LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Non-Technical Summary

August 2024

Prepared by: Llŷr Floating Wind Ltd

FLOVENTIS ENERGY

Document Status

Version	Authored by	Reviewed by	Approved by	Date
FINAL	AECOM	AECOM	AECOM	August 2024

Approval for Issue

Prepared by	AECOM
Prepared for	Llŷr Floating Wind Limited
Approved by	Marc Murray

This report has been prepared by AECOM on behalf of Llŷr Floating Wind Ltd. Llŷr Floating Wind Ltd has made reasonable efforts to ensure that the content is accurate, up to date and complete for the purpose of the Environmental Statement. Llŷr Floating Wind Ltd shall have no liability for any loss, damage, injury, claim, expense, cost or other consequence arising as a result of use or reliance upon any information contained in or omitted from this document.

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.
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, 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

Term	Definition
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.
The proposed 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.

Acronyms and abbreviations

Acronym or abbreviation	Definition	Acronym or abbreviation	Definition
AEZ	Archaeological Exclusion Zones	HVDC	High Voltage Direct Current
AIS	Automatic Identification System	IAC	Inter Array Cable
CEMP	Construction Environmental Management Plan	ICES	International Council for the Exploration of the Sea
CIEEM	Chartered Institute of Ecology and Environmental Management	IEMA	Institute of Environmental Management and Assessment
DEMP	Decommissioning Environmental Management Plan	INNS	Invasive and Non-Native Species
EEA	European Economic Area	JNCC	Joint Nature Conservation Committee
EIA	Environmental Impact Assessment	Km	Kilometres
ES	Environmental Statement	m	Metres
FLCP	Fisheries Liaison and Coexistence Plan	MA&D	Major Accidents and Disasters
GIS	Geographical Information System	MHWS	Mean High Water Springs
GHG	Greenhouse Gas	MLWS	Mean Low Water Springs
GW	Gigawatts	MOD	Ministry of Defence
HDD	Horizontal Directional Drilling	MW	Megawatts
HVAC	High Voltage Alternative Current	NGET	National Grid Electricity Transmission
NTS	Non-Technical Summary	NRW	Natural Resources Wales
O&M	Operational & Maintenance	SMP	Soil Management Plan
OEMP	Operational Environmental Management Plan	SCC	Suspended Sediment Concentration
OfECC	Offshore Export Cable Corridor	SSSI	Site of Special Scientific Interest
OnECC	Onshore Export Cable Corridor	SuDS	Sustainable Drainage Systems
PAD	Protocol for Archaeological Discoveries	TJBs	Transition Joint Bays
PEDW	Planning and Environment Decisions Wales	UK	United Kingdom

Acronym or abbreviation	Definition	Acronym or abbreviation	Definition
PEMP	Project Environmental Management Plan	WFD	Water Framework Directive
PINS	Planning Inspectorate	WMP	Water Management Plan
PRoW	Public Right of Way	WSI	Written Scheme of Investigation
RAG	Red, Amber, Green	WTGs	Wind Turbine Generators
ROV	Remotely Operated Vehicle	ZoI	Zone of Influence

Table of Contents

List of Figures

List of Tables

NON-TECHNICAL SUMMARY

Introduction

1. This Environmental Statement (ES) has been commissioned by Llŷr Floating Wind Limited (hereafter the 'Applicant') to present the results of the Environmental Impact Assessment (EIA) for the Llŷr 1 Floating Wind Project (hereafter referred to as 'the proposed Project' for both the onshore and offshore scope of the proposed Project).
2. Due to the nature, scale and location of the proposed Project, it is categorised as a Schedule 2 development under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Consents being sought are pursuant to Section 36 of the Electricity Act 1989 (including deemed planning permission under Section 90 of the Town and Country Planning Act 1990), under the Electricity Works (EIA) (England and Wales) Regulations 2017 (as amended), and include a Marine Licence under the Marine and Coastal Access Act 2009 and the Marine Works (EIA) Regulations 2007 (as amended). Consequently, an EIA has been undertaken to consider the potential environmental impacts of the proposed Project. This Non-Technical Summary (NTS) provides an overview of the proposed Project details as well as the findings of the EIA, which are provided in detail within the Environmental Statement (ES).
3. The ES comprises the following parts:
   - **Volume 1: The Proposed Project;**
   - **Volume 2: Terrestrial Environment;**
   - **Volume 3: Marine Environment;**
   - **Volume 4: Project Wide Effects;**
   - **Volume 5: Figures; and**
   - **Volume 6: Technical Appendices.**
4. The assessment has been undertaken by AECOM. Further details of the proposed Project Team's competency are provided in **Appendix 1A: Statement of Competence**. Technical chapters have been completed by a combination of specialists from AECOM, HiDef Aerial Surveying Ltd., Coracle Consulting Services Ltd., Anatec Ltd., PagerPower Ltd. and NIMA Consultancy Ltd.

The Proposed Project Context

5. As part of their commitments to tackling climate change, the UK and Welsh governments have set a legally binding target for England and Wales to become net-zero in all greenhouse gases by 2050. In addition, the UK Government committed to developing offshore wind at scale, setting a target of delivering 50 gigawatts (GW) of wind-generated electricity by 2030, including 5 GW from floating offshore wind.
6. A study, undertaken by Offshore Renewable Energy Catapult, has highlighted the benefits to Wales of developing floating offshore wind (Offshore Renewable Energy Catapult, 2020) . The study shows that average wind speeds in the Celtic Sea are high, meaning there is an opportunity to develop offshore wind, including floating offshore wind, in waters surrounding Wales and south-west England.
7. The overall aim of the proposed Project is to enable the demonstration of new floating wind technologies, providing validation of the technology proposition and establishing a pathway to cost effective series production. The proposed Project will demonstrate the progression of floating offshore wind technology to deployment at commercial scale. Additionally, the

proposed Project will act as a pathfinder project to aid the establishment and development of UK offshore floating wind industrial capability in the Celtic Sea region. This will be in preparation for larger commercial opportunities for floating wind, not only within Wales and the UK, but the wider western European region.

8. Further information regarding the aims and potential benefits of the proposed Project are included in **Volume 1, Chapter 01: Introduction.**

Overview of the Proposed Project

9. Floating offshore wind represents an opportunity to utilise the full extent of the offshore wind resource potential in the UK, which is already a global leader in offshore wind. Conventional fixed bottom offshore wind is limited in application because it is restricted to areas of relatively shallow water, up to 60 m in depth. In contrast, floating offshore wind, which consists of floating substructures anchored to the seabed, can exploit deeper offshore waters.

10. The proposed Project comprises both offshore and onshore components. The offshore project components are located wholly within the Offshore Development Area. The **Offshore Development Area** comprises of:

- The **Array Area**: the area within which Wind Turbine Generators (WTGs), floating substructures, mooring and Inter Array Cable (IAC) arrangements will be located. This is an area of 45 square kilometres (km^2); and
- The **Offshore Export Cable Corridor** (OfECC): the area within which the offshore export cable circuits will be located. The OfECC runs from the northern boundary of the Array Area to the Mean High Water Springs (MHWS) mark.

11. The onshore 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.

12. Further information regarding design of proposed Project is included in **Volume 1, Chapter 04: Description of the Proposed Project.**

Project Description

13. Key details regarding the design and progression of the proposed Project are provided in **Volume 1, Chapter 04: Description of the Proposed Project**. The proposed Project is comprised of three constituent phases:

- **Construction Phase:** comprises of the installation of floating offshore wind and associated infrastructure such as subsea cables in a safe and environmentally responsible manner. This includes anchor, mooring, platform and turbine design; the installation techniques required as well as pre installation activities such as site corridor surveys and cable route clearance.
- **Operation Phase:** this includes the operational and maintenance tasks required for the turbines, platforms, moorings, anchors and subsea and offshore cables to ensure the continued functioning of the proposed Project.

- **Decommissioning Phase:** comprises the reverse of the construction phase and its associated aspects. It includes the dismantling of the floating offshore wind development and associated subsea and onshore cable infrastructure in a safe and environmentally responsible manner at the end of the proposed Project's operational life.

Proposed Project Design

14. Floating offshore wind provides a means of developing offshore wind in deeper waters where conventional wind turbines that are directly fixed to the seabed are unable.

15. Consequently, the proposed Project comprises of several key components, both onshore and offshore, the designs of which are detailed further in **Volume 1, Chapter 04: Description of the Proposed Project**.

16. Offshore infrastructure includes:

- Up to 10 wind turbines;
- Associated floating offshore wind platforms;
- Anchors and associated mooring arrangement for the floating offshore wind platforms;
- Offshore inter-array cables (IAC);
- Up to two electricity export cables connecting the floating offshore wind turbine generators with the landfall site;
- Other associated infrastructure, such as navigational buoys.

17. Onshore infrastructure includes:

- One connection point between the offshore cable and the onshore cable
- Up to two transition joint bays (TJB) at the above connection point – one per cable);
- Up to two onshore export cables between the landfall and the proposed substation; and
- A single onshore export cable from the substation to the grid connection point.

Project Location

18. The proposed Project is located approximately 35 km from the Pembrokeshire coastline in the Celtic Sea. It includes all the infrastructure required to generate and transmit electricity from the Proposed Development Array Area to the National Grid Connection point adjacent to Pembroke Power Station, the supporting infrastructure, and the required temporary construction areas both offshore and onshore (**Figure 1**). The key factors which led to the selection of the proposed Project area are:

- Available wind resource, with the estimated mean annual wind speed averaging at 9.78 m/s;
- The array location has minimised its visibility and potential conflict with inshore uses as, at its closest point, the edge of the array is approximately:
    - 56 km from the Lundy Island shore;
    - 67 km from the Devon coastline; and
    - 35 km from the Welsh coastline.
- Water depths and ground conditions are suitable for a number of mooring and anchor types;

- There are several electrical infrastructure connection points near the adjacent coastline to enable an efficient connection to the National Grid;
- There is good access to suitable ports and local supply chain for construction and operation;
- There is suitable safe site access and working areas for construction plant, vehicles and personnel;
- There are nearby facilities for fabrication, assembly, and maintenance support; maximising the operational availability and economic feasibility of the wind farm; and
- There are no known active telecommunication cables, submarine cables, oil and gas extraction activities, or aggregate interests in the development area.

