LLŶR FLOATING OFFSHORE WIND PROJECT

Llŷr 1 Floating Offshore Wind Farm

Environmental Statement

Volume 2: Chapter 16 – Socio-economics, Recreation and Tourism

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	Jay Hilton-Miller

Acronyms and abbreviations

Acronym or Abbreviation	Definition	Acronym or Abbreviation	Definition
ASHE	Annual Survey of Hours and Earnings	MLT	Marine Licensing Team
B&B	Bed and Breakfast	NPS	National Policy Statement
BEIS	Department for Business, Energy and Industrial Strategy	NRW	National Resources Wales
BRES	Business Register and Employment Survey	NSIP	Nationally Significant Infrastructure Projects
CAGR	Compound Annual Growth Rate	ONS	Office for National Statistics
CCUS	Carbon Capture, Usage and Storage	OREP	Offshore Renewable Energy Programme
CEA	Cumulative Effects Assessment	O&M	Operation and Maintenance
DECC	Department of Energy and Climate	PCNPA	Pembrokeshire Coast National Park Authority
DESNZ	Department for Energy Security and Net Zero	PPW	Planning Policy Wales
EEA	European Economic Area	PROW	Public Rights of Way
EIA	Environmental Impact Assessment	RYA	Royal Yachting Association
EMF	Electric and Magnetic Fields	SOC	Standard Occupational Classification
ES	Environmental Statement	STEM	Science, Technology, Engineering and Mathematics
FTE	Full Time Equivalent	SUP	Stand Up Paddleboarding
GVA	Gross Value Added	TAN	Technical Advice Note
HCA	Homes and Communities Agency (Now Homes England)	WAP	Working Age Population
HIA	Health Impact Assessment	WIMD	Wales Index of Multiple Deprivation
IAM	Impact Assessment Matrix	WNMP	Welsh National Marine Plan
IC	Infrastructure Consent	ZOI	Zone of Influence
LDP	Local Development Plan		
LSOA	Lower Super Output Area		

Glossary of project terms

Term	Definition
The Applicant	The developer of the Project, Llŷr Floating Wind Ltd.
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.

Term	Definition
Landfall	The location where the offshore export cable(s) from the Array Area, as defined, are brought onshore and connected to the onshore export cables (as defined) via the transition joint bays (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 and visibility splays, that forms the onshore boundary for the planning application.
Onshore Export Cable(s)	The cable(s) that transmit electricity from the landfall to the onshore substation.
Onshore Export Cable Corridor (OnECC)	The area within which the onshore export cable circuit(s) will be located.
proposed Project	All aspects of the Llŷr 1 development (i.e. the onshore and offshore components).
Onshore Substation	Located within the Onshore Development Area, converts high voltage generated electricity into low voltage electricity that can be used for the grid and domestic consumption.
Section 36 consent	Consent to construct and operate an offshore generating station, under Section 36 (S.36) of the Electricity Act 1989. This includes deemed planning permission for onshore works.

Contents

List of Figures

List of Tables

16. SOCIO-ECONOMICS, RECREATION AND TOURISM

16.1 Introduction

1. Llŷr Floating Wind Limited (hereafter the Applicant) is proposing to develop the Llŷr 1 Floating Offshore Wind Farm (hereafter referred to as the proposed Project), located approximately 35 km off the coast of Pembrokeshire in the Celtic Sea.
2. The proposed Project is a test and demonstration wind farm development, comprising up to 10 wind turbine generators (WTGs). The proposed Project will make landfall at Freshwater West before connecting into Pembroke Dock power station and the national grid network.
3. The Applicant is seeking a Section 36 consent and Marine Licence for Llŷr 1, and this chapter forms part of the Environmental Statement (ES) which is submitted in support of those consent applications. This chapter describes the potential impacts and effects of the proposed Project on socio-economics, recreation and tourism receptors during the construction, operation and maintenance and decommissioning phases, and includes mitigation and good practice measures to reduce the impacts of the proposed Project on these receptors.
4. **Section 16.10** of this ES chapter provides a summary of the impact assessment undertaken and any residual significant effects on socio-economics, recreation and tourism receptors following consideration of any mitigation measures.
5. The assessment presented in this chapter should be read in conjunction with the following linked and supporting chapters:
    - **Chapter 04: Description of the Proposed Project;**
    - **Chapter 05: EIA Approach and Methodology;**
    - **Chapter 13: Traffic and Transport;**
    - **Chapter 15: Air Quality; and**
    - **Chapter 16: Noise and Vibration.**
6. The assessment has been undertaken by AECOM. Further details of the proposed Project Team's competency are provided in **Appendix 1A: Statement of Competence**.

16.2 Legislation, Policy and Guidance

7. In accordance with Section 39 of the Wales Act 2017 (UK Government, 2017), offshore wind developments, such as the proposed Project, with a capacity of between 1 and 350 MW are not subject to a Development Consent Order. However, guidance relevant to NSIPs is considered relevant for this proposed Project in line with best practice. National Policy Statements (NPSs) were developed to provide guidance in the determination of NSIPs, and are used by NRW to guide development and decision making. Some of those relevant to the proposed Project include:
    - The Overarching National Policy Statement for Energy ((NPS EN-1), Department for Energy Security and Net Zero (DESNZ), 2023);
    - NPS for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023); and
    - NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023).
8. Further information on national planning policy can be found in **Chapter 02: Legislation and Policy.**
9. The following sections identify specific legislation, policy and guidance that is applicable to the assessment of socio-economic, recreational and tourism effects. Further detail on the wider

legislation, policy and guidance relevant to this ES is provided in **Chapter 02: Regulatory and Planning Policy Context**.

16.2.1. Legislation

10. The legislation that is applicable to the assessment of socio-economic, recreational and tourism effects is summarised in this section.

11. **Environment (Wales) Act (2016):** The Environment (Wales) Act was introduced in March 2016 by the Welsh Government, with the aim of managing the natural resources in Wales more sustainably (Welsh Government, 2016). A key policy within the Act is the need to adopt a more integrated approach to managing natural resources to achieve long-term sustainability. The legislation placed new regulations on plastic bags, waste, use of fisheries, and marine licensing. The Act also placed a duty on Welsh Ministers to set targets for reducing greenhouse emissions and to set carbon budgets, to help transition Wales to a low-carbon economy.

12. Through this act, the Welsh Government established a framework which includes producing:

- The State of Natural Resources Report – Natural Resources Wales (NRW) must produce a report that gives an assessment of natural resources and how well they are being managed.
- A National Natural Resources Policy – the Welsh Government must produce a national policy that sets out the priorities, risks and opportunities for managing natural resources sustainably. The policy will consider the findings of the State of Natural Resources report.
- Area statements – NRW will produce a local evidence base, which helps to implement the priorities, risks and opportunities identified in the National Policy and how NRW intends to address these.

13. **The Planning (Wales) Act (2015):** The Planning (Wales) Act was established in 2015, and acts to strengthen the '*plan-led*' approach to planning in Wales (Welsh Government, 2015). The key purposes of the Act include:

- Strengthen the plan-led approach to planning. The Bill introduces a new legal framework for the Welsh Ministers to prepare a national land use plan, to be known as the National Development Framework for Wales. The framework will set out national land use priorities and infrastructure requirements for Wales.
- Make provision for the production of Strategic Development Plans, to tackle larger-than-local cross-boundary issues, such as housing supply and areas for economic growth and regeneration.
- Make provision for pre-application consultation, and to require local planning authorities to provide pre-application services.
- Provide for planning applications for nationally-significant projects to be made to the Welsh Ministers.
- Reform the development management system to streamline procedures, to ensure that applications are dealt with promptly, providing certainty for developers and communities.

14. **Well-being of Future Generations (Wales) Act (2015):** The Well-being of Future Generations (Wales) Act 2015 was established with the intention to improve the social, economic, environmental, and cultural well-being of Wales (Welsh Government, 2015). The Act places a statutory duty on public bodies in relation to sustainable development, based on seven well-being goals. The key goals of the Act in the context of the proposed Project are to become:

- ‘Prosperous – An innovative, productive and low carbon society which recognises the limits of the global environment and, therefore, uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.’
- ‘Resilient – A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience.'
- ‘Globally Responsible – A nation which, when doing anything to improve the economic, social environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.’

15. **Welsh Language (Wales) Measure (2011):** The Welsh Language Measures ensures that the Welsh Language has official status in Wales. The official status of the Welsh language is given legal effect by enactments such as:

- Duties on bodies to use the Welsh language, and the rights which arise from the enforceability of those duties, which enable Welsh speakers to use the language in dealings with those bodies (such as the provision of services by those bodies);
- The treatment of the Welsh language no less favourably than the English language;
- The validity of the use of the Welsh language;
- The promotion and facilitation of the use of the Welsh language;
- The freedom of persons wishing to use the Welsh language to do so with one another;
- The creation of the Welsh Language Commissioner; and
- Other matters relating to the Welsh language.

16. These measures ensure that the Welsh and English languages are treated ‘on a basis of equality’ and are given equal standing on other Measures and Acts of the National Assembly for Wales and subordinate legislation.

17. **Infrastructure (Wales) Bill (2023):** The Infrastructure (Wales) Bill was introduced as prospective legislation in June 2023 by the Welsh Government, with the purpose of simplifying the process to consent major infrastructure projects in Wales, through making a more transparent and consistent approach (Welsh Government, 2023). This process will be known as an Infrastructure Consent (IC) and will focus on specific types of major infrastructure called Significant Infrastructure Projects (SIPs). These include energy, transport, waste, water and gas projects. IC replaces existing statutory regimes and reduces the number of authorisations needed to construct and operate a SIP by incorporating them into a single consent.

18. **Health and Well-being Impact Assessment for the Planning (Wales) Bill (2015):** The Planning (Wales) Bill is a set of provisions which provide a prospective legislative framework for the operation of the planning system in Wales. The Bill provisions will support the Welsh Government’s aims in line with the Programme for Government, and reflect how the Welsh Government have put sustainable development at the heart of government (Welsh Government, 2015). Specifically, the Bill mentions the following relevant objectives in relation to socio-economic impacts:

- To strengthen the conditions that will enable businesses to create jobs and sustainable economic growth; and

- Contribute to '*health'* in its broadest sense (as defined by the world health organisation) – a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

16.2.2. National Planning Policy

Table 16-1. A summary of national planning policy relevant to socio-economics, recreation and tourism

Summary of policy	How and where it is considered in the chapter
Build Back Better (UK Government, 2021): The Build Back Better publication sets out the UK Government policy for supporting economic growth through investment (UK Government, 2021). A key objective to achieve growth is through supporting the transition to net-zero, and to embrace net zero industries. In particular, the UK Government commits to: • Invest in net zero to create new opportunities for economic growth and jobs across the country, including supporting up to 60,000 jobs in the offshore wind sector, 50,000 jobs in Carbon Capture, Usage and Storage (CCUS) and up to 8,000 in hydrogen in our industrial clusters. • Grow the current net zero industries and encourage new ones to emerge. This includes working with industry, aiming to generate 5GW of low carbon hydrogen production capacity and capture 10Mt CO2 / year using CCUS by 2030, and ending the sale of new petrol and diesel cars and vans in 2030.	The proposed Project creates opportunities for economic growth and jobs in the offshore wind sector, which is assessed in **Section 16.8**.
Building Better Places (Welsh Government, 2020): The Building Better Places publication aims to support improvements in placemaking in Wales as a direct response to the COVID-19 pandemic (Welsh Government, 2020). Published in July 2020 by the Welsh Government, it sets out the following relevant issues to address: • Staying local: creating neighbourhoods • Changing working practices: our future need for employment land • Reawakening Wales' tourism and cultural sectors • Green infrastructure, health and well-being and ecological resilience	The proposed Project supports the establishment of green infrastructure in Pembrokeshire, and its effects are considered in **Section 16.8**.
Ten Point Plan for a Green Industrial Revolution: The UK Government has explicitly set out plans to meet net zero targets by 2050 through their Ten Point Plan (UK Government, 2020). Within this policy paper, the first key objective is to quadruple the UK offshore wind capacity, stating	The proposed Project aligns to the policy through assisting the increase in offshore wind capacity in the UK. The socio-economic effect of this is considered within **Section 16.8**.

Summary of policy	How and where it is considered in the chapter
that '*by 2030, we aim to produce 40GW of offshore wind, including 1GW of innovative floating offshore wind in the windiest parts of our seas…To support this enlarging industry, we will invest £160 million into modern ports and manufacturing infrastructure, providing high quality employment in coastal regions. We will also enable the delivery of 60% UK content in offshore wind projects*'.	
Energy White Paper – Powering Our Net Zero Future (BEIS, 2020): The former department for Business, Energy, and Industrial Strategy (BEIS, now DESNZ[1]) released the Energy White Paper in December 2020, which explicitly sets out a strategy for the wider energy system to transition to net zero, with Offshore Wind recognised as a key policy area. The Energy White Paper sets out the government's policies and commitments, following the Ten Point Plan, noted above, and specifically increasing offshore wind capacity, aiming to put the UK on the course to Net Zero.	The proposed Project aligns to the policy through assisting the increase in offshore wind capacity in the UK. The socio-economic effect of this is considered within **Section 16.8**.
Planning Policy Wales (Welsh Government, 2021): The 12th edition of Planning Policy Wales (PPW) was published in February 2024 (Welsh Government, 2024). PPW gives substantial importance to the sustainable development and the vision for Wales to become economically, socially and environmentally sustainable. When implementing this placemaking policy, development proposals should assess the following economic considerations: • '*The numbers and types of long term jobs expected to be created or retained;* • *whether, and how far, the development will help redress economic disadvantage or support regeneration priorities, for example by enhancing local employment opportunities or upgrading the environment;* • *the contribution the development would make to achieving wider strategies, for example the growth or regeneration of certain areas;*	The proposed Project aligns to the policy through assisting the increase in offshore wind capacity in Wales in order for renewable energy to become the majority provider of energy. The socio-economic, tourism and recreational effects of this are considered within **Section 16.8**.

[1] This department was recently changed to the Department for Energy Security and Net Zero (DESNZ), however, this paragraph refers to BEIS as this was the name of the department when the White Paper was published.

Summary of policy	How and where it is considered in the chapter
• *the contribution this economic activity will have to wider policy goals; and* • *how the proposal would support the achievement of a more prosperous, low carbon, innovative and resource efficient Wales.'* Development proposals should also consider the following cultural considerations: • *'whether or not the development protects areas and assets of cultural and historic significance;* • *have cultural considerations and their relationships with the tourism industry been appropriately maximised;* • *if the proposal protects areas known for their cultural value in terms of music, literature, sport and the arts; and* • *vibrant cultural experiences.'* The Welsh Government has a set target for Wales to generate 70 % of its electricity consumption from renewable energy by 2030, stating that *'The planning system has an active role to help ensure the delivery of these targets, in terms of new renewable energy generating capacity and the promotion of energy efficiency measures in buildings.'*	
Future Wales – The National Plan 2040, (Welsh Government, 2020): This is the National Development Framework for Wales up to 2040 (Welsh Government, 2020). It seeks to address key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate resilience, and improving the health and well-being of our communities. Policies 17 and 18 set out Future Wales' approach to renewable energy generation across Wales, and highlight that proposals should describe the net benefits the proposed Project will bring in terms of social, economic, environmental and cultural improvements to local communities, whilst having no adverse impacts on the surrounding environment. Haven Waterway, including the ports of Milford Haven and Pembroke Dock, are identified within the Welsh Government's Strategic Gateways to facilitate international connectivity and connecting Wales to the World (Policy 10). The	The proposed Project lies within an area that is significant nationally to Wales, and aligns with the targets for renewable energy. The socio-economic effect of the proposed Project is considered within **Section 16.8**.

