Offshore Energy Alliance

North Wales and North West England

Commissioned by:

Offshore Wind Industry Council

The Crown Estate

the offshore energy alliance

Delivering our regional growth through

Future Electrical Systems & Cables

Smart Environmental Services

Next Generation Installation and O&M

Industrialised Foundations & Substructures

Enabled by

7.5GW total regional portfolio and pipeline

Plus:

- Access to Irish market, Celtic Sea project areas and Isle of Man development
- Liverpool City Freeport status
- Cross-sector leverage – hydrogen, nuclear & civil defence
- North Wales Growth Deal - £1bn funding
- Anglesey Freeport
- North East Wales Investment Zone

Working with

LOCAL STAKEHOLDERS

- Welsh Government
- Regional enablers – Liverpool City (LCRCA), Enterprising Cumbria, Menter Môn, Mersey Maritime, Ambition North Wales, Marine Energy Wales and Enterprising Cumbria, Mersey Dee Alliance
- Developers/T1s - Ørsted, RWE, EnBW, bp, Vattenfall, Vestas & SGRE
- Topic champions – Supply Chain Growth (Hutchinson), Maritime & Vessel (Bibby Marine) & Ports (ABP)

And building on

SKILLS

- Apprenticeships – Furness College & Grwp Llandrillo Menai
- North Wales Regional Skills Partnership
- Wirral Met College
- The Engineering College in Birkenhead
- Wrexham Glyndwr University

INNOVATION

- Sheffield University AMRC Cymru
- Bangor University (Ocean Sciences/Environmental Sciences)
- OpTIC Technology Centre (Wrexham University)
- M-SParc
- Mersey Maritime Innovation Action Framework
- N0MES Centre for Doctoral Training in Net Zero Maritime Energy Solutions

INFRASTRUCTURE

- Holyhead, Mostyn, Liverpool, Barrow, Heysham & Workington
- Cammell Laird shipyard
- Cable OEM capability – Prysmian, Wrexham

Offshore Energy Alliance: building on long term experience for future success

An established offshore wind powerhouse with the ambition and capability to broaden its industrial horizons

With the Irish Sea hosting some of the UK's most active offshore wind development over the past decade, particularly in the Liverpool Bay and off the North Wales Coast, companies in the Offshore Energy Alliance cluster have secured contracts across several Industrial Growth Plan (IGP) priority areas. A broad-based local supply chain has emerged, delivering high-value services in **Next Generation Installation, Operations and Maintenance** and **Next Generation Environmental Services,** supported by port capacity in Cumbria, Merseyside and North Wales.

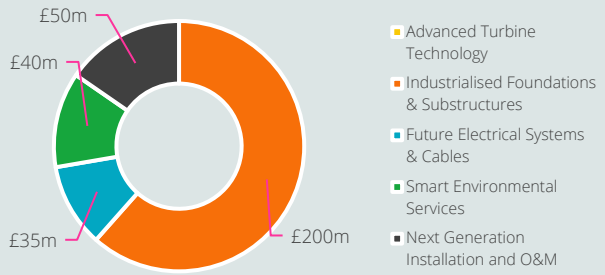
There is strong growth in secondary steel provision for **Industrialised Foundations and Substructures**, with future potential to access wider industrial expertise in Lancashire, South Yorkshire and the Midlands. The cluster also benefits from access to established chemical, heavy industry, aerospace, and automotive capabilities, as well as strategic proximity to the Ynys Môn Freeport and the planned North Wales Investment Zone.

Prysmian's Wrexham facility has been a traditional strength of this region, enabling value capture in array cable manufacturing, together with legacy from the former cable factories at Prescot and Helsby that created the skill base. However, as cable ratings grow, focus of offshore cable manufacture has shifted elsewhere in the UK, though the plant is still active in supporting Prysmian's wider network of manufacturing sites. Today the UK is a site of excellence and innovation for a next generation of electrical systems design and manufacturing, including Siemens Energy sites in both Manchester and Ulverston, meaning the region is set to play a leading role in IGP work on **Future Electrical Systems and Cables**.

