Energi Coast Cluster

North East England

Commissioned by:

Offshore Wind Industry Council

The Crown Estate

ENERGI COAST®

Delivering our regional growth through

Advanced Turbine Technology

Future Electrical Systems & Cables

Smart Environmental Services

Next Generation Installation and O&M

Industrialised Foundations & Substructures

Enabled by

5.2GW operational or in construction
6GW in scoping

Plus:

- Longer term identification of deep water development area in North Sea
- Freeport and North East investment zones
- Active partnering within the four rivers, and growing coordination across the region's ports
- Strong Developer / tier one & logistics support network
- Floating offshore wind demonstrator plans

Working with

LOCAL STAKEHOLDERS

- NOF
- North East Combined Authority
- Tees Valley Combined Authority
- ORE Catapult
- Regional Mayors
- Energy Central
- Tyne Taskforce
- Global Underwater Hub

And building on

SKILLS

- STEM Ambassador Hub North East
- Energi Coast Skills Group
- Energy Central Campus
- Newcastle College Energy Academy
- Make UK
- Tees Maritime
- Energy Central Institute (planned)

INNOVATION

- ORE Catapult (Blyth Test & Demo facilities and DARE Centre)
- Universities - Durham (Energy Institute), Teesside, Newcastle, Sunderland, Northumbria
- Aura Centre for Doctoral Training
- Teesside Net Zero Innovation Centre
- TWI Technology Centre
- Maritime Innovation Centre

INFRASTRUCTURE

- Strong port infrastructure - ports including Port of Blyth, Tyne, Sunderland, Middlesbrough, Teesport, Able Seaton, Clarence Port
- Large manufacturing and engineering capabilities in export and inter array cables, jackets, substations and transition pieces

Energi Coast Cluster: Cables and fabrication expertise with a growing manufacturing footprint

Globally recognised cable and subsea engineering capability, plus a depth of expertise in fabrication and manufacturing, installation and O&M. Regional capacity able to scale up thanks to strong partner ethos in region

Energi Coast is home to a wide variety of supply chain companies working in offshore wind, with all four of the region's rivers hosting firms active in offshore wind. The long-standing presence of JDR Cables and a wider supply chain, as well as a larger group of fabricators (including tier one suppliers in SeAH and Smulders) and presence of installers such as Technip FMC, SMD and many others in the region highlights its importance to UK efforts to grow Industrialised Foundations and Substructures, Future Electrical Systems and Cables, Next Generation Installation and O&M and Smart Environmental Services..

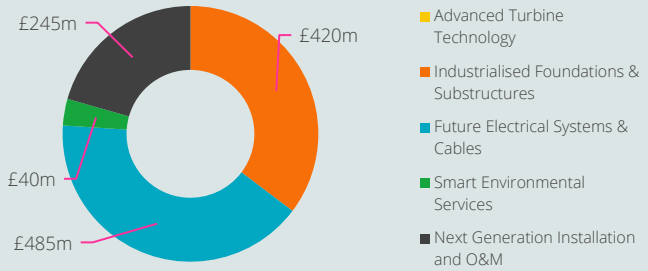
Port and industrial locations along the rivers Blyth, Tyne, Tees and Wear are active locations in offshore wind, as well as related sectors such as oil and gas. Within these ports sit a strong network of port-based fabricators. This wide and deep supply chain expertise creates opportunity, particularly if it can be better integrated with the region's primary fabricators, and also through securing larger installation packages. UK focus on deeper foundations and substructures is an opportunity for the region, with both XXL monopile, jacket and substation production already embedded in the region, as well as interest in floating substructure component manufacturing.

Widespread cable manufacturing and installation expertise in the region means the cluster is well placed to support Industrial Growth Plan (IGP) opportunities around cables. The recent success of Enshore Subsea in winning the Inch Cape export cable installation shows regional capability to secure and deliver bigger installation packages.

There are also opportunities within region to support the IGP's commitment to treble UK manufacturing through local growth and foreign direct investment in, for example, Advanced Turbine Technology. There are significant landbanks available for utilisation in ports around the region, with regional growth funding and freeport status a potential draw. The region demonstrates a clear identity and a strong predisposition to work collectively across the region to build value and attract new investments, while making use of innovation assets such as ORE Catapult and local universities.

