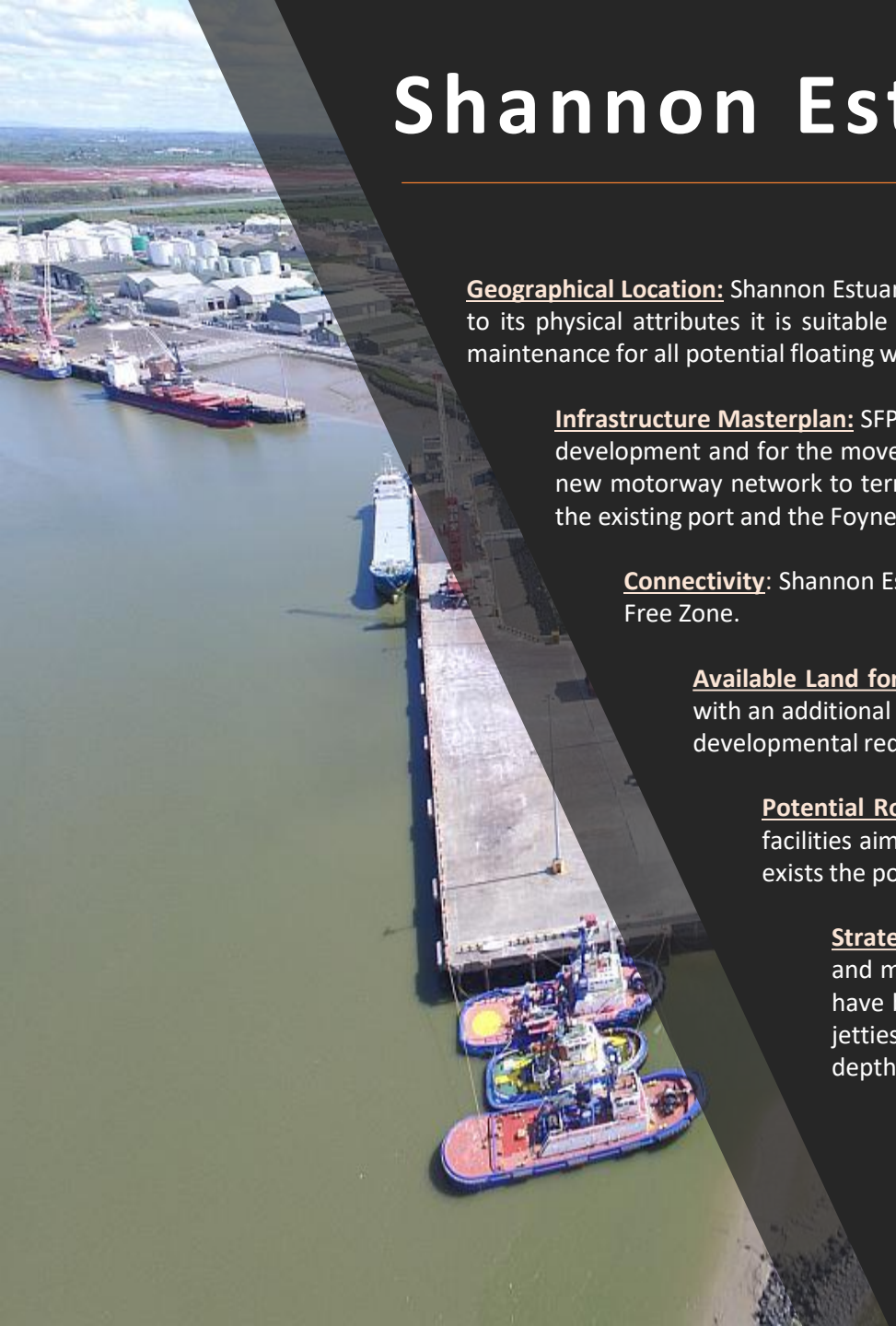

# Shannon Estuary

## Offshore Wind Potential Study

SHANNON FOYNES PORT

GDG GAVIN & DOHERTY GEOSOLUTIONS



# Shannon Estuary - Floating Wind Suitability

## Advantages / Strengths

**Geographical Location:** Shannon Estuary is ideally located to support floating offshore wind because of its proximity to the resource with massive market potential. Due to its physical attributes it is suitable for component manufacturing (turbines, towers, blades, floating foundations, cables, etc), assembly, staging, operations and maintenance for all potential floating wind farm developments.

**Infrastructure Masterplan:** SFPC has a development plan which includes upgrading the Foynes to Limerick railway line, which is strategically important for port development and for the movement of raw materials for offshore manufacturing requirements. In addition, there has been recent government approval for a new motorway network to terminate at the front gate of Foynes Port. The existing West and East jetties are about to be joined, giving additional berthage in the existing port and the Foynes Island development of 1,000m. Water depths alongside of up to -18.5m CD are currently in planning.

**Connectivity**: Shannon Estuary is located nearby some of Ireland's main roads and is in close proximity to Shannon International Airport and the Shannon Free Zone.

**Available Land for Development & Operational Capacity**: SFPC has significant opportunity for expansion. SFPC has an existing 250 ha landbank with an additional 1,200 ha zoned for port related activity. The existing marine infrastructure is also capable of being re-purposed to accommodate developmental requirements.

**Potential Route to Market**: With investment into the Shannon Estuary, there exists huge potential to develop world-class and innovative facilities aimed at growing the floating offshore renewable energy (ORE) sector allied to the manufacturing potential in the estuary. Therein exists the potential of dramatically reducing the Levelised Cost Of Energy (LCOE).

**Strategically advantageous deep-water channel**: Shannon Estuary has the deepest watercourse in Ireland and is one of the deepest and most sheltered estuaries in the world. It extends to 500 $km^2$ and has channel depths of 32m. Numerous areas of safe anchorage have been identified in the estuary for floating offshore components that are in excess of 25m e.g. 'wet storage'. There are currently jetties with over 20m water depth alongside and the new Foynes Island development will have 1,000m of quayside with 18.5m water depth alongside.

**Recognised Port of National Significance; Tier 1:** Shannon Foynes Port is one of only 3, Tier 1 ports in Ireland and the only one on the Atlantic Coast. The Tier 1 designation under the EU's Trans-European Transport Network (TEN-T) is of significance, as it is on an EU core network corridor and a result qualifies for European programme funding assistance.

# Contents

# Offshore Wind in Ireland

# Floating Wind in Ireland

There is major appetite and confidence in the future of floating wind in Ireland:

**'Beyond 2030, the technical resource available to both fixed and floating offshore wind off the coast of Ireland is immense, with the SEAI and OREDP referencing 12.5GW for fixed and up to 27GW for floating'** – Carbon Trust, Harnessing our Potential March 2020.

Recent 'Programme For Government' released in June 2020 states **'We will take advantage of the massive potential of offshore energy on the Atlantic Coast. This plan will set out how Ireland can become a major contributor to a pan-European renewable energy generation and transmission system, taking advantage of a potential of at least 30GW of offshore floating wind power in our deeper waters in the Atlantic'.**

# Floating Offshore Wind in Ireland – Supply Chain

Floating wind presents an opportunity for Ireland to become a world leader. The market size is available but ultimately the biggest constraint will be the ability of Ireland to connect this resource to the grid and export the excess to other markets knowing the electricity demand in Ireland.

