterations) to sustainable development'.*
- *'The beneficial objectives served by the modifications or alterations, or by the sustainable development activities, cannot, for reasons of technical feasibility or disproportionate cost, be achieved by other means which are a significantly better option'.*

*10.2.3. Desk Study*

33. The terrestrial water environment study area was reviewed in relation to the following sources which are relevant to the WFD:

- WFD status and objectives from the appropriate River Basin Management Plan for cycle 3 data, available from Water Watch Wales (NRW, 2024);
- Defra's Multi-agency geographical information for the countryside website (MAGIC), including contemporary Ordnance Survey (OS) maps (DEFRA, 2024);
- Historical maps (NLS, 2024);
- British Geological Survey maps (BGS, 2024);
- Soilscapes website (Cranfield University, 2024);
- Aerial photography (Bing, 2024);

- Hydrological information (NRFA, 2024); and
- Climate information (Met Office, 2024).

*10.2.4. Field Study*

34. A site walkover survey was undertaken by a Water Scientist and Hydromorphologist on 21st to 24th of August 2023 to establish the baseline conditions of watercourses local to the proposed Project.

35. The walkover focused on surface water bodies in the Study Area (as defined above), observing their current condition and aquatic habitats, the presence of existing risks and any potential pathways for construction and operational impacts from the proposed Project.

36. For further details of the field surveys refer to Appendix 10B: Onshore Water Environment Site Survey Report.

*10.2.5. Limitations and Assumptions*

37. This WFD is based on baseline and the proposed Project design information available at the time of writing in June 2024. It is based on the proposed Project design set out in **Chapter 4: Description of the proposed Project**.

38. Where there is uncertainty in the design, reasonable assumptions have been made and these are described at relevant points within this assessment, such as **Section 10.3.2** Screening of Activities. Further assessment or updates may therefore be required if there are material changes to the design elements post planning or it is determined that proposed embedded mitigation cannot be implemented as currently proposed for whatever reason.

39. The assessment relies on a combination of published data sources, and observations from hydromorphological surveys and ecological surveys conducted in 2022 and 2023, to define the quality of water environment receptors. While the available data is considered robust for defining receptor importance, there may be inherent uncertainties or gaps in the data. Additionally, groundwater levels are estimated based on published sources and will be confirmed through ground investigation post-consent, introducing a degree of uncertainty regarding the exact groundwater conditions.

40. It was not possible to survey the entire length of all watercourses within the OnECC due to land access restrictions, safety and time constraints. However, the survey data that has been obtained and presented in **Appendix 10B: Onshore Water Environment Site Survey Report** is representative of each watercourse and sufficient for the prediction of effects. Site specific variances for final crossing locations will be surveyed as part of pre-works surveys and used to inform reinstatement.

41. Groundwater levels will be confirmed by ground investigation post consent to confirm cable burial depth across the OnECC and attenuation basin design (depth, permanent water level etc) at the Onshore Substation. This will take place as part of the detailed design, post consent in line with **Appendix 4A: Outline CEMP**.

42. Where a watercourse is located within the OnECC it has been assumed it will be crossed by the Onshore Export Cable (as well as any temporary access tracks and haul roads) as a reasonable worst-case scenario approach.

43. It is assumed (as reasonable worst-case scenario) that any watercourse within the OnECC will be crossed via dry open cut trench methodology when installing the Onshore Export Cable.

44. It is assumed (as a reasonable worst-case scenario) that any watercourse within the OnECC will also be culverted for the construction of temporary access tracks and haul roads, which may run alongside it. In practice, there are likely to be existing accesses into fields that can be

used, although at this stage this level of design information is not known. It is assumed that any temporary culvert for access will be between 10-12 m long (the haul road will be approximately 10 m wide) and will be a suitably sized pipe culvert for the estimated flows that may be experienced and to fit the channel cross section. A geotextile will be placed across the bed and clean, washed aggregates placed on top as the pipe bed and to build up to the required road level. A parapet made of pea-gravel filled sacks will be provided on either side and regularly maintained during the works. The pipes will extend beyond this to reduce the risk that aggregate falls into the channel. The temporary crossing will be removed as soon as possible, and the watercourse reinstated as found. To allow this a Pre-construction Morphology and Riparian Habitat Survey will be carried out.

45. The dimensions stated for the construction methodology of the Onshore Export Cable and installation below watercourses are indicative but represent the likely maximum parameters, with the exact burial depths to be determined following future site and ground investigations within the detailed design stage which will take place post-consent.

46. At the time of writing, the construction methodology for any temporary access tracks or haul roads is unknown, as it is subject to investigations into ground conditions and topographical surveys. It is assumed that the temporary access tracks or haul roads may need to cross the ordinary watercourses in the OnECC and the reasonable worst-case scenario will involve the installation of temporary pipe(s) culverts to ensure continuity in flow.

47. This assessment only includes the onshore activities of the proposed Project, and the offshore activities are detailed in **Appendix 10D: Offshore WFD Assessment**. Although the activities have been separated between onshore and offshore, the water bodies have not. This onshore assessment includes WFD transitional and coastal water bodies as the onshore activities can still affect them. Although the proposed Project has been split into two elements, all WFD risk is covered.

48. Further information on limitations and assumptions are detailed in **Chapter 10: Terrestrial Water Environment.**

## 10.3 WFD Screening and Scoping

### *10.3.1. WFD Screening*

49. The purpose of the WFD screening stage is to identify a zone of influence of the Onshore Development Area and to determine whether that influence has the potential to adversely impact upon WFD water body receptors. A Study Area of 1 km around the Onshore Development Area has been considered to identify water bodies that are potentially hydrologically connected to the proposed Project and potential works associated with the proposed Project that could cause direct impacts. The Study Area also extends into transitional and coastal water bodies. Further details regarding the Study Area were given in **Section 10.1.2.**

50. The screening stage also identifies specific activities of the proposed Project that could affect receptor water bodies' WFD status and carries them forward to subsequent stages of the assessment process. Justification is provided where water body receptors are screened out and are not carried forward through the assessment. Water bodies or activities screened 'out' of the assessment are therefore not considered further at the impact assessment stage.

**Screening of WFD Water Bodies**

51. The proposed Project interacts with various types of WFD water bodies. WFD Screening of these water bodies is provided in **Table 10C-1**. As mentioned in **Section 10.1**, a number of fluvial watercourses that interact with the proposed Project are not within a WFD surface water body catchment, however this does not exclude them from this assessment because they are still at risk from adverse impacts and the WFD requires measures to protect all water bodies whether they are classified or not. The WFD provides the most robust methodology for assessing potentially adverse impacts; so, while some watercourses do not have objectives assigned to them, the WFD methodology is being followed to ensure they are suitably protected from degradation. For the purposes of this assessment the Castlemartin Corse - headwaters to tidal limit (GB110061025000) will be used as a surrogate for the unnamed area.

*Table 10C-1 Screening of WFD water bodies potentially impacted by the proposed Project.*

| WFD water body ID | Screening outcome | Justification |
|---|---|---|
| Castlemartin Corse - headwaters to tidal limit (GB110061025000) - River | In | WFD water body won't be worked on directly but may be indirectly impacted by the proposed Project due to a range of activities that would interact with the local tributary network during construction, operation, and decommissioning phases. |
| *Pembrokeshire South (GB611008590003) - Coastal* | In | WFD water body may be indirectly impacted by the proposed Project due to a range of activities that would interact with the local tributary network during construction, operation, and decommissioning phases. |
| *Cleddau and Pembrokeshire (GB41002G200400) - Groundwater* | In | WFD groundwater body may be directly impacted by the proposed Project due to a range of activities that would interact with the network during construction, operation, and decommissioning phases. |

| WFD water body ID | Screening outcome | Justification |
|---|---|---|
| *Milford Haven Inner (GB531006114100) – Transitional* | Out | WFD water bodies will not be directly impacted by the proposed Project, and despite hydrological connectivity to these water bodies it is anticipated that any biological, physico-chemical and hydromorphological impacts related to construction runoff or spillages that have potential to enter these water bodies will be adequately mitigated by a Construction Environmental Management Plan (CEMP) **Appendix 4A: Outline CEMP** and associated Water Management Plan (WMP). In addition, the scale of theoretical impact to the large area of the water bodies is negligible to zero (Milford Haven Outer is 35 $km^2$, Milford Haven Inner is 21 $km^2$). The CEMP will be standard procedure for the proposed Project and will describe the principles for the protection of the water environment during construction. The CEMP will be supported by the WMP (which will be an appendix to the CEMP), that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction including requirements for water quality monitoring. Further detail is given regarding the embedded mitigation in **Chapter 10 Terrestrial Water Environment.** Given this mitigation and the lack of any direct works to these waterbodies, it is considered that they can be screened out of further assessment. |
| *Milford Haven Outer (GB641008220000) - Coastal* | | |
| | | |

### *10.3.2. Screening of Activities*

52. As described in **Section 10.1**, the proposed Project comprises a number of activities, some of which present a potential risk to the WFD status of water bodies. The components and activities relevant to WFD are listed and screened in **Table 10C-2. Chapter 4: Project Description** has more information regarding the components and activities.