Relevant Investment Need

Shared between relevant clusters



Cluster's unique proposition

Respond:
- Support top tier companies such as JDR Cable Systems, SeAH and Smulders to grow presence and activity in region
- Build on region's installation and O&M presence
- Opportunities to build on UK success in topside fabrication

Expand:
- Widespread fabricator network can be supported to build presence and secure larger contracts
- Expand and develop regional expertise in cables and associated components, including securing larger installation contracts

Disrupt:
- Significant port capacity expansion suitable for future construction, installation and manufacturing

Analysis

ENERGI COAST – Company mapping

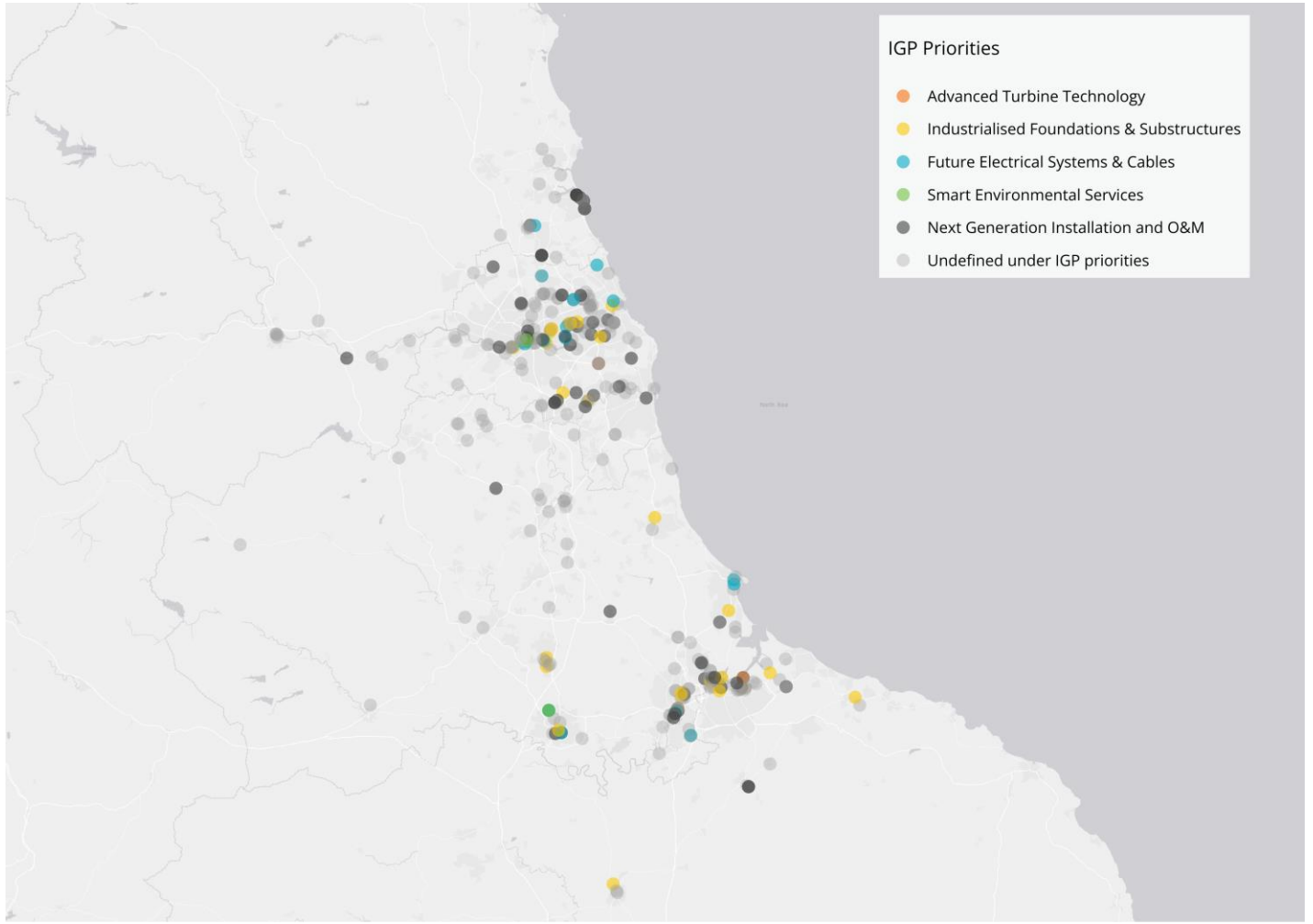
The UK's Industrial Growth Plan has identified a series of opportunities, grouped under five priorities, for the UK to prioritise and grow value. The Regional Growth Prospectus assessment shows a strong mapping of current capabilities in the Energi Coast cluster. While current capability is not the sole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