As one of the UK's most mature offshore wind regions, the cluster is positioning itself for future opportunities in decommissioning, repowering, and end-of-life disposal. Regional universities, such as Bangor, bring strong environmental research expertise, while the Advanced Manufacturing Centre (Cymru), part of the High Value Manufacturing Catapult, is actively advancing floating wind innovation.

Relevant Investment Need

Shared between relevant clusters



Cluster's unique proposition

Respond:
- Environmental datasets
- Foundation, mooring and anchoring manufacture

Expand:
- Autonomous and low emissions vessels

Disrupt:
- Advanced materials for floating substructures
- Cable reliability and interoperability
- Data-driven surveys, installation and O&M

Analysis

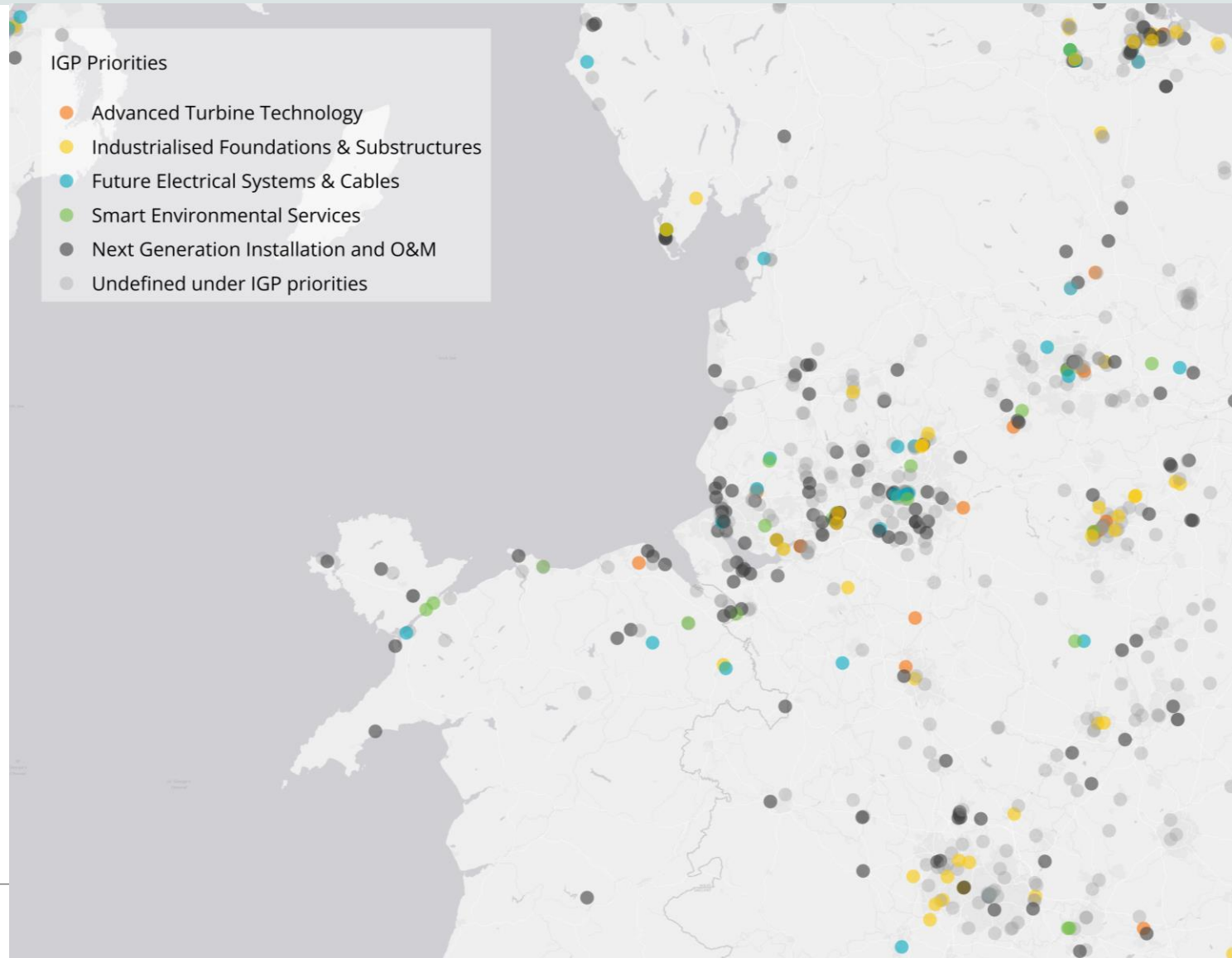
the offshore energy alliance – Company mapping

The UK's Industrial Growth Plan has identified a series of opportunities, grouped under five priorities, for the UK to prioritise and grow value. The Regional Growth Prospectus assessment shows a strong mapping of current capabilities in the Offshore Energy Alliance cluster. While current capability is not the sole determinant of future capability, it is a clearly a good place to start. The UK can then supplement this as needed through innovation, investment in start ups and through foreign direct investment.