To facilitate taking a lead in the global market, Ireland needs to apply significant investment in research & development to solve this market barrier along with looking to reduce the cost of floating wind technology. In doing so, capacity building through research activities in Ireland will place it at the forefront of the industry allowing a supply chain to develop well in advance of project construction opening a domestic and international market to Irish companies who have established themselves in the floating wind supply chain. Consideration should be given to establishing floating wind technology hubs along the south-west and north-west coast. A centre of excellence for floating offshore wind is currently being created at the University of Limerick, in conjunction with Limerick Institute of Technology.

**Shannon – Foynes** is strategically placed to take advantage of the resource available.

# Supply Chain Opportunities

A key recommendation on Port Infrastructure from the ***Carbon Trust, Harnessing our Potential March 2020*** report is that *'The Irish Government or the investment community should consider a strategic investment at a port(s) on the west coast to take advantage of the commercial opportunity of delivering floating offshore wind where the majority is likely to be on the west, north/south west coast.'* The same report also states that offshore wind could create 2,500 jobs over the next 10 years and attract €42 bn in lifetime investment, but that this may be lost because no Irish port currently meets all of the requirements to serve the project construction.

The case for investing in port infrastructure to support the growth in offshore wind and create local supply chain **cannot be underestimated**. Ports act as focal points during the manufacturing, installation and operation of offshore wind farms.

**As the floating wind sector is currently in its infancy there is no well established supply chain. Therefore this represents an opportunity for Ireland to be first-movers in the floating wind sector. For SFPC there are two opportunities, 1) to service the domestic market in the Atlantic and 2) to become an exporter of floating wind technology on a global scale.**

# Supply Chain Opportunities

Four distinct supply chain opportunities:

1) Manufacturing
2) Staging and Installation
3) Operations and Maintenance
4) Decommissioning

Manufacturing will also extend to the preparation and export of component parts further afield to the East coast of USA and into European developments, both onshore and offshore.

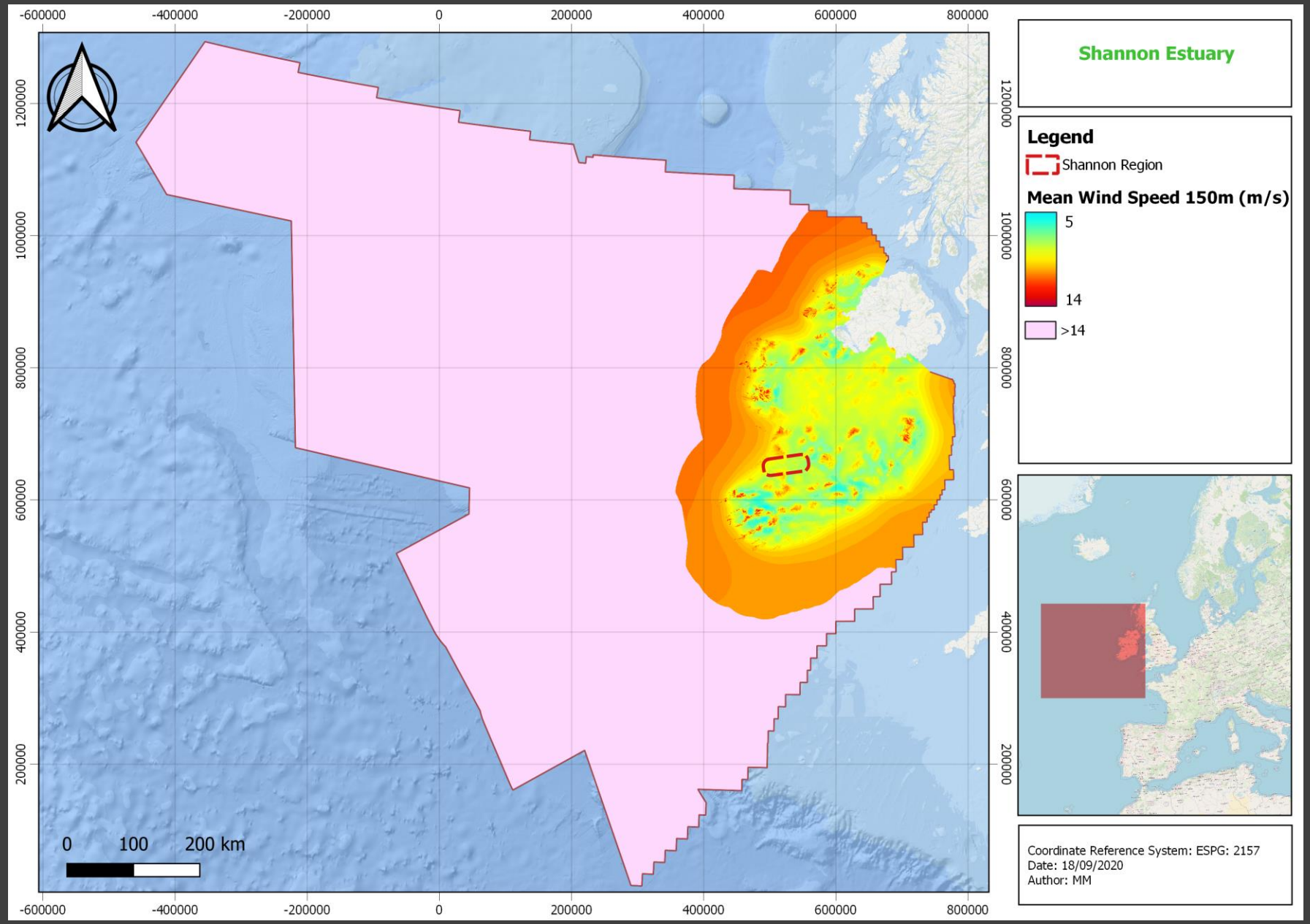
# Offshore Wind in Ireland


The Irish government has through Project Ireland 2040, the Climate Action Plan and most recently the Marine Planning and Development Management Bill, set ambitious plans for offshore renewable energy resource development in Ireland.

The following areas are generally considered as key market constraints for the development of the Offshore Renewable Energy (ORE) in Ireland:

- Consenting regime;
- Route to Market (RESS);
- Access to grid; and
- Supply chain suitability and availability.

The development of the ORE industry is critically dependent on the development of enabling infrastructure. Currently, there's a limited number of suitable port facilities that can service the offshore wind sector in Ireland.




# Why invest in Offshore Wind?

The Irish West coast has one of the best wind resources in the world.

Consistent wind speeds are greater than 14 m/s.

This makes floating wind particularly attractive.

The area available for floating is larger than the entire island of Ireland.