Summary of policy	How and where it is considered in the chapter
Welsh Government will support appropriate development which can enhance international connectivity and can be accommodated within statutory climate change targets and carbon budgets. Policy 32 also supports development in the area of the proposed Project, through Haven Waterway. Haven Waterway and Energy states that '*Welsh Government supports operations at Haven Waterway and recognises its location for potential renewable and low carbon energy-related development, innovation and investment. New energy related development should support local and regional communities and provide jobs and investment in training and skills'.*	
Stronger, Fairer, Greener Wales - Net Zero Skills Action Plan (Welsh Government, 2023): The Net Zero Skills Action Plan sets out seven key areas of action to support the Welsh economy whilst simultaneously transitioning away from a fossil-fuelled economy. The seven key areas are as follows: • Gain an understanding of the current skills position for each emission sector; • Build a shared understanding of net zero skills across Wales; • Grow a skilled workforce to meet our net zero commitments; • Strengthen the skills system; • Promote opportunities for early years and young people to realise their potential; • Cross-government and partnership approach to meet our skills commitment; and • Just transition. Within this, the Welsh Government has outlined 36 key actions, for the short, medium and long term, in order to transition to a net zero economy.	The proposed Project generates employment in all three phases to support the growth of a skilled net zero workforce, alongside providing training opportunities. This is considered further within **Section 16.8**.
Net Zero Wales Carbon Budget 2 (2021-25) (The Welsh Government, 2021): The Welsh Government released the Carbon Budget 2 in 2021 following the declaration of a climate emergency in Wales in 2019. Among the policy areas covered in the carbon budget, policy 22 focuses on increasing renewable energy developments on land through the planning regime. The policy states that Consenting for project development is '*fully devolved, so can*	The proposed Project supports Policy 22 and Policy 24, and the socio-economic effects of the proposed Project are considered further within **Section 16.8**.

Summary of policy	How and where it is considered in the chapter
legislate for the consenting of generating stations which have an installed capacity of 350 MW or less, as well as all onshore wind and energy storage developments'. Policy 24 focuses on supporting offshore and marine renewable energy deployment. The Welsh Government states that '*Natural Resources Wales (NRW) has a key role to play in advising on future opportunities for marine renewable energy and we are working with NRW to continue the Offshore Renewable Energy Programme (OREP)… We are collaborating with the Crown Estate and others through the Offshore Wind Evidence and Change Programme to understand spatial opportunities for offshore wind including floating wind developments.'*	
Welcome to Wales - Priorities for the visitor economy 2020-25, (Welsh Government, 2017): This document sets out the plan for tourism in Wales to drive sustainable growth and for harnessing the visitor economy for wider gain, and the aims on how to get there. The document states that '*More than 9% of the workforce in Wales is now employed in tourism. It is one of the country's fastest growing sectors and benefits many rural areas as the main driver of the economy and source of employment*'. Given this, the policy focuses on economic growth that delivers benefits for people and places, including environmental sustainability, social and cultural enrichment and health benefits.	This chapter considers the socio-economic, recreation and tourism effects of the proposed Project **in Section 16.8** to identify any impacts and to align with the objectives of this policy.
Welsh National Marine Plan (Welsh Government, 2019): By adopting this policy, the Welsh Government committed to the requirement to introduce Marine Plans for Wales. The Welsh Government has developed the first marine plan for Welsh inshore and offshore waters. Objective 5 of the Welsh National Marine Plan (WNMP) seeks to '*recognise the significant value of coastal tourism and recreation to the Welsh Economy and welling and ensure that such activity and potential for future growth are appropriately safe guarded'*. Furthermore, Policy SOC_02 focuses on the well-being of coastal communities. This policy recognises that development and use of the marine environment has the potential to affect the socio-economic future of coastal	This chapter considers the recreational and tourism effects of the proposed Project in **Section 16.8** to identify any impacts and to align with the objectives of this policy, which recognises the significant value of coastal tourism and recreation.

Summary of policy	How and where it is considered in the chapter
communities and decision makers should ensure that opportunities to contribute positively to the future well-being of coastal communities are taken. It covers policies and commitments on the wider ecosystem, as set out in the MPS including those relating to the Marine Strategy Framework Directive and the Water Framework Directive, and other environmental, social, and economic considerations. Energy Low Carbon Sector Objective 1 of the WNMP is to '*contribute significantly to the decarbonisation of the economy and prosperity by increasing the amount of marine renewable energy generated through supporting offshore wind, wave energy and tidal stream energy generation, generating a better understanding of the potential for tidal lagoon power, and recognising the potential role of the marine environment in new coastal nuclear energy generation facilities'*. Objective 2 states that it will develop Wales as an exemplar of marine renewable energy by developing the skill base, infrastructure, and technical knowledge to support the industry over the next 20 years.	
Net Zero - The UK's contribution to stopping global warming (The Committee on Climate Change, 2019): The Committee for Climate Change (CoCC) states that the UK should aim to reduce greenhouse gas emissions to '*net-zero'* by 2050 and to end the UK's contribution to global warming by this point (CoCC, 2019). To do so, CoCC states that *'Most sectors will need to reduce emissions close to zero without offsetting'* and stresses that greater urgency is required to meet current climate targets. The net zero target was made legally binding by the Climate Change Act 2008 (2050 Target Amendment) Order 2019 (UK Government, 2019). The role of renewable energy will be considerable, and to meet a net zero target by 2050, the current energy system will require extensive electrification, supported by a '*major expansion of renewable and other low-carbon power generation'*.	The proposed Project aligns with net-zero objectives at a UK level and this chapter assesses the socio-economic, recreational and tourism effects of the proposed Project, which are summarised in **Section 16.10**.
Welsh Government Economic Resilience and Reconstruction Mission (Welsh Government, 2021): The Economic Resilience and Reconstruction Mission sets out how Welsh Government is to address the socio-economic	The proposed Project aligns with objectives to support a green recovery in Wales, and to support the tourism industry following the COVID-19 pandemic. This chapter assesses the socio-economic, recreational and tourism

Summary of policy	How and where it is considered in the chapter
impact of the coronavirus pandemic, to recover from the economic damage of the pandemic and reconstruct the economy to help its people, businesses, and communities to prosper. The Mission is underpinned by five beacons to help achieve its vision of a well-being economy which drives prosperity, is environmentally sound, and helps everyone realise their potential: • Strengthening the Foundational Economy • Protecting and enabling skills and employment • Accelerating adaptation for recovery and future prosperity • Magnetising investment in a green recovery • Fortifying the pursuit of social value '*Strengthening the Foundational Economy*' relates to the need to champion and support the sectors that provide the infrastructure of everyday life, such as care and health services, childcare, food, housing, energy, construction, waste and recycling. Tourism, including sporting and recreational activities, has been identified as one of Welsh Government's four priority foundational economy sectors alongside care, retail and food. Through '*Protecting and Enabling Skills and Employment*', Welsh Government aims to support people across Wales into work and to prepare the workforce for the immediate and long-term challenges through access to support, training, higher and further education.	effects of the proposed Project, which are summarised in **Section 16.10**.

16.2.3. Regional Planning Policy

Table 16-2. A summary of regional planning policy relevant to socio-economics, recreation and tourism

Summary of policy	How and where it is considered in the chapter
Swansea Bay City Deal (Swansea Bay City Region, 2023): The Swansea Bay City Deal, led by the four regional local authorities of Carmarthenshire Council, Swansea Council, Neath Port Talbot Council and Pembrokeshire County Council, is an investment consisting of £1.3 billion across several programmes and projects across the Swansea Bay City Region. The programme will also support the transition to a net zero economy through its activities.	The proposed Project supports the transition to a net zero economy in the Swansea Bay City Region, and the socio-economic, recreation and tourism effects of this have been assessed in **Section 16.8**.

16.2.4. *Local Planning Policy*

Table 16-3. A summary of local planning policy relevant to socio-economics, recreation and tourism

Summary of policy	How and where it is considered in the chapter
Pembrokeshire County Council Local Development Plan (Pembrokeshire County Council, 2013): Pembrokeshire County Council's Local Development Plan provides the framework for decisions on how land is used and developed within the local authority, which includes decisions on new energy infrastructure, such as offshore wind. Although Pembrokeshire's Local Development Plan was developed before 2013, the policy is still relevant to offshore wind. For example, Policy GN.4 focuses on '*Resource Efficiency and Renewable and Low-Carbon Energy Proposals'* The policy states that '*Development proposals should seek to minimise resource demand, improve resource efficiency and seek power generated from renewable resources, where appropriate. They will be expected to be well designed in terms of energy use. Developments which enable the supply of renewable energy through environmentally acceptable solutions will be supported.'*	The Local Development Plan prioritises low carbon energy proposals, including those proposed in the proposed Project. The socio-economic, recreation and tourism effects of this have been assessed in **Section 16.8**.
Pembrokeshire Recovery and Regeneration Strategy 2020-2030 (Pembrokeshire County Council, 2020): This strategy combines the economic restart and recovery plans in response to the COVID-19 pandemic with a longer term renewal and regeneration approach. One of the key objectives is to focus on green energy, stating its focus on *'New approaches around localism and resilience, particularly in local food production as well as growth in interest in green energy and sustainable transport supporting the Swansea Bay City Deal trajectory'.*	At a local level, the effect of the proposed Project on recreational and tourism receptors is considered in **Section 16.8** to support the recovery of the Pembrokeshire economy from the COVID-19 pandemic. The proposed Project also supports a transition to a *'green economy'*, which supports the ambitions of this policy.
Pembrokeshire County Council Action Plan Towards Becoming A Net Zero Carbon Local Authority By 2030 (Pembrokeshire County Council, 2019): In 2019, Pembrokeshire County declared a climate emergency, and subsequently developed an action plan towards becoming a net zero carbon local authority by 2030. Within the Action Plan, Pembrokeshire County Council envisions a big role for offshore and onshore wind, and highlights this as a key area of investigation to enable a net zero local authority by 2030.	The proposed Project supports the transition of the local authority towards becoming net zero, and the socio-economic, recreation and tourism effect of the proposed Project have in turn been assessed in **Section 16.8**.

Summary of policy	How and where it is considered in the chapter
Pembrokeshire Coast National Park Local Development Plan (LDP) 2 2020-2031, (Pembrokeshire Coast National Park Authority 2020): Pembrokeshire Coast National Park recognises the importance of tourism and the visitor economy throughout its LDP. The Plan includes the long-term vision for the Pembrokeshire Coast National Park and the objectives and land use policies needed to deliver that vision. The key objectives of the plan include: • To attract a sustainable number of people at all times of the year to enjoy the special qualities of the National Park (Policy 38); and • To help create and maintain a diverse, viable and sustainable local economy benefiting all sections of the community (Policy 43, Policy 44 and Policy 45).	This chapter considers the recreational and tourism effects of the proposed Project in **Section 16.8** to identify any impacts and to align with the objectives of this local policy, which recognises the significant value of coastal tourism and recreation.
Well-being Plan for Pembrokeshire, (Pembrokeshire Public Services Board, 2023): The Well-being Plan represents the additional value that can be delivered through working innovatively and collaboratively as partners. The Plan sets out how public and private sector partners will work together to improve economic, social, environmental and cultural well-being in Pembrokeshire through joint working across three specific project areas: • Reducing poverty and inequalities; • Strengthening communities; and • Tackling climate change and the nature emergency. The Plan states that *'Working with communities and a wide variety of stakeholders from the public, private and third sector organisations, to identify solutions to adapt to address the risks and impacts of climate change will help build capacity, capability and confidence to strengthen community cohesion. It will also help inform community profiles and community well-being plans'.*	The proposed Project supports the wellbeing plan, through tackling climate change and the nature emergency. As a result, this chapter assesses the socio-economic, recreational and tourism effects of the proposed Project in **Section 16.8** to identify any impacts and to align with the objectives of this policy.

16.2.5. Guidance

Table 16-4. A summary of guidance relevant to socio-economics, recreation and tourism

Summary of Guidance	How and where it is considered in the chapter
Technical Advice Note 13 - Tourism (Planning Guidance Wales, 1997): Technical Advice Notes (TANs) have been produced by the Welsh Government, and all are to be read in conjunction with Planning Policy guidance from the Welsh Government. For TAN 13: Tourism, it is stated that *'While it cannot be regarded as a single or distinct category of land use, the issues it raises should be addressed in preparing or revising development plans and may feature in development control decisions. Development plans may provide guidance on opportunities for larger scale or innovative projects, appropriate facilities for the countryside or designated areas and the provision of facilities in historic towns and seaside resorts.'*	The effect of the proposed Project is considered with respect to this TAN, through the assessment of recreational and tourism effects outlined in **Section 16.8**.
TAN 16: Sport Recreation and Open Space (Planning Policy Wales, 2009): This TAN focuses on the impact of Planning Policy on these subjects. The TAN notes that *'Planning conditions and obligations (Section 106 Agreements) can be used to provide open space, sport and recreational facilities, to safeguard and enhance existing provisions, and to provide for their management. PPW indicates that planning obligations should only be sought where they are necessary to make a proposal acceptable in land use planning terms. Local planning authorities will usually be justified in seeking planning obligations where the quantity or quality of provision for recreation is inadequate or under threat, or where new development increases local needs.'*	The effect of the proposed Project is considered with respect to this TAN, through the assessment of recreational effects outlined in **Section 16.8**.
TAN 23: Economic Development (Welsh Government, 2015) This TAN reflects the intersection of economic development with planning policy guidelines. The TAN states that *'Where economic development would cause environmental or social harm which cannot be fully mitigated, careful consideration of the economic benefits will be necessary. There will of course be occasions when social and environmental considerations will outweigh economic benefit. The decision in each case will depend on the specific circumstances and the planning authority's priorities'.* Regarding low	The effect of the proposed Project is considered with respect to this TAN, through the assessment of socio-economic effects outlined in **Section 16.8**.

Summary of Guidance	How and where it is considered in the chapter
carbon initiatives, the TAN states that *'the planning system should particularly support the low-carbon economy, innovative business / technology clusters and social enterprises which are defined as businesses that are particularly important in providing opportunities for social groups disadvantaged in the labour market.'*	

16.3 Stakeholder Engagement and Consultation

19. Consultation with statutory and non-statutory organisations is a key element of the EIA process. Consultation with regards to socio-economics, recreation and tourism has been undertaken to inform the approach to, and scope of, the assessment.

20. Stakeholders for the proposed Project include statutory consultees, landowners, local communities and other sea users. In addition to the statutory consultation process, there has been ongoing engagement with statutory and non-statutory consultees to steer the development of the proposed Project and this is detailed in **Table 16-5**.

16.3.6. Summary of Stakeholder Consultation

Table 16-5. Summary of the key issues raised by consultees and how each issue was addressed

Consultee	Consultation type and date	Comment raised	How issue has been addressed and location of response in chapter
Pre-application			
Pembrokeshire Coast National Park Authority (PCNPA)	Scoping Opinion 2023	PCNPA raised the issue of potential adverse impacts of the construction employment on housing and accommodation demands. An increase in the size of the workforce could create social friction and reduced supply of housing for residents.	An assessment of the construction workforce impacts on the local housing market is incorporated into the assessment of construction phase effects of the proposed Project. This has been accounted for in **Section 16.8**.
		PCNPA raised the issue of adverse visual amenity effects as a result of the offshore wind turbines and a concern that this may have impacts on the tourism and recreational sector including recreational sea users.	The impacts of **Chapter 07: Seascape, Landscape and Visual** chapter that affect the Socio-economics, Tourism and Recreation chapter will be referred to where applicable. This has been accounted for in **Section 16.8.**

16.4 Approach to Assessment

16.4.1. Assessment Methodology

21. **Chapter 05: EIA Approach and Methodology** provides a summary of the general impact assessment methodology applied in this ES. The following sections provide further detail on the specific methodology used to assess the potential impacts on socio-economic, recreation and tourism receptors.

22. The approach to the assessment of cumulative impacts, transboundary impacts and interrelated effects is provided in Sections 16.11, 16.12 and 16.13.

23. There is currently no industry-recognised guidance or methodology for undertaking assessments of socio-economic effects. The assessment follows best practice methodology from other assessments undertaken on comparable energy infrastructure schemes. The approach to making balanced assessments for the proposed Project has been guided by technical specialists, using available data, experience and expert judgement.

24. The socio-economic assessment produced a review of baseline conditions within the Study Area, which is outlined within **Section 16.5** of this ES. This has been used as a contextual basis to assess against the potential impacts (beneficial, adverse or neutral) from the proposed Project.

25. To ensure a robust assessment of the likely significance of the environmental socio-economic effects of the proposed Project, this chapter assesses the maximum (or where relevant, minimum) realistic worst-case parameters for the elements where flexibility needs to be retained (building dimensions or operational modes for example).

26. In this chapter, the minimum scenario will be assessed for employment and skills and training, as it is envisioned to be a beneficial impact. In contrast, maximum parameters for impacts on other receptors (such as Public Rights of Way (PROW), the employment effect on the housing market and local services) will be assessed, whereby the 'worst case scenario' is considered, as the effect of the Proposed Development is expected to be an adverse impact.