The map on the right shows capability across North Wales and the NW of England, based on the Supply Chain Capability Assessment commissioned by OWIC and the OWGP complimented with additional data from the cluster.

Most prevalent are companies focused in **Next Generation Installation and O&M**, but the region is also home to companies offering products and services covering each of the five priorities, and a wider group working in areas of offshore wind not defined by the IGP.

Clustering is greatest in Liverpool and around the Greater Manchester area, with additional capability around ports such as Workington, Barrow, Mostyn and Holyhead. The region also has access to wider capability in West and South Yorkshire as well as Staffordshire and the West Midlands.



– IGP aligned priorities

Investment £158m-325m

Investment needed, shared between relevant clusters

Based on a national 'make or buy' analysis of critical components and services, the IGP highlights areas essential to domestic supply or where the UK has the potential to build global competitiveness.

While national in scope, the IGP emphasises the vital role of the UK's clusters in driving local supply chain growth and attracting targeted investment based on regional strengths.

This Regional Growth Prospectus helps to set out how the IGP can best build on these regional strengths. Developed with input from the OEA, the table on the right shows the most relevant Investment Opportunities set out in the IGP for this region. Also set out is IGP data showing target dates for investment, the value of required UK level investment and expected UK GVA if this investment is made.

IGP priorities	Opportunity		Target date	Investment	National level GVA
Industrialised Foundations & Substructures	Expand UK foundation manufacturing for designs catering to deep waters	Respond	2030	£70-100m	£ 1.2 – 2.0 bn
Industrialised Foundations & Substructures	Increase UK capacity of mooring and anchors by 50% from 2023	Respond	2030	£20-50m	£ 0.3 – 0.5 bn
Smart Environmental Services	Build extensive marine datasets	Respond	2026	£5-10m	£ 80-120m
Smart Environmental Services	Claim the global top position in providing surveying services across global serviceable markets, with more than 30% of contracts awarded to UK suppliers	Expand	2030	£10-20m	£ 0.2-0.3bn
Next Generation Installation and O&M	Use only low carbon emission vessels for all installations, operations and maintenance services in the UK	Expand	2030	£10-20m	N/A
Industrialised Foundations & Substructures	Develop UK manufacturing capability to produce advanced material for part of the floating substructure production to reduce the weight of the floating substructures by 20%	Disrupt	2035	£20-50m	£ 0.8-1.6m
Future Electrical Systems & Cables	Reduce the number of cable related failures/reliability issues of UK supplied cables by 80%	Disrupt	2030	£1-5m	-
Future Electrical Systems & Cables	Develop mutually compatible and interoperable HVDC systems in the UK	Disrupt	2035	£10-30m	£ 0.1-0.2 bn
Future Electrical Systems & Cables	Develop new wet and dry cable designs and materials	Disrupt	2035	-	-
Smart Environmental Services	Integrate multiple Machine learning techniques optimising environmental surveys and minimising ecological impact in the UK	Disrupt	2030	£1-10m	-
Next Generation Installation and O&M	Integrate Machine Learning (ML) algorithms optimising operations and maintenance services	Disrupt	2030	£1-5m	-
Next Generation Installation and O&M	Commercialise next generation inspection, monitoring and installation services, implementing autonomous vehicles, robotic system and ML algorithms to process data from sensors	Disrupt	2035	£10-25m	-
Advanced Turbine Technology - Materials	Grow UK supply of materials into offshore wind blade production	N/A	-	-	-

– IGP aligned priorities

Investment £158m-325m

Investment needed, shared between relevant clusters

Next Generation Installation and O&M

Overall, the region's greatest current focus is seen to be in operations & maintenance, with firms across the region supporting the O&M of a wide group of offshore wind farms. With new development expected in Liverpool Bay and across the Irish Sea, the region's ports and supply chain has significant opportunity ahead to support both the installation and the running of these new sites.