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

Clearly visible are distinct areas of clustering along the rivers Blyth, Tyne, Wear and Tees, all of which have capability in **Next Generation Installation and O&M.**

There is also notable concentration of companies supplying **Smart Environmental Services** around Tyneside and **Future Electrical Systems and Cables** across the region with strong clustering around the Tyne.

The region's fabrication expertise is also visible, particularly on Tyneside and Teesside for fabrication of larger components for **Industrialised Foundations & Substructures**, and at Blyth for fabrication of specialist components for **Next Generation Installation and O&M**. These companies also serve other energy, defence, chemical and process related industries across the UK.



ENERGI COAST – IGP aligned priorities

Investment £591-1,190m

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 Energi Coast, the table 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 expected 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
Industrialised Foundations & Substructures	Develop UK manufacturing capability to produce 50 units of floating foundation per year	Respond	2030	£100-200m	£ 4.0-8.1 bn
Future Electrical Systems & Cables	Increase HVDC manufacturing capacity by securing two proposed facilities	Respond	2026	£200-400m	£1.5-2.9 bn
Smart Environmental Services	Build extensive marine datasets	Respond	2026	£5-10m	£ 80-120m
Next Generation Installation and O&M	Increase the UK's supplier base of EPCI companies	Respond	2027	£1-5m	£0.4-0.8 bn
Next Generation Installation and O&M	Increase the UK's fleet of cable laying vessels	Respond	2027	£100-200m	£0.6-1.2bn
Industrialised Foundations & Substructures	Develop UK manufacturing capability to produce advanced material for mooring and anchors	Expand	2035	£10-20m	-
Future Electrical Systems & Cables	Develop UK manufacturing capability to produce dynamic inter-array cables at 132kV in 20% of its factory	Expand	2030	£30-50m	£ 0.2-0.3 bn
Smart Environmental Services	Claim the top position global 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	Implement a new cable installation technique in the UK eliminating cable damage during installation	Expand	2028	£2-10m	-
Advanced Turbine Technology	Develop next generation drive train technology	Disrupt	2032	-	-
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 has 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	-

– IGP aligned priorities

Investment £591-1,190m
Investment needed, shared between relevant clusters

Future Electricity Systems & Cables
The region's deep capability and strength in cables and systems is going to be critical for UK efforts to secure greater value from cable manufacturing and installation. The region has end-to-end capability in place from design and manufacturing through to testing, installation and inspection putting the region at the heart of UK efforts to secure greater value from electricity systems and cables.