27. This impact assessment considers the potential for effects during the construction, operation and decommissioning phases of the proposed Project. Impacts have been classified as follows:

- Direct impacts: these may arise from impacts associated with the construction, operation and maintenance, or decommissioning of the proposed Project;
- Indirect impacts: these may be experienced by a receptor that is not within the footprint extent of the direct impact; and
- Cumulative impacts: these may occur as a result of the proposed Project, in conjunction with other existing, or planned projects within the Study Area, for each receptor.

28. The significance of potential effects has been evaluated using a systematic approach together with the expert judgement of the specialist consultant. The systematic approach is based upon the identification of the importance / value of receptors and their sensitivity to the proposed Project together with the predicted magnitude of the potential impact.

16.4.2. Significance Criteria

Magnitude of Impact

29. The scale or magnitude of potential impacts (both beneficial and adverse) is determined by a combination of three criteria: scale of change, spatial extent of change and duration of change, as outlined in **Chapter 05: EIA Approach and Methodology**, **Section 5.4.9**.

30. The criteria for defining magnitude of impact for the purpose of the assessment on socio-economic, recreational and tourism receptors are provided in **Table 16-6**.

Table 16-6. A summary of the magnitude criteria that are associated to specific impacts

Magnitude Criteria	Definition
High	The impact occurs over a large spatial extent resulting in widespread, long-term, or permanent changes in baseline conditions or affects a large

Magnitude Criteria	Definition
	proportion of a receptor population. The impact is very likely to occur and/or will occur at a high frequency or intensity. **Adverse:** Loss of resource and / or quality and integrity of resource; severe damage to key characteristics, features or elements **Beneficial:** Large scale or major improvement of resource = quality; extensive restoration; major improvement of attribute quality
Medium	The impact occurs over a medium spatial extent resulting in medium-term, or partial changes in baseline conditions or partially affects a proportion of a receptor population. The impact is likely to occur and / or will occur at a medium frequency or intensity. **Adverse:** Loss of resource, but not adversely affecting the integrity; partial loss of / damage to key characteristics, features or elements **Beneficial:** benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality
Low	The impact occurs over a small spatial extent resulting in short-term, or small changes in baseline conditions or partially affects a small proportion of a receptor population. The impact has a low likelihood of occurring and / or will occur at a low frequency or intensity. **Adverse:** Some measurable change in attributes, quality, minor loss of, or alteration to, one or more key characteristics, features or elements. **Beneficial:** Minor benefit to, or in addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk or negative impact occurring
Negligible	The impact occurs over a minor spatial extent resulting in very short-term, or minor changes in baseline conditions or partially affects a very small proportion of a receptor population. The impact has a very low likelihood of occurring and / or will occur at a very low frequency or intensity. **Adverse:** Very minor loss of detrimental alteration to one or more characteristics, features or elements. **Beneficial:** Very minor benefit to or positive addition of one or more characteristics, features or elements

Sensitivity of the Receptor

31. Receptor sensitivity is defined as the degree to which a receptor would be affected by an impact. The sensitivity of the receptor is characterised by three factors: vulnerability, recoverability and importance, as outlined in **Chapter 05: EIA Approach and Methodology**, **Section 5.4.10.**

32. The criteria for defining receptor sensitivity for the purpose of the assessment on socio-economic, recreational and tourism receptors are provided in **Table 16-7**.

Table 16-7. A summary of the criteria determining a receptor's sensitivity

Receptor Sensitivity Criteria	Definitions
Very High	Very high importance and / or rarity, internationally important receptor with little or no ability to absorb change without

Receptor Sensitivity Criteria	Definitions
	fundamentally altering its character. Limited potential for substitution.
High	High importance and / or rarity, nationally important, limited ability to absorb change and limited potential for substitution.
Medium	Medium or high importance and / or rarity, regional scale, limited potential for Substitution, with a medium ability to absorb change.
Low	Low or medium importance and / or rarity, local scale, with some ability to absorb change.
Negligible	Very low importance and / or rarity, local scale, with good ability to absorb change.

Significance of Effect

33. As set out in **Chapter 05: EIA Approach and Methodology**, an Impact Assessment Matrix (IAM) is used to determine the significance of effect which is a function of the sensitivity of the receptor and the magnitude of the impact, as shown in **Table 16-8**. This IAM differs from the standard methodology noted in **Chapter 05: EIA Approaches and Methodology**, but it is judged as more suitable for assessing the socio-economic, recreation and tourism receptors affected by the proposed Project. This aligns with the methodology set out in the **Scoping Report.**

34. The matrix provides a framework for the consistent and transparent assessment of predicted effects across all receptor topics; however, it is important to note that the IAM acts as a guide and that assessments also allow for the application of expert judgement.

Table 16-8. Significance matrix

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

35. The IAM provides levels of effect significance ranging from major to negligible. Assignment of significance is carried out with consideration of embedded mitigation measures relevant to socio-economics, recreation and tourism. Embedded mitigation measures (including project design measures and best practice) are presented within **Section 16.7**. Details on additional mitigation measures and associated definitions can be found in **Section 16.9**. For the purposes of this assessment, Moderate and Major levels of significance are defined as significant, and where relevant additional mitigation measures may be required, whilst Negligible or Minor impacts are defined as not significant.

Table 16-9. A summary of the definitions of each significant of effect criteria

Significance Category	Definitions	Significant / Not Significant Effect
Major	A large and detrimental change to a valuable / sensitive receptor; likely or apparent exceeding of accepted (often legal) threshold. Or A large and beneficial change, resulting in improvements to the baseline result in previously poor conditions being replaced by new legal compliance or a major contribution being made to national targets. These effects may represent key factors in the decision-making process. Potentially associated with sites and features of national importance or likely to be important considerations at a regional or district scale. Major effects may relate to resources or features which are unique and which, if lost, cannot be replaced or relocated.	Significant
Moderate	A medium scale change which, although not beyond an acceptable threshold, is still considered to be generally unacceptable, unless balanced out by other significant positive benefits of a project. Likely to be in breach of planning policy rather than a legal statute. Or A positive moderate effect is a medium scale change that is significant in that the baseline conditions are improved to the extent that guideline targets (e.g. UK BAP targets) are contributed to. These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision making.	Significant
Minor	A small change that, whilst adverse, does not exceed legal or guideline standards. Unlikely to breach planning policy. Or A small positive change, but not one that is likely to be a key factor in the overall balance of issues. These effects may be raised as local issues and may be of relevance in the detailed design of a project but are unlikely to be critical in the decision-making process.	Not Significant
Negligible	A very small change that is so small and unimportant that it is considered acceptable to disregard. Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error. These effects are unlikely to influence decision making irrespective of other effects.	Not Significant

16.4.3. Study Area

36. The Study Area for the assessment of socio-economic, recreational and tourism impacts covers several geographic scales and is shown in **Volume 5: Figure 16-6**. The geographic areas used are listed below:

- The Lower Super Output Area (LSOA) where the proposed Project is located, known hereafter as Pembrokeshire LSOA[2] [3];
- Local authority (Pembrokeshire);
- Regional (South Wales[4]); and
- National (Wales).

37. The local authority of Pembrokeshire is used as the Direct Impact Area for the assessment of effects in **Section 16.8.**

16.4.4. Data Sources

Desk Study

38. A comprehensive desk-based review was undertaken to inform the baseline for socio-economics, recreation and tourism. Where applicable, data collected through the consultation stage has also been used to assist the assessment of socio-economic, tourism and recreation impacts, which is detailed in **Section 16.4.** Key data sources used to inform the assessment are set out in **Table 16-10.**

Table 16-10. Summary of key desktop sources

Title	Source	Year	Brief description
Office for National Statistics (ONS) and ONS Mapping	ONS	2023	Used to identify and illustrate local characteristics of the study area.
Satellite Imagery	Google Earth	2023	Used to identify local characteristics of the study area.
2021 Census	ONS	2021	Used to analyse the key socio-economic trends in the Study Area, including age demographics, skills, and employment patterns.
Annual Survey of Hours and Earnings (ASHE)	ONS	2021	Used to analyse trends in wages.
Regional Gross Value Added by industry	ONS	2021	Used to identify trends in economic output by sector in the Study Area.
Business Demography	ONS	2020	Used to analyse business survival rates over a 5 year period in the Study Area.
Dwelling Stock Estimates for Wales	Welsh Government	2020	Used to identify trends in the housing market.
Population Projections	Welsh Government / ONS	2018	Used to identify population projections across England and Wales.
Welsh Indices of Multiple Deprivation	Welsh Government	2019	Used to identify local trends in deprivation.

[2] This includes the LSOA for Pembrokeshire 015A.
[3] LSOAs are a geographic hierarchy with an average population of between 1,000 and 2,000 people.
[4] This includes the local authorities for Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Carmarthenshire, Merthyr Tydfil, Monmouthshire, Neath Port Talbot, Newport, Pembrokeshire, Rhondda Cynon Taff, Swansea, Torfaen and Vale of Glamorgan.

Title	Source	Year	Brief description
Visit Pembrokeshire	Visit Pembrokeshire	2019	Used to identify trends in tourism and key points of interest in Pembrokeshire.

16.5 Baseline

39. The following sections describe the baseline environment relating to the Study Area, in terms of socio-economic, recreational and tourism receptors.

16.5.1. Existing Baseline

40. This section provides information on the current economy and trends in economic factors for the Study Area, including; population, economic activity, the skills base, employment by industry, employment by occupation, business demographics, output by industry and deprivation. This provides information to support the analysis of the impacts of the proposed Project, in particular to support the judgement of sensitivity for the receptors.

Population

41. Pembrokeshire is situated in south-west Wales, bordered by Carmarthenshire to the east and Ceredigion to the north-east, as shown in **Volume 5: Figure 16-6**. In the latest population estimates from the 2021 Census (ONS, 2021a), Pembrokeshire LSOA has a population of 1,720. The Pembrokeshire district local authority has a population of circa 123,360. This represents 6 % of the population of South Wales and 4 % of the population of Wales respectively.

Table 16-11. Population, 2021

Pembrokeshire LSOA	Pembrokeshire	South Wales	Wales	England and Wales
1,720	123,360	2,215,939	3,107,494	59,597,542

Source: Census 2021, ONS.

42. In terms of the population structure, both Pembrokeshire LSOA and Pembrokeshire have a smaller working age population (WAP) than its comparators, at 58 % and 57 % of the total population respectively (ONS, 2021a). This is compared to 62 % for South Wales and 61 % for Wales. Conversely, the 65+ age cohort is larger in Pembrokeshire LSOA (22 %) and Pembrokeshire (26 %) than regionally in South Wales (20 %) or nationally in Wales (21 %) or England and Wales (18 %). Child age cohorts (people of 0-15 years old) are relatively similar across all comparator areas, with the exception of Pembrokeshire LSOA, which has a larger proportion of 20 %.

Table 16-12. Population age cohorts, 2021

Age cohorts as a % of total (years)	Pembrokeshire LSOA	Pembrokeshire	South Wales	Wales	England and Wales
0-15	20 %	17 %	18 %	18 %	18 %
16-64	58 %	57 %	62 %	61 %	63 %
65+	22 %	26 %	20 %	21 %	18 %

Source: Census 2021, ONS

Economic activity, employment and unemployment

43. **Table 16-13** details the current levels of economic activity in the Study Area. In Pembrokeshire LSOA and Pembrokeshire, among the labour force, the economic activity rate is lower than regional and national comparators, at 52 % and 53 % respectively (ONS, 2021a). This also corresponds to low employment rates in the Pembrokeshire LSOA (48 %) and Pembrokeshire (50 %). The unemployment rate is 4 % in Pembrokeshire LSOA, which is marginally higher than South Wales, Wales and England (all 3 %). The most common reasons for economic inactivity in all comparator areas is retirement (ONS, 2021a).

Table 16-13. Economic activity, 2021

Area	Pembrokeshire LSOA	Pembrokeshire	South Wales	Wales	England and Wales
Economic activity rate	52 %	53 %	54 %	54 %	58 %
Employment rate	48 %	50 %	52 %	52 %	56 %
Unemployment rate	4 %	2 %	3 %	3 %	3 %
Economic inactivity rate	47 %	46 %	43 %	44 %	39 %

Source: Census 2021, ONS

Skills and qualifications

44. **Table 16-14** provides detail on the highest qualification levels in the Study Area (ONS, 2021a). In Pembrokeshire LSOA, there is a lower proportion of the population aged 16 or over with no qualifications than for all other comparable geographic areas. For levels 1 to 3 qualifications, Pembrokeshire LSOA shows similar proportions of individuals to other geographic areas. However, for level 4 qualifications or above, Pembrokeshire LSOA has a higher proportion, at 36%, than for all other comparator areas.

Table 16-14. Highest level of qualification, 2021

% of geographic area with	Pembrokeshire LSOA	Pembrokeshire	South Wales	Wales	England and Wales
No qualifications	17%	19%	21%	20%	18%
Level 1 and entry level qualifications	9%	9%	9%	9%	10%
Level 2 qualifications	15%	15%	14%	14%	13%
Apprenticeship	6%	6%	5%	6%	5%
Level 3 qualifications	16%	17%	17%	17%	17%

% of geographic area with	Pembrokeshire LSOA	Pembrokeshire	South Wales	Wales	England and Wales
Level 4 qualifications or above	36%	31%	32%	32%	34%

Source: Census 2021, ONS

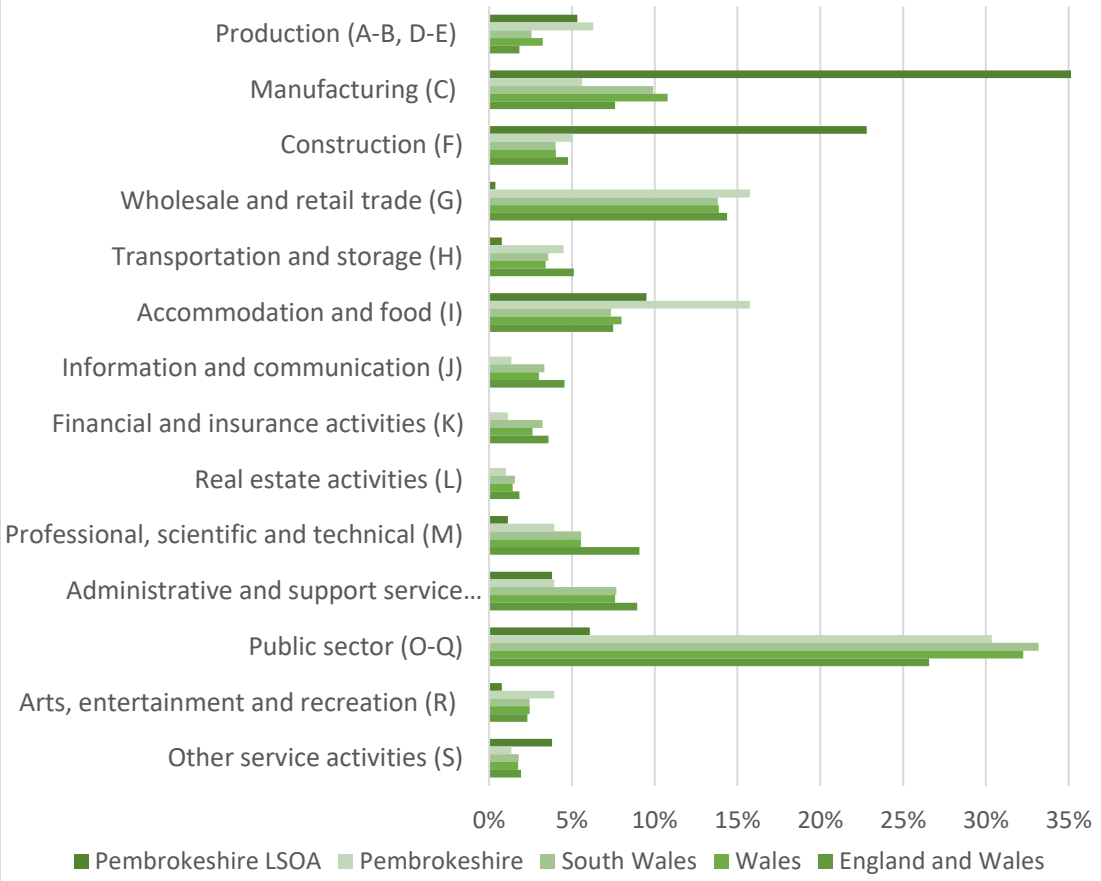
Employment by industry

45. **Figure 16-1** shows the most recent employment data grouped by industry from the ONS (Business Register and Employment Survey (BRES), 2021).