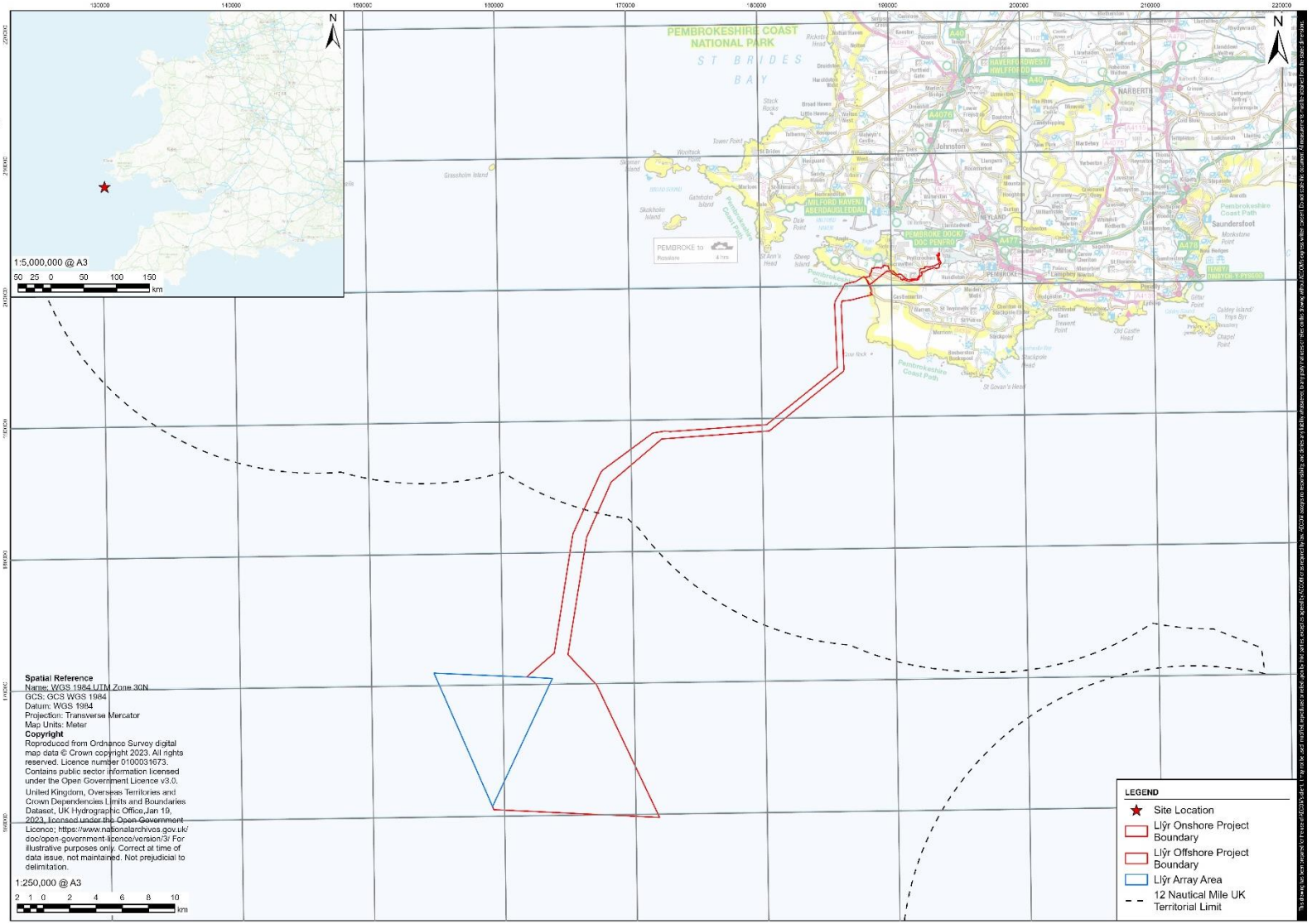

Figure 1. Location of the proposed Project

Consideration of Alternatives

19. The Applicant has considered multiple locations across the United Kingdom for the proposed Project, that complements, helps facilitate and enables the realisation of the benefits of the proposed Project, as detailed in **Volume 1, Chapter 03: Site Selection and Alternatives**, including policy contributions, technology and commercial opportunities, and the ease of developing the proposed Project.

Table 1. The summaries of the key policy / planning considerations the Applicant used when assessing proposed Project location and alternatives.

Alternative consideration	Reasoning
A favourable policy and regulatory environment for the proposed Project.	The degree of support different regional and devolved administrations has for developing offshore demonstration renewable infrastructure is key for deciding the location of the proposed Project. The certainty over the demonstration project lease process and support in Scotland and Northern Ireland at the time the decision was made ruled those locations out of the planning process. Wales and south-west England had a much more supportive economic and planning environment for marine energy infrastructure.
Local National Grid Electricity Transmission (NGET) Capacity.	The ability for the proposed 200 MW capacity to connect to the grid economically is key for the feasibility of the proposed Project. Applicant consultations with NGET and modelling of future electricity markets concluded that Wales and south-west England were the most preferable sites to develop additional offshore wind electricity inputs into the grid.
Discretion of the Crown Estate.	The support of the owner of the seabed in Wales, the Crown Estate, is key for developing the proposed Project. Following meetings between the Applicant and Crown Estate between 2018 and 2019 and the publication of Crown Estate's Offshore Wind Leasing Round 4 areas for commercial scale lease opportunities the location of the proposed Project was refined to the Celtic Sea region.

20. Along with planning and policy considerations the Applicant also considered various technical and environmental constraints which aided in selecting the site of the proposed Project and assessing alternative locations. In the case of floating offshore wind these technical and environmental considerations include:

- Water depths (a minimum of 45 m is required);
- Wind resource and potential energy yield;
- Seabed conditions / characteristics.
- Grid connection options;
- Shipping and navigation;
- Visual impact;
- Fishing effort;
- Civil and military aviation;
- Existing seabed infrastructure and Users;

- Construction and operational & maintenance (O&M) ports; and
- Marine ecology, including internationally designated sites, other nature conservation designations, Annex 1 Habitats (not part of a designated site), ornithology, and features of marine ecological interest.

21. The site selection process used a Geographical Information System (GIS) which enabled layering of relevant spatial constraints, drawn from existing sources, to produce a series of constraints maps to help identify preferred locations and alternatives for the proposed Project within the general Western Approaches and Celtic Sea region.

22. The proposed Project refinement considerations are summarised as follows; further information regarding proposed Project alternatives is provided in **Volume 1, Chapter 03: Site Selection and Alternatives.**

Offshore Export Cable Corridor (OfECC)

23. A geological desk study was commissioned in 2022 to assess the potential OfECC routes back to shore from the identified Llŷr windfarm Agreement for Lease (AfL) areas (**Appendix 3B: Offshore Geological Desk Study**). The aim of this desk-based study was to provide an overview of the geological features, marine habitats and human activity for two OfECC options, one north towards Wales (with a cable landing zone near Milford Haven, Pembrokeshire – near to the National Grid point of connection at Pembroke Power Station) and the second one, with a south-easterly heading towards Devon.

24. The desk top study concluded that both OfECCs presented environmental and engineering challenges, but as the Welsh route is essentially half the distance of the Devon route, the Welsh route was identified as the most practical option based on consumer cost and environmental impact.

25. The OfECC was further refined through consideration of the need to take the cable towards Pembroke Peninsula where the NGESO point of connection is and by taking into account the following principles:

- Routing options needed to be able to connect to a viable landfall location;
- The number of existing pipeline and cable crossings to be minimised as far as possible;
- Where a crossing is required, cables and pipelines to be crossed at 90 degrees where possible;
- Historic wrecks to be avoided as far as possible;
- Avoidance of other infrastructure, dredging areas, disposal areas etc with suitable buffers; and
- Avoidance of designated sites as far as possible; and
- Avoidance of ecologically important sandbanks and potential reefs

26. The basic proposed Project parameters were developed prior to undertaking the site specific surveys (which have subsequently evolved as described in **Chapter 4 – Description of the Proposed Project**). These basic proposed Project parameters for the export cable corridor as within **Chapter 3- Site Selection and Alternatives**.

27. Following geophysical and benthic habitat surveys (**Appendix 19A – Nearshore Benthic Survey Report** and **Appendix 19B – Offshore Benthic Survey Report**) and the production of the Offshore Cable Route Analysis Report (**Appendix 3A - Offshore Cable Route Assessment**), a number of features of importance were identified within the wider project area. It was

identified that the nearshore area of the surveyed OfECC may cause adverse impacts to the integrity of the Pembrokeshire Marine SAC via likely significant effect of loss of Annex 1 habitats. Consequently, adjustments were made to the OfECC in order to avoid Annex 1 reef and Annex 1 sandbanks.

28. As a consequence, the HDD exit point and the OfECC boundary were adjusted. It is acknowledged that there may be more advantageous routes within the OfECC, therefore the final offshore export cable routes will be refined following further geophysical and geotechnical surveys that will be conducted after the consent application is determined.

Landfall

29. A study was commissioned and undertaken by AECOM to identify and evaluate an offshore export cable corridor landfall site located within a search area between West Angle Bay and Freshwater West (**Appendix 3C - Landfall Assessment**). Seven landfall locations within this search area were initially identified. Whilst all seven landfall sites were considered technically feasible, only West Angle Bay and Freshwater West were given further consideration on the basis that the other locations would require cliff face landings on a remote section of coastline with limited access.

30. The remaining landfall sites were investigated further to fully understand any environmental and engineering constraints. The method of landfall for both options (West Angle Bay and Freshwater West) will be achieved using HDD. At Freshwater West this is considered the only option in order to mitigate the risk of disturbance to the SSSI and avoid the unintended formation of a scour channel. Although Project Erebus has identified trenching as a potential option at West Angle Bay, the presence of intertidal reefs and important geological features suggests that trenching should also be avoided at this location.

31. Based on the outcome of a detailed assessment, the landfall site selected is at Freshwater West.

Onshore Cable

32. Three possible onshore cable corridor options were identified to connect the proposed project from the identified landfall site to the NGESO connection point at Pembroke Power station, namely:

- **Option a -** to align with the route utilised by Greenlink cable.
- **Option b** - to align with the route utilised by the Erebus cable.
- **Option c** - to identify a distinct cable corridor to the north remote from either the Greenlink or Erebus projects.

33. Option (a) was soon disregarded as it followed the U6306 minor road between Hoplass Farm and Wallaston Cross which is a single track highway and had a significant technical engineering challenge. After review, option (c) was amended to avoid or minimise impact on potentially sensitive ecological resources, such as hedgerows, woodlands, and watercourses.

34. An Engineering feasibility assessment between the two options (option (b) and the amended option (c)) was undertaken. The assessment concluded that both cable routes were feasible from an engineering perspective and negotiations were opened up with the prospective landowners.

35. However, for option (c) (the northern alternative route), some of the landowners were either unwilling or reluctant to enter discussions or were considering their own development proposals that were incompatible with the proposed Project proposals.

36. This meant that the focus for the proposed project cable route centred on the cable route identified as option (b), aligned with the Erebus cable route. As a consequence, an engineering refinement of route option (b) was commissioned by the Applicant to identify a base case onshore export cable route and the consent envelope boundary.