*Table 10C-2 Screening of the proposed Project's activities against WFD quality elements.*

| Activity | Description | Screening outcome | Justification |
|---|---|---|---|
| Landfall | The proposed landfall cable will utilise two Horizontal Directional Drilling (HDD) ducts to traverse Freshwater West. HDD distance will be 1,300 m (landfall 0.3 km from Freshwater West). Each HDD duct will have a diameter of 660 mm with each of the two onshore HDD drilling entry locations being spaced at 20 m intervals.<br><br>The HDD will require a temporary landward working area (typically called an HDD compound) of approximately 7,500 $m^2$ during construction to accommodate the drilling equipment and ancillary plant. The HDD compound will be set back approximately 400 m from MHWS which will provide sufficient space for the arced drill profile to pass beneath the intertidal area and exit onto the seabed below MLWS. The exit pits will likely be temporarily backfilled until ready for cable pull through. The ducts will then need to be re-exposed to pull in the cable. Once installation is complete, the exit pits will either be backfilled using available side-cast material.<br><br>Indicative HDD landfall details are shown in **Volume 1 – Chapter 4: Description of the Proposed Project (Figure 4-17: Indicative HDD landfall arrangements)**. | **Out** - Castlemartin Corse - headwaters to tidal limit (GB110061025000) – River<br><br>**In** - Cleddau and Pembrokeshire (GB41002G200400) - Groundwater<br><br>**Out** - Pembrokeshire South (GB611008590003) - Coastal | All landfall surface infrastructure will be wholly located above MHWS. Although the Onshore Development Area extends to mean low water springs (MLWS), there will be no surface activity during construction (or operational) phases within the normal intertidal zone.<br><br>Offshore export cables will be installed by horizontal directional drilling, wholly below the level of the ocean bed[1], and only come to the surface within the land-based infrastructure, which will be located outside of the WFD river water body. The WFD ground water body is screened in for the HDD drilling that are planned due to the risk of groundwater breakout. Therefore, the groundwater body is screened in for further assessment for construction.<br><br>Any potential water quality issues relating to construction runoff or spillages that have potential to enter tributaries will be mitigated by best practice measures, outlined in the CEMP **Appendix 4A: Outline CEMP** (and subsequently in WMP). HDD drilling fluid discharges to the marine environment that may lead to increased sediment loading for the water column will be mitigated by the stopping of drilling before drilling through the HDD marine exit point. Excess fluid will be extracted before the final drilling reaches the marine exit point. The cross-sectional area of a subsea HDD exit pit is not considered sufficient to result in significant impact to the coastal water body, particularly given |

[1] The offshore punch out location is assessed as part of the offshore activities. Refer to **Appendix 10D: WFD Assessment Offshore**.

| Activity | Description | Screening outcome | Justification |
|---|---|---|---|
| | | | the large scale of the WFD coastal body. Pembrokeshire South water body has an approximate area of 414 km$^2$.<br><br>The Operation Environmental Management Plan (OEMP) and Decommissioning Environmental Management Plan (DEMP) produced post-consent, would minimise adverse water quality impacts during operation and decommission.<br><br>Given the proposed mitigation, it is considered that Landfall can be screened out of further assessment for river and coastal water bodies. |
| Transition Joint Bay and Cable Joint Bays | Up to two TJBs or risers will be located near to the landfall. The TJBs will contain the connection between the onshore and offshore cables and will be located circa 368 m inshore of Mean High Water and will be approximately 12 m long, 6 m wide, and 2.25 m deep. Two earth link boxes of approximately 0.8 m x 0.8 m x 0.6 m will be provided adjacent to each TJB, therefore accommodating two export cables per TJB.<br><br>The target depth of burial of TJBs will be 1 m (dependent on ground conditions) and minimum depth of cover will be 0.9 m, however if this is not possible, mechanical protection will be used to achieve a depth of cover.<br><br>CJBs will be required every 1000 m along the cable route to connect the onshore cable circuit sections. The CJB will be approximately 12 m long, 6 m wide, and 2.25 m deep.<br><br>The minimum depth of burial of CJBs will be 0.9 m except for in agricultural lands where the minimum depth of cover is 1.1 m, to allow for ploughing. | **Out** - Castlemartin Corse - headwaters to tidal limit (GB110061025000) – River<br><br>**Out** - Cleddau and Pembrokeshire (GB41002G200400) - Groundwater<br><br>**Out -** Pembrokeshire South (GB611008590003) - Coastal | All landfall surface infrastructure will be wholly located above MHWS.<br><br>Offshore export cables will be installed by horizontal directional drilling, wholly below the level of the water body bed, and only come to the surface within the land-based infrastructure.<br><br>Any potential water quality issues relating to construction runoff or spillages that have potential to enter watercourses will be mitigated by the CEMP **Appendix 4A: Outline CEMP**. The CEMP will be standard procedure for the proposed Project and will describe the principles for the protection of the water environment during construction. The OEMP and DEMP produced post-consent, would minimise adverse water quality impacts during operation and decommission.<br><br>Indicative burial depths for the TJBs and CJBs specify that it will have a maximum depth of 1 m and 1.1, which will likely be above the water table across the majority of the onshore project boundary, based on groundwater data available on the Geoindex website (BGS, 2024). As such, there would be no significant |

| Activity | Description | Screening outcome | Justification |
|---|---|---|---|
| | | | impact to the groundwater bodies, particularly given the large scale of the WFD groundwater bodies.<br><br>Given this mitigation it is considered that the water bodies can be screened out of further assessment. |
| Onshore Export Cable | There will be one onshore export cable circuit from each TJB , at either 66 kV or 132 kV. Each onshore cable circuit comprises three power cables and a fibre optic cable for monitoring purposes.<br><br>Within each circuit, each cable will comprise a copper or aluminium single core cable with a cross-linked polyethylene (XLPE) insulated layer and an outer protective layer with a final layer of steel armouring.<br><br>The circuits will be laid in separate trenches created by Open Cut Trenching (OCT). At certain locations along the OnECC where OCT is not feasible the cables will be installed by HDD.Both methods are assessed as a worst case. The cables will run from the TJB/riser to the onshore substation and from the substation to the point of connection. The minimum burial depth is 0.9 m, although this may be increased to 1.1 m in certain locations for example across some arable fields to allow for ploughing. The maximum trench width will be 1.2 m. It should be noted that this will also vary with depth of cover (the deeper the cables are buried the wider the trench may become), however 1.2 m represents the maximum width. | **In** - Castlemartin Corse - headwaters to tidal limit (GB110061025000) – River<br><br>**In** - Cleddau and Pembrokeshire (GB41002G200400) - Groundwater<br><br>**Out -** Pembrokeshire South (GB611008590003) - Coastal | The WFD river surface water body is screened in due to the possible use of intrusive OCT to cross some watercourses. This is because there may be effects during the construction phase, such as the uncontrolled release of construction site runoff that may include high levels of fine sediment, oils and drilling lubricant if this runoff is not carefully managed. The use of intrusive OCT causes the potential for direct impacts to the riparian zone and channel and increased fine sediment delivery to water bodies and pollution of water bodies during construction works. Although construction works will be temporary, the impact on riparian habitat will persist until vegetation re-establishes. Therefore, the river surface water body is screened in for further assessment for construction.<br><br>The WFD ground water body is screened in for the watercourse crossings that are planned due to the risk of groundwater breakout during HDD. Therefore, the groundwater body is screened in for further assessment for construction.<br><br>There will be no direct works to the coastal water body so there is no mechanism for direct impacts. Any indirect impacts related to construction runoff or spillages that have potential to enter watercourses and drain to the coastal water body will be mitigated by the CEMP - **Appendix 4A: Outline CEMP**. Given the proposed mitigation and the large scale of the coastal water body there will |

| Activity | Description | Screening outcome | Justification |
|---|---|---|---|
| | | | be no significant impact and can be screened out of further assessment.<br><br>The OEMP and DEMP produced post-consent would minimise adverse water quality impacts during operation. Therefore, all water bodies are screened out for further assessment for operation and decommission. |
| Onshore Substation | The onshore substation transfers electricity from the proposed Project to the National Grid Electricity Transmission (NGET) system. The substation will comprise of: static VAR compensators (SVC); transformers; electrical switchgear (either air insulated, or gas insulated); static synchronous compensator (STATCOM); reactive power compensation equipment; harmonic filter switchyards; and control building.<br><br>Access will be provided around the site by poured concrete footpaths and tarmac areas connecting the substation to the access road. | **Out** – Cleddau and Pembrokeshire (GB41002G200400) - Groundwater<br><br>**Out** – Castlemartin Corse – headwaters to tidal limit (GB110061025000) – River<br><br>**Out –** Pembrokeshire South (GB611008590003) – Coastal | The works for the Onshore Substation is not within the WFD river or coastal water bodies. Any potential water quality issues relating to construction runoff or spillages that have potential to enter tributaries of these water bodies will be mitigated by the CEMP **Appendix 4A: Outline CEMP**. The CEMP will be standard procedure for the proposed Project and will describe the principles for the protection of the water environment during construction. The OEMP and DEMP post-consent, would minimise adverse water quality impacts during operation and decommissioning.<br><br>Given this mitigation it is considered that they can be screened out of further assessment for construction, operation, and decommission. |
| Access | If no direct access is available to the working areas from the local highway network, a temporary haul road for the Onshore Infrastructure will be required. If needed, temporary access tracks and haul roads will be constructed and will typically be approximately 10 m wide, including verges and drainage channels, although these could be wider in places depending upon topography and access requirements. The method of | **In** - Castlemartin Corse - headwaters to tidal limit (GB110061025000) – River<br><br>**Out** - Cleddau and Pembrokeshire | No WFD monitored watercourses are directly impacted by site access and access tracks; however, there will be works on existing watercourses and ditches that might have some connectivity to these watercourses. There is a potential for adverse water quality impacts from runoff containing fine sediments and chemical spillages related to plant usage adjacent to the watercourses and structural works to install crossings in the riparian margins and over the watercourses. Given the limited potential for |

| Activity | Description | Screening outcome | Justification |
|---|---|---|---|
| | construction will also depend on ground conditions and topography.<br><br>It is assumed (as a reasonable worst-case scenario) that any watercourse within the OnECC will also be culverted for the construction of temporary access tracks and haul roads, which may run alongside it. In practice, there are likely to be existing accesses into fields that can be used, although at this stage this level of design information is not known. It is assumed that any temporary culvert for access will be between 10-12 m long (the haul road will be approximately 10 m wide) and will be a suitably sized pipe culvert for the estimated flows that may be experienced and to fit the channel cross section. A geotextile will be placed across the bed and clean, washed aggregates placed on top as the pipe bed and to build up to the required road level. A parapet made of pea-gravel filled sacks will be provided on either side and regularly maintained during the works. The pipes will extend beyond this to reduce the risk that aggregate falls into the channel. The temporary crossing will be removed as soon as possible and the watercourse reinstated as found. To allow this a Pre-construction Morphology and Riparian Habitat Survey will be carried out. | (GB41002G200400) - Groundwater<br><br>**Out -** Pembrokeshire South (GB611008590003) - Coastal | conveyance in these generally dry watercourses, any impact would be expected to remain very localised.<br><br>Culverted watercourse crossings for access will utilise appropriate design measures which would be implemented by way of mitigation to reduce impact.<br><br>Failure to adhere to appropriate mitigation measures could potentially result in negative impacts caused by culverts. However, these impacts are likely to be localised and negligible at the water body scale. Additionally, works would be timed to coincide with drier periods. Good practice measures, as outlined in the CEMP **Appendix 4A: Outline CEMP**, would minimise any adverse water quality impacts to the watercourses.<br><br>Given the lack of information surrounding watercourse crossings for site access, they are screened in of further assessment for construction and operation for the river surface water body.<br><br>There is no direct works within the WFD coastal water bodies. There is limited potential for impacts on the groundwater body, as no significant changes in runoff patterns compared to existing conditions are expected from the internal access tracks. Given this mitigation, it is considered that groundwater bodies can be screened out of further assessment.<br><br>Decommissioning impacts are likely to be similar to those during construction and would be mitigated by the measures that will be set out in the DEMP. |