46. Employment in Pembrokeshire LSOA is highly concentrated in the sectors of Manufacturing (C, 46 %), Construction (F, 23 %) and Accommodation and Food (I, 10 %), which together account for approximately 79 % of all employment in the area. More widely in Pembrokeshire, the three largest employment sectors are the Public Sector (O-Q, 30 %), Accommodation and Food (16 %) and Wholesale and Retail trade (16 %). Employment is highly concentrated in these sectors, accounting for a cumulative 62 % of all employment, and no other sector has employment of more than 6 %.

47. Comparatively, employment in the Public Sector and Wholesale and Retail trade sectors are largely in line with comparator areas. However, Pembrokeshire has a much larger proportion of employment in Accommodation and food, at over double the next largest proportion, in Wales (7 %). Conversely, Pembrokeshire has lower proportions of employment in Information and Communication (J) and Financial and insurance activities (K), which account for 1 % each in Pembrokeshire, but 3 % respectively in England and Wales. This trend can also be seen in other knowledge intensive sectors such as Professional, scientific, and technical (M) and Administrative and support service activities (N).

Figure 16-1. Employment by industry, 2021



Source: BRES, ONS, 2021.

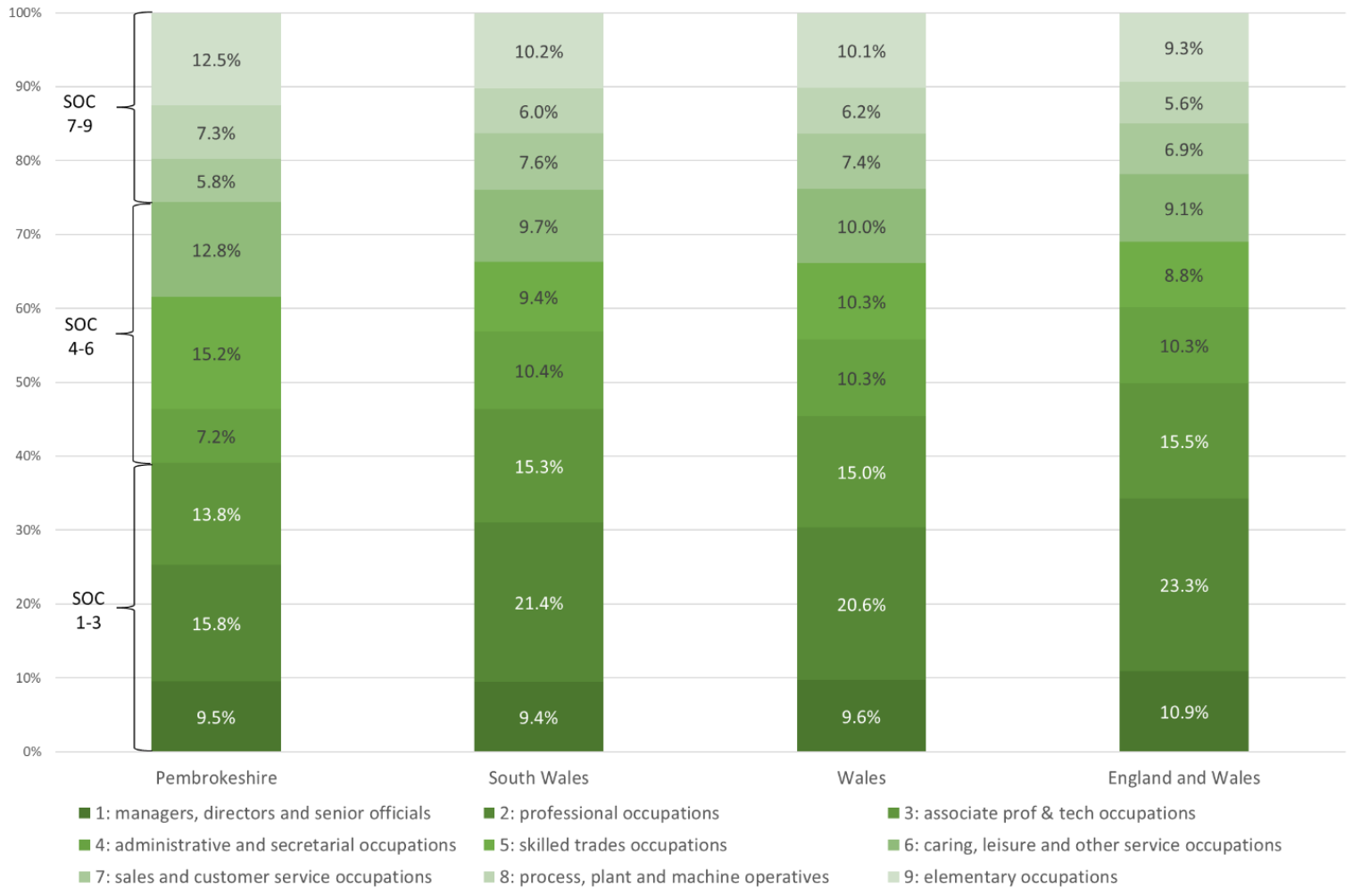
Note: Some industries have been grouped for clarity and are annotated on the data point.

Employment by occupation

48. In terms of employment by occupation (ONS, 2021a), as shown in **Figure 16-2**, Pembrokeshire LSOA has a smaller proportion of higher skilled occupations[5], at 32 %, compared to 36 % in Pembrokeshire, 42 % in South Wales, 41 % in Wales and 46 % in England and Wales. Conversely, the proportion in low skilled occupations[6] is marginally higher than in other comparator areas for Pembrokeshire LSOA. Looking at individual Standard Occupational Classification (SOC) codes, employment in Elementary occupations (9) and Caring, Leisure and Other service occupations (6) are higher than other comparator areas, by at least 3 % and 2 % respectively.

[5] Classed as SOC 1-3 level occupations.
[6] Classed as SOC 7-9 level occupations.

Figure 16-2. Employment by occupation, 2021

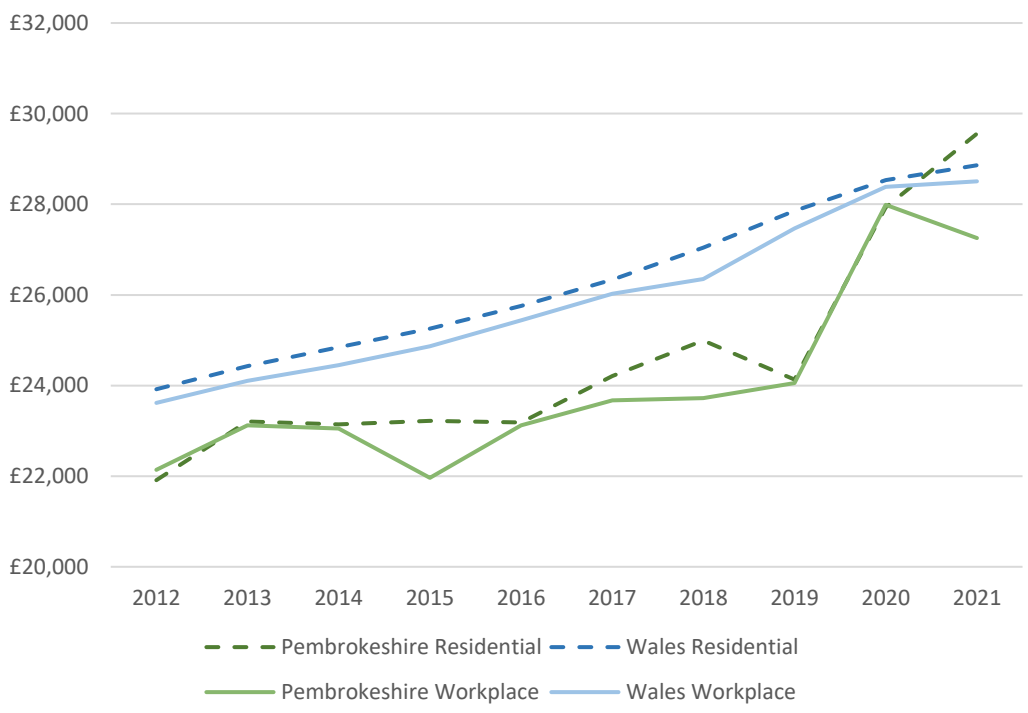


Source: Census 2021, ONS.

Earnings

49. In 2021, median resident annual wages in Pembrokeshire stood at £29,558, compared to £27,251 for workplace wages (ONS, 2021b). 2021 marked the first time in ten years that Pembrokeshire's resident wages average higher than Wales' resident wages (£28,861), however, workplace annual wages are still below Wales averages (£28,506). Prior to this, both the resident and workplace annual wages were below Wales throughout this period. These trends are shown in **Figure 16-3.**

Figure 16-3. Resident and workplace annual median earnings, 2012-2021



Source: ASHE, ONS, 2012-2021.

50.

Business survival rates

51. In Pembrokeshire, the business survival rate among new businesses is higher than at national levels, as shown in (ONS, 2020). This is true at every year between 2016 and 2020, with the survival rate in the fifth year (49 %) showing the biggest difference from Wales (40 %) and England and Wales (38 %). This is shown in **Table 16-14.**

Table 16-15. Business survival rates, 2016-2020

Area	Pembrokeshire	Wales	England and Wales
1 year	97 %	95 %	95 %
2 years	81 %	73 %	71 %
3 years	66 %	56 %	54 %
4 years	56 %	47 %	45 %
5 years	49 %	40 %	38 %

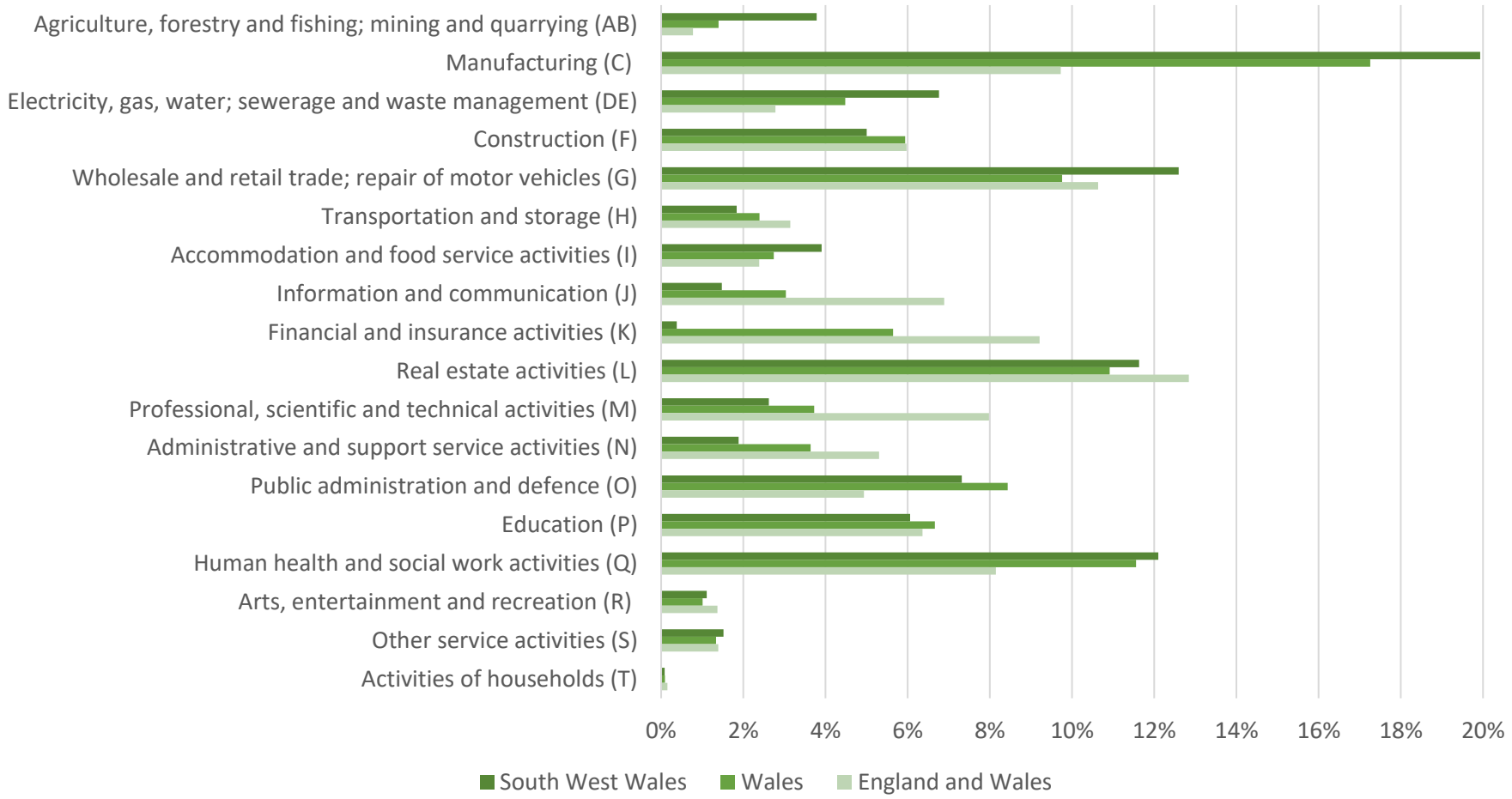
Source: Business demography, ONS 2016-2020.

Gross Value Added (GVA) per industry

52. In terms of economic output, South West Wales[7] contributed £8.1bn to the Wales economy in 2021, which represented 12 % of the Wales economy (ONS, 2021c). **Figure 16-4** shows that in South West Wales, the key output sectors are in Manufacturing (C, 20 %), Wholesale and retail trade (G, 13 %) and Human health and social work activities (Q, 12 %). For the Manufacturing and Wholesale and retail trade sectors, this represented output above regional and national averages.

[7] Smallest geography available for this dataset. This includes Ceredigion, Carmarthenshire and Pembrokeshire.

Figure 16-4. GVA by industry, 2021



Source: Regional gross value added by industry, ONS, 2021.

Deprivation

53. The Welsh Government produces the Welsh Index of Multiple Deprivation (WIMD), a measure that was most recently produced in 2019 to analyse the relative deprivation for small areas in Wales (Welsh Government, 2019). In 2019, 4 out of the 71 LSOAs in Pembrokeshire were in the most deprived decile in Wales, which accounted for 5.6 % of those in the Pembrokeshire Local Authority. Through looking at the domains for deprivation[8], LSOAs in Pembrokeshire perform poorest in the domains of Access to Services (27 LSOAs in the most deprived decile), Education (6) and Community Safety (6).

54. The LSOA specific to the Onshore Project Boundary, Pembrokeshire 015A, is ranked 982 out of 1909 LSOAs in Wales, placing it among the 50 % least deprived overall in Wales. Pembrokeshire 015A represents an area of low deprivation, except for access to services, where it ranks 4th out of 1909 LSOAs in Wales, placing it among the top 10 % most deprived in the category for access to services.

Tourism

55. Pembrokeshire is a popular tourist destination which attracts visitors from all of the UK and overseas. In 2019, Pembrokeshire's Tourism sector was valued at £590 million, as a result of 6 million total day trips and 1 million total overnight stay trips (Visit Pembrokeshire, 2019). The tourism sector is also a key employment base and is estimated to support approximately 12,400 jobs in Pembrokeshire, which accounts for 21 % of all employment in the county.

56. The Pembrokeshire Coast National Park is the only fully coastal National Park in the UK (Pembrokeshire Coast, 2023). The Pembrokeshire Coastal Path is a 186-mile path encompassing 58 beaches and 14 harbours that starts in St Dogmaels in north Pembrokeshire and ends in Amroth, south Pembrokeshire. The Coastal Path's attractions include Neolithic tombs on St David's Head, castles at Manorbier and Pembroke and Celtic chapels near Bosherton (Visit Wales, 2021). The National Park Authority estimates that the Coastal Path attracts around 1 million user days annually (Pembrokeshire Coast, 2022), representing one of the county's most important economic assets. Other activities within the National Park include rock climbing, coasteering and sea kayaking (Pembrokeshire Coast, 2023).

57. Pembrokeshire contains many small coastal towns and villages that play a key role in the local tourism industry. The proposed landfall locations occur within the National Park Boundary and the Coastal Path also runs through these towns and villages.

58. Across Pembrokeshire, 12 beaches have been awarded Blue Flag Award status in 2017[9], the highest number of any county in Wales (Blue Flag, 2023). Fourteen beaches were also awarded the prestigious Green Coast Award in 2017. Pembrokeshire has a wide range of accommodation offers which can be placed in the following categories: hotels, Bed and Breakfasts (B&B) and guest houses, self-catering cottages, caravan parks, '*glamping*' (glamourous, high end camping, commonly in purpose built camping pods, yurts or tepees), holiday villages, bunkhouses and hostels and campsites.