*The info for this figure is for heights of 150m above ground level from SEAI

# Offshore Wind in Ireland

"*Ireland's territorial waters present major opportunities in the blue economy and offshore renewable energy sectors, which would support our transition to a zero carbon economy*" (IPORES 2018)

Irish Ports are likely to be requested to support the Offshore Wind industry, during Staging & Installation as well as Operation & Maintenance phases, on the following activities:

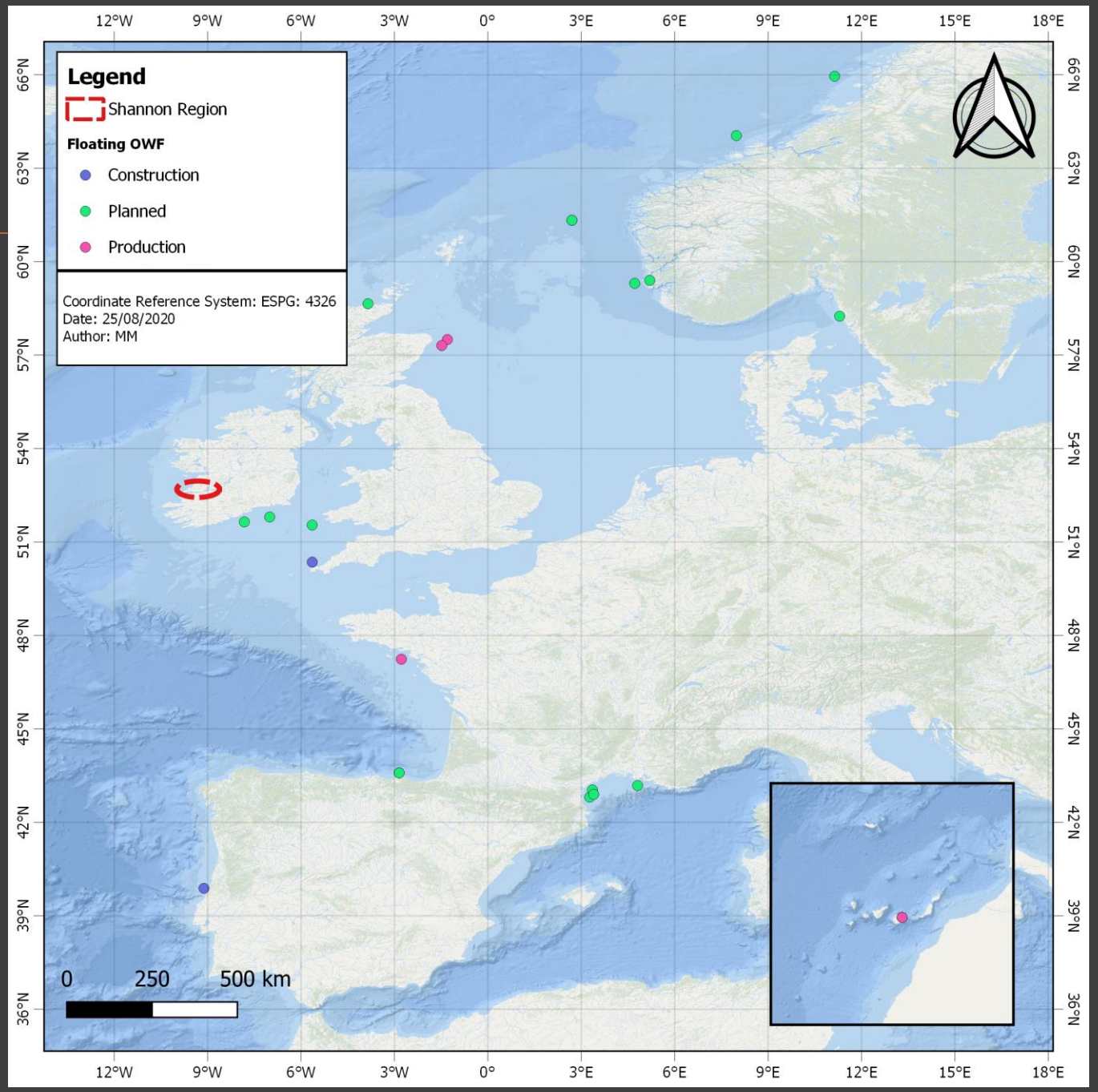
- Loading / offloading of OWF components and auxiliary equipment;
- Lay-down / storage of OWF components and auxiliary equipment;
- Final assembly works or inspections of WTG and foundation OWF components;
- Crew Transfer Vessel (CTV) operations;
- Marine coordination and project management base;
- General vessel logistics (e.g.: bunkers, food stores, etc.);
- Vessel lay-down / shelter.

The existing port infrastructure in Ireland is technically not ready to adequately and efficiently respond to the Offshore Wind industry demands and will need to be upgraded to take full advantage of this opportunity.

# Proximity to the Floating Markets

There are a number of demonstration floating wind projects already installed in Europe and a number currently in construction.

The figure shows these projects along with other floating wind projects that are in the planning stages in Europe. New floating wind turbine systems have been deployed in these demonstration projects and are reaching a stage of readiness to be deployed in large offshore arrays which will open up further opportunities.



# Floating Market Ambitions

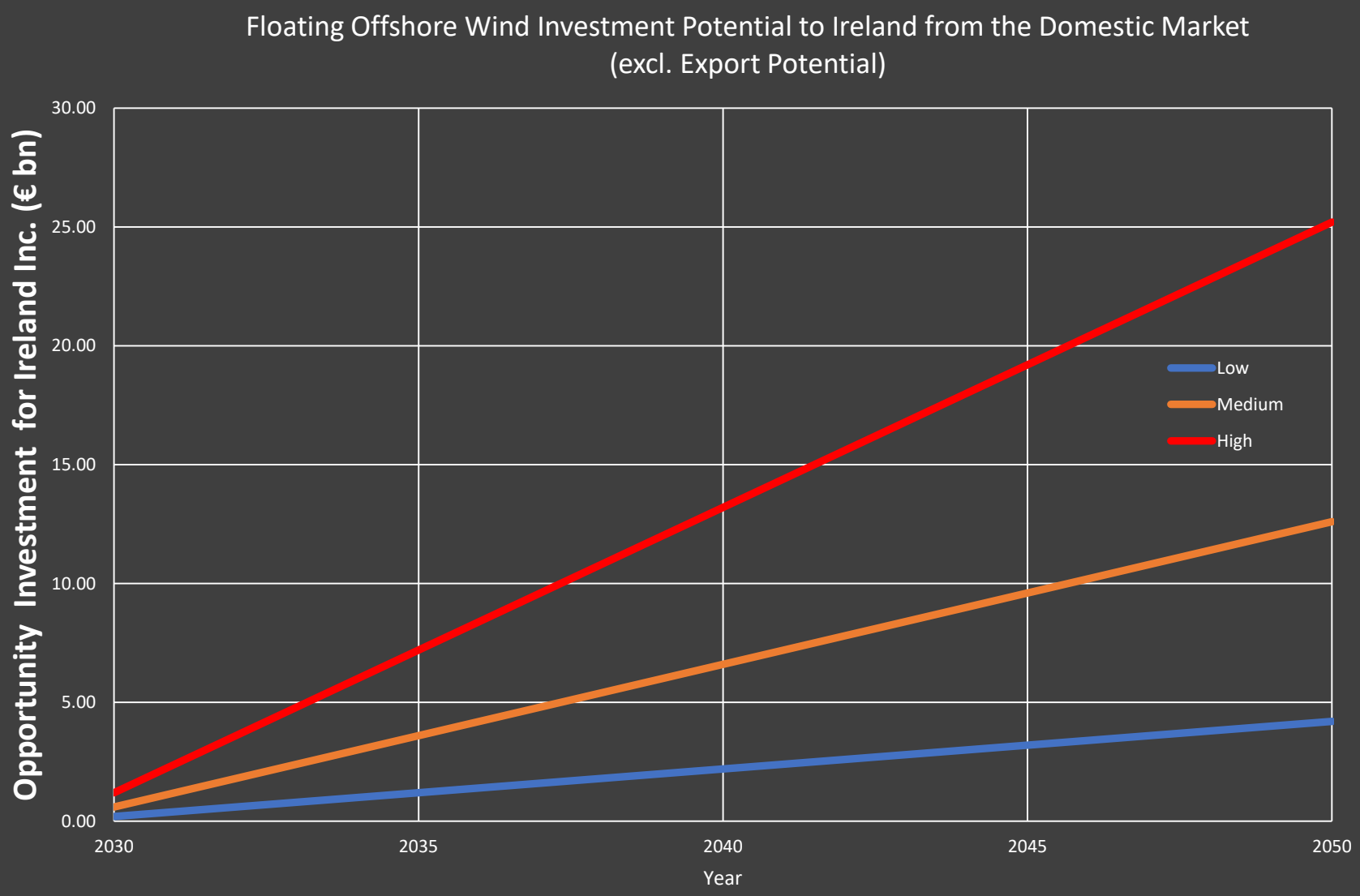
Market growth to 2030 predicts for up to circa 8GW of floating offshore wind generation by 2025, extending by up to circa 30GW by 2030