### *10.3.3. WFD Scoping*

53. The WFD scoping stage defines the level of detail required for further WFD assessment. This includes identifying risks to the WFD receptors from the proposed Project's activities. The scoping stage assessment is presented in **Table** 10C-3**.**

*Table 10C-3 Scoping of the proposed Project's activities against WFD quality elements.*

| WFD quality element | Potential risk to receptor (Yes/No) | Justification | Scoping outcome (In/Out) |
|---|---|---|---|
| **Biological Quality Element** | | | |
| Fish | Yes | OCT and HDD crossings, and watercourse crossings may result in noise and vibrations, and a spillage of drilling fluids or pollutants, which have the potential to impact fish populations during the construction phase.<br><br>Temporary blockages in longitudinal connectivity from intrusive crossing methods of water bodies, and watercourse crossings required for site access. Potential for loss of biological continuity resulting in interference with fish population movements and blocking the exchange of individuals among populations, reducing gene flow and disrupting the ability of 'source' populations to support declining populations nearby. Potential direct impact on fish populations from disturbance of the bed and / or release of contaminated construction site runoff, including the risk of 'break out' during directional drilling operations. | In |
| Invertebrates | Yes | OCT and HDD crossings, and watercourse crossings may result in a spillage of drilling fluids or pollutants, which have the potential to impact invertebrate populations during the construction phase.<br><br>Intrusive crossings and watercourse crossings for site access may cause direct mortality of invertebrates or the smothering of habitat with fine sediment. | In |
| Macrophytes, Diatoms and Phytobenthos Combined | Yes | OCT and HDD crossings and watercourse crossings for site access may result in a spillage of drilling fluids or pollutants, which have the potential to impact macrophytes, diatoms and phytobenthos populations during the construction phase.<br><br>Intrusive crossings of water bodies may cause the removal of macrophytes, and removal of the bed or macrophytes supporting phytobenthos. Similar impacts could arise from installation of watercourse crossings for site access. | In |
| **Physico-Chemical Quality Elements** | | | |
| Thermal conditions | No | OCT and HDD crossings, and watercourse crossings for site access could alter the level of shading to water | Out |

| WFD quality element | Potential risk to receptor (Yes/No) | Justification | Scoping outcome (In/Out) |
|---|---|---|---|
| | | bodies following potential riparian vegetation removal, however this is very unlikely to result in a notable change in shading or associated change in water temperature given launch and receive pits will be located at least 10 m from the water body.<br><br>Intrusive crossings and watercourse crossings for site access may result in riparian vegetation removal, yet this will only be at a very local scale and would not alter the water body temperature. | |
| Oxygenation conditions | Yes | OCT and HDD crossings, and watercourse crossings for site access may increase sediment and organic material entry into watercourses. | In |
| Nutrient conditions including Ammonia and Phosphorous | Yes | OCT and HDD crossings, and watercourse crossings for site access may increase sediment loads to watercourses and organic material from site clearance works. | In |
| pH Levels | Yes | OCT and HDD crossings, and watercourse crossings for site access may increase sediment loads to watercourses from site clearance works which may contain chemicals that change could impact pH levels. | In |
| **Hydromorphological Quality Elements** | | | |
| Quantity and dynamics of water flow | No | There is no mechanism for either cable crossing method to impact this element; intrusive crossings and watercourse crossings for site access will preferably be carried out during dry periods or maintain water body flow by installation of a pipe or flume or by over-pumping the flow for the relatively short duration of the works. | Out |
| Connection to groundwater bodies | No | Cables will cross beneath water bodies and other infrastructure, but this should not impact connectivity to groundwater bodies due to the small scale of activity compared to water body size. Watercourse crossings for site access may also present a barrier to connection with groundwater bodies, but this will be extremely localised and would not present an impact at the water body scale. | Out |
| River continuity | Yes | OCT crossings will present a temporary blockage to continuity whilst excavation takes place. Watercourse crossings for site access can also interrupt river continuity. There is no mechanism for non-intrusive crossings to affect this quality element. | In |
| River depth and width variation | Yes | OCT crossings may lead to local changes in channel profile. Watercourse crossings for site access would also impact this element locally. | In |

| WFD quality element | Potential risk to receptor (Yes/No) | Justification | Scoping outcome (In/Out) |
|---|---|---|---|
| Structure and substrate of the riverbed | Yes | OCT crossings may lead to local changes in bed substrate. Watercourse crossings for site access can present an interruption to the natural bed substrate. | In |
| Structure of the riparian zone | Yes | OCT crossings will involve digging below the watercourse bed, which will inevitably involve disruption of the watercourse banks and the riparian zone as they will be temporarily removed before being reinstated. Non-intrusive crossings will also involve excavations each side of riverbanks, but these will be set back by a minimum of 10 m from the normal flow channel/ water's edge. Watercourse crossings for site access can locally disconnect the river channel from the riparian zone. | In |
| **Groundwater Quality Element** | | | |
| Quantitative Elements | Yes | There are potential impacts from groundwater ingress to excavations for non-intrusive crossings and HDD for landfall. | In |
| Chemical Elements | Yes | There are potential impacts from groundwater ingress to excavations for non-intrusive crossings and HDD for landfall. | In |

## 10.4 Desk Study

### *10.4.1. General Characteristics*

**Topography and Land Use**

54. Generally, the topography for the entire Study Area is relatively subdued, with elevations typically ranging from c.3 mAOD at the coastline to c.75 mAOD near Kilpaison Burrows. Much of the Study Area is characterised by undulating terrain that ranges from c.30 mAOD to 65 mAOD.

55. The landcover across the Study Area is dominated by arable land, with approximately 51.7% coverage, this is followed by improved grassland at 24.7% coverage, and supralittoral sediment at 14.9% coverage. Notable landcover is neutral grassland (3.1%), heather grassland (2%), suburban (1.1%), supralittoral rock (0.8%), broadleaved woodland (0.7%), littoral sediment (0.7%), urban (0.2%), and fen, marsh, and swamp (0.1%).

### *10.4.2. Geology and Soils*

56. No superficial deposits are recorded for much of the Study Area. However, at the west coast (Freshwater West) there is Marine Beach Deposits (sand) and Blown Sand. Alluvium (clay, silt, sand, and gravel) deposits are present at Pembroke Power Station and along various.

57. The BGS Geoindex indicates that the underlying bedrock at landfall comprises outcropping Silurian Ludlow Rocks consisting of Sandstone, and Ordovician Aber Mawr Shale formation consisting of Mudstone. (BGS, 2020). Immediately to the north, the Onshore Development Area is underlain by the Milford Haven Group of calcareous marls and sandstone. Then, the Onshore Project Boundary and Study Area consists of a series of thin bands of outcropping Ridgeway Conglomerate Formation, Skrinkle Sandstone Formation, the Avon Group consisting of limestone and mudstone, Black Rock Subgroup and Gully Oolite Formation consisting of limestone. Further to the east, around Pembroke, the Pembrokeshire Limestone Formation is present although is not within the Study Area.

58. The Milford Haven Group, consisting of calcareous marls and sandstone, forms the centre of the structural fold, before the sequence is repeated along the southern limb of the fold and southern part of the peninsula; however the Carboniferous Black Rock Subgroup and Gully Oolite Formation are absent in the sequence and replaced by the younger Pembrokeshire Limestone Formation (BGS, 2024).

59. Soil composition indicates that the natural, undisturbed soils in the Study Area should be generally a mix of freely draining slightly acid loamy soils and freely draining slightly acid but base-rich soils. South of the B4320 Angle Road, there are two thin bands extending into the Study Area consisting of loamy and clayey floodplain soils with naturally high groundwater and slowly permeable seasonally wet acid loamy and clayey soils. There are sand dune soils at the landfall location, to the northeast of Freshwater West (Cranfield University, 2024).

**Hydrology**

60. There are no National River Flow Archive (NRFA) river monitoring stations located within the Study Area (NRFA, 2024).

61. There is not a Met Office monitoring location within the Study Area or within any of the waterbody catchments. The closest Met Office monitoring location is approximately 4 km north of the Study Area at Milford Haven Conservancy Board. For the climate period of 1991-2020, the monitoring station has an average annual maximum temperature of 13.72 °C, with the warmest months June, July, August and September and the coolest December, January, and February, as typical of a northern hemisphere temperate climate. Total annual rainfall for

the climate period of 1991-2022 is 1080.87 mm, which is below but close the UK average of 1162.93 mm (Met Office, 2024).

**Historical Change**

62. Analysis of historic mapping from the late 19th century shows that there have been only minor adjustments to channel planform of WFD water bodies and watercourses over the past century (NLS, 2024). However, this is thought to be a result of significant modification prior to the advent of available mapping rather than a reflection of a natural and unmodified area as the watercourses in question are clearly straightened, and artificial in places.

### *10.4.3. WFD Status*

**Surface Water Bodies**

63. A small area of the Study Area zone of influence overlaps a small part of one WFD river surface water body, and further details regarding the WFD classifications of the screened in water bodies are given in **Table** 10C-4 (NRW, 2024). There are also several tributaries of this water body present within the Study Area; these are predominantly unnamed agricultural ditches and drains that drain through Castlemartin Corse to Pembrokeshire South.

*Table 10C-4 Summary of the WFD status (cycle 3 data) of the screened -in WFD river surface water body.*

| WFD parameter | Status / summary |
|---|---|
| Water Body ID | GB110061025000 |
| Water Body Name | Castlemartin Corse - headwaters to tidal limit |
| Water Body Type | River |
| Water Body Area ($m^2$) | 47330623 |
| Water Body Length (m) | 51012 |
| Hydromorphological Designation | Heavily Modified |
| Hydrological Designation | High |
| Overall Ecological Status | Moderate |
| Current Overall Status | Moderate |
| Biological Quality Elements | Good |
| Chemical | High |

**Coastal Water Bodies**

64. The Study Area falls within two WFD coastal water body catchments and one of these is screened in. Further details regarding the WFD classifications of the screened in water body are given in **Table** 10C-5**.**

*Table 10C-5 Summary of the WFD status (cycle 3 data) of the screened -in WFD coastal water body.*

| WFD parameter | Status / summary |
|---|---|
| Water Body ID | GB611008590003 |
| Water Body Name | Pembrokeshire South |
| Water Body Type | Coastal |
| Water Body Area ($m^2$) | 1076827401 |
| Hydromorphological Designation | Natural |
| Current Overall Status | Good |
| Overall Ecological Status | Good |
| Chemical Status | High |
| Biological Quality Elements | Good |
| Morphology | High |

| WFD parameter | Status / summary |
|---|---|
| General Ecology | High |
| Dissolved Oxygen | High |
| Dissolved Inorganic Nitrogen | High |

**Groundwater Bodies**

65. The proposed Project is underlain by one groundwater body which is screened in. A summary of the WFD status of the water body is given in **Table** 10C-6 (NRW, 2024).