37. The base case onshore export route and consent envelope boundary ascertained, assessed and identified a solution for a total of 55 crossings and 4 'pinch point's' that now forms the basis for the onshore cable route for this application.

Substation

38. An initial eight potential locations were identified and assessed for suitability to host the proposed Project substation (see Figure 2). The locations were assessed by considering a number of technical, construction, environmental and safety factors including:

- Avoiding, where possible, dense areas of population or close proximity to other building or residential dwellings.
- Avoiding areas and sites of international and national designations (e.g. Ramsar, SAC, SPA, National Nature Reserve (NNR), SSSI's).
- Avoiding, where possible, areas subject to international and national landscape designations, such as the National Park and Areas of Outstanding Natural Beauty (AONB's).
- Avoiding, where possible, sites and features subject to cultural heritage designation, such as listed building, scheduled monuments, etc.
- Minimising the impact to agricultural interests as far as possible.
- Avoiding, where possible, difficult construction areas, such as side slopes, solid rock strata and complex river crossings.
- Seeking safe access for construction traffic, ease of access, and avoidance of undue disturbance to the local road network; and
- Seeking adherence to cable separation distances and project specific design constraints.

39. The eight potential Project substation locations identified were subject to a Red, Amber, Green (RAG) rating exercise to assess the strengths and weaknesses of the various options.

40. Options 1, 3, 4, 5 and 7 were least favoured from an engineering and constructability point of Options 2, 6 and 8 were preferred Options and were rated at an Amber level. There were no Green rated Options following RAG assessment.

41. Based on the assessment the locations for options 2, 6 and 8 were brought forwards for public consultation and further consideration. Feedback from stakeholders and ongoing landowner negotiations were included to update the RAG assessment, with option 2 being identified as the preferred substation location.

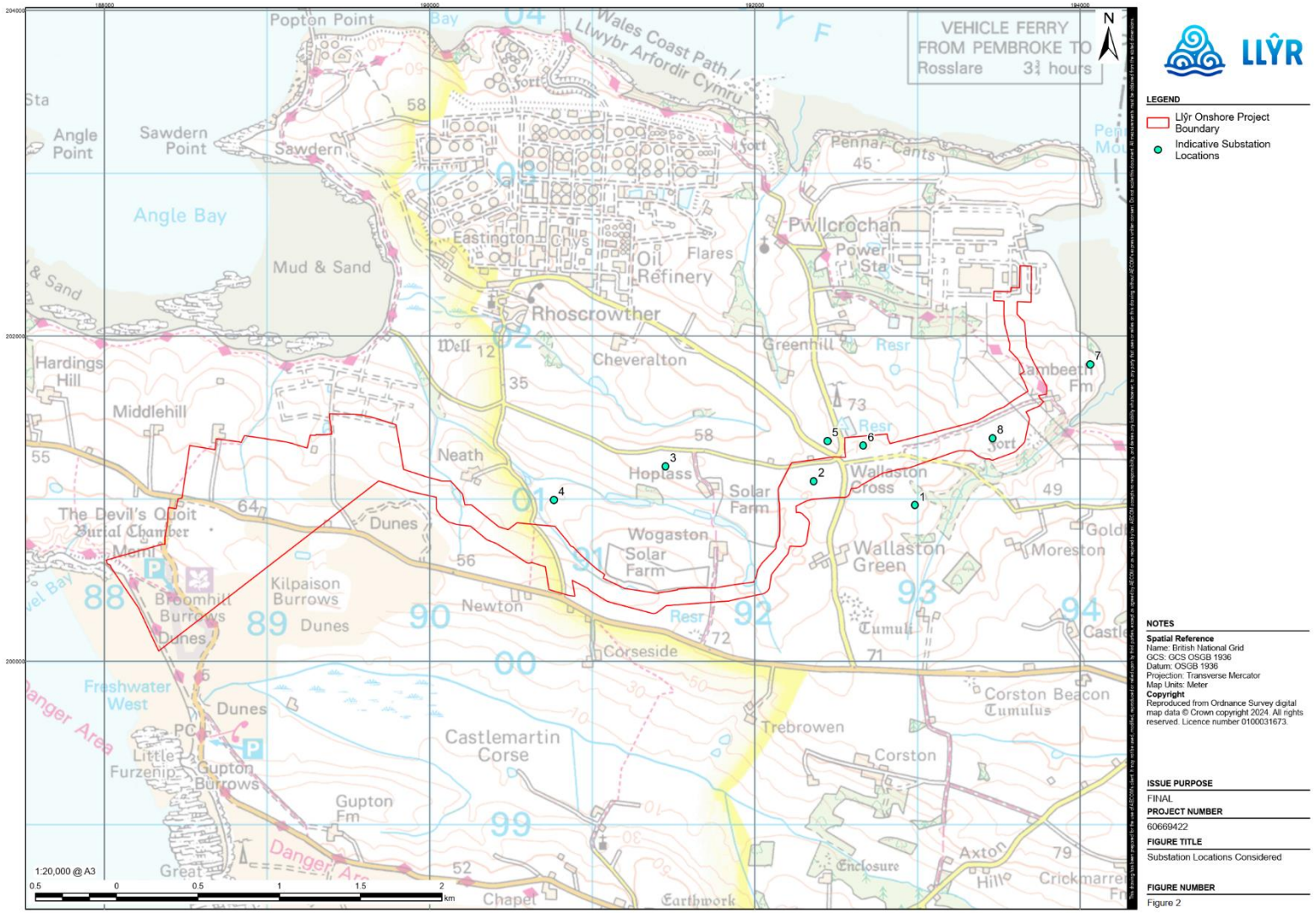

Figure 2 Substation locations considered and onshore cable corridor

Development Timescales

42. Onshore construction activities are planned to commence in Q1 2027, with the installation of onshore components likely to be completed over 18 to 24 months by Q4 2028. Offshore construction activities are also planned to commence in Q1 2027, with the installation of offshore components likely to be completed over two years. Final commissioning of the proposed Project is anticipated to take place in Q4 2028. Following construction, the proposed Project will be operational for a period of 30 years, followed by a decommissioning process.

43. The dates provided above are indicative and the final construction programme for the proposed Project will be confirmed prior to the commencement of construction and as a condition of consent.

44. Further details on the construction programme are summarised in **Volume 1, Chapter 04: Description of the Proposed Project**.

Proposed Project Consultation

45. To ensure support for the proposed Project from both the local community within the vicinity of the proposed Project and non-statutory stakeholders, the Applicant undertook several consultation workshops and events. The aim of these were to inform stakeholders of the details of the proposed Project and to ensure concerns and queries regarding the details of proposed Project such as design and routing are addressed.

46. The key phases of engagement for the proposed Project are set out in **Table** 2.

Table 2. Phases of engagement and consultation

Phase of engagement / consultation	Date	Description
Early Engagement	2018 – 2021	To inform the proposed Project site selection and options development process.
Scoping Consultation	06 April – 06 July 2022	To define and agree the approach to the EIA and technical content of this ES with key statutory and non-statutory consultees.
EIA Technical Engagement	May 2022 – March 2024	To address concerns and queries raised during the Scoping consultation phase and confirm the approach to the EIA.
Introductory public engagement	July 2023	To introduce the Applicant and the proposed Project to the public.
Public Consultation	15 January – 11 February 2024	To seek input on the proposed Project from the general public. The results of the consultation undertaken, and a summary of feedback received are presented within the Consultation Report.

47. Further details of the key consultees contacted, and in-depth responses are provided in **Volume 1, Chapter 06: Consultation and Stakeholder Engagement**.

Environmental Impact Assessment Process

48. The primary aim of undertaking an EIA is to ensure that the authority determining the application (the 'Competent Authority') for a proposed development makes its decision in full knowledge of any potentially significant effects on the environment. Further details on the methodology of the ES can be found in **Volume 1, Chapter 05: EIA Approach and Methodologies.**

Approach of the Environmental Impact Assessment

49. The EIA identifies key environmental, socio-economic and historical / cultural receptors in the vicinity of the proposed Project and assesses the potential impacts of the proposed Project on these receptors, including any mitigation measures required. The EIA is a systematic approach guided by robust and up to date evidence as well as guidance and best practice provided by Natural Resources Wales (NRW), Planning and Environment Decisions Wales (PEDW) and other Welsh governmental guidance, the Planning Inspectorate (PINS) Advice Notes and industry and professional EIA guidance documents.

Scoping Stage

50. The scoping stage assesses the proposed location and design of the proposed Project and sets out the structure, scope and content of the EIA and ES.

51. In April 2022, the Applicant submitted an EIA Scoping Report for the proposed Project to planning authorities (NRW and PEDW) and other governmental, non-governmental and commercial stakeholders). The comments from the consultees were subsequently collated and used to inform and refine the subsequent EIA and ES process.

Baseline Study

52. In order to identify potential impacts of the proposed Project on relevant receptors, a description of the existing conditions of the receptors is provided in the proposed Project's EIA. This is known as the *'existing baseline environment'*. The baseline environment description also includes projected changes in the baseline environment over the duration of the proposed Project (including changes resulting from climate change) - this is known as the *'future baseline environment'*.

53. Consequently, the baseline study is based on the most robust, current data available. This can involve several approaches, including:

- Marine and terrestrial surveys commissioned by the proposed Project;
- Use of available data and information collected by other projects in the vicinity;
- A detailed review of specialist baseline studies and existing literature; and
- Stakeholder consultation.

54. Using a combination of these methods the existing and potential future baseline environment has been ascertained for use within the EIA.

Appraisal of Potential Impacts and Likely Significant Effects

55. The ES methodology to assess the potential impacts of the proposed Project on the existing baseline environment follows the Institute of Environmental Management and Assessment's (IEMA) Guidelines for Environmental Impact Assessment (IEMA, 2004) (and where applicable the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018)).

56. It identifies new sources of impact introduced by the proposed Project that may produce an effect on the baseline environment (a measurable consequence of an impact) and the subsequent links (interaction pathways) between these sources and identified receptors. Each impact can be classified under numerous groupings summarised in **Table 3.**

Table 3. The definitions of all impact classifications used in the appraisal of potential impacts.