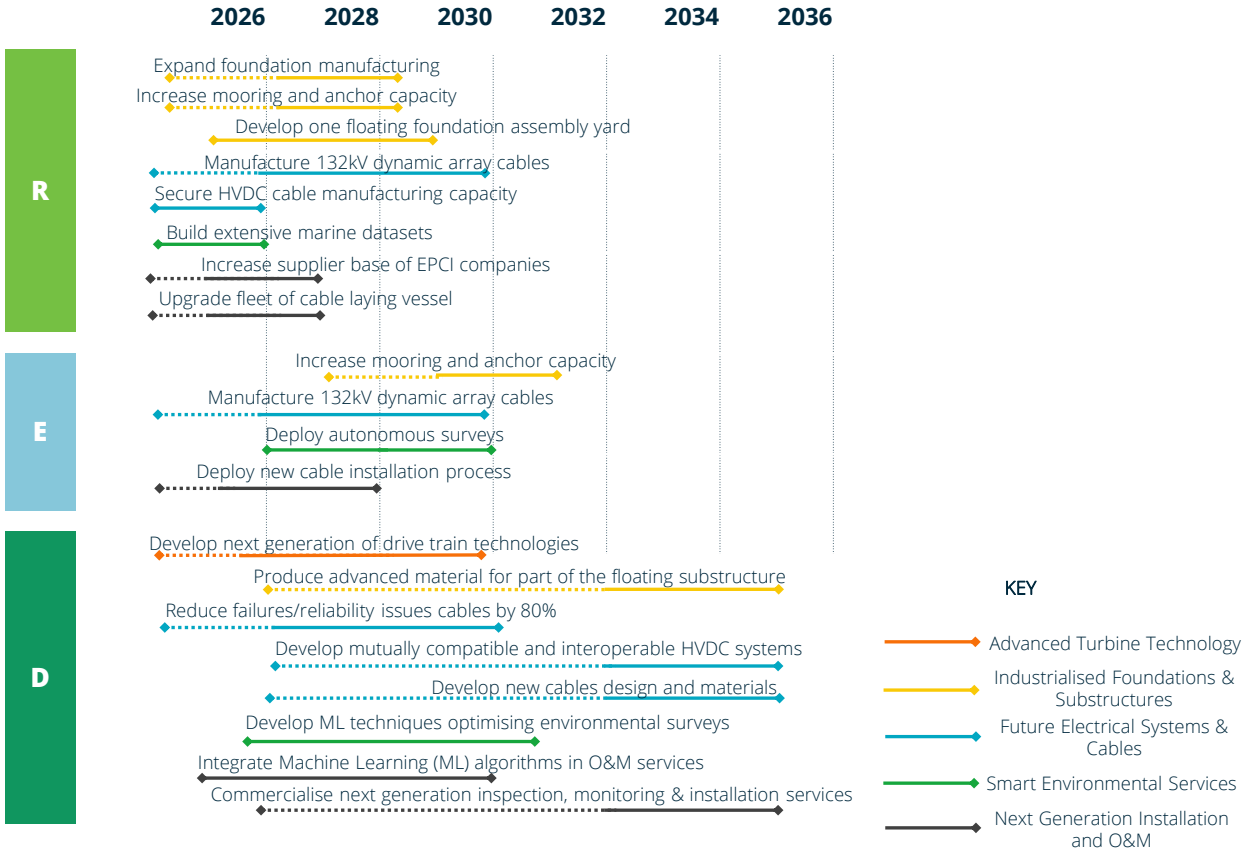
Industrialised Foundations & Substructures
If the UK is to treble manufacturing, a clear focus for the IGP will be securing a greater volume of fabrication of foundations and substructures. With SeAH and Smulders regional footprint, the IGP needs to work to defend and expand their activity, plus open up supply opportunities for other fabricators and look at longer term floating opportunities, including regional capability in moorings and anchors.

Next Generation Installation and O&M
The region provides significant O&M services to wind farms in the region and is an important hub for turbine and cable installation work in the North Sea, for example Able Seaton for marshalling and Prysmian's Port of Middlesbrough base for cable installation. Companies such as Texo and Osbit supply specialised installation equipment into the sector.

Smart Environmental Services
The region has widespread data and digital capability already active in offshore wind. As offshore wind developers look to embed machine learning and other digital tools into the sector, the cluster can support sector efforts to build marine datasets and utilise autonomous survey technologies.

Advanced Turbine Technology
The region has a strong innovation and manufacturing base including Siemens Energy and ORE Catapult's testing and validation capabilities. There is also important expertise in the region – for example Michell Bearings and Greenspur Wind – that could be used to support growth of next generation of drive train technologies.

(R)espond, (E)xpand and (D)isrupt Programmes
Below are shown the IGP Investment Opportunities identified as most relevant to Energi Coast. Investment data and timelines are taken from the IGP to help focus regional and national conversations on investment priorities.



Analysis

ENERGI COAST – Ports summary

The Energi Coast cluster boasts an expansive coastal and riverway port network, which has supported multiple offshore wind farms:

- **Blyth:** Provides nine lock-free heavy loadout quays and turn-key services, including vessel mobilisation, cable marshalling, O&M facilities, while being a centre for training, R&D and subsea engineering.
- **Tyne:** A strategically located deep-sea port, Tyne is well positioned to service the offshore energy sector, building on an established history of manufacturing and load out of large scale components. The Port of Tyne has ambitious growth plans to create new quayside and land areas for manufacturing, advanced turbine technology, marshalling and O&M.
- **Wear:** The Port of Sunderland at the mouth of the River Wear consists of deepwater berths, and can support mobilisation, project cargo and operations and maintenance activities.
- **Tees**: Providing lock-free but headroom constrained access to the North Sea, a series of ports along the River Tees provide a variety of services to support manufacturing and deployment of offshore energy projects.