*Table 10C-6 Summary of the WFD status (cycle 3 data) of the screened -in WFD groundwater body.*

| WFD parameter | Status / summary |
|---|---|
| Water Body ID | GB41002G206000 |
| Water Body Name | Pembrokeshire Carboniferous Limestone |
| Water Body Type | Groundwater |
| Water Body Area ($m^2$) | 873128313 |
| Hydrological Designation | Natural |
| Overall Status | Good |
| Quantitative | Moderate |
| Quantitative Status Elements | Good |
| Quantitative GWDTEs test | Good |
| Chemical | Good |
| Chemical GWDTEs test | Good |
| Chemical Dependent Surface Water Body Status | Good |

*10.4.4. Baseline Characteristics Against WFD Quality Elements*

**Biological Quality Elements**

66. Data on biological quality elements was requested from NRW; data on macrophytes and macroinvertebrates was provided from 2018.

*Macroinvertebrates*

67. Macroinvertebrate sampling was undertaken for Castlemartin Corse - headwaters to tidal limit river WFD water body in May and October 2018, at NGR SR 91190 99430 via 3-minute active kick sampling and 1 minute hand search. In May 2018, 44 species were recorded (of which 30 were BWMP scoring taxa) with estimated number of live species ranging from 1 to 4200. The most abundant species recorded are listed below with their respective counts:

- Mud Snail (*Potamopyrgus antipodarum*) – 4200;
- Pill clams (*Pisidium*) – 412;
- Freshwater shrimp (*Gammarus pulex/fossarum* agg.) – 128;
- Flatworm (*Polycelis felina*) – 67;
- Pond Slater (*Asellus (Asellus) aquaticus*) – 61; and
- Freshwater Snail (*Physella acuta*) – 42.

68. Overall, the Biological Monitoring Working Party (BMWP) Score for May 2018 was 168 and the BWMP Average Score Per Taxon (ASPT) Score for May 2018 was 5.6, indicating excellent water quality.

69. In October 2018, fewer species were recorded; 35, of which 20 were BWMP-scoring taxa. The estimated number of live species ranged from 1 to 1530, a decrease since May 2018. The most abundant species recorded are listed below with their respective counts:

- Chironomid Midge (*Tanypodinae*) – 6;
- Chornomid Midge (*Tanytarsini*) – 6;
- Riffle Beetle (*Elmis aenea*) – 9;
- Gammarids (*Gammaridae*) -14;
- Freshwater Shrimp (*Gammarus pulex/fossarum* agg.) – 23; and
- Mud Snail (*Potamopyrgus antipodarum*) – 1530.

70. Overall, the BWMP for October 2018 was 79, and the BWMP ASPT Score for October 2018 was 3.95, indicating a decrease in water quality from May 2018, however a generally neutral water quality (neither grossly polluted nor excellent).

*Macrophytes*

71. A Macrophyte survey was undertaken in June 2018, for Castlemartin Corse - headwaters to tidal limit river WFD Water body at NGR SR 91190 99430. The standard WFD compliant method for macrophyte sampling was used (WFD UK Tag, 2014), and the following species were identified:

- Yellow flag iris (*Iris pseudacorus*);
- Exotic bur-reed (*Sparganium erectum*);
- Lesser pond sedge (*Carex acutiformis*);
- Common reed (*Phragmites australis*);
- Reed canarygrass (*Phalaris arundinacea*);
- Hemlock water-dropwort (*Oenanthe crocata*);
- Marshpepper knotweed (*Persicaria hydropiper*);
- Green algae (*Zygnematalean*); and
- Giant horsetail (*Equisetum telmateia*).

72. Further details are available in ES Chapter 10: Terrestrial Water Environment.

**Physico-Chemical Quality Elements**

73. There is a limited number of freshwater sampling locations available on the NRW Water Quality Archive. The following stations have been identified within the Study Area and are both situated within the Castlemartin Corse - headwaters to tidal limit water body (GB110061025000):

- Castlemartin Corse River (Station S83627), Status: Closed.
- Freshwater West Stream at B4319 (Station S86237), Status: Open

74. Outside of the Study Area, there are no freshwater sampling locations upstream of Castlemartin Corse, or on any of the other identified surface water features (Welsh Government, 2023).

75. **Table** 10C-7 shows the averages of the latest available data for the two freshwater sampling locations within the Study Area.

*Table 10C-7 Summary of physico-chemical parameters of two stations within the Study Area.*

| Station Name and ID | NGR | Parameter | Average | Sample Date Range | |
|---|---|---|---|---|---|
| Castlemartin Corse River - S83627 | SR 90000 99800 | pH | 7.52 | 2002 – 2004 | High |
| | | Calcium | 96.74 mg/l | | N/A |
| | | Ammoniacal Nitrogen as N | 0.155 mg/l | | N/A |
| | | Nitrite as N | 0.037 mg/l | | N/A |
| | | Chloride | 125.4 mg/l | | N/A |
| | | Phosphate | 0.087 mg/l | | Good |
| Freshwater West Stream at B4319 – S86237 | SR 88545 99727 | pH | 7.64 | 2013-2015 | High |
| | | Oxygen, Dissolved, % Saturation | 71 % | | Bad |
| | | Orthophosphate, reactive as P | 0.53 mg/l | 2013-2014 | Good |
| | | Nitrite as N | 0.025 mg/l | 2013-2015 | N/A |
| | | Conductivity at 25°C | 824.45 | | N/A |
| | | Ammoniacal Nitrogen as N | 0.049 mg/l | | N/A |

**Hydromorphological Quality Elements**

76. A site walkover was conducted on the 21st to 24th of August 2023, in part to assess the hydromorphological condition and quality of watercourses set to be crossed by the Grid Connection Route. The findings of this are summarised in **Table** 10C-8 and watercourse locations are shown in **Volume 5: Figure 10.2: Surface Water Features and Their Attributes**. Further details are available in **Appendix 10B: Onshore Water Environment Site Survey Report**.

*Table 10C-8 Summary of the hydromorphological characteristic of watercourses.*

| WFD parameter | Status / summary |
|---|---|
| **Castlemartin Corse**<br>**NGR SR 91217 99442**<br>  | Castlemartin is within the 1 km Study Area but not the Onshore Development Area, therefore it will not directly interact with by the proposed Project. The Castlemartin Corse was observed at two points: the B4319 road crossing (NGR SR 88561 99742) and a public footpath crossing (NGR SR 91217 99442). The watercourse exhibited characteristics of a passive meandering typology. The bed material was not visible due to extensive vegetation cover, but it is assumed to primarily consist of finer sediment, given the low-energy nature of the watercourse and the adjacent agricultural land use. Both the channel and banks were overgrown with |

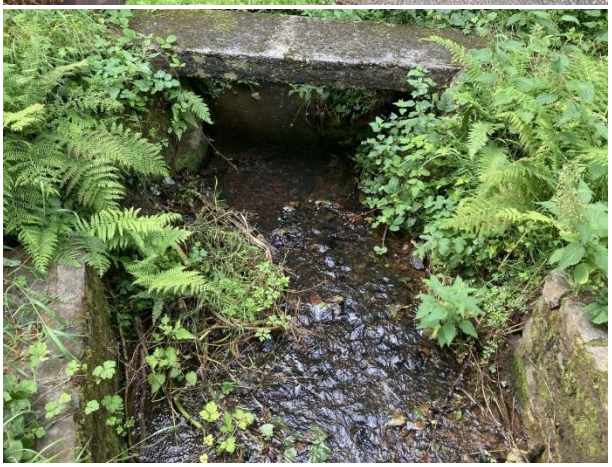
| WFD parameter | Status / summary |
|---|---|
|  <br>**NGR SR 88561 99742**<br>  <br>  | tall herbaceous plants, grasses, and scrub.<br>The channel is artificially straightened and laterally confined beneath the B4319. At this location, the concrete/stone banks reached a depth of approximately 3 m. |
| **T07c - NGR SM 89927 01010** | This watercourse is within the OnECC and might be crossed by OCT cabling. Access to this watercourse was restricted by very dense vegetation. |

| WFD parameter | Status / summary |
|---|---|
|  | |
| **WC05 - NGR SM 88667 01054**<br>  <br>  | This watercourse is within the OnECC and might be crossed by OCT cabling. The watercourse features an artificially straightened channel with a water depth of approximately 1 cm, indicating its likely ephemeral nature. The channel is situated between two agricultural fields used for livestock, which are likely sources of fine sediment and nutrient inputs. The channel exhibits steep banks covered in tall grasses. Even during extremely high flood events, it is improbable that the channel would overflow onto these fields, owing to the steep and deep configuration of the banks. |
| **T07b - NGR SM 90211 00976** | This watercourse is within the OnECC and might be crossed by OCT cabling. The watercourse was observed at a construction works crossing, where silt traps and straw bales were present in the watercourse surroundings. The channel bed and banks at the construction crossing appeared to be altered downstream of the culverted crossing due to the removal of vegetation and |

| WFD parameter | Status / summary |
|---|---|
|  <br>  | regraded banks. Further upstream and downstream, natural characteristics prevailed, with dense grass, herbs, scrubs, and the occasional tree present on both banks. After the first silt trap, the watercourse becomes highly vegetated, forming a grassy channel. It was not possible to observe the flow or water depth within this part of the channel due to access restrictions. |
| **T07a - NGR SM 90834 00753**<br>  | This watercourse is within the OnECC and might be crossed by OCT cabling. The watercourse is situated within a woodland that is bordered between two agricultural fields. The right bank exhibits a steep profile with depths of up to 2 m in certain areas, while the left bank is approximately 10 cm in height. Water depths vary throughout the observed section, ranging from 2 to 7 cm. The bed material primarily consists of fine sediment, owing to the low-energy nature of the watercourse and its proximity to agricultural land. Small woody material is present along the watercourse. It is expected that significant runoff from the right bank will contribute to the influx of fines and nutrients. Both the banks and floodplain are characterised by the presence of herbaceous plants, scrubs, and trees. |

| WFD parameter | Status / summary |
|---|---|
|  | |
| **WC07 – NGR SM 92314 00639**<br>  <br>  | This watercourse is within the 1 km Study Area but not the Onshore Development Area, therefore it will not directly interact with by the proposed Project. The agricultural ditch features an artificially straightened channel with an approximate width of 0.5 m and a water depth ranging from approximately 2 to 3 cm, indicating its likely ephemeral nature. Situated between two agricultural fields used for livestock, the ditch is likely subject to the ingress of fine sediment and nutrients. The bed substrate appeared to be silty in nature. The channel's banks were characterised by steep inclines and were vegetated with scrub, occasionally featuring trees on the left bank. Even during high flood events, it is improbable that the channel would overflow onto these fields, owing to the steep and deep configuration of the banks. |
| **WC14 – NGR SM 92342 00368** | This agricultural ditch is within the OnECC and might be crossed by OCT cabling. The agricultural ditch possesses an artificially straight channel with a width of approximately 0.5 m. It was predominantly dry but featured certain areas with a water depth ranging from 1 to 2 cm, indicative of its ephemeral nature. No visible flow was observed in the sections containing water. This |