Industrialised Foundations & Substructures

The region has discreet but important capability in supply of secondary steel for offshore wind. Cluster supply chain growth champion Hutchinson Engineering are an example of a forward-looking UK fabricator winning work in a competitive environment. Their success highlights the importance of the IGP identifying practical ways to support UK fabricators grow their offer across both fixed and floating technologies. The presence of the Advanced Manufacturing Centre (Cymru) can also be expected to support utilisation of advanced materials and processes in offshore wind.

Future Energy Systems & Cables

The presence of Prysmian Cables in Wrexham has traditionally been seen as a strength of the region. The facility remains active supplying other markets but can no longer supply the larger rated inter-array cables needed by larger turbines and projects. However, important regional players like Siemens Energy, with its T&D capability in Manchester, and its Subsea Excellence Centre in Ulverston, highlight wider regional strengths.

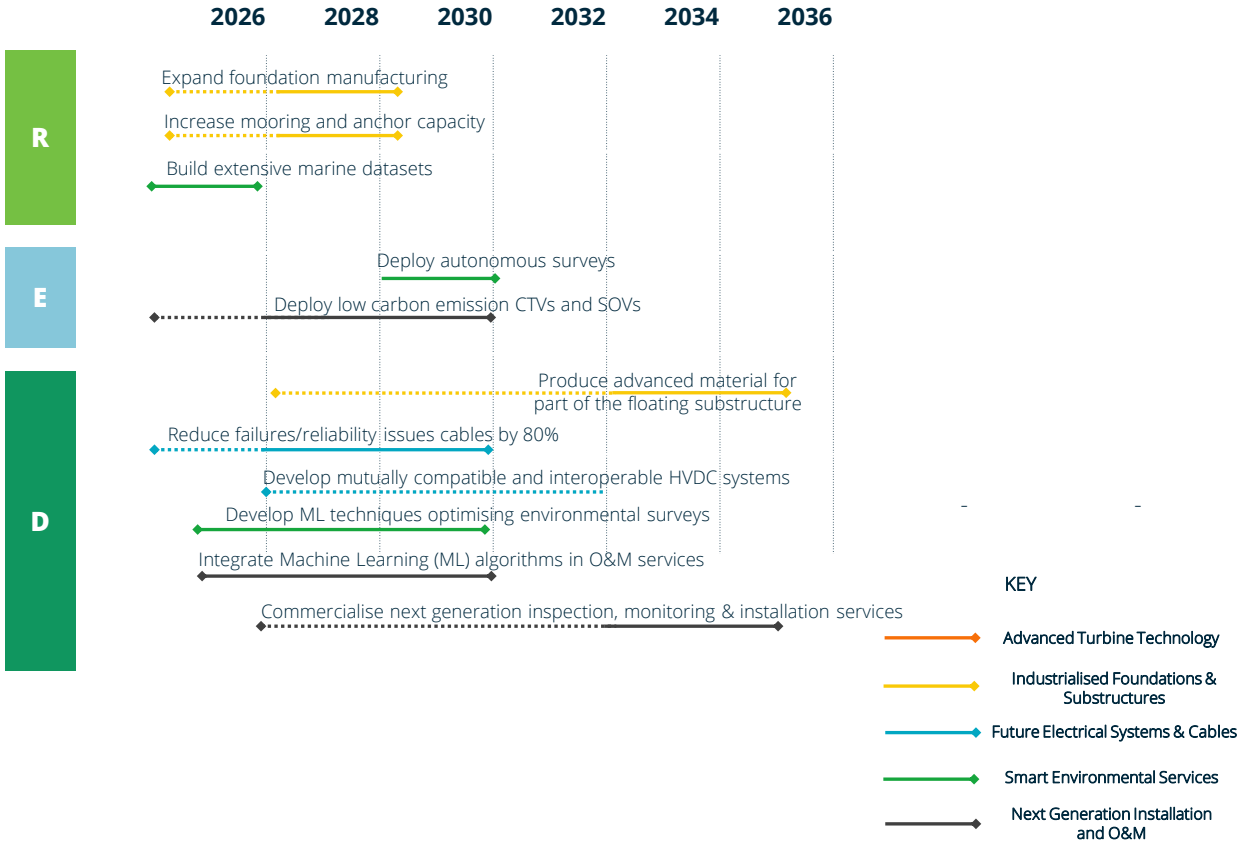
Smart Environmental Systems

Regional digital capability has been identified by the RGP. This strength could see the region support IGP opportunities around machine learning in both surveying and installation and O&M.