Port of Blyth has supported the construction of multiple UK wind farms, including cables for Seagreen and Sofia. The JDR Cable Systems' £130 million subsea cable factory currently under construction, will enhance the port's capabilities, providing high-voltage subsea cables for offshore wind farms. On the nearby River Tyne, Smulders have completed manufacturing and assembly of foundations and substations for several offshore wind projects. Equinor's UK central control room is located at the Port of Tyne and will be used to monitor existing and future offshore wind farms, such as Dogger Bank.

Able Seaton Port has a proven track record of marshalling WTG and foundation components. Hartlepool and Middlesbrough are equipped with varying fabrication capabilities and laydown areas. The Port of Middlesbrough's long-term partnership with Prysmian has allowed the facility to become the companies northern European marine base. JDR has manufacturing capacity in Hartlepool and also now in Blyth.

Teesworks on the River Tees could become a major offshore wind hub, and features SeAH Wind's £900m XXL monopile factory, due for completion in 2025. The nearby Teesport Offshore Gateway development could accommodate manufacturing, marshalling and assembly.

The region has steadily become a renewables hub. Blyth's Energy Central Campus and wind turbine training facility is a clear example. They include a full-sized turbine for developing necessary skills for the industry. Blyth is also home to the ORE Catapult's state of the art test centre which includes blade, drivetrain, electrical and robotic testing facilities.

Analysis

ENERGI COAST – Ports & O&M

In addition to a range of supply chain and installation expertise located at ports across the region, ports in the Energi Coast cluster support a number of operating offshore wind farms.

The Port of Blyth hosts the O&M Base for the EDF Blyth Demonstrator project. At the Port of Tyne, new quayside suitable for O&M facilities has been developed; Equinor's UK central control room is located at the Port of Tyne and will be used to monitor existing and future offshore wind farms, such as Dogger Bank. The four North Star SOVs supporting Dogger Bank A, B & C projects are being supported out of the Port of Tyne. This SOV use highlights a general shift by the offshore wind sector to O&M strategies based on supporting larger projects further from shore.

Hartlepool is the O&M base for EDF Renewables' Teesside Offshore Wind farm, alongside its role as a marshalling port. ASCO in collaboration with the Port of Sunderland, delivered materials management, warehousing and procurement services for Dogger Bank. ASCO also established a Central UK hub to provide quayside management services at Steel River Quay within Teesworks.

With a significant pipeline of new development off North East England's coastline, there will be a need for further port infrastructure in regional ports to support O&M activities.

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.

While the current focus in North East England is on fixed offshore wind, the region has deepwater and floating potential. EDF's forthcoming Blyth Floating Demonstrator project and potential future leasing for deeper water sites will lead to the development of floating O&M expertise in the region. A critical difference between fixed and floating is the potential use of ports for providing periodic maintenance and larger component replacement through tow-to-port strategies.