| WFD parameter | Status / summary |
|---|---|
|  <br>  | channel is situated between two agricultural fields used for livestock, which likely contributes to the ingress of fine sediment and nutrients. The left bank was characterised by grasses and herbs, while the right bank was densely covered with scrub and occasional trees. |
| **Tributary of Goldborough Pill West – NGR SM 92679 01109**<br>  | This watercourse is within the OnECC and might be crossed by OCT cabling. The agricultural ditch possesses an artificially straight channel. It was predominantly dry but featured certain areas with a water depth ranging from 1 to 2 cm, indicative of its ephemeral nature. No visible flow was observed in the sections containing water. This channel is situated between two agricultural fields used for livestock, which likely contributes to the ingress of fine sediment and nutrients. An electric fence was present to stop livestock poaching. The left bank was characterised by grasses and scrub, while the right bank was densely covered with scrub and trees. The channel's banks were characterised by steep inclines and is approximately 1 m deep. Even during extremely high flood events, it is improbable that the channel would overflow onto these fields, owing to the |

| WFD parameter | Status / summary |
|---|---|
| | steep and deep configuration of the banks. |
| **Goldborough Pill**<br>**NGR SM 93382 01154**<br>  <br>  <br>  <br>**NRG SM 93858 01416** | This watercourse is within the 1 km Study Area but not the Onshore Development Area, therefore it will not directly interact with by the proposed Project. The Goldborough Pill was observed at two locations: the Goldborough Road crossing (NGR SM 93382 01154) and a public footpath crossing (NRG SM 93858 01416). Vegetation was highly dense, limiting access and visibility of the watercourse. Both banks were characterised by trees and scrub. From the visible portion of the watercourse, it is assumed to have a pool-riffle typology with a combination of run and riffle flows. The bed consisted of small gravels and fine sediment. At the road crossing, road runoff was present and likely contributes to a significant influx of fines and nutrients from both traffic and surrounding agricultural fields. |

| WFD parameter | Status / summary |
|---|---|
|  | |
| **T11a - NGR SM 93241 02160**<br>  <br>  | This watercourse is within the 1 km Study Area but not the Onshore Development Area, therefore it will not directly interact with by the proposed Project. The watercourse downstream of Greenlink construction site is situated within a wet woodland. There is a small leaky dam upstream of a culvert for the watercourse. The watercourse demonstrates riffles and pools, and the channel bed consists of gravels, pebbles, boulders. Shortly after the culvert, the watercourse enters large deep pond. The channel had the presence of woody debris and leaf litter. |

| WFD parameter | Status / summary |
| --- | --- |
|  | |

## 10.5 WFD Impact Assessment

### *10.5.1. Site Specific Assessment of the Project Against WFD Quality Elements*

77. Components of the proposed Project and potential associated impacts have been introduced along with mitigation measures in **Table** 10C-9**.** The purpose of this table is to introduce the key sources of potential impacts and associated mitigation; the compliance assessment follows which considers impacts on WFD quality elements of each water body.

78. There is a range of mitigation measures for the water environment within the proposed Project. Where relevant, these are discussed in the screening of the proposed Project's activities and components (**Table 10C-2**) and the impact assessment presented within **Table** 10C-9**.** Details can also be found in **Chapter 10: Terrestrial Water Environment**. Further details of the scheme parameters that are assessed are in **Table 10C-2.**

*Table 10C-9 Project components, potential impacts, and associated mitigation measures for proposed works to water bodies scoped into this assessment.*

| Proposed project component | Potential impacts | Mitigation measures |
|---|---|---|
| Landfall HDD – directional drilling through groundwater body. | Potential impacts from groundwater ingress to excavations. | **Construction**<br><br>The CEMP **Appendix 4A: Outline CEMP** will be followed which outlines measures to mitigate ingress. Water-based drilling fluids will be used. A site-specific Hydraulic Fracture Risk Assessment will be carried out, with site specific mitigation included appropriate to the local ground conditions. The ingress of any groundwater will be carefully managed through design of the send or receive pit, shoring method, and a pumping and treatment system. Excessive ingress of water would make the pit unsafe and thus it is important that ingress is minimised and that a suitable system of managing that water is implemented. The drainage strategy **Appendix 10A: Drainage Management Strategy** produced post-consent will be followed and set out the approach to dispersing and discharging water to ensure no negative effects on nutrient pathways to groundwater during construction.<br><br>**Operation**<br><br>An OEMP produced post-consent will be followed and will describe measures which will be taken to prevent the groundwater ingress during maintenance of the infrastructure if specific maintenance is required. |

| Proposed project component | Potential impacts | Mitigation measures |
|---|---|---|
| | | **Decommissioning**<br><br>An DEMP produced post-consent will be followed and will describe measures which will be taken to prevent the groundwater ingress.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact from Landfall HDD during the construction, operation, and decommissioning phases. |
| Onshore Cable: Non-intrusive HDD crossings – excavation of launch and receive pits to facilitate directional drilling beneath watercourse bed. | Non-intrusive HDD crossings have the potential to impact WC05, T05a, WC06, T07c, T07b, WC14, WC07, two tributaries of Goldborough Pill West, WC12 and T12a. The watercourses in question are mostly of low hydromorphological quality as they are mostly artificial, trapezoidal agricultural ditches. These are detailed in **Table** 10C-8 and **Volume 5: Figure 10.2: Surface Water Features and Their Attributes**.<br><br>Impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body.<br><br>Impacts to biological and physico-chemical quality elements from spillages of drill fluids or pollutants.<br><br>Potential impacts from groundwater ingress to excavations. | **Construction**<br><br>The CEMP **- Appendix 4A: Outline CEMP** will be followed which outlines measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse. Topsoil will be moved to the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area. Topsoil storage will be managed to maintain the nature of the soils and measures taken to prevent compaction, soil loss due to erosion, excessive weed growth, etc.<br><br>The CEMP will be followed which outlines measures to reduce the risk of spillages. Water-based drilling fluids will be used. A site-specific Hydraulic Fracture Risk Assessment will be carried out, with site specific mitigation included appropriate to the local ground conditions. The WMP will describe measures for implementation in the event of a 'break-out' under a watercourse to minimise the risk of pollution.<br><br>Launch and receive pits will be located at least 10 m from the edge of water/channel for normal flows to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>The drainage strategy **Appendix 10A: Drainage Management Strategy** |

| Proposed project component | Potential impacts | Mitigation measures |
|---|---|---|
| | | produced post-consent will be followed and set out the approach to dispersing and discharging water to ensure no negative effects on nutrient pathways during construction.<br><br>**Operation**<br><br>An OEMP developed post-consent will be followed will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse during removal and re-installation of sections of the Onshore Export Cable during maintenance of the Onshore Infrastructure if specific maintenance is required.<br><br>**Decommissioning**<br><br>An DEMP developed post-consent will be followed will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse during decommissioning.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact from non-intrusive HDD crossings during the construction and decommissioning phases. |
| Intrusive OTC crossings – short-term disturbance of watercourses during the construction phase. | Intrusive OTC crossings have the potential to impacts WC05, T05a, WC06, T07c, T07b, WC14, WC07, two tributaries of Goldborough Pill West, WC12 and T12a. The watercourses in question are mostly of low hydromorphological quality as they are mostly artificial, trapezoidal agricultural ditches. These are detailed in **Table** 10C-8 and **Volume 5: Figure 10.2: Surface Water Features and Their Attributes**. | **Construction**<br><br>Where possible OTC crossings will be avoided with preference for trenchless crossings. The CEMP **Appendix 4A: Outline CEMP** outlines that OTC will be carried out in dry weather at low-flow conditions, where possible. If flow is present, this will be flumed or culverted through the works to maintain flow downstream and maintain a dry working area.<br><br>The CEMP **- Appendix 4A: Outline CEMP** will be followed which will describe measures which will be taken to prevent the deposition of fine |

| Proposed project component | Potential impacts | Mitigation measures |
|---|---|---|
| | Localised but short-term loss of riparian habitat.<br><br>Short-term impediment to fish passage and ecological connectivity from impact to river continuity.<br><br>Potential removal of macrophytes and mortality of invertebrates.<br><br>Short-term adverse impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body, and chemical spillage risk.<br><br>Loss of morphological diversity; change in structure of riverbed. Impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body from the newly reinstated, bare earth banks. | sediment or other material in, and the pollution by sediment of, any existing watercourse. Topsoil will be moved to the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area. Topsoil storage will be managed to maintain the nature of the soils and measures taken to prevent compaction, soil loss due to erosion, excessive weed growth, etc. The WMP will also describe all other pollution prevention measures and proposed water quality monitoring.<br>A pre-works condition survey will be carried out to inform reinstatement of the channel. Reinstatement will return in-stream vegetation from its temporary locations, and the banks of the watercourse replanted and reseeded in accordance with the reinstatement plans contained within the Landscape and Ecological Management Plan (LEMP). The area of bank reinstatement will be covered with hessian to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back.<br><br>**Decommissioning**<br><br>An DEMP developed post-consent will be followed will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse during decommissioning.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact from OTC crossings during the construction, operation, and decommissioning phases. |

| Proposed project component | Potential impacts | Mitigation measures |
|---|---|---|
| Site access and access tracks –disturbance of watercourses through culverting. | Localised loss of riparian habitat.<br><br>Impediment to fish passage and ecological connectivity from impact to river continuity.<br><br>Potential removal of macrophytes and mortality of invertebrates.<br><br>Impacts to physico-chemical quality elements from potential increase in fine sediment load and organic matter delivered to water body, and chemical spillage risk.<br><br>Loss of morphological diversity; change in structure of riverbed. | **Construction**<br><br>The CEMP **Appendix 4A: Outline CEMP** will be followed which will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse.<br><br>Culverts will maintain connectivity along watercourses for aquatic species and riparian mammals, where present. Mammal ledges with sufficient room will be utilised.<br><br>Perched inverts that create a drop from the structure to the downstream bed level will be avoided.<br><br>Culverts will ensure capacity for the peak flow rate of the watercourse, preventing any impact on flow.<br><br>The base of a culvert will be buried at least 0.3 m below bed level to limit the impact on aquatic species migration and sediment transport. The natural bed within the culvert will be maintained.<br><br>The culvert will cross the channel perpendicularly and be of an appropriate width to contain the entire channel width.<br><br>The culvert will be of an appropriate height to allow for environmental mitigation and flood flows.<br><br>A pre-works condition survey will be carried out to inform reinstatement of the channel. Length-for-length equivalent watercourse enhancements are required for each new culvert extension to ensure compliance with WFD objectives. Reinstatement will bring the watercourse as close as possible to its original state once the works are completed. This includes vegetation planting and replacement of bed and bank features. |

| Proposed project component | Potential impacts | Mitigation measures |
|---|---|---|
| | | The temporary culverts for access will be removed as soon as possible after the relevant works are completed.<br><br>Reinstatement measures will be in accordance with the LEMP produced post-consent.<br><br>**Decommissioning**<br><br>An DEMP developed post-consent will be followed will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse during decommissioning.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact from non-intrusive HDD crossings during the construction, operation, and decommissioning phases. |

79. Site-specific impacts of the proposed Project on the biological, physico-chemical and hydromorphological quality elements of the screened-in water bodies are provided in **Table 10C-10**. The impact assessment on the groundwater bodies is provided in

80. **Table** 10C-11 and only applies to non-intrusive crossings as all other activities have been screened out for ground water. The mitigation referred to in these tables forms the basis of this assessment, and the outcomes of the assessment are subject to the appropriate implementation of the mitigation measures provided.