Also of note is the NW being the home of the main UK glass fibre manufacturer (Nippon Glass) and also hosting specialists in advance materials such as composites and carbon fibre (Cygnet Texkimp).

(R)espond, (E)xpand and (D)isrupt Programmes

Below are shown the IGP Investment Opportunities identified as most relevant to the OEA. Investment data and timelines are taken from the IGP to help focus regional and national conversations on investment priorities.



Analysis

the offshore energy alliance – Ports summary

The UK's Offshore Energy Alliance Cluster is a dynamic initiative aimed at strengthening the country's offshore wind supply chain. Several key regions play a crucial role in this cluster, serving as vital hubs for logistics, assembly, and maintenance of offshore wind projects:

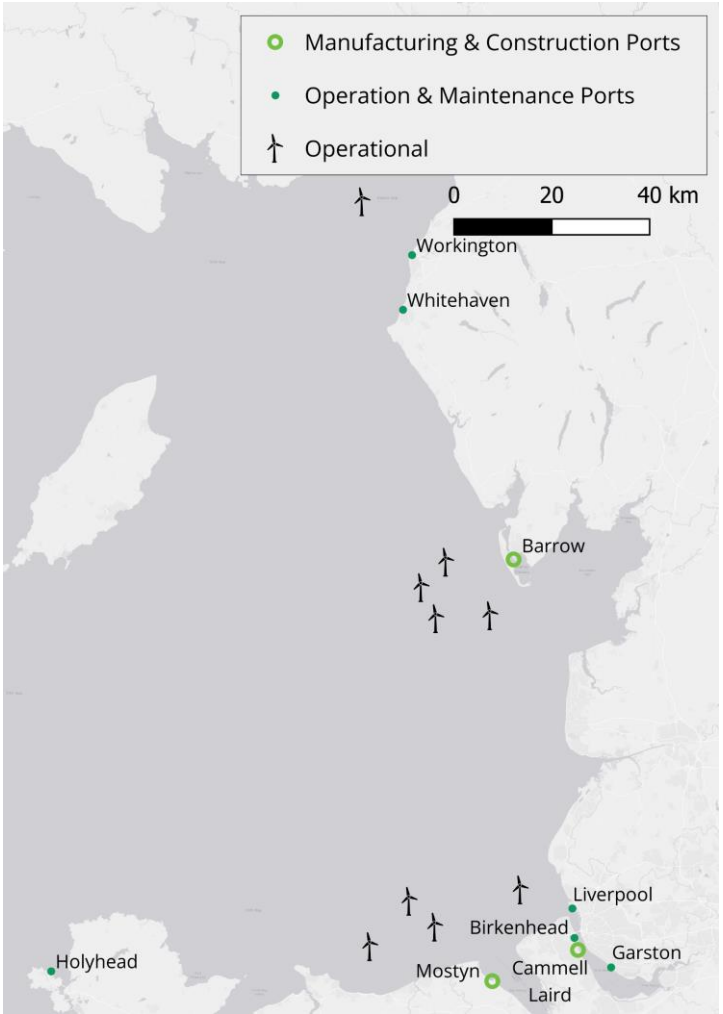
- North Wales: This region has significant experience in installing and maintaining offshore wind projects. The ports of Mostyn and Holyhead have consented expansion plans to support future projects. Holyhead is also situated in the Anglesey freeport.
- Merseyside: Known for its strong maritime infrastructure and expertise in energy, Merseyside could prove pivotal for future offshore wind development and maintenance, with ports offering substantial expertise and a proven track record.
- Cumbria: With its strategic location and industrial capabilities, Cumbria could provide crucial services for manufacturing and assembly of wind turbine components, supported by ports such as Barrow.
- North West: As a hub for innovation and business development, this region supports the broader supply chain and ports have the potential to provide O&M services for the offshore wind industry.