Impact classification	Definition
Direct Impact	Impacts that result from a direct interaction between the proposed Project activities and the receiving environment.
Indirect Impact	Impacts on the environment, which are not a direct result of the proposed Project activities, often produced away from the activity or as a result of a complex pathway.
Adverse Impact	An impact that is considered to represent an adverse change from the baseline condition or introduces a new undesirable factor.
Beneficial Impact	An impact that is considered to represent an improvement on the baseline condition or introduces a new desirable factor.
Cumulative Impact	Impacts that result from incremental changes caused by other present or reasonably foreseeable actions together with the proposed Project (European Commission, 1999). Generally considered to be the same impact but from different projects e.g., noise generated from two separate projects combining to affect residential amenity.
Inter-related Impacts	Inter-related effects or interactions between impacts on different environmental factors have been considered in this ES. This includes where an element of the proposed Project described and assessed in a particular discipline (e.g. Noise Assessment) may cause a direct or indirect effect on one or more sensitive receptors (e.g. Population and Human Health, Marine Mammals, Terrestrial Fauna). Additionally, various impacts can interact and present a greater effect on a sensitive receptor than each impact considered separately. Inter-related effects are assessed through consideration of all effects on a receptor by the proposed Project. An assessment of the potential for all effects on that receptor to interact, whether that be spatially or temporally, results in the identification of inter-related effects on a receptor.
Transboundary Impacts	Transboundary impacts are those that may have an impact on the environment in other European Economic Area (EEA) states.

57. Each impact is then assessed for its significance. The significance of an effect is determined within each technical chapter by correlating the magnitude of change of the impact and the sensitivity of the receptor. This has been formulated using a significance matrix (

Table 4) as guidance, however, some specialist disciplines may have required a variation of the matrix which better aligns with magnitude and sensitivity criteria relevant to their topic area. Where this is the case, this is detailed in the relevant technical chapters (**Volume 2: Chapters 7 – 16; Volume 3: Chapters 17 – 28**).

Table 4. An impact matrix used to assess the significance of a given impact on a receptor based on the impact's likelihood and severity.

		Value / Sensitivity				
		Very High	**High**	**Medium**	**Low**	**Negligible**
Magnitude	**Large**	Major	Major / Moderate	Major / Moderate / Minor	Moderate / Minor	Minor / Negligible
	Medium	Major / Moderate	Major / Moderate	Moderate / Minor	Minor / Negligible	Negligible
	Small	Major / Moderate / Minor	Moderate / Minor	Moderate / Minor	Minor / Negligible	Negligible
	Negligible	Minor / Negligible	Minor / Negligible	Minor / Negligible	Negligible	Negligible

58. The interpretation of the matrix, in line with the specific approaches defined by each discipline for specific receptors, is the assignment of the level of significance of the effect for potential impacts. Assignment of significance is firstly carried out with consideration of embedded mitigation measures relevant to the receptor being assessed. Embedded mitigation measures generally include project design measures and best practice, which are summarised within their relevant chapter headings. Levels of significance are defined as:

- **Major**: Significant effect present and very high or high.
- **Moderate**: Significant effect present and moderate.
- **Minor**: Although an effect may occur it is not significant.
- **Negligible**: No or very low impact identified.

Mitigation Measures

59. Mitigation measures to reduce the impact from the proposed Project are sought for those impacts that have been classed as 'Major' or 'Moderate'. Mitigation measures can broadly be classified under the following hierarchy:

1. **Avoidance / Prevention:** In the first instance, mitigation should seek to avoid or prevent the adverse effect at source for example, by routeing the cables away from a sensitive receptor;
2. **Reduction:** If the effect is unavoidable, mitigation measures should be implemented which seek to reduce the significance of the effect; and
3. **Offsetting:** If the effect can neither be avoided nor reduced, mitigation should seek to offset the effect through the implementation of compensatory mitigation.

Results of the Environmental Impact Assessment

60. The following presents a summary of the conclusions identified within each technical chapter provided in Volumes 2 and 3 of the ES. This includes the determination of likely significant

effects from the proposed Project, along with any embedded or additional mitigation measures that reduce the potential for significant effects to occur.

Volume 2 Terrestrial Environment

Landscape and Visual

61. **Volume 2, Chapter 7: Landscape and Visual** appraises the potential impacts of the proposed Project on landscape character and visual amenity, identifying the impact pathways associated with construction, operation, and decommissioning phases of the proposed Project. The offshore seascape, landscape and visual assessment is addressed in **Volume 3: Chapter 23: Seascape, Landscape and Visual Assessment.**

62. The existing baseline considering landscape designations, landscape character, and visual receptors has been informed by consultation with statutory and non-statutory organisations, and derived from site-specific surveys, and a comprehensive desk-based review.

63. Potential impacts from the construction, operation and maintenance, and decommissioning of the proposed Project on the onshore Landscape, and Visual Amenity receptors were assessed. Embedded mitigation measures identified include placing the Onshore Export Cable underground and reinstating above ground vegetation as part of construction; siting of the Onshore Substation relative to the local national park, and other existing energy development and infrastructure; minimising the extent of the construction corridor, retaining existing trees and hedges as far as possible; careful siting of construction compounds; and minimising lighting. Additional mitigation measures identified included positioning the Onshore Substation at a lower elevation, provision of additional earthworks, and incorporating tree and woodland planting as part of the proposed Project.

64. The assessment concluded that after implementation of embedded and additional mitigation, the majority of potential impacts on landscape character are **minor adverse**, and therefore **not significant**. However, there are **moderate adverse,** and therefore **significant**, impacts on visual amenity at Viewpoint A: B4320, The Burrows; Viewpoint E: Wallaston Green; and Viewpoint F: Right of Way, west of Lambeeth Farm, where additional mitigation cannot be applied. The moderate adverse effects at Viewpoint A are predicted to occur during construction only. The moderate adverse effects at Viewpoint E and Viewpoint F are predicted to occur during construction and year 1 of operation, effects are predicted to be not significant by year 15.

65. Cumulative effects upon receptors arising from the proposed Project, alongside all existing, and reasonably foreseeable projects, plans, and activities during the construction, operation, and decommissioning phases of the proposed Project were considered. It concluded that the cumulative effects on landscape character and visual amenity are considered **negligible** or **minor adverse** and therefore **not significant**. Inter-related effects on landscape character across all phases of the proposed Project are considered minor adverse or less. For visual amenity, construction, operation, and decommissioning effects relating to the Onshore Substation and Export Cable are primarily minor adverse, with some localised moderate adverse effects on a small number of visual receptors. Furthermore, it is considered there is no potential for transboundary impacts and resultant effects to occur.

Terrestrial Ecology and Biodiversity

66. **Volume 2, Chapter 8: Terrestrial Ecology and Biodiversity** appraises the potential interaction between the proposed Project and terrestrial ecology, assessing the impact pathways associated with construction, operation, and decommissioning phases of the proposed Project.

67. The existing baseline was informed by consultation with statutory and non-statutory organisations, and derived from site-specific surveys, and a comprehensive desk-based review. This comprised consideration of nature conservation designations, habitats, species, and species assemblages.

68. Potential impacts from the construction, operation and maintenance, and decommissioning of the Onshore Development on terrestrial Ecology and Biodiversity receptors assessed, included: damage or degradation of habitats; permanent and temporary loss of habitats; killing, injury or disturbance of species. Species considered within the assessment included great crested newt and other amphibians, reptiles, birds (including chough), hazel dormouse, water vole, badger, bats and otter. The process identified embedded mitigation measures and management plans that have been incorporated into the proposed Project's design to reduce the potential for impacts on terrestrial ecology. These measures include micro-siting, minimising habitat loss, reinstating habitat and the implementation of a Construction Environmental Management Plan (CEMP). Additional mitigation measures were identified, such as timings for a two-stage process of hedgerow removal; scrub and tree planting; utilising fencing at watercourses; and pre-construction surveys for breeding individuals, dormice, and bats.

69. After the implementation of the embedded and additional mitigation the residual potential impacts on terrestrial ecology during construction, operation, and decommissioning are considered to be **minor adverse** or less, and therefore **not significant**.

70. Cumulative effects upon terrestrial receptors (with a focus on bats and hazel dormice) arising from the proposed Project, alongside other potential projects within the locality, during the construction, operation, and decommissioning phases were considered. The cumulative effects on bats were considered to be **minor adverse**, and therefore **not significant**. However, cumulative habitat loss and fragmentation as a result of the construction of multiple projects was considered to be **moderate adverse** for dormice, and therefore **significant**. Inter-related effects of the proposed Project were scoped out of assessment and it was considered there was no potential for transboundary impacts or resultant effects to occur.

71. The applicant is committed to further consultation with Pembrokeshire County Council, after the consent application is determined, to identify the implementation timelines of other development projects in the area. It may be possible to combine some activities such as vegetation clearance to minimise disturbance. If mitigation and construction timeframes can be combined, then it may be possible to reduce the significance of effects.

Historic Environment and Cultural Heritage

72. **Volume 2, Chapter 9: Onshore Historic Environment and Cultural Heritage** appraises the potential effects of construction and the existence of the proposed project on the archaeological and historic environment.

73. The existing baseline has been informed by consultation with statutory and non-statutory organisations, and derived from site-specific surveys. It was supported by a desk-based assessment of designated cultural historic receptors, non-designated archaeological and cultural historic receptors, new identified archaeological and cultural heritage receptors, and general archaeological background within 3 km of the proposed Project's boundary. The proposed Project surveys and desk based reviews identified several additional historic receptors not previously recorded within the Historic Environment Record.

74. Potential impacts from the construction, operation and maintenance, and decommissioning of the Onshore Development from damage to or loss of Archaeology and Cultural Heritage

receptors were assessed, including loss of or damage to unknown historic environment assets and prehistoric landscapes and adverse effects to the setting of onshore historic environment assets. Several embedded mitigation measures were identified to be implemented within the design and installation methodologies that aim to avoid physical disturbance to heritage and non-designated assets and archaeology, the use of protective measures for heritage receptors, consideration of construction compound layout and placement to avoid designated and undesignated receptors, minimise visibility from historic receptor settings and the implementation of a CEMP. The need for a number of additional mitigation measures during installation was identified, predominantly comprising measures implemented as part of an Archaeological Mitigation Strategy.

75. Following the implementation of embedded and additional mitigation the residual potential impacts on historic environment and cultural heritage during construction, operation, and decommissioning were considered to be **slight** or less, and therefore **not significant**.

76. Cumulative effects of the proposed Project with other plans and projects in the area were assessed, with no effect considered significant. Inter-related effects are addressed in **Volume 2, Chapter 07: LVIA**, which also concluded that there were no significant effects.. Furthermore, it is considered that there is no potential for transboundary impacts and resultant effects to occur.

Water Environment

77. **Volume 2, Chapter 10: Water Environment** appraises the potential effects of construction, operation, and decommissioning on the water environment onshore.

78. The existing baseline was informed from consultation with statutory and non-statutory organisations, and derived from site-specific surveys, and a desk-based assessment of surface water features (such as rivers, streams, ditches, and lakes), groundwater assets, flood risk, and demand for water resources within 1 km of the proposed Project.