*Table 10C-10 Impact assessment on the WFD quality elements of the surface water bodies screened-in for this assessment.*

| WFD quality element | Potential impact | Justification |
|---|---|---|
| **Biological Quality Elements** | | |
| Fish | **Onshore Export Cables and watercourse crossings for site access**<br><br>Potential for loss of biological continuity resulting in | The CEMP (**Appendix 4A: Outline CEMP)** and WMP will be followed for the installation of onshore cables and watercourse crossings for site access. They outline measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. This will include storage of excavated material at the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area. The CEMP and WMP will |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | interference with fish population movements and blocking the exchange of individuals among populations, reducing gene flow, and disrupting the ability of "source" populations to support declining populations nearby, resulting from short-term blockages in longitudinal connectivity from the intrusive crossing method and potentially from watercourse crossings for access.<br><br>Possible harm to fish from spillages or pollution from fine sediment, drilling fluids (water based) and chemicals used during construction (e.g. fuel and hydraulic oil), and through disturbance when intrusive techniques and watercourse crossings for site access are used. | outline measures to reduce the risk of spillages. Water-based drilling fluids will be used.<br><br>Where possible, it is proposed to carry out the works for intrusive crossings and watercourse crossing for site access in relatively dry weather, wherein it is expected that the smaller water bodies proposed to be crossed by intrusive methods may be expected to be dry, and it is unlikely fish will be present. If flow is present within the watercourse, this will be over-pumped which will reduce impact to flow dynamics. Fish surveys and rescues, if required at the time of construction, will be carried out prior to works; this will be detailed in the CEMP.<br><br>Launch and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (edge of normal flow) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>For culverts, natural bed level and gradient will be maintained. Capacity will be designed to ensure flow velocities are not impacted. All of these will mean that fish access is not impeded. Impacts to biological continuity are not considered to be significant given the localised, small scale, and short-term nature of the works, and the small nature of most of the water body at the crossing location that is unlikely to provide preferable habitat for fish.<br><br>With the proposed mitigation in place, it is not expected that there would be an impact to this quality element. |
| Invertebrates | **Onshore Export Cables and watercourse crossings for site access**<br><br>Harm or direct mortality to invertebrates through excavation of the channel bed and bank. | The CEMP **(Appendix 4A: Outline CEMP)** and WMP will be followed for the installation of onshore cables and watercourse crossings for site access. They will outline measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. This will include storage of excavated material at the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area. The CEMP and WMP will outline measures to reduce the risk of spillages. Water-based drilling fluids will be used. |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | Possible harm to invertebrates from spillages or pollution from fine sediment, drilling fluids (water based) and chemicals used during construction (e.g. fuel and hydraulic oil), and through disturbance when intrusive techniques and watercourse crossings for site access are used. | Launch and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (edge of normal flow) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>Impacts to invertebrates from the Onshore cables are not considered to be a significant given the localised, small scale, and short-term nature of the works. With the proposed mitigation in place, it is not expected that there would be an impact to this quality element. |
| Macrophytes, Diatoms and Phytobenthos | **Onshore Export Cables and watercourse crossings for site access**<br><br>Possible smothering of macrophytes, diatoms and phytobenthos from excessive fine sediment from construction runoff or drilling fluids, or toxic effects from chemical pollutants that may be spilt Proposed Development site, and through disturbance when intrusive techniques are used and at watercourse crossings for site access.<br><br>Possible removal of macrophytes and phytobenthos from excavation of the channel bed and bank. | The CEMP **(Appendix 4A: Outline CEMP)** and WMP will be followed for the installation of onshore cables and watercourse crossings for site access. They outline measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. This will include storage of excavated material at the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area. The CEMP and WMP will outline measures to reduce the risk of spillages. Water-based drilling fluids will be used.<br><br>Launch and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (edge of normal flow) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>Impacts to macrophytes, diatoms and phytobenthos are not considered to be significant given the localised, small scale, and temporary, short-term nature of the works and the artificial nature of the majority of watercourses subject to this activity. With the proposed mitigation in place, it is not expected that there would be an impact to this quality element. |
| **Physico-chemical Quality Elements** | | |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| Oxygenation conditions | **Onshore Export Cables and watercourse crossings for site access**<br><br>Possible reduction in levels of dissolved oxygen from excavation activities for launch and receive pits, and intrusive crossing excavation activities, and watercourse crossings for site access which may create a source and pathway for the delivery of fine sediments and organic material to the water body. | The CEMP **(Appendix 4A: Outline CEMP)** and WMP will be followed for the installation of onshore cables and watercourse crossings for site access. They outline measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. This will include storage of excavated material at the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area.<br><br>Intrusive crossings and watercourse crossings for site access will be carried out in dry weather when flow is at its lowest. Reinstated banks will be covered with biodegradable matting and seeded as soon as practicable to reduce risk of bank erosion and delivery of fine sediment and organic material to water bodies.<br><br>Launch and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (edge of normal flow) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>With the proposed mitigation in place, it is not expected that there would not be a significant impact to oxygenation conditions. |
| Nutrient conditions including Phosphorous and Ammonia | **Onshore Export Cables and watercourse crossings for site access**<br><br>Possible increase in nutrient levels from excavation activities for launch and receive pits, and intrusive crossing excavation activities, and watercourse crossings for site access which may create a source and pathway for delivery of nutrients to the water body. | The CEMP (**Appendix 4A: Outline CEMP)** and WMP will be followed for the installation of onshore cables and watercourse crossings for site access. They outline measures which will be taken to prevent the ingress of fine sediment or other material to, and the pollution by sediment of, any existing watercourse. This will include storage of excavated material at the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area.<br><br>Intrusive crossings and watercourse crossings for site access will be carried out in dry weather when flow is at its lowest, where possible. Reinstated banks will be covered with biodegradable matting and seeded as soon as practicable to reduce risk of bank erosion and delivery of fine sediment and organic material to water bodies.<br><br>Launch and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (edge of normal flow) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>With the proposed mitigation in place, it is expected that there would not be a significant impact to nutrient conditions. |
| pH Levels | **Onshore Export Cables and watercourse** | The CEMP **(Appendix 4A: Outline CEMP)** and WMP will be followed for the installation of onshore cables and watercourse |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | **crossings for site access**<br><br>Possible change in pH levels from excavation activities for launch and receive pits, and intrusive crossing excavation activities, and watercourse crossings for site access which may create a source and pathway for delivery of pollutants to the water body. | crossings for site access. They outline measures which will be taken to prevent the ingress of chemicals, fine sediment, or other material to, and the pollution by sediment of, any existing watercourse. This will include storage of excavated material at the edge of the working area and heaped such that the spoil heap does not encroach outside the fenced area.<br><br>Intrusive crossings and watercourse crossings for site access will be carried out in dry weather when flow is at its lowest, where possible. Reinstated banks will be covered with biodegradable matting and seeded as soon as practicable to reduce risk of bank erosion and delivery of fine sediment and organic material to water bodies.<br><br>Launch and receive pits for non-intrusive crossings will be located at least 10 m away from the watercourse (edge of normal flow) to reduce the risk of pathways being created for runoff or pollutants to enter water bodies.<br><br>With the proposed mitigation in place, it is expected that there would not be a significant impact to pH levels. |
| **Hydromorphological Quality Elements** | | |
| River continuity | **Onshore Cables and watercourse crossings for site access**<br><br>There will be some unavoidable short-term interruption to river continuity during the construction phase from intrusive crossings and watercourse crossings for site access. The watercourses in question are mostly of low hydromorphological quality. | Intrusive crossings will be carried out in dry weather when flow is at its lowest, where possible. At intrusive crossings, flow will be maintained if required by flumes. Watercourse crossings for site access with flume pipes will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions. The flume bed level will be set below the existing bed level to allow for the natural excavated bed to be placed over the flume base. The channel gradient will not be disrupted; there will be a smooth transition through the channel bed to the flume bed.<br><br>Before installation of the onshore cables by the intrusive crossing method, a pre-works condition survey will be carried out to inform reinstatement of the channel. Reinstatement will aim to provide an improved channel form.<br><br>With the proposed mitigation in place, it is not expected that there would not be a significant impact to river continuity given the short-term nature and small scale of the barrier and the ephemeral or artificial nature of the majority of water bodies subject to this activity. |
| River depth and width variation | **Onshore Cables and watercourse crossings for site access** | The CEMP **(Appendix 4A: Outline CEMP)** will be followed and a pre-works condition survey will be carried out to inform reinstatement of the channel for cables crossing and watercourse crossings for site access. The flume bed level will be set below the existing bed level to allow for the natural |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | There will be some unavoidable short-term disturbance during the construction phase of cable crossings and watercourse crossings for site access. Flume pipes access cables will present a short-term, uniform, unchangeable section of channel. The watercourses in question are mostly of low hydromorphological quality. | excavated bed to be placed over the flume base. The channel gradient will not be disrupted; there will be a smooth transition through the channel bed to the flume bed.<br><br>Before installation of the onshore cables by the intrusive crossing method, a pre-works condition survey will be carried out to inform reinstatement of the channel.<br><br>Reinstatement will aim to provide an improved channel form. Bed material, including any gravels and cobbles will be retained on site for reinstatement to the watercourse. Material will be cleaned of fine sediment where appropriate prior to reinstatement.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact to river depth and width variation. |
| Structure and substrate of the river bed | **Onshore Export Cables and watercourse crossings for site access**<br><br>There will be some unavoidable short-term disturbance during the construction phase.<br><br>There are possible changes to bed substrate upon reinstatement of the channel from trenched crossings.<br><br>The watercourses in question are mostly of low hydromorphological quality. | The CEMP (**Appendix 4A: Outline CEMP)** will be followed and before installation of the cable by the trenched crossing method, a pre-works condition survey will be carried out to inform reinstatement of the channel. Reinstatement would aim to provide an improved river bed. Bed material, including any gravels will be retained on site for reinstatement to the watercourse. Material will be cleaned of fine sediment where appropriate prior to reinstatement. Enhancement works will be carried out between 5 and 10 m upstream and downstream of the trenched crossing to ensure the reinstated improved structure and substrate of the river bed merges into the existing structure and substrate of the river bed.<br><br>For sensitive water crossings, the working width will be reduced to 10 m.<br><br>The OEMP and DEMP will be followed will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse during operation and decommissioning.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact to the structure and substrate of the river bed. |
| Structure of the riparian zone | **Cable Crossings and Watercourse crossings for Site access**<br><br>There will be some unavoidable short-term disturbance | **Appendix 4A: Outline CEMP** will be followed for the installation of cables and watercourse crossings for Site access. Before installation of the cable and watercourse crossings for Site access, a pre-works condition survey will be carried out to inform reinstatement of the riparian zone. Reinstatement would aim to provide an improved the riparian zone form. The |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | during the construction phase.<br><br>Loss of riparian habitat at the location of the excavation for the cable. Crossings would present a local removal and disconnection of the channel from the riparian zone. | area of bank reinstatement will be covered with hessian to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back. Enhancement works will be carried out between 5 and 10 m upstream and downstream of the trenched crossing and watercourse crossings for Site access to ensure the reinstated riparian zone merges into the existing riparian zone.<br><br>Launch and receive pits for trenchless crossings will be located at least 10 m away from the watercourse (edge of normal flow), which will help to minimise disturbance of the bank and riparian vegetation. For sensitive water crossings, the Working Width will be reduced to 10 m.<br><br>The OEMP and DEMP, which will be produced post consent, will be followed which will describe measures which will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse during operation and decommissioning.<br><br>With the proposed mitigation in place, it is not expected that there would be a significant impact to the structure of the riparian zone. |