Crucially these targets do not take into account the scale of growth of the Irish floating offshore wind market, which when taken onboard will boost the global output further.

| Country | Installed (MW) 2018 | Expected (MW) 2021 | Industry Ambition (MW) 2025 | 2030 | Certainty |
|---|---|---|---|---|---|
| EUROPE | | | | | |
| UK | 30 | 80 | 1,000 | 5,000 | Low |
| France | 2 | 98 | 2,000 | 6,000 | Med |
| Norway | 2 | 6 | 30 | 250 | Low |
| Portugal | 0 | 25 | 25 | 260 | Med |
| **Europe (Max)** | **34** | **209** | **3,055** | **11,510** | |
| ASIA | | | | | |
| Japan | 16 | 41 | 1,400 | 4,000 | Med |
| China | 0 | 0 | 1,000 | 3,000 | Med |
| Taiwan | 0 | 0 | 1,000 | 2,000 | Low |
| **Asia (Max)** | **16** | **41** | **3,400** | **9,000** | |
| UNITED STATES | | | | | |
| California | 0 | 0 | 1,000 | 2,500 | Med |
| Hawaii | 0 | 0 | 400 | 1,200 | Low |
| Maine | 0 | 12 | 500 | 5,000 | Low |
| **United States (Max)** | **0** | **12** | **1,900** | **8,700** | |
| GLOBAL | | | | | |
| **Global (Max)** | **50** | **262** | **8,355** | **29,210** | |

*Ref: Floating Wind Joint Industry Project Summary Report Phase 1 (Carbon Trust, 2018)*

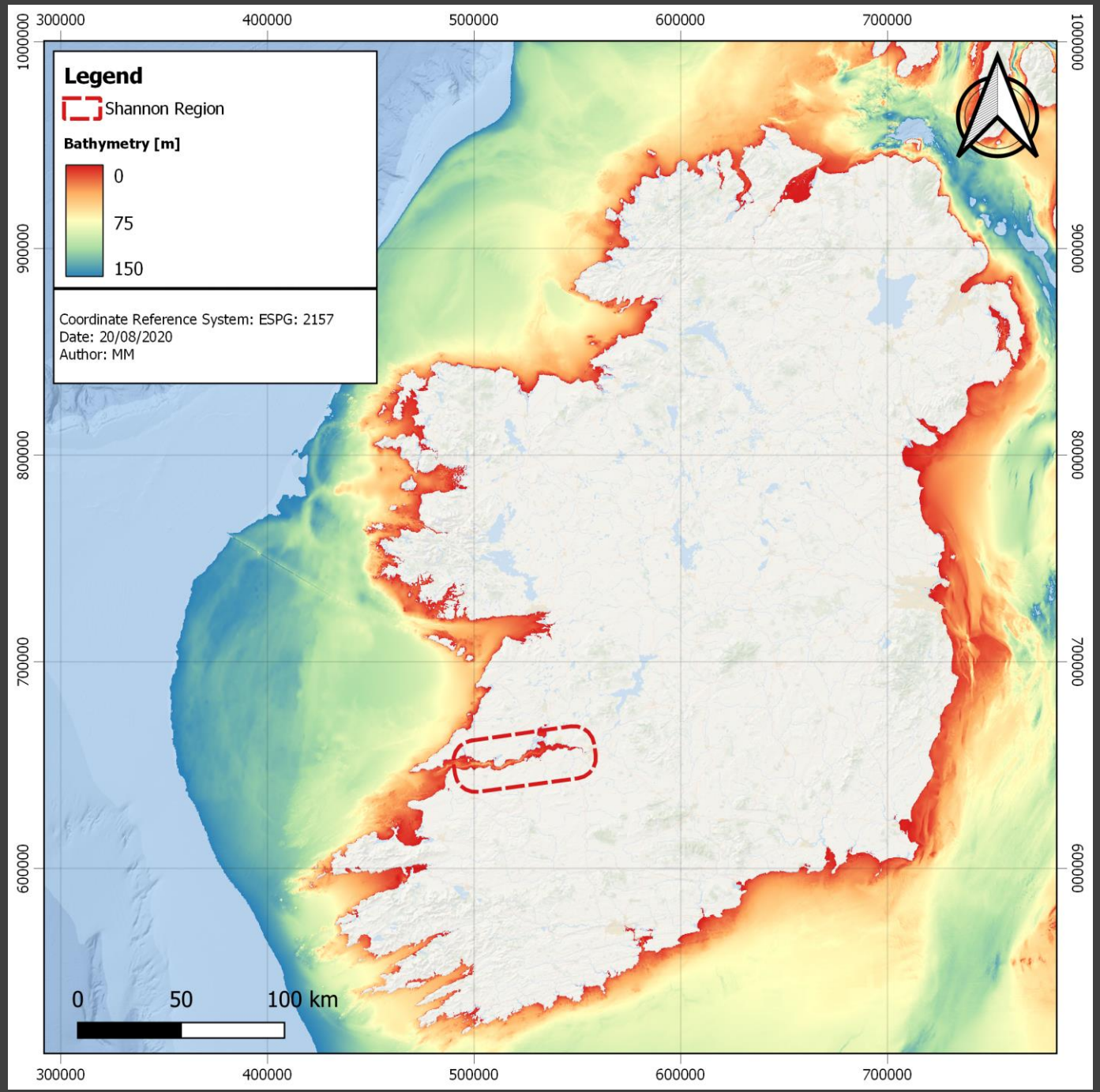
# Floating Market Ambitions




Market data from WindEurope suggests that the average growth in offshore wind in established countries such as UK & Germany has typically been 1.5 GW / yr, and growing, over the past decade. The approximate investment costs are in the order of 1.0 € bn / GW.

Assuming 40% of the total investment, can be captured by the local supply-chain, **this represents a 12 billion investment to the Shannon Estuary by 2050** (Assuming a medium growth scenario and ignoring the export potential to other markets).