79. Potential impacts from the construction, operation and maintenance, and decommissioning of proposed Project on the Water environment assessed included: potential changes of water quality on groundwater resources and water supplies, changes of hydro-morphology to local watercourses, potential to cause local pollution and potential changes to local flood risks. Embedded mitigation measures identified included the implementation of a Surface Water Drainage Strategy (including a Foul Water Management Strategy), installation of Onshore Cables at watercourse crossings, use of HDD during landfall installation, and management of flood risk, as well as adherence to a CEMP, Water Management Plan (WMP), Operational Environmental Management Plan (OEMP), and Decommissioning Environmental Management Plan (DEMP). Following the implementation of embedded mitigation, **a**ll effects were assessed as **not significant**.

80. Cumulative effects of the proposed Project with other plans and projects in the area were assessed, where projects had the potential to interact over the same area and/or on the same timeline as the Offshore Development. Due to the relatively limited spatial extent of effects from the proposed Project all cumulative effects were assessed as **not significant**. Inter-related effects were scoped out of the assessment, and transboundary effects are not anticipated to occur.

Geology and Hydrogeology

81. **Volume 2, Chapter 11: Geology and Hydrogeology** appraises the likely environmental impacts relating to geology and hydrogeology within the Onshore Development Area from activities

associated with the construction, operation, and decommissioning phases of the proposed Project.

82. The existing baseline was informed by consultation, and established through site-specific surveys, and a comprehensive desk-based review of potential hazards and constraints to the proposed Project deriving from the ground conditions, including the potential for land contamination.

83. Potential Impacts assessed including impacts on geologically designated sites like Sites of Special Scientific Interest and Geological Conservation Review, sterilisation of mineral resources, and the potential to cause land contamination. The process identified embedded mitigation measures; including undertaking detailed ground investigations and intrusive surveys prior to construction, minimisation of surplus material during design and installation, the implementation of several management plans, and adherence to industry best practice.

84. Following the implementation of embedded mitigation, the residual potential impacts on geology and hydrogeology during construction, operation and maintenance, and decommissioning are considered to be **minor adverse**, and therefore **not significant**.

85. Cumulative effects on receptors arising from the proposed Project alongside other local planned projects were considered as part of the assessment. All cumulative effects were considered to be **not significant**. Furthermore, inter-related effects on geology and hydrogeology have been scoped out of the assessment and transboundary effects are not anticipated for geology and hydrogeology receptors.

Agriculture and Soils

86. **Volume 2, Chapter 12: Agriculture and Soils** appraises likely environmental impacts within the Onshore Project Boundary associated with the construction, operation and maintenance, and decommissioning phases of the proposed Project.

87. Consultation with statutory and non-statutory organisations informed the existing baseline and was derived from a comprehensive desk-based review.

88. Embedded mitigation measures of direct effects include avoidance of arable and high quality agricultural land; sensitive positioning of infrastructure around the edge of fields, in field boundaries, or through less productive areas of individual fields. Mitigation of indirect effects include measures such as avoidance of field severance, avoiding separation of livestock from water supplies and the implementation of a Soil Management Plan (SMP). There are no additional mitigation or enhancement measures required.

89. The assessment concluded that some permanent loss of agricultural land will occur because of the proposed Project (due to permanent built infrastructure – substation and any permanent accesses) and this cannot be mitigated. However, most land required for the proposed Project (temporary access tracks, compound sites, cable installation corridors etc.) will be temporary, with land excluded from agricultural use for the duration of construction only. Agricultural land used temporarily during construction will be reinstated to agricultural use. The temporary loss of agricultural land and the impact of this loss can be reduced through appropriate mitigation. Through the use of embedded mitigation, measures, all potential impacts on agriculture and soils are considered to be **not significant**.

90. Assessment of the cumulative effects from the proposed Project with other plans, and projects in the area concluded that potential pathways for cumulative effects on Agriculture and Soils are not anticipated. Similarly, transboundary effects relating to Agriculture and Soils are not anticipated. The assessment also determined that there is no potential for combined

Agriculture and Soils effects with other topic areas as a result of spatial and temporal receptor-led interactions.

Traffic and Transport

91. **Volume 2, Chapter 13: Traffic and Transport** appraises the potential effects of the proposed Project on the highway network between Pembroke and the Onshore Substation, export cable installation sites and landfall site, during construction, operation and maintenance, and decommissioning.

92. The existing baseline has been informed through consultation, derived from site specific surveys and a desk study assessing key access routes and accessibility for project related vehicles, and accident data.

93. Potential impacts from the proposed Project considered as part of the assessment included: potential delays to pedestrian, cyclist and driver journeys; impacts on pedestrian and cyclist amenity; effects from increased traffic volume; potential increased risk of accidents and reduced general road safety; and perceived impacts of physical separation from the local community Mitigation measures identified include the implementation of a Construction Traffic Management Plan, and management of Public Right of Way (PRoW) access. Additional mitigation measures weren't considered necessary.

94. With the implementation of embedded mitigation, all potential effects are considered to be **minor adverse**, and therefore **not significant**.

95. Cumulative effects from the proposed Project with other plans and projects in the area were assessed . and concluded that all effects are **not significant**. Additionally, inter-related effects are addressed in **Volume 2 Chapter 14: Air Quality**, and **Volume 2 Chapter 15 Noise and Vibration**; which considered all identified effects to be **not significant**. The assessment also concluded there is no potential for transboundary effects to occur.

Air Quality

96. **Volume 2, Chapter 14: Air Quality** assesses the potential impacts on air quality that could arise from the proposed Project during construction, operation and maintenance, and decommissioning. It considers impacts due to construction dust, as a result of construction road traffic emissions, and from operational road traffic emissions.

97. The existing baseline was informed by consultations with statutory and non-statutory organisations, and a desk study review which included ongoing monitoring data from Pembrokeshire County Council. This describes local air quality management and regional monitoring data, and expected future trends in local air quality over the lifespan of the proposed Project.

98. The assessment of potential environmental impacts focused on the potential generation of dust and airborne particulate matter during construction. Mitigation measures identified primarily derive from dust control measures specified within the CEMP. Additional targeted site-specific mitigation will be identified in the appointed construction contractors' CEMP. These measures are anticipated to include reducing emissions and incorporating appropriate dust suppression systems; water suppression and regular cleaning; covering materials; using appropriate techniques while mixing grout or cement-based materials; using topsoil or other material to cover areas that cannot be re-vegetated; and vehicle, plant and equipment maintenance.

99. Fugitive emissions of dust and particulate matter are the sole identified potential impact on air quality. With the implementation of embedded mitigation this impact is considered to be **not significant**.

100. Cumulative effects upon receptors arising from the proposed Project alongside other projects were also assessed and concluded that any potential cumulative effects are considered to be **not significant**. Additionally, air quality was scoped out of the inter-related effects assessment; and there is no potential for transboundary impacts and resultant effects to occur as a result of the proposed Project.

Noise and Vibration

101. **Volume 2, Chapter 15: Noise and Vibration** appraises the impact of noise and vibration generated during the construction, operation and maintenance, and decommissioning phases of the proposed Project, relative to nearby sensitive receptors.

102. The assessment establishes a baseline of sensitive receptors through a comprehensive desk-based review.

103. Embedded mitigation measures primarily derive from the implementation of a CEMP and DEMP. Additional mitigation, involving the use of barriers and maintaining specified distances from receptors has also been identified.

104. Key potential noise and vibration impacts were identified, including noise generated from daytime cable trenching works, HDD noise at night, and noise generated from daytime substation construction activities; and operational substation noise emissions. With the implementation of embedded mitigation, the only impact pathway considered to have a short term **significant** impact (**moderate adverse**) is potential HDD noise generated at night that may affect the residential receptor group at Burrows, Angle.

105. Cumulative effects from the proposed Project alongside other projects were are also considered as part of the assessment that concluded that the potential cumulative significance of the effects would be, at worst, **minor adverse** and therefore **not significant**. Additionally, there is no potential for inter-related project lifetime effects from combined noise and vibration effects to occur; and inter-related receptor-led effects are considered to be **not significant**. Furthermore, no noise and vibration trans-boundary effects are likely to occur during the construction, operation and decommissioning of the Project.

Socio-economics and Tourism

106. The assessment of socioeconomics, recreation and tourism (**Volume 2, Chapter 16: Socio-economics, Recreation and Tourism**) considered the effects in local (Pembrokeshire), regional (South West Wales), and (where applicable) national (Wales and the UK) areas relative to the proposed Project, with a desk-based study and consultation with local authorities and stakeholders undertaken to inform the assessment. A comprehensive desk-based review of population statistics, economic activity, skills base, employment by industry, employment by occupation, business demographics, economic output by industry, and household deprivation data also informed the baseline.

107. The socio-economic impacts assessed included the potential effects on business activity in the proposed Project supply chain, the potential for the generation of additional economic output, the potential effects on employment, and the potential opportunities for the development of workforce skills and training. The recreation and tourism impacts assessed included possible disruption to or reduced access for activities, such as marine-based recreational activity (e.g. boating, recreational fishing, etc.), coastal recreational users,

coastal tourism, land-based recreational activity, and businesses that cater to visitors. The potential impacts on housing and demand for local services considered the possible interaction between the proposed Project and the demand for and supply of housing, healthcare, education, public transport, and other local services.

108. Potential impacts from the proposed Project on employment, economic output, recreational and tourism activities, and demand for housing and services (i.e. socio-economics, recreation and tourism receptors) were assessed. It is estimated that the average number of Full Time Equivalents (FTEs) within the UK per year for the construction phase ranges from 2,165 to 3,654, with the operational phase (estimated as 30 years) anticipated as around 96 gross direct FTEs. The proposed Project is expected to support supply chain growth in local and regional areas and encourage the recruitment and training of a local workforce. This would create direct and indirect employment, including highly skilled roles. The assessment concluded that the proposed Project is likely to result in a significant beneficial effect during the construction phase on employment for the labour force in Pembrokeshire. As part of the proposed Project design process, several designed-in measures have been proposed to reduce the potential for adverse impacts. The design of the proposed Project therefore includes embedded mitigation measures the CEMP and Traffic Management Strategy. With the implementation of embedded mitigation, the greatest potential impacts on socio-economics and tourism were considered to be **minor beneficial**, and therefore **not significant**.

109. Cumulative impacts from the proposed Project along with other projects and plans where projects had the potential to interact over the same area and/or on the same timeline as the proposed Project. Cumulative effects on the economy during construction and operation are considered to be **moderate beneficial**, and therefore **significant**; cumulative effects on construction workforce on the local housing market during the construction phase are also considered **moderate adverse**, and therefore **significant**. All other effects are considered to be **not significant**. Additionally, it is considered that there is no potential for transboundary impacts and resultant effects to affect socio-economics and tourism.