[8] Income, Employment, Health, Education, Access to Services, Community Safety, Physical Environment and Housing.

[9] Blue Flag status is awarded to beaches, marinas and boats where they have complied with a number of stringent environmental, educational, safety and accessibility criteria for their maritime feature.

59. There are several advertised tourist attractions in Pembrokeshire which are located near to the Onshore elements of the proposed Project. These include:

- Chapel Bay Fort and Museum located adjacent to West Angle Bay;
- Pembroke Dock Heritage Centre;
- Milford Haven Heritage and Maritime Museum; and
- Pembroke Castle.

60. The area also has key festival attractions, including:

- Pembrokeshire Fish Week – biennial event held in June or July, based in Milford Waterfront located 5 km north; and
- Seafair Haven Festival – A biennial event for watercraft enthusiasts taking place in Lawrenny, Pembrokeshire in June. It has taken place since 2006 having originally been run by the Port of Milford Haven and includes a range of small boats in a week long programme of sailing and entertainment.

61. In terms of sports, cycling is a popular tourist activity across Pembrokeshire, and, in recent years, the Ironman Wales has been held at Tenby in September, attracting over 2,000 competitors and tens of thousands of spectators. The bike course element of this popular triathlon event includes roads on the Angle peninsula, including some around Freshwater West.

Recreation

62. The proposed Project is located close to many local walkways and paths in South Pembrokeshire (Pembrokeshire County Council, 2023), which is shown in **Volume 5: Figure 16-8**. The Onshore Development Area is close to Stackpole, Colby Woodlands and Cleddau Woodlands, which are all National Trust sites (National Trust, 2023). In addition, the coastline provides pedestrian walking routes based at Manorbier Castle, Tenby South Beach and Castle Hill, which offer a variety of landscapes and terrains for tourists.

63. Coastal recreational use is common, and includes rowing, wind surfing, kayaking, canoeing, and surfing. West Angle Bay and Freshwater West beaches are popular for swimming, as both are wide sandy beaches exposed to the prevailing south westerly winds and waves. Freshwater West is known for body boarding and surfing. Windsurfing (The Kite and Windsurfing Guide, 2023) and Stand Up Paddleboarding (SUP) journeys are undertaken at both beaches (McConks, 2023). Pembrokeshire is a popular destination for sea kayaking for both novices and experienced paddlers and kayaking is undertaken along the majority of the Angle Peninsula coastline. All activities are most frequently undertaken during the summer months, with surfing being busy throughout the year.

64. In addition, Pembrokeshire offers a wide range of marine recreational activities. These include deep sea fishing, catch and release Shark fishing, and diving on the offshore reefs, wrecks and reef sites located within the waters around the town of Milford Haven, including Scotch Bay (Port of Milford Haven, 2023). Several companies, operating from Milford Haven, Neyland and Dale, offer wildlife boat trips, fishing charters and historical cruises. The trips include routes upstream within Milford Haven Waterway, trips to the islands of Skomer, Skokholm and Grassholm passing St. Annes Head, or further offshore to the Celtic Deep.

65. The Milford Haven Waterway is used frequently by power boats and cruiser sailing, undertaking day trips within the estuary to Dale and Watwick Bay or out to the islands of Skomer and Skokholm (Pembrokeshire Island Boat Trips, 2023). Recreational angling boats

regularly visit areas to the northwest of Angle Bay, around Stack Rock, off the coast of Rat Island, in deeper waters between St Anne's Head and Sheep Island and off Angle Peninsula. These areas are used most frequently during late spring and during the summer holidays.

66. Pembrokeshire is one of the UK's top dive destinations (Pembrokeshire Dive, 2023). Dive operators provide trips to offshore dive sites which include: the reefs and waters surrounding Skomer, Skokholm and Middleholm Islands, and established dive sites and wreck sites closer inshore.

67. Recreational vessels that use the area near the onshore elements of the proposed Project are predominantly local vessels, operating out of local ports and harbours in the south Pembrokeshire region. These include Neyland Marina and Milford Marina. Some recreational vessel activity will also be associated with visiting vessels from home ports further afield, including north Wales, north Devon, Cornwall, and the Republic of Ireland. There are nine Royal Yachting Association (RYA) clubs, nine RYA training centres, and a number of marinas and slipways across the south Pembrokeshire region (RYA, 2023). Sailing, in yachts or dinghies, is by far the most abundant activity on the Milford Haven Waterway which is associated with the yacht clubs.

Local Receptors

68. This section provides information on social, tourism and recreational factors, including residential properties, commercial properties, community facilities, alongside PROW. This provides context for the effects on socio-economic receptors in **Section 16.8.**

Residential properties

69. The area around the Onshore Development Area is predominantly rural and is sparsely populated. The major settlement close to the proposed Project is in Angle, 2.5km to the east of the proposed Project. Lambeeth Farm is also located within 100m east of the boundary of the Onshore Development Area. These settlements are shown in **Volume 5: Figure 16-9**.

Business Premises

70. Business premises for the area are also shown in **Volume 5: Figure 16-9**. There are some bed and breakfast business premises located in Freshwater West and surrounding areas, including Gupton Farm Campsite, Newton Farm Caravan and Campsite and Rocket Cart House. There are also two bed and breakfasts along the B4319 from Freshwater West, which are the Barn and Chaffhouse and Pen-Y-Holt Farm Holiday Cottages. Pembroke Power Station and Pembroke Refinery are also located close to the Onshore Development Area, west of Rhoscrowther. In Newton, Corseside Plant Nursery lies close to the Onshore Development Area, as does Trebowen Farm and Davies T.G., a dairy farm.

Public Rights of Way

71. **Table 16-16** below highlights the PROW that are within the Onshore Development Area.

Table 16-16. Public Rights of Way

PROW	Location from Onshore proposed Project Boundary
SP2 / 12	90 m north of Onshore Development Area
SP2 / 13	Intersects Onshore Development Area
SP37 / 10	730 m north of Onshore Development Area
SP34 / 5	Intersects Onshore Development Area
SP34 / 6	Intersects Onshore Development Area

PROW	Location from Onshore proposed Project Boundary
SP14 / 5	180 m south east of Onshore Development Area
SP37 / 6	Intersects Onshore Development Area
SP37 / 7	Intersects Onshore Development Area
SP37 / 8	Intersects Onshore Development Area

Source: The Consolidated Definitive Map, Pembrokeshire County Council (2023)

72. The PROW that lies close to, or within the proposed Project's site are shown in **Volume 5: Figure 16-7**.

Community facilities

73. Community facilities are physical facilities used by individuals or communities to deliver community-led activities. There are no community facilities within the Onshore proposed Project Boundary, and few that are within the vicinity of the Onshore proposed Project Boundary. Pembroke Power Station is the only notable community facility, located approximately 800 m north west of the Onshore proposed Project Boundary. Some community facilities exist within the town of Angle, including the Hibernia Inn, the Church of Saint Mary Angle and Chapel Bay Fort and Museum. However, these lie beyond 1 km to the west of the Onshore proposed Project Boundary.

16.5.2. Future Baseline

74. This section considers the changes to the baseline conditions described above that might occur during the time period over which the proposed Project will be in place. It considers changes that might occur in the absence of the proposed Project being constructed, which informs the assessment of effects in the long term phases of the proposed Project (operation and decommissioning)

75. Comparing the 2018 population with those forecasted for 2043[10], the projected population of Pembrokeshire is expected to be 130,196, an increase of 4.1 % (ONS, 2018; StatsWales, 2018). This represents a lower rate of increase than for Wales (5.4 %) and nationally (9.7 %). In terms of Compound Annual Growth Rate (CAGR), both Pembrokeshire and Wales have a lower CAGR than for England and Wales.

Table 16-17. Population projections, 2018-2043

Area	Pembrokeshire	Wales	England and Wales
Population in 2018	125,055	3,138,631	59,115,809
Population in 2043	130,196	3,309,154	64,853,936
2018 to 2043 rate of change, %	4.1 %	5.4 %	9.7 %
CAGR, %	0.2 %	0.2 %	0.4 %

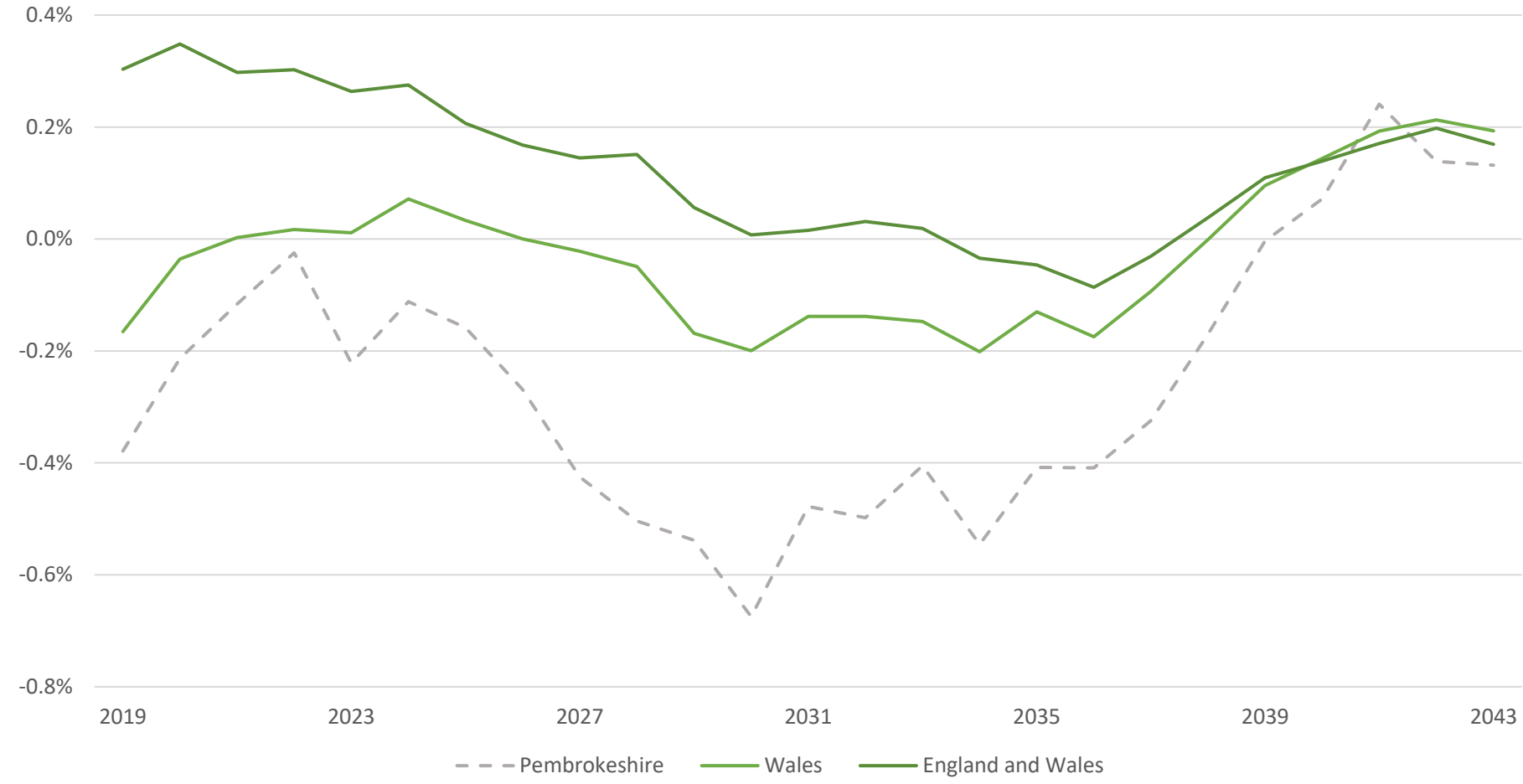
Source: Population Projections, ONS, 2018; Population projections, Stats Wales, Welsh Government, 2018.

76. Observing trends by age cohort shows that there is a trend of a declining working age population across Pembrokeshire as defined in **Section 16.5**. Between 2018 and 2043, Pembrokeshire's working age population is expected to fall from 57 % to 52 %, which will be lower than the equivalent age cohorts for Wales (58 %) and England and Wales (59 %). As

[10] Data on population projections is only available for a 2018 year baseline.

shown in **Figure 16-5** below, this is due to a working age population that is shrinking at a faster rate than regionally and nationally over the 25 year period.

Figure 16-5. Year-on-year population growth for the working age population, 2018-2043



Source: Population Projections, ONS, 2018; Population projections, Stats Wales, Welsh government, 2018.

16.6 Scope of the Assessment

77. An EIA Scoping Report for the proposed Project was submitted to NRW Marine Licensing Team (MLT) in April 2022. The Scoping Report was also shared with relevant consultees, inviting comment on the proposed approach adopted by the Applicant. A Scoping Opinion was provided to the Applicant by NRW MLT in July 2022. Based on the Scoping Opinion received, and further consultation undertaken, potential impacts on socio-economics, recreation and tourism scoped into the assessment are listed below in **Table 16-18**. Impacts scoped out of the assessment are detailed in this section.

78. As set out in **Section 16.4.1**, this assessment considers the design parameters of the proposed Project which are predicted to result in the greatest environmental impact, known as the '*realistic worst case scenario'*. The realistic worst case scenario represents, for any given receptor and potential impact on that receptor, the greatest potential for change to the receptor in question. Given that the realistic worst case scenario is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that the development of any alternative options within the design parameters will give rise to effects no greater or worse than those included in this impact assessment.

79. Accordingly the design scenarios identified in **Table 16-18** have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group within the Study Area. These scenarios have been selected from the details provided in **Chapter 04: Description of the Proposed Project**.

Table 16-18. Design scenario considered for the assessment

Potential impact	Design scenario	Justification
Construction		
Employment creation	Minimum value of FTEs (2,165 FTEs).	This is the reasonable worst case scenario for socio-economic impacts, given that the creation of employment will result in a benefit.
Effects of the construction employment on the local housing market	Maximum value of FTEs (3,654 FTEs).	This is the reasonable worst case scenario for assessing this socio-economic impact, given that the effect of the construction employment on the local housing market is expected to be adverse.
Skills and training	Minimum number of skills and training opportunities.	This is the reasonable worst case scenario for socio-economic impacts, given that the skills and training effects are expected to result in a benefit.
Recreation amenities; Access to PROW or other paths	Maximum impact on these receptors.	This is the reasonable worst case scenario for socio-economic, tourism and recreation impacts, given that the effect is expected to be adverse for these receptors.
Operation and maintenance		

Potential impact	Design scenario	Justification
Employment creation	Minimum value of FTEs (96 FTEs).	This is the reasonable worst case scenario for socio-economic impacts, given that the creation of employment will result in a benefit.
Skills and training	Minimum number of skills and training opportunities.	This is the reasonable worst case scenario for socio-economic impacts, given that any skills and training effects will result in a benefit.
Decommissioning		
Employment creation	Minimum value of FTEs (242 FTEs).	This is the reasonable worst case scenario for socio-economic impacts, as employment effects are expected to result in a benefit.

16.6.1. Impacts scoped out of assessment

80. As detailed in the Scoping Report and the Scoping Opinion in **Section 16.3**, there are not anticipated to be any EMF impacts on socio-economic receptors, with the design intended to keep any maximum voltage within acceptable levels from industry guidelines and standards. This is consistent with other offshore wind projects, such as Blue Gem Wind's Erebus project. As such, considerations of EMF impacts from a health perspective are scoped out of the assessment. The potential effect of EMFs is assessed for relevant receptors in **Chapter 19: Benthic Ecology, Chapter 20: Fish and Shellfish Ecology, Chapter 21: Marine Mammals** and **Chapter 25: Commercial Fisheries**.

16.6.2. Assessment Assumptions and Limitations

81. The assessment of impacts and the significance of effects has been carried out against a benchmark of the current community and socio-economic baseline conditions prevailing in the Study Area. As with any dataset, these may be subject to change over time, which may influence the relevance of the findings of the assessment. However, there is enough information available to make a sufficiently robust assessment of significance, which follows the approach as defined in the **Scoping Report** (LFW, 2022).

82. From a socio-economic impact perspective, there were limitations associated with the assessment of significance. The lowest spatial scale of baseline data which was available is at LSOA level; however, this was not available for all datasets. Where LSOA data was unavailable, county (Pembrokeshire) level data has been used, although this has provided comprehensive metrics covering current demographics and labour market characteristics in the county. This is covered in the **Section 16.5** below.