The port of Liverpool has been awarded freeport status, which could benefit component manufacturing, construction, and maintenance activities in the future. Cammell Laird, having served as the base port for the installation of 160 monopiles for the Gwynt y Môr wind farm, could benefit from this freeport status. Ørsted's O&M base for Burbo Bank offshore wind farm is located at King's Wharf, Wirral.

The Port of Mostyn supports construction and O&M for fixed offshore wind projects. It is expanding with a new 350-meter quay and developing a 18-hectare site to handle larger fixed and floating turbines, creating 300 new jobs.

The Port of Barrow supports offshore wind construction and O&M activities. It has previously facilitated the construction of the West of Duddon Sands and Walney Extension wind farms. The port has plans to expand facilities to accommodate larger service operation vessels and new O&M bases and to act as a base for construction related work packages such as cable installation.

Ports within the Offshore Energy Alliance Cluster provide essential services to all phases of offshore wind projects and are well positioned for significant future growth in the sector.



Analysis

the offshore energy alliance – Ports and O&M

The Offshore Energy Alliance has a number of ports currently acting as O&M bases.

Ørsted's O&M base for the Burbo Bank offshore wind farm is located at King's Wharf, Wirral. The Port of Mostyn supports O&M for several offshore wind projects, acting as a base for Rhyl Flats, Gwynt y Môr, and North Hoyle.

The Port of Barrow supports O&M activities for the Barrow, Walney, West of Duddon Sands and Ormonde wind farms. In NW Cumbria, the Port of Workington, which serves as the base for Robin Rigg O&M services, is currenty looking at new opportunities and options for port investment to support growth of offshore wind.

With a significant pipeline of new development ahead in the region, there will be a need for further port infrastructure at the above and other regional ports for O&M activities.

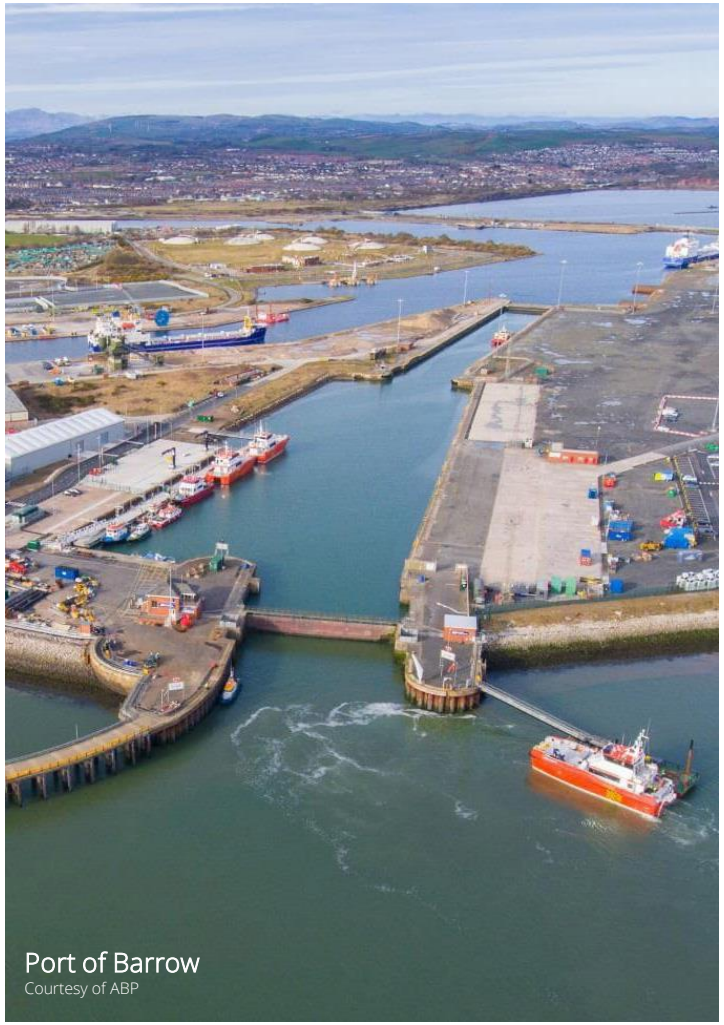
Larger ports may be able to act as bases for a range of activities, with space to support manufacturing, installation and/or O&M. In the following pages, there is a focus on those ports also able to potentially support installation and manufacturing activities identified within the IGP.