Volume 3 Marine Environment

Physical Environment (Marine)

110. **Volume 2, Chapter 17: Physical Environment** appraises the likely impacts upon the physical marine environment associated with the construction, operation, and decommissioning phases of the proposed Project.

111. The existing baseline has been informed by consultation with Natural Resources Wales and derived from a comprehensive desk-based review of water levels, tidal currents, wind, waves, bathymetry, geology, geomorphology, seabed sediments, suspended sediment, and sediment transport.

112. Considerations during the assessment include potential changes to: suspended sediment concentrations (SSC); seabed floor; sediment transportation; and the coastline. In most cases, marine physical processes are not in themselves receptors but are, instead, 'pathways' which have the potential to indirectly impact other environmental receptors (e.g. benthic ecology, fish ecology etc). While potential changes assessed in the Physical Environment assessment may not themselves be significant, they may have potential to cause significant impacts to other receptors (for example benthic or fish ecology). A number of mitigation measures were identified including: micro-siting of the offshore export cable within the export cable corridor; use of HDD at the landfall; cable burial as the preferred means of cable protection; and disposal of dredged material close to its location of origin, to be implemented

in the proposed Projects implementation. No additional mitigation or enhancement measures are required for potential physical environmental impacts.

113. With the implementation of embedded mitigation, the all potential impacts upon the physical environment during construction, operation, and decommissioning are considered to be **not significant**.

114. Physical environment receptors are entirely insensitive to SSC's which is the sole source of potential physical environment impact identified from the assessment, therefore, a cumulative assessment is not required. Potential of SSC changes to impact other EIA receptor groups is considered within Volume 2, in **Chapter 18: Marine Water Quality**, **Chapter 19: Benthic Ecology**, **Chapter 20: Fish & Shellfish Ecology**, **Chapter 21: Marine Mammals**, and **Chapter 22: Ornithology**; this is also the case for inter-related effects. Similarly, there is no potential for transboundary impacts and resultant effects to the physical environment to occur.

Marine Water and Sediment Quality

115. **Volume 3, Chapter 18: Marine Water and Sediment Quality** appraises the potential impacts and effects of the proposed Project on Marine Water and Sediment quality from the construction, operation and maintenance, and decommissioning phases.

116. The existing baseline was informed through consultation with statutory and non-statutory organisations, and derived from previous site-specific surveys, and a comprehensive desk-based review. Data sources from the three Water Framework Directive (WFD) water bodies located within the study area (Milford Haven Inner, Milford Haven Outer and Pembrokeshire) and existing information about bathing waters, marine sediment (quality, type, and bacteria), suspended sediment and sediment transport were used to support the assessment.

117. The assessment address aspects such as the risk of pollution, changes in turbidity, the release of chemical contaminants and bacteria from the seabed. The assessment identified a number of embedded mitigation measures including pollution prevention measures; following best practice protocols and material usage for drilling and piling; minimisation of sediment disturbance through activities and site selection; the use of appropriate vessels; and the implementation of various risk assessments and management plans. It is considered that no additional mitigation or enhancement measures are required.

118. Following the implementation of embedded mitigation, the remaining potential impacts on marine water and sediment quality during construction, operation, and decommissioning are considered to be **minor** or **negligible**, and therefore **not significant**.

119. Cumulative effects on marine water and sediment quality from the proposed Project alongside other projects and plans were considered as part of the assessment. Similarly the cumulative effects identified were considered to be **minor**, and therefore **not significant**. Additionally, , it is predicted that inter-related receptor led effects will not be more significant than the assessment of individual impacts. Furthermore, there is no potential for transboundary impacts and resultant effects to occur.

Benthic Ecology (including intertidal)

120. **Volume 3, Chapter 19: Benthic Ecology** appraises potential impacts upon benthic receptors within 14 km of the proposed Project, during the construction, operation, and decommissioning phases.

121. Baseline data were informed by stakeholder consultations, site specific surveys, and a comprehensive desk-based review of the key species of relevance. The baseline includes data on intertidal ecology, subtidal ecology, and Invasive and Non-Native Species (INNS).

122. Potential for impacts during all development phases of the proposed Project on benthic ecology receptors (habitats and species) through several mechanisms were assessed, including,: direct physical disturbance, smothering or abrasion; changes to suspended sediment concentrations; changes to water quality (including direct pollution); changes to physical and sediment processes; thermal (heating) impacts; the influence of electro-magnetic fields (EMF) from seabed cables; and the introduction of Invasive Non Native Species (INNS). Identified embedded mitigation measures include micro-siting of the offshore export cable within an agreed cable corridor, combined with pre-installation ecological surveys to inform micro-siting of infrastructure to avoid sensitive habitats; use of non-toxic drilling fluids during HDD; deployment of appropriate protection measures for buried or seabed surface laid infrastructure to minimise significance of impacts; the use of dynamic positioning by project vessels (rather than anchored vessels); implementation of best practice and management measures such as *'OSPAR Commission Guidelines on Best Environmental Practice'* or agreed management plans (including a Project Environment Management Plan (PEMP) and Construction Environmental Management Plan (CEMP)); agreement of biosecurity risk assessments; and adherence to industry standard best practice regarding ballast water management, emergency pollution plans, effluent discharges, and biofouling management by project vessels. No need for additional mitigation over and above embedded mitigation and best practice measures was identified.

123. After the implementation of embedded mitigation, the residual potential impacts on benthic ecology during construction, operation, and decommissioning are **small** or less and are **not significant**.

124. Cumulative effects upon benthic ecology from the proposed Project alongside all existing and reasonably foreseeable projects, plans, and activities have also been considered as part of the assessment. The most relevant cumulative effects were considered to be **negligible to minor**, and therefore **not significant**. It is also predicted that inter-related receptor led effects will not be more significant than the assessment of individual impacts in isolation. The assessment also concluded that transboundary impacts and resultant effects to occur are also highly unlikely.

Fish and Shellfish Ecology

125. **Volume 3, Chapter 20: Fish and Shellfish** assesses the likely impacts during the construction, operation, and decommissioning phases upon fish and shellfish receptors within 30.7 km of the proposed Project.

126. Baseline data has been informed by stakeholder consultations, site specific surveys, and supported by a comprehensive desk-based review of key species of relevance. The baseline comprises of data around key functional fish groupings based on species class, habitat preferences and life history, factors that can determine a species' particular sensitivity to different anthropogenic pressures and their importance as protected species, features of designated sites, and their importance to commercial fisheries.

127. The potential for impacts during all development phases of the proposed Project on fish and shellfish ecology receptors was assessed. The impacts assessed included disturbance or damage to sensitive species due to underwater noise, disturbance or loss of feeding, spawning and nursery grounds, changes to suspended sediment concentrations; changes to water

quality, effects of EMFs from seabed cables. Mitigation measures are similar to those identified to safeguard benthic habitats including: micro-siting of the offshore export cable within an agreed cable corridor; pre-installation ecological surveys to inform micro-siting of infrastructure; use of non-toxic drilling fluids during HDD; deployment of appropriate protection measures for buried or seabed surface laid infrastructure; the use of dynamic positioning by project vessels (rather than anchored vessels); implementation of best practice and management measures such as 'OSPAR Commission Guidelines on Best Environmental Practice' or agreed management plans (including a Project Environment Management Plan (PEMP) and Construction Environmental Management Plan (CEMP)); agreement of biosecurity risk assessments; and adherence to industry standard best practice regarding ballast water management, emergency pollution plans, effluent discharges, and biofouling management by project vessels. No need for additional mitigation over and above embedded mitigation and best practice measures was identified.

128. The assessment concluded that with the implementation of embedded mitigation, all potential impacts on fish and shellfish ecology are **minor** or less and **not significant.** During the construction phase, impacts will be temporary and localised, and mitigation measures will be in place to manage interactions between potentially sensitive fish and shellfish species and construction activities. During the operation and maintenance phase, based on the localised spatial extent, any impacts are unlikely to affect the long-term functioning of the wider available spawning and nursery ground or migratory routes for fish and, therefore, the impacts were assessed as not significant. Decommissioning impacts were similar or less than those of construction activities and therefore not significant.

129. Cumulative effects upon fish and shellfish ecology arising from the proposed Project alongside all existing and reasonably foreseeable activities have also been considered as part of the assessment. All cumulative effects identified were considered to be either **minor** or **negligible**, and **not significant**. Additionally, it is predicted that inter-related receptor led effects will not be more significant than the assessment of individual impacts in isolation and that there is no potential for transboundary impacts.

Marine Mammals

130. **Volume 3, Chapter 21: Marine Mammals** appraises the likely impacts upon cetaceans and pinnipeds within their relative management units during the construction, operation, and decommissioning phases of the proposed Project.

131. Baseline data gathered has been informed by stakeholder consultations, site specific surveys, and was supported by a comprehensive desk-based review of key species of relevance.

The potential for impacts on marine mammals by all stages of the proposed Project was assessed for the following impact pathways: underwater noise (various sources including piling, vessels and WTG operation); airborne noise; visual disturbance; collision (vessels); entanglement and barrier effects (with mooring lines and cables); pollution / contamination; EMF; and indirect impacts on prey species. Embedded mitigation measures include a commitment to minimise piling activities; measures to control risks from INNS and biofouling ; and the implementation of management plans with potential to reduce risk for marine mammals (including CEMP, PEMP, vessel management plan, marine mammal mitigation protocols and decommissioning environmental management plan). The need for marine mammal mitigation protocols was identified; predominantly based on Joint Nature Conservation Committee (JNCC) guidance and related to methods of unexploded ordnance clearance, regular inspections of moorings and cables, and the subsequent removal of any discarded fishing gear, and monitoring of underwater noise during construction.

132. With the implementation of the embedded and additional mitigation measures all potential residual impacts on marine mammals during construction, operation, and decommissioning are considered **not significant**.

133. Marine mammal cumulative effects arising from the proposed Project alongside all existing, and reasonably foreseeable projects, plans, and activities have also been considered as part of the assessment. Two key impact pathways were assessed; disturbance from underwater noise during construction and disturbance from vessel activity during pre-construction, construction, and operation. The assessment considers the potential impact on all receptors from both pathways to be **negligible**, and therefore **not significant**.

134. It was concluded that there is limited potential for inter-related effects to occur between the proposed Project phases that would result in a larger effect than in isolation; and transboundary effects are **negligible**, and therefore **not significant**.

Marine Ornithology

135. **Volume 3, Chapter 22: Marine Ornithology** appraises the potential impacts upon marine ornithology receptors, spatially within their relative foraging ranges, and temporally within their breeding and migration seasons, during all phases of the proposed Project.

136. The existing baseline has been informed by consultation with statutory and non-statutory organisations, site-specific surveys, and supported by a desk-based review of existing data sources.