83. The input data used in the socio-economic impact assessment to assess gross and net employment estimates is based on information provided by the Applicant.

16.7 Embedded Mitigation, Management Plans and Best Practice

84. As part of the proposed Project design process, several designed-in measures have been proposed to reduce the potential for impacts. The design of the proposed Project therefore includes embedded mitigation measures and reference to various management plans that are expected be required as conditions of consent, and which will further mitigate potential

impacts. This approach has been employed to demonstrate commitment to mitigation measures by including them in the design of the proposed Project and as such these measures have been considered within the assessment presented in **Section 16.8** below. Assessment of sensitivity, magnitude and therefore significance includes the implementation of these measures.

85. Standard mitigation measures which the proposed Project has already implemented, or is committed to implement in the future, in order to minimise potential impacts on socio-economics are listed below:

- A Construction Environment Management Plan (CEMP) will be produced in accordance with each of the relevant parts of the proposed Project. Each element of the CEMP will explain how the activities of contractors and sub-contractors would be required to comply with its requirements, including where necessary the production of subsidiary plans in relation to specific construction matters. The onshore construction working area(s) will be enclosed within fencing, enabling continued use of nearby paths and routes whilst work is underway close to, but separated from them. The type of fencing will be selected to suit the location and purpose and will be agreed with Pembrokeshire County Council and relevant landowners. An Outline CEMP is provided as part of this EX, in **Appendix 4A: Outline CEMP**.
- In addition, work to install the onshore elements of the proposed Project in the highway will be required to comply with the Traffic Management Plan (see **Chapter 13: Traffic and Transport**). Individual Traffic Management Plans will be produced for all onshore locations where the proposed Project is buried in the highway, or impacts on the uninterrupted use of the highway by vehicular traffic.
- As set out in **Chapter 04: Description of the Proposed Project,** works will generally progress in stages along the route of the proposed Project, so that individual sections will be affected for a minimum amount of time, rather than for the full onshore construction period. Construction of the onshore infrastructure is this anticipated to progress in sections. Trenches will be reinstated following construction of the cable conduits so that PROW can be reinstated as soon as is practical, rather than waiting for months for the construction of the cable itself. It should be noted that, in the worst-case scenario, the haul roads may stay in use for the complete construction period but with traffic controls in place throughout.
- For PROW affected by the proposed Project, the chosen contractors will ensure that diversions are in place, and where closures are required, this will be minimised to localised areas, and centralised at single points of a PROW wherever possible.

16.8 Assessment of Environmental Effects

86. The impacts and effects (both beneficial and adverse) associated with the construction, operation and maintenance and decommissioning of the proposed Project are outlined in the sections below and are considered for the Direct Impact Area of Pembrokeshire local authority unless otherwise stated. The assessments consider the embedded mitigation measures described in **Section 16.7** and additional mitigation in **Section 16.9** should there be any significant adverse effects.

16.8.1. Construction Effects

Employment Creation

87. The proposed Project will create direct and indirect employment (expressed as Full Time Equivalents (FTEs)) in locations within the Onshore Development Area and in the supply chain,

as well as safeguarding employment in the supply chain, ports and marine services that will be required during construction.

88. The proposed Project is expected to support and potentially grow the current supply chain and could encourage businesses to relocate to the local area, creating additional employment and generating economic benefits including additional Gross Value Added (GVA). The direct employment will also generate further demand across the supply chain, which in turn creates additional economic growth and employment.

89. In estimates provided by the Applicant, the estimated average number of Full Time Equivalents (FTEs) within the UK per year for the construction phase ranges from 2,165 to 3,654. As this effect is likely to be beneficial, the minimum value of 2,165 FTEs is used to analyse a worst-case scenario for this effect. This is comprised of 302 development FTEs and 1,863 FTEs for construction (originating from capital expenditure in this phase).

90. It is anticipated that 2,165 gross full time equivalent direct FTEs will be created during the construction phase as a result of the proposed Project. This is comprised of the minimum estimated for FTEs to support the construction stage of the proposed Project. To understand the net additional FTEs resulting from the proposed Project, additionality factors have been considered in the following sections, which are leakage, displacement, and multiplier effects. Please note that at the time of writing the final selection of the key technology elements is not complete, and the technology choice, and their requisite construction methodologies, may impact these numbers.

Leakage

91. Leakage effects refer to the proportion of FTEs employment created that are filled by residents living outside the extent of the direct impact area.

92. It is assumed that a high leakage value of 50% is appropriate given a significant proportion of the employment created in the manufacture and supply of project components will originate from outside of the UK, in line with the High ready reckoner for Leakage noted in Table 4.3 of the 2014 Additionality Guide (HCA, 2014).

93. Overall, for the total of 2,165 gross FTEs which are anticipated to be created from the construction of the proposed Project, it is estimated that 1,083 FTEs will be located within the impact area.

Displacement

94. Displacement measures the extent to which the benefits of a given project are offset by reductions of output or employment elsewhere. Any additional demand for labour cannot simply be treated as a net benefit if it removes workers from other posts and the net benefit is reduced to the extent that this occurs.

95. Overall, it is assumed that due to the flexibility of a typical construction workforce (i.e., they quickly move from project to project) displacement effects are considered to be low. The former Homes and Communities Agency (HCA, now Homes England) Additionality Guide (HCA, 2014) suggests 25 % as a '*ready reckoner'* for low levels of displacement (i.e., there are expected to be some displacement effects, although only to a limited extent). Applying this level of displacement to the employment generated by the proposed Project results in a net direct employment of 1,624 FTEs.

Multiplier

96. In addition to the direct construction employment generated by the proposed Project itself there will be an increase in local employment arising from indirect and induced effects of the

construction activity. Employment growth may arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, part of the income of the construction workers and suppliers will be spent in the local economy. Through this, there is likely to be increased revenues in this stage for local businesses, which in turn will generate further employment. This additional employment is captured through the use of a multiplier.

97. The impact of the multiplier depends on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The HCA Additionality Guide (HCA, 2014) provides '*ready reckoners'* of composite multipliers – the combined effect of indirect and induced multipliers. It has been assumed that the local area has '*average'* supply linkages based on the scale of its economy, in line with HCA additionality guidance. Therefore, a multiplier of 1.3 is determined from the HCA guidance.

98. Based on the gross construction worker requirements in the construction schedule the multiplier effect would result in an additional 487 FTEs of which 244 are expected to be created in the impact area.

Net Additional Construction Employment Summary

99. **Table 16-19** presents the short-term employment created by the construction phase of the proposed Project, taking leakage, displacement, and multiplier effects into account. This results in 2,111 net additional FTEs, of which 1,056 are FTEs likely to be taken by residents in the impact area.

Table 16-19. A Gross to net construction employment summary

Employment Impact	Impact Area	Outside impact area	Total
Gross direct FTEs	1,083	1,082	2,165
FTEs accounted for by displacement	271	270	541
Net direct FTEs (*less displacement*)	812	812	1,624
Additional FTEs created through multiplier	244	244	487
Total net FTEs (*less displacement, including multiplier*)	1,056	1,056	2,111

Sensitivity of the receptor

100. For sensitivity, this is assessed to be **Medium** for this impact as the construction workforce in Pembrokeshire is expected to be able to respond quickly to demand for the labour to construct the proposed Project, given the nature of employment in this industry.

Magnitude of impact

101. Given the scale of the construction employment for the proposed Project, the magnitude has is assessed as **High** for this impact, given that the size of the net additional construction workforce required represents 94% of the estimated total construction workforce in Pembrokeshire (BRES, 2021).

Significance of the effect

102. The sensitivity of the employment receptors is considered to be **Medium** and the magnitude of the impact is assessed as **High**. Therefore, the effect will be **Moderate Beneficial, which is significant** in EIA terms.

Effects of construction employment on the local housing market

103. To assess the effects of demand from the construction workforce on the local housing market it is necessary to understand both the proportion of workers who might require accommodation and the likely availability of accommodation available to meet this requirement. To note, there is an expectation that the proposed Project's contractors will attempt to source a large proportion of FTEs locally from '*home based*' workers.

104. For these calculations, the worst case scenario would be where employment is maximised, as this would produce the greatest adverse impact possible on the local housing market. Therefore, for this assessment, the maximum gross figure of 3,654 FTEs has been used as the basis for this assessment. Applying the same assumptions for leakage, displacement and the multiplier results in a net additional 3,562 FTEs created, of which 1,781 FTEs are non-home based in a worst case scenario where the maximum employment is used.

105. From this, it has been estimated that 1,781 FTEs will be taken by residents in the impact area. This represents the '*home based*' proportion of employment, defined as already living within the Study Area, and the remaining 1,781 FTEs will be '*non-home based*' and potentially requiring housing accommodation. ONS data shows that the proposed Project's employment requirements for the construction phase are smaller than the total construction workforce in Pembrokeshire local authority (2,250 total employees; BRES, 2021).

106. The private rented homes sector is considered to be the principal sector for accommodating demand for housing from '*non-home based*' construction workers in an urban development context. When last estimated in 2019, there were 62,100 private rented properties in the Pembrokeshire area, of which the majority (54,100) were occupied (Welsh Government, 2019). Although no area-based statistics are available, when last recorded by the ONS in 2021, 8 % of dwellings were unoccupied in Wales (ONS, 2021a), noting that not all these properties would be available for occupancy. Taking a cautious approach and assuming that 5 % are available implies that there were 3,105 properties within Pembrokeshire in 2019 that could potentially be occupied by construction workers.

107. Given the non-home based construction workforce noted above (1,056), and assuming each member of this non-home based workforce requires a property, this results in a surplus of 2,049 properties in Pembrokeshire. Whilst forecasting availability over the construction period (expected to be 3 years) is difficult, it is noted that demand from workers is typically also met

by bed & breakfast accommodation for shorter stays, providing a further option for accommodating construction worker need from the proposed Project if required.

Sensitivity of the receptor

108. The sensitivity of this receptor is therefore also considered to be **Medium** as the local housing market has sufficient capacity to absorb the likely impacts of the construction workforce without adversely affecting residents**.**

Magnitude of impact

109. The magnitude is considered to be **Low** because of the substantial surplus of properties (2,049) in a worst case scenario of maximum employment**.**

Significance of the effect

110. The sensitivity of receptors is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will be **Minor Adverse**, **which is not significant** in EIA terms.

Skills and Training

111. The proposed Project will offer temporary training opportunities both in terms of direct construction FTEs and opportunities in the supply chain, which will lead to an improvement of the skills base in the Study Area. The Applicant will support opportunities to upskill and train local residents or to enhance the skillsets of workers. This will include through specialist engineering roles as well as professional management and supervisory roles during construction.

112. Through the proposed Project, the Applicant has also committed to the Pembrokeshire County Council led Energy Skills Network to identify opportunities to upskill the local population through the development of the proposed Project, collaborating with 14 local schools, to provide Science, Technology, Engineering and Mathematics (STEM) workshops and interactive activities for students.

113. The applicant is working closely with Pembrokeshire College and other partners on SPARC,(Women in Sustainable Power & Construction) which will see the establishment of a team based at Pembrokeshire College who will tasked with engaging with both Further Education and Secondary schools across the region (years 7-12). The applicant is also part of the business group network of the office of the Future Generations' Commissioners Office.

Sensitivity of the receptor

114. The sensitivity of the receptor is assessed to be **Medium** for this impact. This is because the Pembrokeshire labour workforce would be able to absorb this change with the skills and training opportunities presented by the proposed Project.

Magnitude of impact

115. Given the scale of the skills and training programme, the magnitude is considered to be **Low** due to the low level of direct training opportunities and opportunities presented within the employment worker profile by the proposed Project. Any opportunities are expected to have a minimal, localised extent.

Significance of the effect

116. The sensitivity of the receptors is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will, be **Minor Beneficial**, **which is not significant** in EIA terms.

Recreation amenities

117. The proposed Project could result in temporary disruption and temporary reduced access to beaches at the proposed landfall location, or other recreation amenities that rely on access to the coast. This particularly affects the Pembrokeshire Coastal Path, which is a PROW that overlaps with the Onshore Development Area. Due to the localised extent to any impacts, in line with the embedded mitigation noted in **Section 16.7,** this will ensure that any closures to the recreation paths and roads towards activity sites are kept to a minimum during the construction period. The duration of any effects are also limited to the length of the construction period and are therefore temporary in nature. Considering this, the construction location and programme will not disrupt entire areas which are designated for recreation amenities.

Sensitivity of the receptor

118. The sensitivity of these receptors is judged to be **Medium**, given the high number of users and the importance of the recreational amenities to the tourism economy in Pembrokeshire. There is some potential for substitution of these routes should it be required.

Magnitude of impact

119. The magnitude of effect is assessed to be **Low** given the small, localised extent of closures expected, the temporary nature of the impacts and the embedded mitigation in place to address any closures.

Significance of the effect

120. The sensitivity of the recreation amenity receptors is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will be **Minor Adverse, which is not significant** in EIA terms.

Access to Public Rights of Way or Other Paths

121. The proposed Project could result in disruption or reduced access to Pembrokeshire Coast Path or other paths for users. As noted in **Section 16.5**, and summarised in more detail in **Chapter 13: Traffic and Transport,** nine sections of PROW lie near the proposed Project Boundary, with 6 PROW intersected by the proposed Project. Where PROW intersect the proposed Project Boundary, mitigations will be implemented whereby the closure of these routes will be avoided and minimised where possible. The majority of the intersecting PROW also only intersect the proposed Project at one point, minimising the disruption for the users and ensuring the extent of any potential disruption is localised. The area around the proposed Project also has multiple PROW routes in close proximity, providing alternative walking routes for users in the area. Given that there are no PROW linking to major employment sites, these PROW are unlikely to be used for commuting.

Sensitivity of the receptor

122. The sensitivity of the receptor is therefore considered to be **Medium.** This is given the high number of users and the importance of the route to the tourism economy in Pembrokeshire. There is some potential for substitution of these PROW should it be required.

Magnitude of impact

123. The magnitude is therefore considered to be **Low.** Any expected impacts in this stage are temporary in nature, the PROW routes are mainly used for recreational purposes and there is a low level of intersections with the proposed Project. There is also embedded mitigation in place to reduce the impact of any temporary closures.

Significance of the effect

124. The sensitivity of this receptor is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will, be **Minor Adverse**, **which is not significant** in EIA terms.

16.8.2. Operation and Maintenance (O&M) Effects

Employment creation

125. The proposed Project will create direct and indirect FTEs during its operation phase. This includes employment and supply chain opportunities, as well as safeguarding FTEs in existing areas of supply chain, ports and marine services. The operational phase is expected to last 30 years from the end of the construction period in 2027.

126. In the operational phase, there are anticipated to be 96 gross direct FTEs created from the proposed Project, resulting from the operation of two 100MW substations. Estimates for displacement and the multiplier are the same as set out for the construction employment impacts, which are as follows:

- A displacement value of 25 %; and
- A multiplier of 1.3.

127. For leakage, this has been estimated as 25 % for the operation phase, which is in line with '*Medium*' estimates from Table 4.3 of the 2014 Additionality Guide (HCA, 2014). The nature of the roles in this stage will likely specialise in maintenance than construction roles. Therefore, these roles will be required to live locally to attend to day-to-day and on-site issues should they occur. However, there will be a proportion of roles that are not required to be local to the impact area.

Net additional operation employment summary

128. There are expected to be 93 net direct FTEs, of which 70 are expected to be from the local area. **Table 16-20** details the summary for gross and net operational employment[11].

Table 16-20. Gross to net operational employment summary

Employment Impact	Impact Area	Outside impact area	Total
Gross direct FTEs	72	24	96
FTEs accounted for by displacement	18	6	24
Net direct FTEs (*less displacement*)	54	18	72
Additional FTEs created through multiplier	16	5	21
Total net FTEs (*less displacement, including multiplier*)	70	23	93

[11] To note that figures have been rounded to the nearest FTE where applicable.

Sensitivity of the receptor

129. The sensitivity of this receptor is therefore considered to be **Medium** given the ability of the construction workforce to absorb the permanent increase in employment in Pembrokeshire.

Magnitude of impact

130. The magnitude is therefore considered to be **Low.** This is given that the operational employment generated represents less than 1% of the 44,450 employees in the Pembrokeshire economy.

Significance of the effect

131. The sensitivity of the employment receptors is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will be **Minor Beneficial**, **which is not significant** in EIA terms.