Across the UK there is a general shift to larger projects further from shore, often in deeper waters. Projects further from shore cannot easily be serviced by Crew Transfer Vessels (CTVs) that take O&M staff out to wind farms from port each day. This will mean more use of Service Operations Vessels (SOVs) that stay out at a windfarm for longer periods before returning to a base port for resupply and crew changeover.

While different projects may choose different ports depending on individual project needs, there are opportunities for clustering of activities such as SOV supply and support to improve operational efficiency. Such clustering of O&M activities can potentially also enable further supply chain clustering in support of multiple projects. This clustering has taken place in oil and gas, so as the number of projects in offshore wind grows, this may also take place in offshore wind.

The IGP identifies UK expertise in O&M as a strength. UK projects and the supply chain are also leading offshore wind sector work to develop new and more efficient methods for O&M, such as remote monitoring and inspection. The UK also has capability in vessel design, operation and on-deck equipment.

IGP opportunities relating to O&M concern **low carbon emission CTVs and SOVs**; **integration of machine learning into O&M services**, and; **commercialisation of next generation inspection, monitoring and installation services**.



Port of Barrow
Courtesy of ABP

Analysis

the offshore energy alliance - Installation & manufacturing ports

Fabrication
Marshalling/Storage
Assembly and Integration
Installation

Barrow

- Deepwater quayside
- Expansive quayside
- Land available for further development
- Developing a floating solar array

Cammell Laird

- Expansive quayside
- Fabrication facilities available for redevelopment
- Heavy lift capability
- Suitable for turbine assembly
- Non-tidal wet basin
- Berth designated for vessel repair

Mostyn

- Suitable for turbine assembly
- Ongoing expansion efforts
- Land available for fabrication and assembly development

Analysis

the offshore energy alliance – IGP alignment (installation & manufacturing ports)

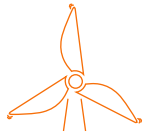
Port specifications and input from the Offshore Energy Alliance cluster has been used to evaluate each port's ability to support manufacturing activities, and services such as assembly and installation. These ports were selected and assessed based on track history and their installation and manufacturing characteristics, such as extensive quay lengths, large laydown areas, and high bearing capacities.

This evaluation adopts the "Expand" and "Respond" terminology set out in the 2024 Offshore Wind Industrial Growth Plan, set against priority symbols to reflect the opportunity for the key ports located in this cluster.

In this context, "Expand" indicates a port has good infrastructure, with upgrades required to fully facilitate the underlying activities. "Respond" defines a port to have strong infrastructure, with minor to minimal improvements needed.

Notes on how to use this assessment:

- "Disrupt" has been omitted from the evaluation as there are many ports that, with sufficient investment, could support the IGP priorities over the coming decade.
- A port is classed as being able to support a particular priority if it could host a range of the varied activities within the priority (for example it could host towers or blades or drive train components, not just one type of facility).
- The IGP priority "Smart Environmental Services" has been omitted from this analysis as these services are less constrained by port infrastructure. For the IGP priority "Next Generation Installation, Operations and Maintenance" only installation activities have been considered, as it is assumed there is widespread capability across multiple ports to support O&M.



Advanced Turbine Technology
- Turbine design and engineering
- Tower
- Blades
- Drive train components
- Composite-based components
- Automation of manufacturing process
- Leading edge protection

Future Electrical Systems and Cables
- Array cables
- Export cables
- Dynamic inter-array cables at 132kV
- HVDC system interoperability
- Standardised systems

Industrialised Foundations & Substructures
- Floating foundation design
- Deeper water & floating foundations
- Moorings and anchors
- Automated welding
- Composites for light weight foundations
- Synthetic mooring line materials

Next Generation Installation
- Wind turbine installation
- Cables installation vessels operation

Activity	Actions	Barrow	Cammell Laird	Mostyn
Manufacture	Expand			
	Respond			
Services	Expand			
	Respond