137. The potential for impacts on marine ornithology receptors by all stages of the proposed Project was assessed. The pathways for impact on marine ornithology assessed, included: disturbance due to several activities including vessel movements and WTG operation; underwater noise; indirect changes to habitat and prey distribution and availability; barrier effects; collision risk; entanglement risk; disturbance (attraction) through lighting; and creation of roosting opportunities. Embedded mitigation measures include the implementation of management plans (including a CEMP, PEMP, Vessel Management Plan, Turbine Lighting and Management Plan, and Decommissioning Plan). No additional mitigation or enhancement measures are required.

138. Following the implementation of the embedded mitigation measures the residual potential impacts on marine ornithological receptors during construction, operation, and decommissioning is **minor**, and **not significant**.

139. Cumulative effects on offshore ornithological receptors from the proposed Project alongside all existing, and reasonably foreseeable projects were also considered. The assessment concluded there will be no outstanding significant cumulative effects on offshore ornithological receptors.

140. Possible inter-related receptor-led effects assessed displacement/barrier effects, attraction to the floating platform and nocturnal lighting effects were assessed as part of the main impact. Regarding inter-related Project lifetime effects, it is not considered feasible that short-term, temporary impacts on individual seabirds (assessed qualitatively) will combine in any meaningful or measurable way with the long-term operational impacts (displacement / barrier effects / collision risk) which are assessed quantitatively. It concluded that any potential inter-related receptor-led effect identified would not lead to a change in the population consequence for any of the seabirds assessed under EIA (as reported in **Chapter 22: Marine Ornithology)**, either at individual colonies or at the wider regional (BDMPS) scale.

141. Transboundary effects in relation to EIA and to SPAs in other EEA states are addressed) in **Appendix 8D: HRA Screening** and **Appendix 8E: HRA RIAA**. Thirty six SPAs were considered

for potential likely significant effect (LSE) including 8 UK, 13 Irish and 15 other transboundary SPAs (French, Spanish and Portuguese). No LSE was concluded for transboundary SPAs in French, Spanish or Portuguese SPAs. Further consideration was given to sites in UK and Irish waters, with the conclusion that with mitigation and best practice measures in place the impact pathways associated with the proposed Project will not hinder the conservation objectives of the Annex I marine ornithology features and that there is no potential for an adverse effect on site integrity (AEoSI) due to the proposed Project, either alone or in-combination.

Seascape, Landscape and Visual

142. **Volume 3, Chapter 23: Seascape, Landscape and Visual** assesses the potential impacts of the proposed Project on seascape and landscape character and visual amenity of the proposed Project up to a distance of 45km from the edges of the array area. .

143. The existing baseline has been informed by consultation with stakeholders, informed by site-specific surveys, and supported by a comprehensive desk-based review. .

144. Embedded mitigation measures consist of siting the WTG's over 35 km from the Pembrokeshire coast; siting of WTG's within an extensive, large-scale simple seascape context; use of aviation lighting with two intensity modes for use in different atmospheric conditions and the implementation of management plans which include a Lighting and Marking Plan, and the Outline Project (Array) Layout Plan.

145. The assessment considers the visual impact of potential construction and decommissioning activities such as the movement of vessels and equipment during the installation of the turbines and offshore export cables. The operational visual impact assessment considered visual impacts on landscape designations, seascape and landscape character, and visual receptors. The assessment used selected representative viewpoints across the Pembrokeshire, South Wales and South West English coastline, agreed with stakeholders, to understand visual daytime and night-time changes introduced by the project.

146. Once the identified mitigation measures are implemented, the residual potential impacts on seascape and landscape character are considered to be **minor adverse** or less, and therefore are **not significant.** Similarly, the residual potential impacts on visual amenity are considered to be **minor adverse** to **negligible**, and therefore **not significant.**

147. Cumulative seascape, landscape and visual effects on receptors arising from the proposed Project alongside other planned and existing projects offshore were considered With the identified cumulative effects on considered **negligible** or **minor adverse** and therefore are **not significant.**

148. Inter-related effects on seascape and landscape character across all phases of the proposed Project would be **minor adverse** or less. Potential receptor-led inter-related effects would be limited to a small number of seascape, landscape and visual receptors due to there being no or very limited and / or distant visibility of either the offshore or onshore elements of the proposed Project. Individual impacts were assigned a significance of **minor** or **negligible adverse** as standalone impacts and although potential combined impacts may arise, it is predicted that this would not be any more significant than the individual impacts in isolation. Furthermore, there are considered to be no potential for transboundary impacts and resultant effects to occur.

Marine Archaeology

149. Desk-based and marine geophysical surveys were undertaken to inform the assessment and identify the likely presence of marine historic environment assets (e.g. environmental and prehistoric deposits, artefacts, shipwrecks, aviation crash sites, and debris associated with wreck or crash sites on the seabed across the offshore array and OfECC area) provided in **Volume 3, Chapter 24: Marine Archaeology** The existing baseline was informed in consultation with statutory and non-statutory organisations.

150. Embedded mitigation measures include the implementation of a marine archaeological written scheme of investigation (WSI), which will ensure compliance with relevant legislation. Additional embedded mitigation measures will include the application of an archaeological exclusion zones (AEZ) and protocol for archaeological discoveries (PAD), input into any additional offshore geotechnical investigations, review of any additional geophysical data, and geological assessment of geotechnical samples. The proposed Project will also use HDD at landfall locations to avoid direct impacts to cultural heritage sites on the foreshore.

151. A total of 41 cultural heritage assets were identified within the Study Area (including 25 wrecks and two aircraft), however, no new assets were identified. In addition, no World Heritage sites, Scheduled Monuments, Protected Wreck sites, Registered Parks and Gardens or Registered Battlefields were identified in proximity to the Offshore Development Area. With the implementation of embedded mitigation measures, the residual significance of effect on marine archaeology assets is assessed as **negligible**, or **not significant**.

152. Cumulative effects on archaeological assets are possible where other projects overlap with the Llŷr 1 Zone of Influence (ZoI). Additionally, one known wreck and one prehistoric submerged forest deposit were identified in the overlapping areas. With adherence to the embedded mitigation, the significance of both direct and indirect cumulative effects on these assets is considered **minor** or **negligible** and therefore **not significant**.

Shipping and Navigation

153. Shipping and navigation activity within and in proximity to the Offshore Site was characterised by site-specific vessel traffic surveys, desk-based studies, a review of past accidents, and stakeholder consultation. Key navigational features were identified in proximity to the Offshore Site, including harbours, aids to navigation, subsea cables, and international ship routeing measures. The detailed results are contained in **Volume 3, Chapter 25: Shipping and Navigation**.

154. The assessment establishes a baseline of navigational features, vessel traffic within the array area, vessel traffic within the offshore export cable corridor, and maritime incidents. Site specific navigational surveys consisting of two 14-day AIS, Radar, and visual observation surveys were undertaken in winter 2022 (05 to 19 March 2022) and summer 2023 (09 to 25 July 2023), providing a total of 28 full days. A further 14-day site specific survey was also undertaken in summer 2022 (12 to 26 August 2021) has been used to validate the vessel traffic movements. The assessment considers potential impacts of vessel displacement, collision risks, reduced access to local Ports and Harbours, creation of vessel allision risks, loss of station from a floating WTG, under keel clearance issues, anchor interaction with mooring lines or subsea cables and potential impacts on emergency response capabilities (including search and rescue).

155. Mitigation measures identified include the implementation of safety zones for construction and maintenance activities, various communication processes, planning and risk assessment deliverables, compliance with industry guidance, and monitoring. An additional mitigation

measure has been identified relating to the deployment of Automatic Identification System (AIS) tracking on the floating structures.

156. With the relevant mitigation measures in place, all the risks / impacts were assessed to be **broadly acceptable** or **tolerable** with mitigation were therefore assessed as **not significant**.

157. All cumulative effects, including vessel displacement due to the presence of project vessels associated with other planned floating offshore wind projects and the reduction in under keel clearance due to other subsea cables / cable protection associated with transmission and telecommunication assets, were assessed as **tolerable with mitigation** significance during installation, and **broadly acceptable** significance during operation and maintenance, and decommissioning; these are therefore considered **not significant**.

Commercial Fisheries

158. **Volume 3, Chapter 26: Commercial Fisheries** appraises the likely impacts relating to commercial fisheries during the construction, operation, and decommissioning phases of the proposed Project, within the International Council for the Exploration of the Sea (ICES) statistical area overlapping the proposed Project.

159. The existing baseline has been informed by consultation with statutory and non-statutory organisations and derived from a comprehensive desk-based review that considers local and regional overviews; UK and non-UK landings; and descriptions of the key fishing methods used. The Offshore Site is in an area used by vessels operating a number of different fishing methods. The fishing effort within the proposed Project Area is predominantly used by UK potting fleet within the OfECC. Other commercial fishing activity is relatively limited across the proposed Project development site, ranging from potential occasional activity to negligible activity by the wider commercial fleet (both UK and International). Landings from the local study area were dominated by shellfish species (e.g. brown crab, spider crab and lobster) with other commercial fish demersal and pelagic species being a much significantly smaller contribution to local fish landing values.

160. Identified embedded mitigation measures include project design considerations, marking and lighting arrangements, cable burial methods, the use of safety zones and guard vessels, implementing a dropped objects protocol, marine coordination with the local harbour authority, implementing best practice standards for proposed Project vessels, proactive fisheries liaison, and the implementation of various management plans. Additional mitigation identified includes further post-consent liaison, specific to the UK potting fleet, as part of the Fisheries Liaison and Coexistence Plan (FLCP) with the aim to encourage co-existence with the proposed Project, and further mitigate any potential effects.

161. Following the implementation of embedded and additional mitigation the residual identified potential impacts on commercial fisheries during construction, operation, and decommissioning are considered to be **minor adverse**, and therefore **not significant**.

162. Cumulative effects upon commercial fisheries receptors arising from the proposed Project alongside all existing, and reasonably foreseeable projects and activities were also considered as part of the assessment. The assessment focussed on the reduction of, or loss of access to, established fishing grounds, and the displacement or disruption of commercially important fish and shellfish resources. With the implementation of a FLCP the greatest potential cumulative effects may be reduced to **minor adverse**, and therefore **not significant**. Additionally, inter-related effects are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual project phase. Transboundary effects are considered to be **not significant**.

Aviation and Radar

163. **Volume 3, Chapter 27: Aviation and Radar** appraises the potential impacts and effects of the proposed Project on aviation and radar infrastructure located within 50 km, 100 km, and 150 km during the construction, operation and maintenance and decommissioning phases.

164. The existing baseline has been informed by consultation with statutory and non-statutory organisations and derived from a comprehensive desk-based review. The baseline provides details on the surrounding airspace, radar infrastructure, civil and military aerodromes, military low flying, danger areas, helicopter operations, and meteorological radar.