This investment will lead to huge jobs growth.




# Bathymetry in Ireland

The depth of the water affects the type of technology used to develop a given offshore wind resource project.

This figure highlights the shallower water depths in the east coast of Ireland. It's no surprise that the first OWF sites in Ireland are all situated on the east coast, as they have fixed foundations.

As the offshore floating wind technology and the associated supply chain develops, the west coast of Ireland will become much more favorable.

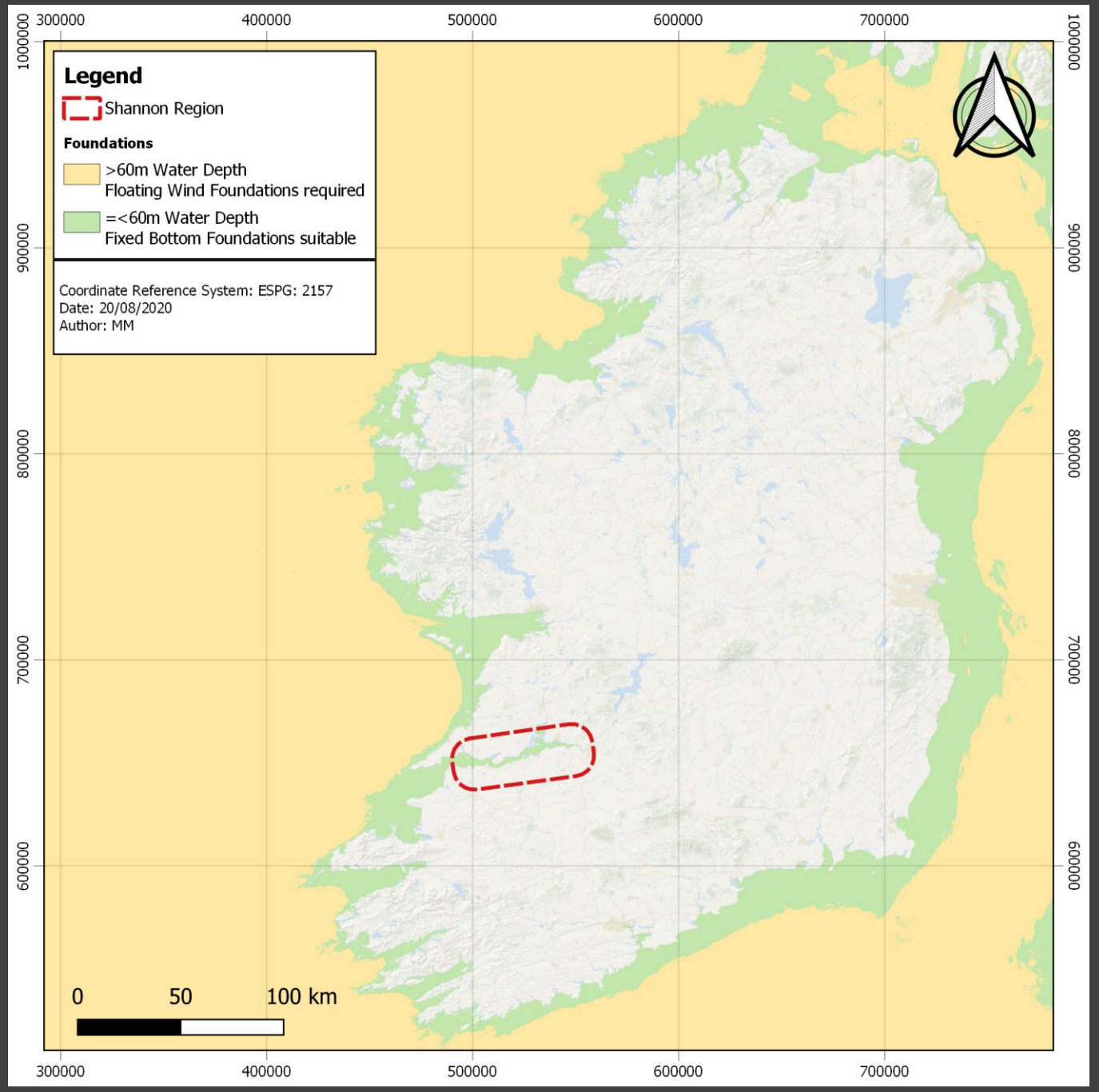
The total potential capacity on the West coast dwarfs the East coast opportunity. To realise this capacity, investment is required in the infrastructure to develop floating offshore wind.

# Foundation Type

Floating offshore wind presents an exceptional opportunity to harness some of the best wind resources in the world.

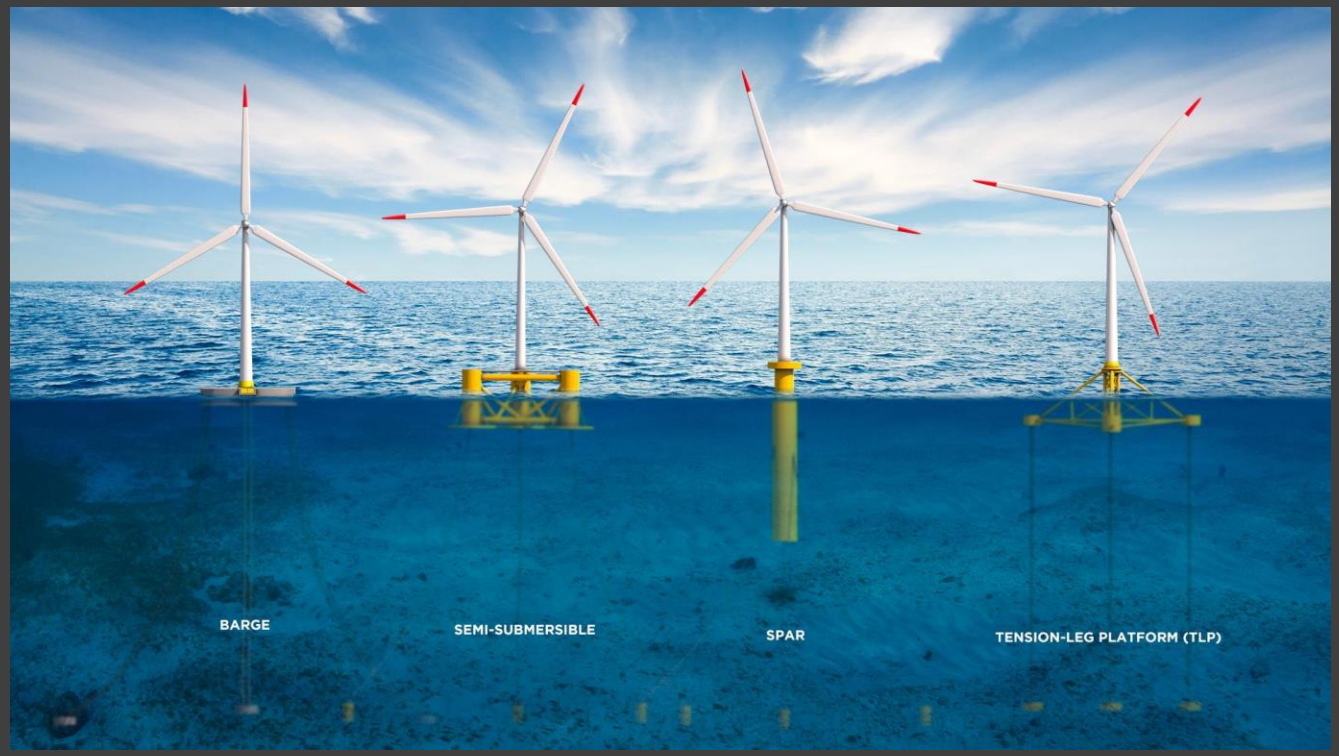
As the offshore wind industry delves into deeper waters at greater distances from shore, floating wind concepts are increasingly being developed and tested.