Skills and training

132. The proposed Project will offer long-term skills and training opportunities during the operational phase of the proposed Project. Whilst this will be dependent on the final technology selection, new skills and training will be required to support the expansion of subsea sectors in the UK.

133. During its operational phase, the proposed Project will support and increase the number of professional roles in the local area and throughout Pembrokeshire. This is because the specialist operational activities associated with the proposed Project will support a number of highly skilled, professional roles across a range of activities. Operational activities will include maintenance, repair / replacement and specialist engineering tasks.

134. As well as specialist engineering roles, there will also be professional management and supervisory roles during the operational phase. The proposed Project will also provide a number of additional professional roles through appropriate training opportunities. The creation of employment during the O&M phase presents an opportunity for local residents to increase their prospects and earnings related to new high skilled employment opportunities and training initiatives. the majority of the likely opportunities for increasing the skill base of the local authority population are within STEM careers, so are more specialised in nature. The population of the Study Area in Pembrokeshire local authority is in line with qualifications averages for all levels except for Level 4 and above, which is lower than average; however, Pembrokeshire LSOA has a higher than average proportion of qualifications for this level. Therefore, the local population is not likely to be more sensitive to opportunities to upskill than generally across Wales. The number of training opportunities will also be a proportion of (i.e. fewer than) the number of operational FTEs. However, any training and skills led opportunities will be permanent in nature.

Sensitivity of the receptor

135. The sensitivity of this receptor is therefore considered to be **Medium.** This is because the Pembrokeshire labour workforce would be able to absorb this change with the skills and training opportunities presented by the proposed Project.

Magnitude of impact

136. The magnitude is therefore considered to be **Low**. This is because there is a low level of permanent direct training opportunities presented as part of the operational phase, and any opportunities are likely to be localised in scale and nature.

Significance of the effect

137. The sensitivity of training and skills receptors is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will be **Minor Beneficial**, **which is not significant** in EIA terms.

16.8.3. Decommissioning Effects

Employment creation

138. Following the end of the proposed Project's operational life, expected to be 30 years, it would be decommissioned, which is anticipated to be in 2057. In this phase, there are anticipated to be 242 FTEs supported through the proposed Project, through the decommissioning the substation and other infrastructure. There is a likely beneficial impact for those attaining employment through the proposed Project in this stage, however, the employment opportunities themselves are likely to be specialised in regard to the decommissioning activities. Similar to the construction phase, the same additionality assumptions are set out for the decommissioning phase, which are as follows:

- A leakage value of 50 %;
- A displacement value of 25 %; and
- A multiplier of 1.3.

139. This results in 216 net direct FTEs, of which 108 will be supported within the local area. **Table 16-21** details this summary[12].

Table 16-21. Gross to net decommissioning employment summary

Employment Impact	Impact Area	Outside impact area	Total
Gross direct FTEs	121	121	242
FTEs accounted for by displacement	30	30	60
Net direct FTEs (*less displacement*)	91	91	182
Additional FTEs created through multiplier	27	27	54
Total net FTEs (*less displacement, including multiplier*)	118	118	236

140. The duration, of these impacts, given their nature, are also expected to be temporary.

Sensitivity of the receptor

141. The sensitivity of this receptor is therefore considered to be **Medium.** This is because the decommissioning workforce in Pembrokeshire is expected to be able to respond quickly to demand for the labour to complete the works at the proposed Project, given the nature of employment in this industry.

[12] To note that figures have been rounded to the nearest FTE where applicable.

Magnitude of impact

142. The magnitude is therefore considered to be **Low,** given that it only represents a small proportion of the employment base in Pembrokeshire, which is detailed in **Section 16.5**.

Significance of the effect

143. The sensitivity of employment receptors is considered to be **Medium** and the magnitude of the impact is assessed as **Low**. Therefore, the effect will be **Minor Beneficial, which is not significant** in EIA terms.

16.8.4. Summary of Residual Environmental Effects

144. This chapter of the ES has assessed the potential environmental effects on socio-economics, recreation and tourism from the construction, operation and maintenance and decommissioning phases of the proposed Project. Where significant effects have been identified, additional mitigation has been considered and incorporated into the assessment.

145. **Table 16-22** summarises the impact assessment undertaken and confirms the significance of any residual effects, following the application of additional mitigation.

16.9 Summary of Additional Mitigation Measures

146. As there are no significant adverse effects, this chapter does not propose any additional mitigation measures. As the significant impacts surrounding employment creation in the construction phase is a positive impact, embedded mitigation is not required for these impacts, and no additional mitigation is required.

16.10 Summary of Effects and Conclusions

147. This section summarises the residual significant effects of the proposed Project on the socio-economic, recreation and tourism receptors following the implementation of mitigation.

Table 16-22. Assessment summary

Potential Impact	Receptor	Receptor Sensitivity	Magnitude of impact	Significance of effect	Additional Mitigation	Residual Significance of Effect
Construction						
Employment creation	Labour force in Pembrokeshire	Medium	High	Moderate beneficial (Significant)	None required	Moderate beneficial (Significant)
Effects of Construction Employment on the Local Housing Market	Housing in the Study Area	Medium	Low	Minor Adverse (Not significant)	None required	Minor Adverse (Not significant)
Skills and Training	Labour force in Pembrokeshire	Medium	Low	Minor Beneficial (Not significant)	None required	Minor Beneficial (Not significant)
Recreation amenities	Population of the Study Area	Medium	Low	Minor Adverse (Not significant)	None required	Minor Adverse (Not significant)
Access to Public Rights of Way or Other Paths	Population of the Study Area	Medium	Low	Minor Adverse (Not Significant)	None required	Minor Adverse (Not Significant)
Operation and Maintenance						
Employment Creation	Labour force in Pembrokeshire	Medium	Low	Minor Beneficial (Not significant)	None required	Minor Beneficial (Not significant)
Skills and Training	Labour force in Pembrokeshire	Medium	Low	Minor Beneficial (Not significant)	None required	Minor Beneficial (Not significant)
Decommissioning						
Employment Creation	Labour force in Pembrokeshire	Medium	Low	Minor Beneficial (Not significant)	None required	Minor Beneficial (Not significant)

16.11 Cumulative Effects of the proposed Project

16.11.1. Introduction

148. Cumulative effects are those effects upon receptors arising from the proposed Project alongside all existing, and / or reasonably foreseeable projects, plans and activities that result in cumulative effects with any element of the proposed Project. Existing Projects are generally considered as part of the baseline and as such are considered within the impact assessment presented in **Section 16.8** above.

149. This section assesses potential cumulative effects on Socio-economics, Recreation and Tourism from identified projects, plans and activities that have the potential to act cumulatively with the proposed Project.

150. PINS Advice 17: Cumulative Effects Assessment (PINS, 2019) suggests that CEA follows a four-stage process. The aim of this approach is to accurately determine relevant projects and associated relationships with scoped in receptors identified in the ES, to be included within the interproject CEA.

151. The approach to the assessment of cumulative effects is detailed in **Appendix 5A: Approach to Cumulative Effects Assessment** and is also summarised in **Table 16-23**.

Table 16-23. PINS Advice 17 Stages of the CEA process

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

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

16.11.2. Scope of Cumulative Effects Assessment for Socio-economics, Recreation and Tourism

152. The following impacts have been scoped into the CEA for socio-economics, recreation and tourism. The maximum spatial extent of potential effects identified within this chapter are determined by Pembrokeshire local authority. Hence, plans or projects with potential to overlap spatially within this Zone of Influence have been subject to the cumulative assessment.

Construction

- Cumulative impact on the economy (FTEs and GVA) as a result of overlapping construction phases of other proposed projects.
- Cumulative impact of construction workforce on local housing market from overlapping construction phases of other proposed projects.
- Cumulative impact on disruption to recreational amenities as a result of overlapping construction phases of other proposed projects.
- Cumulative impact on PROW or other paths from overlapping construction phases of other proposed projects.

Operation and maintenance

- Cumulative impact on the economy (FTEs and GVA) as a result of overlapping operation phases of other proposed projects.

Decommissioning

153. No impacts from the decommissioning phase have been considered for the CEA. At this stage, the information on the potential cumulative projects in their respective decommissioning phases is limited, and there is a high level of uncertainty within this stage. This uncertainty is derived from both the specific approaches to the decommissioning process, technology available and costs, but also for the different projects' lifecycles. Should the scenario occur whereby all cumulative projects enter the decommissioning phase at the same time as the proposed Project, then the overall magnitude and scale of the effect is expected to be similar, but lower than, the cumulative effect identified in the construction phase, which is outlined in **Section 16.11.3** onwards.

154. **Table 16-24** presents the short list of projects identified and included within the CEA for Socio-economics, Recreation and Tourism. As detailed in **Section 16.8,** there are no significant adverse effects on socio-economic, tourism and recreational receptors. The greatest risk of adverse impacts to these receptors from the proposed Project is related to the temporary closure or diversion to recreational amenities, and access to PROW or other paths. Accordingly, the greatest risk for cumulative impacts would be expected to relate to these effect pathways.

Table 16-24 List of projects considered for the socio-economic, recreation and tourism cumulative effects assessment

Project Name / Developer	Project Type	Status	Approx. distance from the proposed Project	Construction Timeframe
Pembroke Oil Refinery (Valero)	Inshore Energy	Operational	1.8km NW of the substation 2.2km NE of landfall 1.7km N of the onshore cable	N/A - Operational
South Hook Combined Heat and Power Station (South Hook CHP Limited)	Inshore Energy	Operational	6.5km NW of the substation 5.5km NE of landfall 5km NE of the onshore cable	N/A - Operational
Erebus (Blue Gem Energy)	Offshore Wind	Consent Authorised	Partially overlaps with the Onshore Development Area	June 2026 – October 2026
Valorous (Blue Gem Energy)	Offshore Wind	Scoping	Partially overlaps with the Onshore Development Area	2028
Greenlink Interconnector (Partners Group)	Offshore Wind	Under construction	Partially overlaps with the Onshore Development Area	2022 – December 2024

16.11.3. Cumulative Effect Assessment

Construction

Cumulative Impact on the Economy (FTEs and GVA)

155. There are three concurrent projects identified in **Table 16-24** where there is potential to create employment opportunities in the construction phase. Information on the level of employment that could be supported as a result of construction activity by the various projects varies. An overview of the three concurrent projects is provided below.

- Erebus – Through the construction phase (18 months for the onshore elements of the proposed Project, from January 2025 to December 2026), 578 net direct jobs and 662 net indirect jobs will be supported. This will generate £117.7m in direct GVA, and £116.2m indirect GVA for the Pembrokeshire economy (Blue Gem Wind, 2021).
- Valorous – At present there is little to no information regarding the effects of the construction phase for this project, as the proposed Project is planned but still in the scoping stage (Blue Gem Wind, 2023). As a result, there are no reported jobs and GVA outputs at this stage.

156. For the sensitivity of this effect, the evidence for Pembrokeshire remains as outlined in the assessment of the proposed Project's construction and operation phases. Therefore, the sensitivity is considered to be **Medium**.

157. On the basis of the above factors, the magnitude of impact on cumulative construction on employment is assessed to be **High.** This is because the total employment supported by the cumulative schemes (3,601, which includes the net additional employment supported through the proposed Project) is larger than the construction workforce in the Pembrokeshire

economy. The effect is temporary in duration and the project may not overlap to require this level of employment; however, this is assuming that all projects simultaneously require construction employment.

158. Given these findings, it is likely that the cumulative impact for the proposed Projects will be beneficial and will support construction employment throughout Pembrokeshire. The overall scale of construction employment is increased through the potentially simultaneous construction phases taking place for each project. However, given the proposed Project will begin works onshore between 2026 and 2027, the opportunity for overlapping programmes of activities between the Projects is likely to be low. The duration of each construction phase for the concurrent projects is also relatively short. Overall, the impact is likely to be **Moderate Beneficial**, **which is considered significant**.

Cumulative Impact of Construction Workforce on Local Housing Market

159. There are three concurrent projects identified in **Table 16-24** where there is potential to increase local demand for housing in Pembrokeshire. An overview (where applicable) for the effect of any construction workforce on local housing demand on the three concurrent projects is provided below.

- Erebus – The effect of additional construction employment on the local residential market was not considered within the assessment of effects of the construction phase.
- Valorous – At present there is little to no information regarding the effects of the construction phase for this project, including the assessment of the phase's effects on the residential market.

160. For the assessment of the cumulative effects of the proposed Project, the sensitivity of this receptor is assessed to be **Medium** as the local housing market has some capacity to absorb the likely impacts of the cumulative construction workforce without adversely affecting residents but is also susceptible to large changes in the temporary population, such as through the construction workforce.

161. In a worst case scenario, it is assumed all of the cumulative schemes come forward simultaneously. This cumulative assessment considers the non-home based employment required in a maximum scenario for the proposed Project, taken from **Section 16.8.1** (1,781 FTEs), and applies the 50% leakage assumption to the employment from the cumulative schemes (745 FTEs) to ascertain the total number of cumulative FTEs that would need to be supported by housing in Pembrokeshire (a total of 2,526 cumulative FTEs). Applying the same assumptions as those noted in **Section 16.8.1** leads to a requirement for 2,526 properties, which leads to a surplus of 579 properties in this scenario. Given the small surplus remaining should the schemes overlap in a worst case scenario, the cumulative magnitude of this effect is expected to be **High**.

162. It is likely that there will be an adverse cumulative adverse impact of the construction workforce on residential accommodation in Pembrokeshire. The overall scale of demand for the residential sector is increased through the simultaneous construction phases taking place for each project. As detailed above, the scope for overlapping construction and construction phases is relatively small, but if this occurs, the combined impact will have an adverse impact on housing availability in Pembrokeshire local authority. The duration of cumulative effects is also likely to be short, as the construction phases of the Erebus and Greenlink Interconnector projects possibly finish before that of the proposed Project.

163. Overall, given that the sensitivity is considered **Medium** and the magnitude is considered **High**, the effect is considered to be **Moderate Adverse, which is significant.**

Cumulative Impact on Disruption to Recreational Amenities

164. There is the potential to increase disruption to recreational amenities through concurrent projects in the Pembrokeshire area. The three cumulative projects each have provided an assessment of these effects within their own submissions. These are detailed below:

- Erebus – this project assessed a minor adverse impact on the reduced access for coastal tourism, leading to a minor adverse effect for coastal recreational users.
- Valorous – At present there is little to no information regarding the effects of the construction phase for this project, and this effect has not yet been assessed at scoping stage.

165. As for the assessment of the proposed Project's effects, the sensitivity is assessed to be **Medium** for this effect, given the high number of users and the importance of the recreational amenities to the tourism economy in Pembrokeshire. There is some potential for substitution of these routes should it be required.

166. The magnitude of this cumulative effect is assessed to be **Low.** This is given the low impacts of the cumulative schemes, the small geographical extent of any closures, the temporary nature of any impacts and the embedded mitigation across all cumulative schemes to reduce any impacts.

167. Given the findings of these assessments, the cumulative effect is likely to be adverse for Pembrokeshire. The overall extent of the cumulative effect is likely to be increased through the concurrent construction phases, however, as detailed previously, the scope for these phases to overlap is only a short period of time. The duration and location are also likely to reduce the size of the effect, as the locations of the disruption to recreational amenities is unlikely to overlap, and if they do, it is unlikely to lead to disruption for long periods of time.

168. Therefore, the overall cumulative effect is assessed to be **Minor Adverse, which is not significant.**

Cumulative Impact on PROW or other paths

169. There are three concurrent projects identified in **Table 16-24** where there is potential to disrupt the PROW and other paths within Pembrokeshire. Within these projects, the following was assessed:

- Erebus – There is a minor adverse impact identified for terrestrial recreational users of the Wales Coast Path. For all other PROW paths in Pembrokeshire, a negligible effect is identified.
- Valorous – This effect has not been assessed yet as the proposed Project is at scoping stage.

170. Given these findings, and the findings of the proposed Project's effects, the cumulative effect is likely to be adverse. The extent of the cumulative effect is likely to be increased by the concurrent construction phases, however, not all PROW will be affected simultaneously, as the construction periods will move geographically with the respective projects. The duration of the effect is likely to be limited, as multiple PROWs will likely only experience disruption for a shorter period of time than the construction phases in their entirety.

171. As previously assessed for this effect for the proposed Project, the sensitivity of this receptor is assessed to be **Medium**, due to the high number of users and the importance of the routes to the tourism economy in Pembrokeshire.