*Table 10C-11 Impact assessment on the WFD quality elements of the groundwater bodies screened-in for this assessment.*

| WFD quality element | Potential impact | Justification |
|---|---|---|
| **Quantitative Status Elements** | | |
| Quantitative Saline Intrusion | No anticipated impact | No mitigation required |
| Quantitative Water Balance | Potential for groundwater ingress to excavations to facilitate the Onshore Export Cable crossing and Landfall HDD.<br><br>Potential for uncontrolled water resource loss, due to unexpected artesian flow.<br><br>Onshore Export Cable launch and receive pits will be dug where it is likely groundwater will be similar to river water level, so relatively shallow. The level of ingress would depend | Excavations for watercourse crossings and programmed so that works are completed in the most efficient and timely manner possible. This will be detailed in the CEMP **(Appendix 4A: Outline CEMP)**.<br><br>An appropriate intrusive ground investigation of selected areas of the Onshore Development Area will be undertaken in accordance with all relevant guidance and legislation including BS 10175:2011, Environment Agency/DEFRA Land Contamination Risk Management (LCRM) series of reports. |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | upon the depth of the pit, and very local geological conditions.<br><br>The combined groundwater vulnerability is classified as High for the whole proposed Project and 250 m Study Area, except for an area of limited extent within the western Onshore Development Area north of Angle Road. The High vulnerability classification applies to the Secondary superficial aquifers, Principal bedrock aquifers and Secondary bedrock aquifers. Further detail can be found in **Chapter 11: Geology and Hydrogeology**. | If areas of the Onshore Development Area are shown to pose a risk, if feasible, infrastructure would be moved to a different location. However, if it is not possible to move the infrastructure in contact with the ground, remedial measures would be implemented.<br><br>Installation of the cable and Landfall will be short term, temporary, transient, and phased.<br><br>Sides of excavations will be shored, the nature of which will depend on ground conditions, size, depth, and purpose of excavation, which will further minimise groundwater ingress.<br><br>Given the proposed mitigation, any impacts to the quantitative water balance would be very localised and temporary, and would not be considered significant at the water body scale. |
| Quantitative GWDTEs test | No GWDTEs are known to be present in the Study Area. | No mitigation required. |
| Quantitative Dependent Surface Water Body Status | Potential for groundwater ingress to excavations to facilitate the Onshore Export Cable crossing and Landfall HDD.<br><br>Onshore Export Cable launch and receive pits will be dug where it is likely groundwater will be similar to river water level, so relatively shallow. The level of ingress would depend upon the depth of the pit, and very local geological conditions.<br><br>The combined groundwater vulnerability is classified as High for the whole proposed Project and 250 m Study Area, except for an area of limited extent within the western Onshore Development Area north of Angle Road. The High vulnerability classification applies to the Secondary superficial aquifers, Principal bedrock aquifers and Secondary bedrock aquifers. Further detail can be found in **Chapter 11: Geology and Hydrogeology**. | Excavations for watercourse crossings and programmed so that works are completed in the most efficient and timely manner possible. This will be detailed in the CEMP (**Appendix 4A: Outline CEMP)**.<br><br>Installation of the cables and Landfall will be short term, temporary, transient and phased.<br><br>The detailed design for HDD will include depth and profile and consider methods to reduce the risk of groundwater breakout during drilling.<br><br>If required, water could be returned to the watercourse following treatment to maintain flows.<br><br>Groundwater ingress to Onshore Export Cable and Landfall excavations would be very localised, and given the proposed mitigation, any impacts to the quantitative dependent surface water body status would not be considered significant. |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| Chemical Status Elements | | |
| Chemical Drinking Water Protected Area | Excavations for installation of Onshore Export Cable crossings may introduce pollutants to groundwater from equipment leaks/spills.<br><br>Potential for groundwater pollution from disturbing contaminated ground (mobilising contaminants). | The CEMP (**Appendix 4A: Outline CEMP)** will be followed which outline measures which will be taken to prevent leaks and spills and clean up procedures in case of leaks/spills. It will also outline measures which will be taken to prevent the ingress of fine sediment or other material to groundwater.<br><br>Additional assessment for contaminated spoil may be required. Depending on the findings of such an assessment, additional measures to reduce the potential risk to groundwater (e.g. segregation of materials and validation testing), over and above the standard 'best practice' measures included in **Appendix 4A: Outline CEMP** for the rest of the proposed Project may be required.<br><br>Given the proposed mitigation, the risk of impacts is low, and would be temporary and localised, therefore there is not expected to be an impact to the Chemical Drinking Water Protected Area. |
| General Chemical test | Excavations for installation of Onshore Export Cable crossings and Landfall HDD may introduce pollutants to groundwater from equipment leaks/spills and mobilising contaminants through disturbing contaminated ground.<br><br>Potential for groundwater ingress to excavations to facilitate the cable crossing and Landfall HDD.<br><br>Onshore Export Cable launch and receive pits will be dug where it is likely groundwater will be similar to river water level, so relatively shallow. The level of ingress would depend upon the depth of the pit, and very local geological conditions.<br><br>The combined groundwater vulnerability is classified as High for the whole proposed Project and 250 m Study Area, except for an area of | The CEMP (**Appendix 4A: Outline CEMP)** will be followed which outline measures which will be taken to prevent leaks and spills and clean up procedures in case of leaks/spills. It will also outline measures which will be taken to prevent the ingress of fine sediment or other material to groundwater.<br><br>Additional assessment for contaminated spoil may be required. Depending on the findings of such an assessment, additional measures to reduce the potential risk to groundwater (e.g. segregation of materials and validation testing), over and above the standard 'best practice' measures included in the CEMP for the rest of the proposed Project may be required.<br><br>Installation of the Onshore Export Cable and Landfall HDD will be transient and phased.<br><br>The detailed design for HDD will include depth and profile and a site-specific Hydraulic Fracture Risk Assessment will be carried out, |

| WFD quality element | Potential impact | Justification |
|---|---|---|
| | limited extent within the western Onshore Development Area north of Angle Road. The High vulnerability classification applies to the Secondary superficial aquifers, Principal bedrock aquifers and Secondary bedrock aquifers. Further detail can be found in **Chapter 11: Geology and Hydrogeology**. | with site specific mitigation included appropriate to the local ground conditions.<br>Given the proposed mitigation, impacts to this chemical status element would be very localised and short-term, and would not be considered significant at the water body scale. |
| Chemical GWDTEs test | No GWDTEs are known to be present in the Study Area. | No mitigation required. |
| Chemical Dependent Surface Water Body Status | Excavations for installation of Onshore Export Cable crossings and Landfall HDD may introduce pollutants to groundwater from equipment leaks/spills.<br>Potential for groundwater ingress to excavations to facilitate the Onshore Export Cable crossing and Landfall HDD.<br>Onshore Export Cable launch and receive pits will be dug where it is likely groundwater will be similar to river water level, so relatively shallow. The level of ingress would depend upon the depth of the pit, and very local geological conditions.<br>The combined groundwater vulnerability is classified as High for the whole proposed Project and 250 m Study Area, except for an area of limited extent within the western Onshore Development Area north of Angle Road. The High vulnerability classification applies to the Secondary superficial aquifers, Principal bedrock aquifers and Secondary bedrock aquifers. Further detail can be found in **Chapter 11: Geology and Hydrogeology**. | The CEMP (**Appendix 4A: Outline CEMP)** will be followed which outline measures which will be taken to prevent leaks and spills and clean up procedures in case of leaks/spills.<br>Given the mitigation will follow best practice, and any impacts to the water quality of groundwater would be short-term and minimal, no anticipated impacts to the chemical dependent surface water body status are expected. |
| Chemical Saline Intrusion | No anticipated impact. | No mitigation required. |

## 10.6 Construction and Operation Impacts

### *10.6.1. Potential Construction Phase Impacts*

81. There are a number of general adverse impacts to the water environment which may occur from construction activity and which could impact on WFD onjectives, including:

- Pollution of surface or groundwater due to deposition or spillage of soils, sediment, oils, fuels, or other construction chemicals, or through uncontrolled site run-off; and
- Temporary, short-term impacts on sediment dynamics and hydromorphology within watercourses and waterbodies, where new crossings are required due to construction works to lay cable and watercourse crossings for site access.