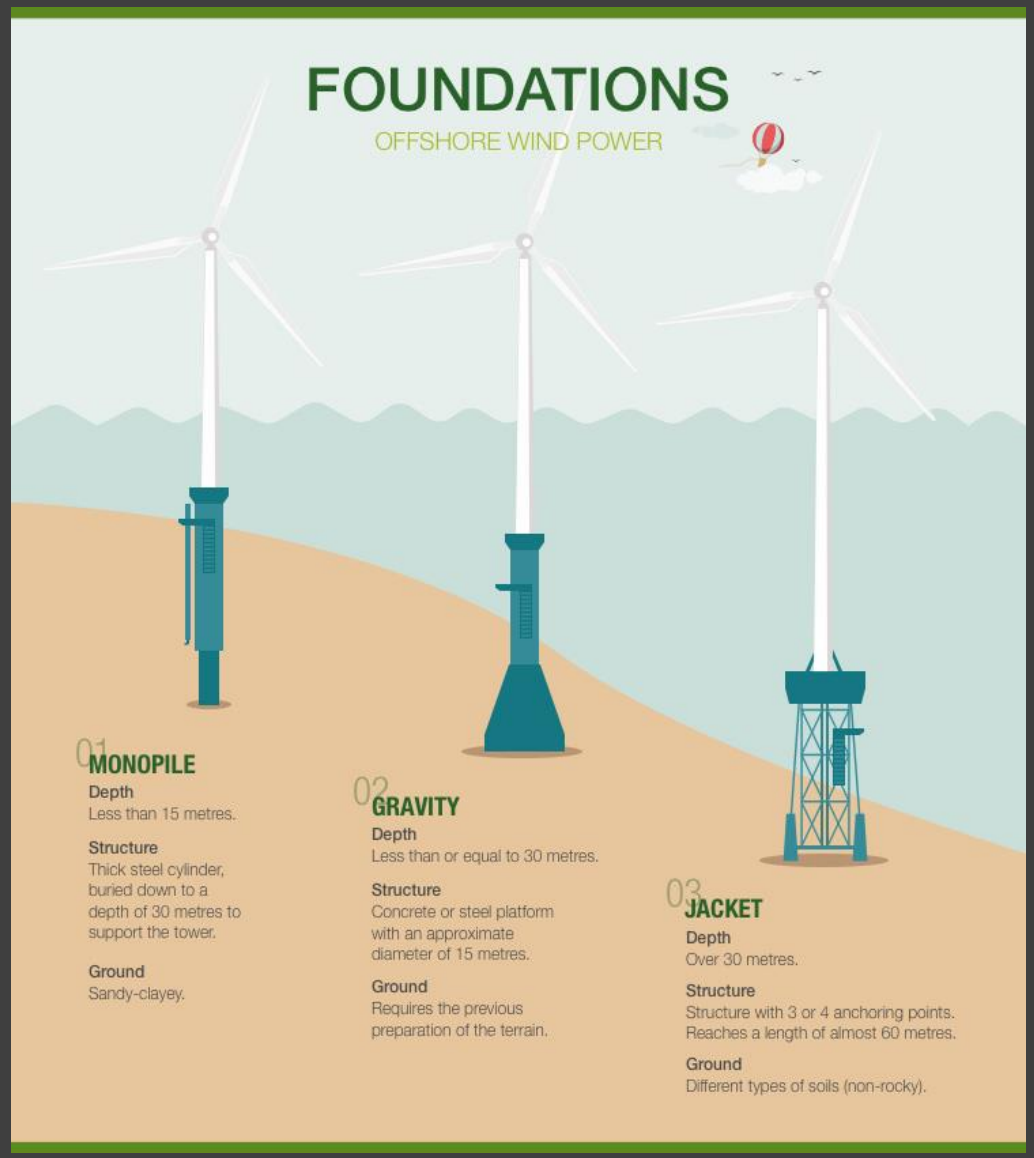
New floating wind turbine systems have been deployed in demonstration projects in Europe (e.g. Hywind Scotland, Windfloat Atlantic and Kincardine) and are reaching a stage of readiness to be deployed in large offshore arrays.



# Foundation Evolution

As seen in the previous slides fixed foundations are typically used in water depths up to 60m. Once the water depths go beyond this limit, fixed foundations are not a viable option and floating foundations need to be considered. The current proposed fixed foundation OWF projects in Ireland are all along the East coast due to the shallower water depths. For OWF projects on the West Coast or further from shore, floating foundations will be required.



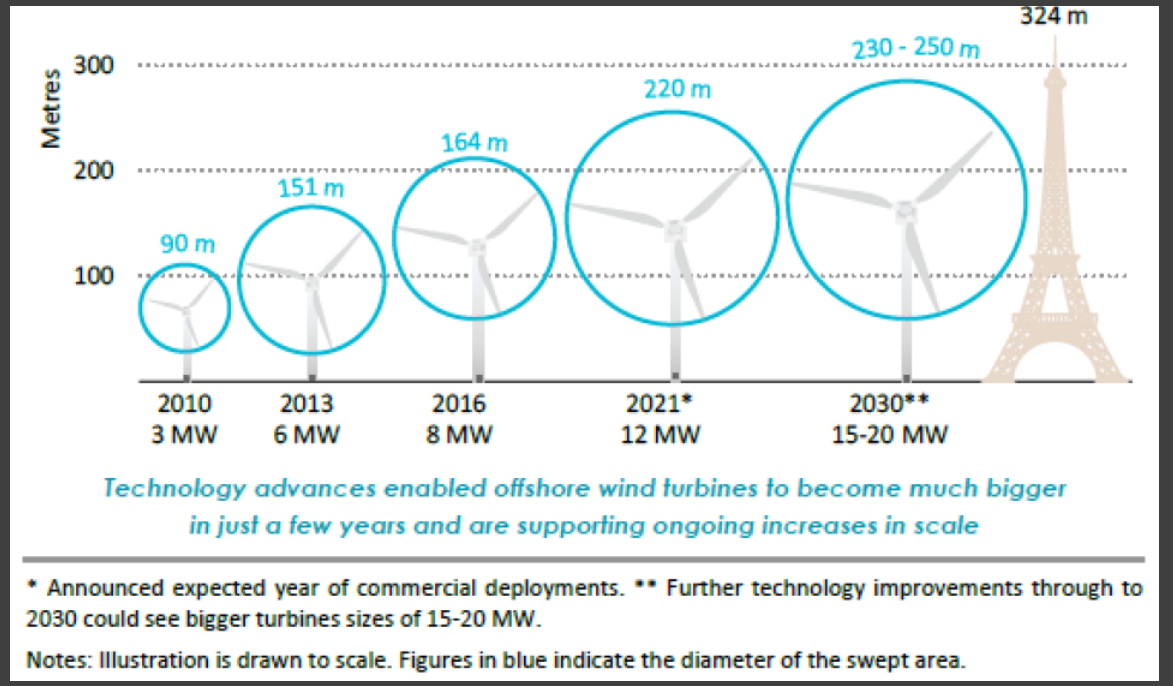
# Floating Offshore Wind

Floating foundations float at site and are kept in place by an effective system of moorings and anchors. This fundamental difference to bottom-fixed offshore wind enables a range of possibilities, namely:

- deployment in larger water depths; offshore wind becomes feasible in a number of new areas and markets;
- reduction of the amount of offshore work required; both substructure and turbine can be assembled and coupled in port or sheltered waters;
- reduction or elimination of the need for heavy-lift transport and installation vessels such as the large (and limited) jack-up vessels; substructures can be towed to site, with or without the turbine coupled;
- increased flexibility to perform maintenance work, particularly heavy maintenance or repair; substructures can be towed to port or sheltered waters to perform work as required; and
- reduction or elimination of the need to customise the substructures of a project to the specific features of the site (water depth, soil conditions); standardised designs could be used and mass fabricated.

# Turbine Evolution

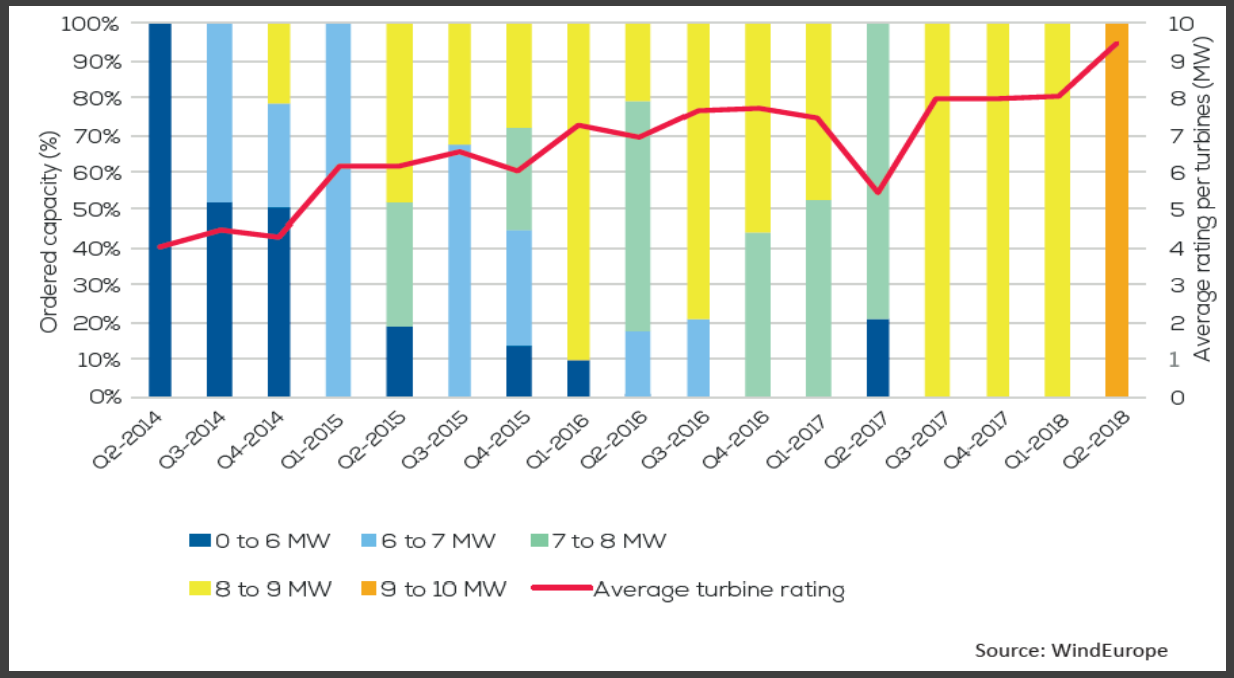
Significant technological progress in recent years has resulted in a rapid increase in the size and capacity of offshore wind turbines. The tip height of commercially available turbines increased from just over 100 metres (m) in 2010 (3 MW turbine) to more than 200 m in 2016 (8 MW turbine) while the swept area increased by 230%.




*Technology advances enabled offshore wind turbines to become much bigger in just a few years and are supporting ongoing increases in scale*

* Announced expected year of commercial deployments. ** Further technology improvements through to 2030 could see bigger turbines sizes of 15-20 MW.

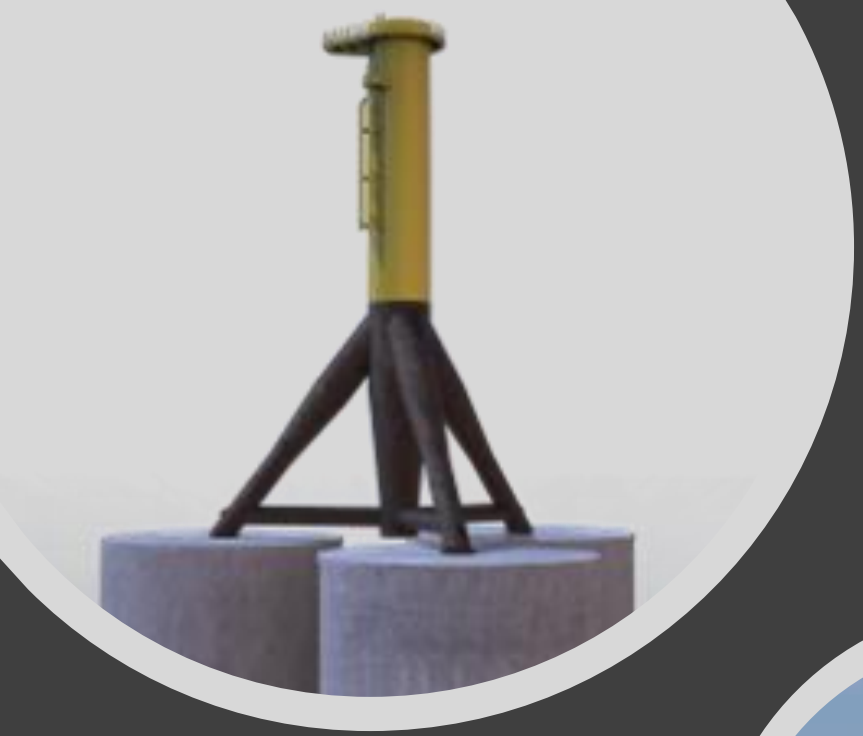
Notes: Illustration is drawn to scale. Figures in blue indicate the diameter of the swept area.