172. As a result of the above explanation, the magnitude of this effect is assessed to be **Low.** This is due to the low impacts envisions in the cumulative schemes, the temporary duration of any

impacts, and the low level of intersections with the proposed Project. There is also embedded mitigation in place to reduce any impacts in this stage should they occur.

Overall, this results in a Minor Adverse effect, which is **not significant.**

Operation and Maintenance

Cumulative Impact on The Economy (FTEs and GVA)

173. All five concurrent projects noted in **Table 16-24** are likely to be operational at the same time, and therefore a cumulative impact on FTEs and GVA is expected in this phase. Within the proposed Projects noted in **Table 16-24**, the following information was publicly available for the assessment:

- Pembroke Oil Refinery – No information is available on the operational phase employment for this project.
- South Hook Combined Heat and Power Station – No information is available on the operational phase employment for this project.
- Erebus – In the operational phase, 118 direct net jobs will be supported, alongside 229 indirect and induced net jobs, per annum. No calculations for GVA generated were provided for this project.
- Valorous – At present there is little to no information regarding the effects of the operation phase for this project, as the proposed Project is planned but still in the scoping stage. As a result, there are no reported jobs and GVA outputs at this stage.
- Greenlink Interconnector – The operational stage will result in five FTE staff in Wales, which will be operated by non-local employment. Therefore, the impact on employment in Pembrokeshire will be negligible.

174. The sensitivity of the receptor, in this case the labour force in the Pembrokeshire economy, remains as for the assessment of the proposed Project's effects, which is **Medium**.

175. Given the findings of the concurrent projects, and the findings of the proposed Project in the operation phase, there is likely to be a positive cumulative impact on the Pembrokeshire economy as a result of the jobs and GVA generated. The extent of this impact varies, given that for some of the proposed Projects mentioned, the jobs generated are low in number and only for maintenance roles, whereas other projects support multiple types of occupational roles in the operational phase. The duration of this employment impact is likely to be substantial in the long term, and all cumulative projects will be operational for a minimum of 25 years, as well as overlapping in this phase. Therefore, the overall magnitude of supporting the operational employment is expected to be **Medium**.

176. Therefore, the overall cumulative effect on the Pembrokeshire economy is considered to be **Moderate Beneficial, which is considered significant** in EIA terms**.**

16.12 Inter-related Effects of the proposed Project

177. The term '*Inter-related*' takes into account the environmental interactions (*'inter-relationships'*) with other receptors within the proposed Project. These are referred to in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 and further described in **Chapter 31: Inter-related Effect Assessment.**

178. As set out in PINS Advice Note 17 (PINS, 2019), 2019, *inter-related -project effects*, or '*interrelationships between topics'*, derive from combinations of different project specific impacts which, when acting together on the same receptor, could result in a new or different

effect, or an effect of greater significance than the proposed Project effects, when considered in isolation.

179. Inter-related effects comprise the following:

180. *Project lifetime effects*: effects that have the potential to occur during more than one phase of the proposed Project (i.e. construction, operation and maintenance and decommissioning) and to interact in a way that could potentially create a more significant effect than if it was assessed in isolation.

181. *Receptor-led effects*: effects that have the potential to interact, spatially and temporally, to create inter-related effects on a receptor.

182. **Chapter 31: Inter-related Effects Assessment** details the approach to the inter-related effects assessment and includes a description of the likely inter-related effects that may occur as a result of the proposed Project on Socio-economics, Recreation and Tourism.

183. The Socio-economics, Recreation and Tourism chapter has been scoped out of the inter-related effects assessment. This is because the inter-relationships between these receptors have already been considered throughout the chapter, as the effects on socio-economic, recreation and tourism receptors are inherently related to the effects of other chapters assessed for this ES. This includes the assessments for the following chapters:

- **Chapter 13: Traffic and Transport;**
- **Chapter 15: Air Quality; and**
- **Chapter 16: Noise and Vibration.**

184. The assessment of these effects is detailed and summarised in **Section 16.8**. As a result, the inter-relationships of the receptors have not been considered further here.

16.13 Transboundary Effects

185. A transboundary effect refers to the impacts or effects of a project that extend beyond the boundaries of the United Kingdom and have the potential to affect the environment of other countries within the European Economic Area (EEA). These effects can occur either from the proposed Project on its own or when combined with the effects of other projects or activities in the wider geographical area.

186. In terms of the impacts on socio-economic, recreation and tourism receptors, impacts will be localised to the extent of the local authority of Pembrokeshire. Given the intervening distance to neighbouring European Economic Area (EEA) states, there is no potential for transboundary impacts and resultant effects to occur.

16.14 References

Blue Flag, 2023. *Blue Flag.* [Online]. Available at: https://www.blueflag.global/ [Accessed 26 July 2023].

Blue Gem Wind, 2021. *Project Erebus Environmental Statement Chapter 30: Cumulative Effects Assessment.* [Online]. Available at: https://www.bluegemwind.com/wp-content/uploads/2020/07/Erebus-ES-Vol-1-Chapter-30-Cumulative-Effects_final.pdf [Accessed 01 August 2023]

Blue Gem Wind, 2023. *Valorous.* [Online]. Available at: https://www.bluegemwind.com/our-projects/valorous/ [Accessed 01 August 2023].

Department for Business, Energy and Industrial Strategy (BEIS), 2020. *Energy White Paper: Powering out Net Zero Future.* [Online]. Available at: *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf* [Accessed*:* 27 June 2023].

Department for Business, Energy and Industrial Strategy (BEIS), 2020. *Energy White Paper: Powering out Net Zero Future.* [Online]. Available at: *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf* [Accessed: 27 June 2023].

Department for Energy Security and Net Zero (DESNZ), 2023. *National Policy Statement for Renewable Energy Infrastructure (NPS EN-3).* [Online]. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3 [Accessed: 31 January 2024].

Department for Energy Security and Net Zero (DESNZ), 2023. *Overarching National Policy Statement for Energy (NPS EN-1).* [Online]. Available at: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1 [Accessed: 31 January 2024].

Department for Energy Security and Net Zero (DESNZ), 2023. Overarching *National Policy Statement for Electricity Networks Infrastructure (NPS EN-5).* [Online]. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5 [Accessed: 31 January 2024].

Google Earth, 2023. *Google Earth.* [Online]. Available at: https://earth.google.com/web/ [Accessed: 27 June 2023].

Greenlink Interconnector, 2020. *GREENLINK ENVIRONMENTAL STATEMENT –ONSHORE WALES CHAPTER 15 – SOCIO-ECONOMICS.* [Online]. Available at: https://www.greenlink.ie/file-share/f065f415-d25a-4bbf-84de-8b68297fefdb [Accessed 01 August 2023]

Homes and Communities Agency (HCA, now Homes England), 2014. *Additionality Guide: Fourth Edition*.

McConks, 2023. M*cconks stand up paddle boarding bitesize travel guides freshwater west pembrokeshire wales* [Online]. Available at: https://mcconks.com/mcconks-stand-up-paddle-boarding-bitesize-travel-guides-freshwater-west-pembrokeshire-wales/ [Accessed 26 July 2023].

National Infrastructure Planning, 2019. *Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects.* [Online]. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/ [Accessed 15 December 2023].

National Trust, 2023. *Pembrokeshire.* [Online]. Available at: https://www.nationaltrust.org.uk/visit/wales/pembrokeshire#our-work-in-pembrokeshire [Accessed 26 July 2023].

Office for National Statistics (ONS), 2018. *Population projections.* [Online]. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections [Accessed: 27 June 2023].

ONS, 2020. *Business demography.* [Online]. Available at: https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/datasets/businessdemographyreferencetable [Accessed: 27 June 2023].

ONS, 2021a. *Census 2021.* [Online]. Available at: https://www.ons.gov.uk/census [Accessed: 27 June 2023].

ONS, 2021b. *Annual Survey of Hours and Earnings.* [Online]. Available at: https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/annualsurveyofhoursandearningsashe [Accessed: 27 June 2023].

ONS, 2021c. *Regional Gross Value Added by industry.* [Online]. Available at: https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalandrealregionalgrossvalueaddedbalancedbyindustry [Accessed: 27 June 2023].

ONS, 2023. *Open Geography Portal.* [Online]. Available at: https://geoportal.statistics.gov.uk/ [Accessed: 27 June 2023].

Pembrokeshire Coast National Park Authority, 2020. *Pembrokeshire Coast National Park Local Development Plan 2 2020-2031.* [Online]. Available from: https://www.pembrokeshirecoast.wales/wp-content/uploads/2020/09/LDP-Text-for-Adoption.pdf [Accessed: 27 June 2023].

Pembrokeshire Coast, 2023. *Pembrokeshire Coast Path National Trail.* [Online]. Available at: https://www.pembrokeshirecoast.wales/coast-path/ [Accessed 26 July 2023].

Pembrokeshire County Council, 2013. *Local Development Plan*. [Online]. Available from: https://www.pembrokeshire.gov.uk/objview.asp?object_id=3398&language= [Accessed: 27 June 2023].

Pembrokeshire County Council, 2019. *Action Plan towards becoming a net zero carbon local authority by 2030.* [Online]. Available at: https://cape.mysociety.org/media/data/plans/pembrokeshire-county-council-ed87318.pdf [Accessed: 27 June 2023].

Pembrokeshire County Council, 2020. *Pembrokeshire Recovery and Regeneration Strategy 2020-2030.* [Online]. Available from: https://www.pembrokeshire.gov.uk/objview.asp?object_id=9703&language= [Accessed: 27 June 2023].

Pembrokeshire County Council, 2023. *The Consolidated Definitive Map.* [Online]. Available from: https://www.pembrokeshire.gov.uk/definitive-map/view-the-consolidated-definitive-map [Accessed: 27 June 2023].

Pembrokeshire Dive, 2023. *Dive Pembrokeshire UK.* [Online]. Available at: http://www.dive-pembrokeshire.com/infos.html [Accessed 26 July 2023].

Pembrokeshire Islands Boat Trips, 2023. *Boat Trips.* [Online]. Available at: https://www.pembrokeshire-islands.co.uk/boat-trips/ [Accessed 26 July 2023].

Pembrokeshire Public Services Board, 2023. *Well-being plan for Pembrokeshire.* [Online]. Available at: https://www.pembrokeshire.gov.uk/well-being-plan/project-plan-strengthening-communities [Accessed 26 July 2023].

Planning Guidance Wales, 1997. *Technical Advice Note (Wales) 13: Tourism.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2022-07/tan13-tourism.pdf [Accessed: 27 June 2023].

Planning Policy Wales, 2009. *Technical Advice Note 16: Sport, Recreation and Open Space.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2018-09/tan16-sport-recreation-open-space.pdf [Accessed: 27 June 2023].

Port of Milford Haven, 2023. *Enjoy the Milford Haven Waterway* [Online]. Available at: https://www.mhpa.co.uk/enjoy-the-milford-haven-waterway/ [Accessed 26 July 2023].

Royal Yachting Association, 2023. *Where's my nearest.* [Online]. Available at: https://www.rya.org.uk/wheres-my-nearest [Accessed 26 July 2023].

StatsWales, 2018. *StatsWales – Population projections.* [Online]. Available at: https://statswales.gov.wales/Catalogue/Population-and-Migration/Population/Projections/Local-Authority/2018-based [Accessed: 27 June 2023].

StatsWales, 2020. *Average household size (persons) by local authority and year.* [Online]. Available at: https://statswales.gov.wales/Catalogue/Housing/Households/Estimates/averagehouseholdsize-by-localauthority-year [Accessed 26 July 2023].

StatsWales, 2020. *Average household size (persons) by local authority and year.* [Online]. Available at: https://statswales.gov.wales/Catalogue/Housing/Households/Estimates/averagehouseholdsize-by-localauthority-year [Accessed 26 July 2023].

Swansea Bay City Region, 2023. *Swansea Bay City Deal.* [Online]. Available at: https://www.swanseabaycitydeal.wales/about/ [Accessed 26 July 2023].

The Committee on Climate Change, 2019. *Net Zero: The UK's contribution to stopping global warming.* [Online] Available at: https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf [Accessed 26 July 2023].

The Kite and Windsurfing Guide, 2023. *Freshwater West.* [Online]. Available at: https://web.kite-and-windsurfing-guide.com/spots/kiteboarding-windsurfing-sup/freshwater-west-wales-bristol-channel-great-britain.html [Accessed 26 July 2023].

UK Government, 2019. *The Climate Change Act 2008 (2050 Target Amendment) Order 2019.* [Online]. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111187654 [Accessed 19 February 2024].

UK Government, 2020. *Ten Point Plan for a Green Industrial Revolution.* [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf [Accessed: 27 June 2023].

UK Government, 2021. *Build Back Better: Our Plan for Growth.* [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/969275/PfG_Final_print_Plan_for_Growth_Print.pdf [Accessed: 27 June 2023].

Visit Pembrokeshire, 2019. *Economic Impact of Tourism – Visit Pembrokeshire*. [Online]. Available at: https://www.visitpembrokeshire.com/wp-content/uploads/Economic-Impact-of-Tourism-Pembrokeshire-Report-2019.pdf [Accessed: 27 June 2023].

Visit Pembrokeshire, 2019. *Economic Impact of Tourism – Visit Pembrokeshire*. [Online]. Available at: https://www.visitpembrokeshire.com/wp-content/uploads/Economic-Impact-of-Tourism-Pembrokeshire-Report-2019.pdf [Accessed: 27 June 2023].

Visit Wales, 2021. *Four walks in Pembrokeshire*. [Online]. Available at: https://www.visitwales.com/things-do/adventure-and-activities/walking/pembrokeshire-coastline-walks [Accessed: 27 June 2023].

Welsh Government, 2015. *Health and Well-being Impact Assessment for the Planning (Wales) Bill (2015).* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2019-05/planning_wales_bill_health_and_wellbeing_impact_assessment.pdf [Accessed: 27 June 2023].

Welsh Government, 2015. *Well-being of Future Generations Commissioner for Wales Act (2015).* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2021-10/well-being-future-generations-wales-act-2015-the-essentials-2021.pdf [Accessed: 27 June 2023].

Welsh Government, 2016. *Environment (Wales) Act 2016.* [Online]. Available at: https://www.gov.wales/environment-wales-act-2016-overview [Accessed 26 July 2023]

Welsh Government, 2017. *Welcome to Wales: Priorities for the visitor economy 2020-25.* [Online]. Available at: https://www.gov.wales/welcome-wales-priorities-visitor-economy-2020-2025 [Accessed: 27 June 2023].

Welsh Government, 2019. *Dwelling Stock Estimates for Wales, as at 31 March 2019.* [Online]. Available at: https://www.gov.wales/sites/default/files/statistics-and-research/2019-09/dwelling-stock-estimates-april-2017-march-2019-225.pdf [Accessed 26 July 2023].

Welsh Government, 2019. *Welsh Index of Multiple Deprivation.* [Online]. Available at: https://gov.wales/welsh-index-multiple-deprivation [Accessed: 27 June 2023].

Welsh Government, 2019. *Welsh National Marine Plan.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2019-11/welsh-national-marine-plan-document_0.pdf [Accessed: 27 June 2023].

Welsh Government, 2020. *Building Better Places.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2020-07/building-better-places-the-planning-system-delivering-resilient-and-brighter-futures.pdf [Accessed: 27 June 2023].

Welsh Government, 2020. *Future Wales – The National Plan 2040.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf [Accessed: 27 June 2023].

Welsh Government, 2021. *Net Zero Wales Carbon Budget 2 (2021-2025).* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2021-10/net-zero-wales-carbon-budget-2-2021-25.pdf [Accessed: 27 June 2023].

Welsh Government, 2021. *Stronger, Fairer, Greener Wales: Net Zero Skills Action Plan.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2023-02/net-zero-skills-action-plan.pdf [Accessed 26 July 2023].

Welsh Government, 2021. *Welsh Government Economic Resilience and Reconstruction Mission.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2021-02/economic-resilience-reconstruction-mission_0.pdf [Accessed: 27 June 2023].

Welsh Government, 2023. *Infrastructure (Wales) Bill.* [Online]. Available at: https://www.gov.wales/infrastructure-wales-bill-2023#124511 [Accessed 26 July 2023].

Welsh Government, 2024. *Planning Policy Wales: Edition 12.* [Online]. Available at: https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12_1.pdf [Accessed: 12 March 2024].

Welsh Parliament, 2015. *Planning (Wales) Act 2015.* [Online]. Available at: https://business.senedd.wales/mgIssueHistoryHome.aspx?IId=11271#:~:text=The%20Bill%20introduces%20a%20new,and%20infrastructure%20requirements%20for%20Wales. [Accessed 26 July 2023].