165. In terms of mitigation, for military low-flying and UK SAR helicopter operations, pilots are ultimately responsible for seeing and avoiding obstructions. Turbines, however, can be difficult to see from the air, particularly in poor meteorological conditions, leading to a potential increase in obstacle collision risk. To mitigate this risk, the turbines at the proposed development will be fitted with Ministry of Defence-accredited aviation safety lighting and the WTG's will be included on aviation charts. For UK SAR helicopter operations, the lighting and marking management plan will be agreed upon with the Maritime and Coastguard Agency (MCA) to ensure compatibility with UK SAR helicopter operations. These and other development design mitigation measures identified will ensure that the overall effect on military low-flying and UK SAR helicopter operations is minor and not significant. Aside from this, no monitoring in the context of aviation and radar is expected to be required

166. Impact pathways during the construction and decommissioning phases have been scoped out, leaving only impact pathways during the operational and maintenance phase. The potential impacts from the operation of the proposed Project on obstacle or collision risk to Aviation and Radar receptors were assessed. The desk-based review, coupled with consultation responses from the relevant aviation stakeholders, identified radar clutter at 3 ATC radars (Manorbier military, Hartland Point military and Cornwall Airport), and one *en-route* radar (Burrington). The potential for physical obstruction and collision risk to low flying military aircraft, civilian aircraft and helicopter operations were identified. The assessment concluded that potential impacts on aviation and radar during operation and maintenance are considered to be **minor adverse**, and therefore **not significant**.

167. Cumulative effects upon aviation and radar from the proposed Project along with other planned projects were considered as part of the assessment, focussing on radar clutter, and physical obstruction. The cumulative effects for both pathways are considered to be **minor adverse**, and therefore **not significant**. Additionally, no inter-related project lifetime effects have been identified in the context of aviation and radar; and inter-related receptor-led effects are predicted to be no greater in significance than that for the individual effects assessed in isolation. Furthermore, there is considered to be no potential for transboundary impacts and resultant effects to occur.

Other Sea Users

168. **Volume 3, Chapter 28: Other Sea Users** appraises the likely direct or indirect impacts relating to other users of the sea within 50 km of the proposed Project, during the construction, operation, and decommissioning phases of the proposed Project.

169. The existing baseline has been informed by consultation with relevant stakeholders, and a desktop review of published information addressing marine tourism and recreation, recreational boating and fishing, other recreational activities, ports and harbour operations, oil and gas operations, renewable energy developments, the presence of subsea cables,

marine dredge activities and the presence and use of disposal and aggregate sites, military activity and the potential for unexploded ordinance.

170. The assessment considered potential impacts to recreational users, offshore infrastructure, potential of risk damage to other third party assets, with mitigation measures identified including amendments to the design and layout of the Array Area, cable siting and routing relative to receptors and other infrastructure; consideration of the landfall location and use of HDD in the inshore area; the implementation of safety zones during construction; use of dynamic positioning by vessels; adherence to industry standard safety legislation and equipment by all vessels; appropriate notifications and regular stakeholder consultation; the implementation of the CEMP, FLCP, Outline Project (Array) Layout Plan, and decommissioning plan. Additional mitigation identified the need for an agreed communications Protocol with the Castlemartin Firing Range, and proximity agreements between the proposed Project and other sea users.

171. After the implementation of embedded and additional mitigation the residual potential impacts on other sea users during construction, operation, and decommissioning are considered to be **minor**, and therefore **not significant**.

172. Cumulative effects on other sea users arising from the proposed Project along with other existing and planned projects were considered; with a focus on disruption to marine tourism and recreation, disruption from increased vessel traffic, and potential damage to, or interference, with third-party assets. The cumulative effects for these pathways are considered to be **minor** or less, and therefore **not significant**. Assessment of inter-related effects on other sea users has been scoped out as no shared receptors were identified within the other ES chapters. In addition, it is considered there is no potential for transboundary impacts and resultant effects to occur.

Volume 4 Project-wide Effects

Climate Change

173. **Volume 4, Chapter 29: Climate Change** identifies the potential impacts on climate as a result of the proposed Project, and outlines how the proposed Project relates to the UK's (including Welsh) climate change legislation. The chapter also identifies how climate change may potentially impact the proposed Project through changes to climatic conditions and extreme weather events, during the construction, operation and decommissioning phases.

174. The chapter outlines the greenhouse gas (GHG) emissions that will rise from the use of materials (embodied GHGs) and fuel use during installation and from electricity and increased vehicle usage for the additional staff employed during operation and maintenance activities. The assessment concludes that the proposed Project has the potential to contribute to national and international carbon reduction and net zero targets and contribute to the decarbonisation of the UK's energy system by providing offshore renewable wind energy generation. By providing renewable energy into the grid, operation of the proposed Project would support national policy ambitions for a renewable and low carbon energy generating and distribution network and net zero targets. .

Major Accidents and Disasters

175. **Volume 4, Chapter 30: Major Accidents and Disasters** (MA&D) outlines the potential for the proposed Project to cause accidents or disasters and the vulnerability of the project to potential accidents or disasters. The disasters may be natural (e.g. meteorological events) or man-made (e.g. hazardous materials incidents). Additionally, the purpose of the MA&D

assessment is to identify appropriate precautionary actions to prevent or mitigate significant risks associated with the proposed Project.

176. The MA&D assessment is divided into four sequential stages: Stage 1 - Identification of hazards and threats; Stage 2 - Screening of hazards and threats (including the identification of the reasonably foreseeable worst-case environmental consequence); Stage 3 - Identification of mitigation; and Stage 4 - Identification of residual risks and their relative significance. The MA&D assessment for the proposed Project concluded that there are no significant residual effects.

177. The MA&D assessment has inherently considered inter-relationship effects with other topics being assessed as part of the EIA which have the potential to lead to a risk event or to affect identified receptors. However, as MA&D are extreme and rare events, they are unlikely to combine with the normal effects of installation or operation described within **Volume 2, 3** or **4** of the ES.

Inter-Related Effects Assessment

178. **Volume 4, Chapter 31: Inter-Related Effects Assessment** outlines the possible inter-related effects of the proposed Project during the construction, operation, and decommissioning phases, and how these impacts might affect different receptors. The evaluation was conducted using information detailed in the technical chapters of the ES in Volume 2 and Volume 3, with the identification of potential connected impacts relying on a qualitative assessment and professional judgement. The inter-related effects are detailed fully within each specialist topic's chapter.

179. The assessment of inter-related impacts for the proposed Project hasn't revealed any significant effects beyond those already mentioned in the corresponding technical assessment chapters. Although some inter-related effects have been identified in **Chapter 31: Inter-Related Effects Assessment**, none are expected to result in effects of greater significance compared to those identified individually.

Residual Effects

180. **Volume 4, Chapter 32: Residual Effects** outlines the possible residual effects of the proposed Project during the construction, operation, and decommissioning phases, and how these impacts might affect different receptors. The residual effects are also detailed fully within each technical chapter.

181. The assessment identified one landscape and visual residual effect considered to be **moderate adverse** / **significant** upon three receptors; one noise and vibration residual effect on one receptor which is also considered to be **moderate adverse** / **significant;** and one socioeconomics, recreation and tourism residual effect on one receptor, considered to be **moderate beneficial** / **significant**.

182. There is one cumulative effect upon one receptor for terrestrial ecology which is considered to be **moderate adverse** / **significant** in the construction phase and one cumulative effect upon one receptor for socioeconomics, recreation and tourism which is considered to be **moderate adverse** / **significant** in the construction phase. There is also one cumulative effect upon one receptor for socioeconomics, recreation and tourism which is considered to be **moderate beneficial** / **significant**. There are two cumulative effects upon the same receptor for commercial fisheries that are considered to be **minor** / **moderate adverse** / **significant** in all three project phases.

183. Further detail regarding the significant residual and cumulative effects, the receptors affected, the proposed Project phase and additional mitigation measures can be found in **Chapter 32 - Residual Effects**, **Table 32-4**.

Conclusion

184. The proposed Project has the potential to contribute substantially to the UK government's 50 GW target of wind generated electricity by 2030, and net zero target for 2050; while simultaneously enabling the progression of floating offshore wind technology to deployment at commercial scale, and developing UK offshore floating wind industrial capability in the Celtic Sea region.

185. The EIA of the onshore and offshore infrastructure has identified and assessed the likely significant effects which would result from its construction, operation, and decommissioning phases of the proposed Project. Where this appraisal has identified significant impacts, commitment to embedded and additional mitigation measures has minimised the vast majority of pathways to levels considered not significant. However, residual significant impacts remain, specifically adverse impacts on visual amenity, adverse impacts from noise created by HDD at night during construction; cumulative adverse impacts upon dormice, and the housing market during construction; cumulative adverse impacts upon UK potting during the construction, operational and decommissioning phases but an overall beneficial impact to the economy.

186. Moving forward, further consultation with regulators and Pembrokeshire County Council may highlight opportunities for further mitigation that can be incorporated into the proposed Project. Moreover, additional information regarding other projects will likely provide the basis to lower the significance or implement further mitigation measures for cumulative effects. These points will assist with satisfying the requirements of the primary consent applications.

References

CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester. [Online]. Available at: https://cieem.net/wp-content/uploads/2019/02/Combined-EclA-guidelines-2018-compressed.pdf [Accessed 16 July 2024].

European Commission, 1999. Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. [Online]. Available at: https://tethys.pnnl.gov/sites/default/files/publications/European-Commission-1999.pdf [Accessed 16 July 2024].

HM Government, 2017. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. [online] Available at: https://www.legislation.gov.uk/uksi/2017/572/regulation/10/made#:~:text=Application%20for%20a%20scoping%20opinion&text=10.,provided%20in%20the%20environmental%20statement. [Accessed 16 July 2024].

HMSO, 2017a. The Marine Works (Environmental Impact Assessment) (Amendment) Regulations 2017. [Online]. Available: https://www.legislation.gov.uk/uksi/2017/588/made [Accessed 11 July 2024].

HMSO, 2017b. The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017. [Online]. Available: https://www.legislation.gov.uk/uksi/2017/580/contents/made [Accessed 11 July 2024].

IEMA, 2004. *Guidelines for Environmental Impact Assessment*. 11-12.

Offshore Renewable Energy Catapult, 2020. Benefits of Floating Offshore Wind to Wales and the South West. [online] Available at: https://www.marineenergywales.co.uk/wp-content/uploads/2020/01/Benefits-of-Floating-Offshore-Wind-to-Wales-and-the-South-West.pdf [Accessed 16 July 2024].

PINS, 2017. Advice Note 7: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements. [online] Available at: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an [Accessed 16 July 2024].