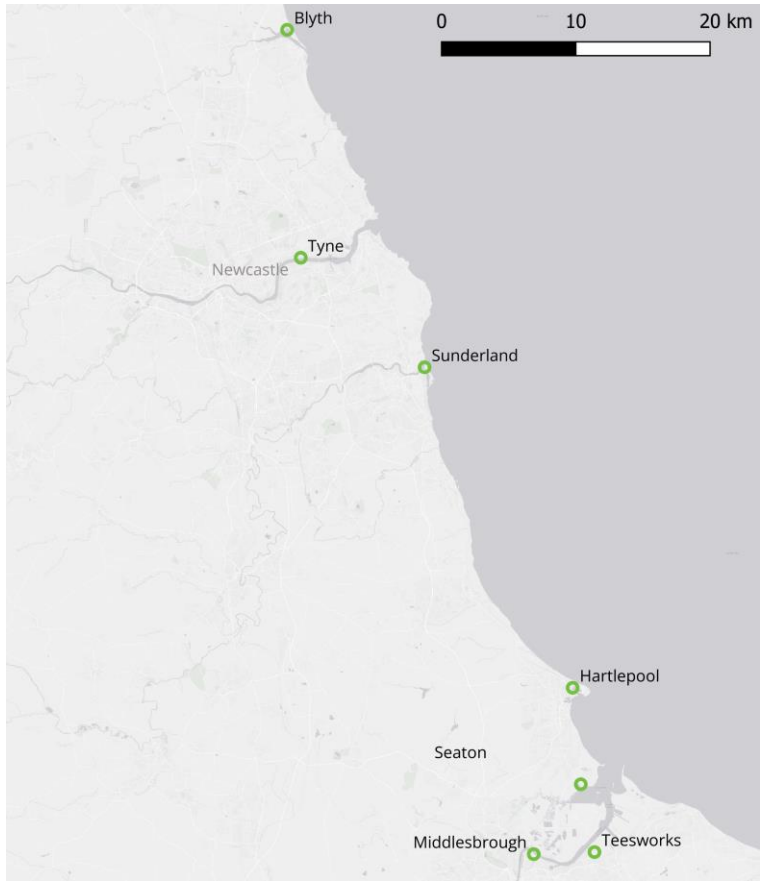
The IGP identifies UK expertise in O&M as a strength. UK projects and the supply chain are also leading offshore wind sector work to develop new and more efficient methods for O&M, such as remote monitoring and inspection. The UK also has capability in vessel design, operation and on-deck equipment.

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**.

Dogger Bank O&M Base and Grampian Derwent SOV
Courtesy of Equinor

Analysis

ENERGI COAST – Installation & manufacturing ports



Fabrication
Marshalling/Storage
Assembly and Integration
Installation

Blyth

- Deepwater quayside
- Expansive quayside
- Significant laydown space
- Heavy lift capability
- Cable handling facilities
- Terminal for offshore energy development
- Lock free access to North Sea
- Rail connection

Tyne

- Deepwater quaysides
- Expansive quaysides
- Heavy lift capability
- Land available for further development
- Rail access within port
- Maritime Innovation Hub at site
- Manufacturing facilities available
- Cable handling facilities
- Decommissioning facilities

Sunderland

- Expansive quayside
- Significant laydown space
- Heavy lift capability
- Significant warehouse facilities
- Land available for further development
- Rail connection
- Centre for circular economy activities

Hartlepool

- Expansive quayside
- Significant laydown space
- Manufacturing facilities available for repurposing
- Cable handling facilities
- Lock-free access to North Sea

Seaton

- Deepwater quayside
- Sheltered water
- Expansive quayside
- Manufacturing facilities available for repurposing
- Significant laydown space
- Suitable for turbine assembly
- Experienced marshalling port
- Offshore energy decommissioning facilities

Middlesbrough

- Expansive quayside
- Heavy lift capability
- Climate controlled warehouse facilities
- Cable handling facilities
- Rail access within port
- On-site ships agency
- Freeport

Teesworks

- Deepwater quayside
- Expansive quayside
- Significant laydown space
- Heavy lift capability
- Significant warehouse facilities
- Rail access within port
- Freeport

Analysis

ENERGI COAST – IGP alignment (installation & manufacturing ports)

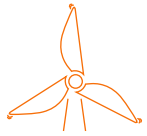
Port specifications and input from the Energi Coast cluster have been used to evaluate each port's ability to support manufacturing activities, and services such as assembly and installation. These ports were selected and assessed based on track history and their installation and manufacturing characteristics,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

This evaluation adopts to 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; and "Respond" defines a port to have strong infrastructure, with minor to minimal improvements needed.

Notes on this assessment:

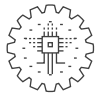
- "Disrupt" has been omitted from the evaluation as there are many ports that, with sufficient investment, could support the IGP priorities over the coming decade.
- A port is classed as being able to support a particular priority if it could host a range of the varied activities within the priority (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.



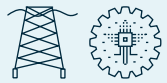
Advanced Turbine Technology
- Turbine design and engineering
- Tower
- Blades
- Drive train components
- Composite-based components
- Automation of manufacturing process
- Leading edge protection

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	Blyth	Hartlepool	Middlesbrough	Seaton	Sunderland	Teesworks	Tyne
Manufacture	Expand							
	Respond							
Services	Expand							
	Respond							