82. Further details are provided in Chapter 10: Terrestrial Water Environment.

### *10.6.2. Construction Mitigation*

83. The construction will take place in accordance with a CEMP. The CEMP details the measures that would be undertaken during construction to mitigate the temporary effects on the water environment. **Appendix 4A: Outline CEMP** has been developed and will be finalised in advance of construction works by the Principal Contractor.

84. The CEMP will comprise good practice methods that are established and effective measures to which the proposed Project will be committed – the CEMP will need to be substantially in accordance with the Outline CEMP. The measures within the document will focus on managing the risk of pollution to surface waters and the groundwater environment.

85. The CEMP will be supported by a WMP that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction.

86. Good Practice Guidance is summarised in **Chapter 10: Terrestrial Water Environment**, which includes information on:

- Permissions and Consents;
- Management of Construction Site Runoff;
- Management of Construction Site Spillage Risk; and
- Management of Flood Risks.

87. It is anticipated that all WFD construction risks could be adequately mitigated with appropriate planning and management.

### *10.6.3. Potential Operation Phase Impacts*

88. There are a number of general adverse impacts to the water environment which may occur from operation activity, including:

- Pollution of surface water and groundwater (and any designated ecology sites that are water dependent) due to runoff derived from impermeable surfaces and deposition or spillage of soils, sediments, oils, fuels, or other chemicals during maintenance activities.

89. Further details are provided in Chapter 10: Terrestrial Water Environment.

### *10.6.4. Operational Mitigation*

90. The operation will take place in accordance with the OEMP produced post-consent and the Drainage Strategy (**Appendix 10A - Annex 10A: Drainage Management Strategy**). The aim of

the OEMP is to provide a clear and consistent approach to the control of operational and maintenance activities within the Proposed Development Site.

91. The key elements of the OEMP include:

- An overview of the proposed Project and associated operation programme;
- Prior assessment of environmental impacts (through the EIA);
- Reduction of potential adverse impacts through design and other mitigation measures;
- Monitoring of effectiveness of mitigation measures;
- Corrective action procedure; and
- Links to other complementary plans and procedures.

92. The OEMP identifies how commitments made in the EIA will be translated into actions during proposed Project operation and includes a process from implementing the actions through allocation of key roles and responsibilities.

93. A surface water Drainage Strategy (**Appendix 10A – Annex 10A: Drainage Management Strategy**) will assess any increase in surface water runoff in accordance with sustainable drainage principles in order to not increase flood risk and ensure no deterioration of the water environment from pollution risk. A Foul Water Management Strategy will be included within **Appendix 10A – Annex 10A: Drainage Management Strategy** and will be implemented to ensure discharges are treated adequately.

94. It is anticipated that all WFD operation risks could be adequately mitigated with the above measures.

### *10.6.5. Potential Decommissioning Impacts*

95. Potential impacts from the decommissioning of the proposed Project are similar in nature to those during construction, as some ground works will be required to remove infrastructure installed. Onshore project components will be processed and disposed of in accordance with relevant regulations at the time of disposal. Currently, the most environmentally acceptable option is leaving the cables in situ, as this avoids disturbance to overlying land and habitats and to neighbouring communities. Alternatively, the cables can be removed by opening the ground at regular intervals and pulling the cable through to the extraction point, avoiding the need to open up the entire length of the cable route. It is assumed that cables beneath watercourses will only be removed by extraction and will not be open cut again, as this will lead to an unnecessary adverse impact. The DEMP will set out required measures to prevent pollution and flooding during this phase of the development.

96. Pollution of surface water features due to deposition or spillages of soils, sediments, oils, fuels, or other construction chemicals, or through uncontrolled site runoff including dewatering of excavations is possible during decommissioning during the removal of the Onshore Export Cable and demolition of the Onshore Substation.

97. However, the pollution of surface water associated with decommissioning activities are expected to be no greater than that associated with construction. All activities will take place in accordance with an DEMP.

98. As a result, it is considered the decommissioning impacts and effects will be no worse than those of the construction phase.

99. Further details are provided in Chapter 10: Terrestrial Water Environment.

### *10.6.6. Decommissioning Mitigation*

100. The decommissioning will take place in accordance with the with a DEMP which will be developed post-consent. It will detail the measures that would be undertaken during decommissioning to mitigate the temporary effects on the water environment.

## 10.7 Assessment of the proposed Project for WFD Compliance

### *10.7.1. Assessment of the Proposed Project Against Water Body Mitigation Measures*

101. NRW identifies mitigation measures for water bodies, which are actions that can be implemented to protect and improve the water environment and help achieve the objectives for each RBMP. This section of the assessment considers the nature of the measures identified by the NRW for each water body and assesses whether the proposed Project may prevent such measures being implemented.

102. The proposed Project has been appraised against measures identified for all screened-in water bodies, which are available via the Wales Water Watch (NRW, 2024). This appraisal is presented in **Table** 10C-12**.**

*Table 10C-12 Appraisal of the proposed Project against the delivery of measures identified for the waterbodies scoped into this assessment.*

| Measure theme | Further detail on measure | Appraisal of the Project |
|---|---|---|
| To control or manage point source inputs of pollution from sewage and trade/industry discharge | Install nutrient reduction to mitigate impacts on receptor | The drainage strategy **Appendix 10A: Drainage Management Strategy** for the proposed Project will ensure no negative effects on nutrient pathways, as existing drainage would be mimicked, and the change in land use may result in a decrease in the production of source inputs. Management of point impacts will be in line with the OEMP and DEMP produced post-consent. Therefore, the proposed Project would not impact the implementation of this measure. |
| To control or manage diffuse source impacts | Reduce diffuse pollution pathways (surface run-off and drainage management) | The drainage strategy **Appendix 10A: Drainage Management Strategy** for the proposed Project would ensure no negative effects on nutrient pathways, as existing drainage would be mimicked, and the change in land use may result in a decrease in the production of source inputs. Management of diffuse impacts will be in line with the OEMP and DEMP produced post-consent. Therefore, the proposed Project would not impact the implementation of these measures. |
| | Reduce diffuse pollution at source- nutrients | |
| | Reduce diffuse pollution at source- arable soils | |
| | Reduce diffuse pollution at source- livestock | |
| | Reduce diffuse pollution at source- pesticide management | |
| Ensure best practice for operations and maintenance. | Ensure best practice is applied when undertaking maintenance works to minimise impacts to the habitat. | The construction will take place in accordance with the CEMP **Appendix 4A: Outline CEMP**. The CEMP **Appendix 4A: Outline CEMP** details the measures that would be undertaken during construction to mitigate the temporary effects on the water environment. The CEMP will be supported by a WMP that will provide greater detail |
| | Good practice management of in channel and riparian vegetation works carried out in a | |

| Measure theme | Further detail on measure | Appraisal of the Project |
|---|---|---|
| | manner that considers the impacts of the activity upon ecology and hydromorphology. | regarding the mitigation to be implemented to protect the water environment from adverse effects during construction.<br>Management and maintenance will be in line with the OEMP and DEMP produced post-consent.<br>The management of habitats during operation will take place in accordance with a LEMP produced post-consent. |
| | Action(s) to reduce the extent and spread of invasive non-native species. | |
| To improve modified habitat | Remove or ease barriers to fish migration to enable fish passage. | There will be some unavoidable temporary disturbance during the construction phase of open-cut crossings and watercourse crossings for site access, but this will be over a relatively short timeframe. The watercourses in question are of low hydromorphological quality as they are artificial, trapezoidal drainage ditches and not thought to be sensitive to such works. Therefore, the proposed Project would not impact the implementation of these measures.<br><br>The management of habitats during operation will take place in accordance with a LEMP produced post-consent. |

### *10.7.2. Assessment Against WFD Objectives*

103. The compliance of the proposed Project is determined based upon an assessment against the following objectives relating to WFD quality elements, including biological, physico-chemical, groundwater and hydromorphological quality elements:

- Whether the proposed Project will cause deterioration in the Ecological Potential or Status of a water body;
- Whether the proposed Project will compromise the ability of a water body to achieve Good Ecological Status or Potential;
- Whether the proposed Project will cause a permanent exclusion or compromise achievement of the WFD objectives (e.g., mitigation measures) in other water bodies within the same RBD; and
- Whether the proposed Project will contribute to the delivery of the WFD objectives (e.g., mitigation measures).

104. The WFD compliance assessment for the proposed Project is summarised in **Table 10C-13**; the proposed Project is expected to be compliant with the objectives of the WFD.

*Table 10C-13 Compliance assessment of the proposed Project.*

| Compliance elements | Water body assessment | Groundwater body assessment |
|---|---|---|
| Water Body name and ID | Castlemartin Corse - headwaters to tidal limit (GB110061025000)<br><br>Milford Haven Inner (GB531006114100)<br><br>Milford Haven Outer (GB641008220000)<br><br>Pembrokeshire South (GB611008590003) | Cleddau and Pembrokeshire (GB41002G200400) |
| Deterioration in the status/potential of the water body | The proposed Project is not anticipated to cause a deterioration in potential/status. | The proposed Project is not anticipated to cause a deterioration in status. |
| Ability of the water body to achieve Good Ecological Potential/Status | The proposed Project and associated mitigation would not cause deterioration in status of the water bodies and would not prevent the water bodies achieving Good Ecological Potential. | The proposed Project and associated mitigation would not prevent the water body reaching Good Status. |
| Impact on the WFD objectives of other water bodies within the same RBD | No downstream or upstream impacts are anticipated associated with the proposed Project and the mitigation measures proposed. | No wider impacts are anticipated associated with the proposed Project and the mitigation measures proposed. |
| Ability to contribute to the delivery of the WFD objectives | The proposed Project does contribute to the delivery of WFD through enhancements at the re-establishment stage. | The proposed Project does contribute to the delivery of WFD objectives. |

## 10.8 Conclusion

105. This assessment has considered the potential impacts and associated mitigation of the proposed Project on the basis of information currently available in relation to the onshore WFD quality elements of the following surface and groundwater water bodies:

- Castlemartin Corse - headwaters to tidal limit (GB110061025000) – River;
- Milford Haven Inner (GB531006114100) – Transitional;
- Milford Haven Outer (GB641008220000) – Coastal;
- Pembrokeshire South (GB611008590003) – Coastal; and
- Cleddau and Pembrokeshire (GB41002G200400) – Groundwater.

106. The assessment demonstrates that the proposed Project is compliant with the objectives of the WFD: it would not cause deterioration in status of the water bodies and would not prevent the water bodies achieving Good Ecological Status and Good Ecological Potential.

107. Further assessment or updates may be required if there are material changes to the design elements post planning or it is determined that proposed embedded mitigation cannot be implemented as currently proposed for whatever reason.

108. A number of permissions will be required from Natural Resources Wales and these will provide an additional check on the proposed works.

## 10.9 References

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