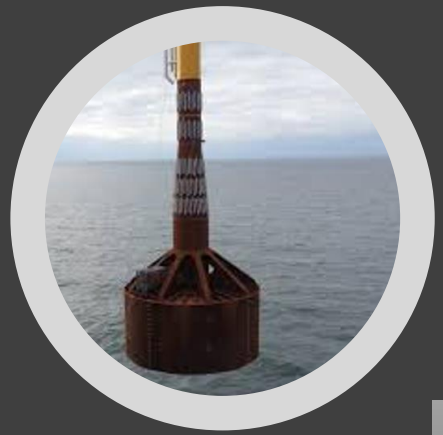



The larger swept area allows for more wind to be captured per turbine. A 12 MW turbine now under development is expected to reach a tip height of 260 m, or 80% of the height of the Eiffel Tower. The industry is targeting even larger 15-20 MW turbines for 2030.

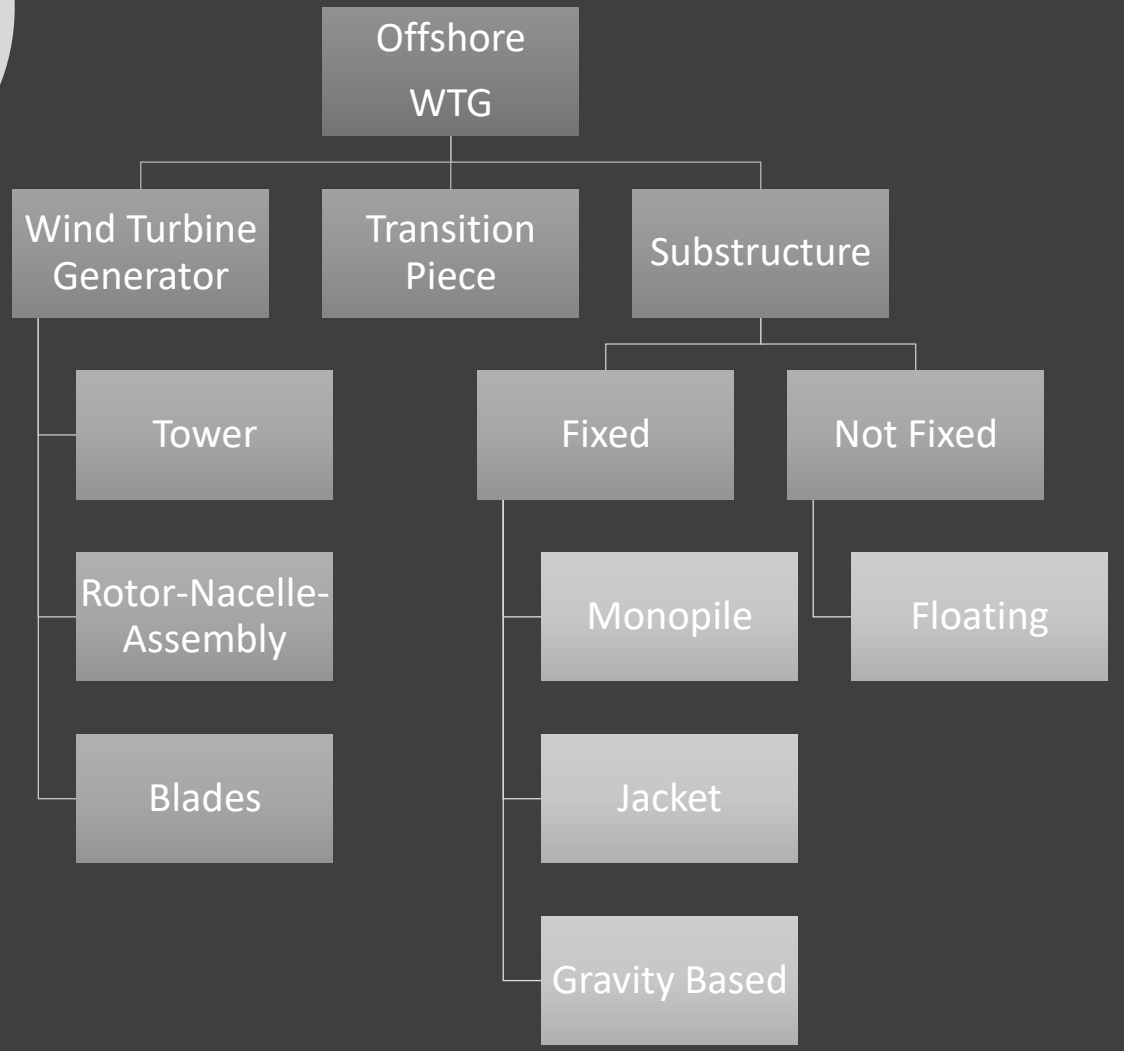
# Offshore Wind Requirements

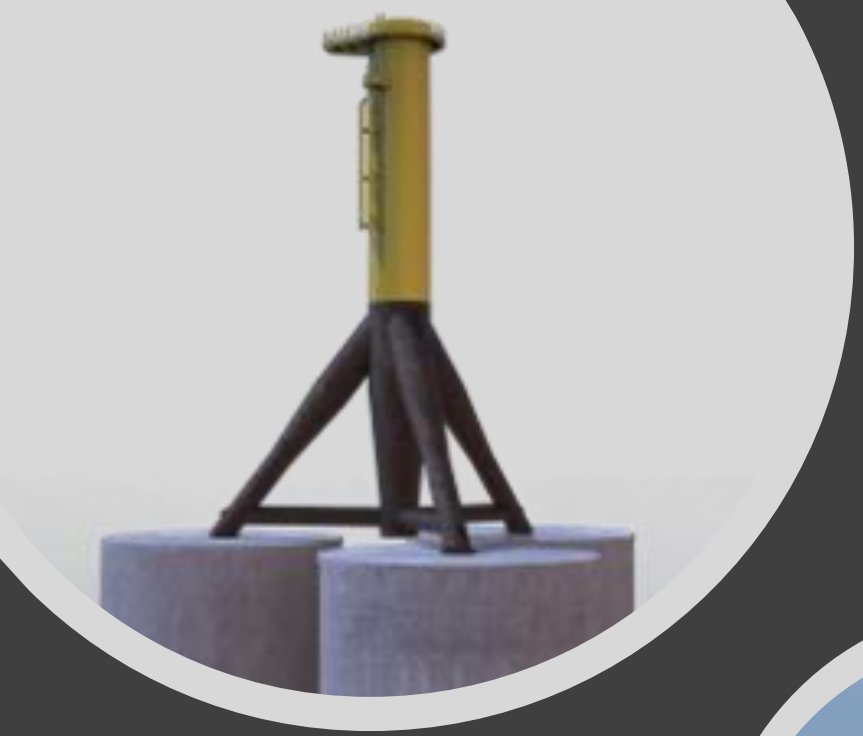
# Offshore Wind Farm

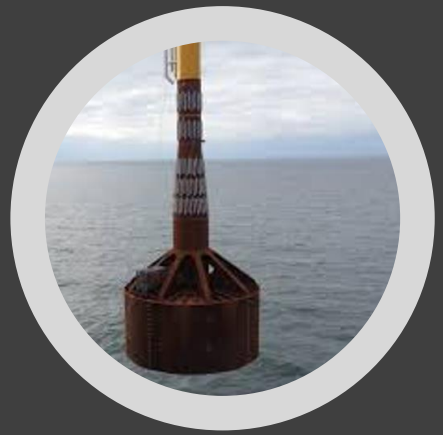




## Key Components

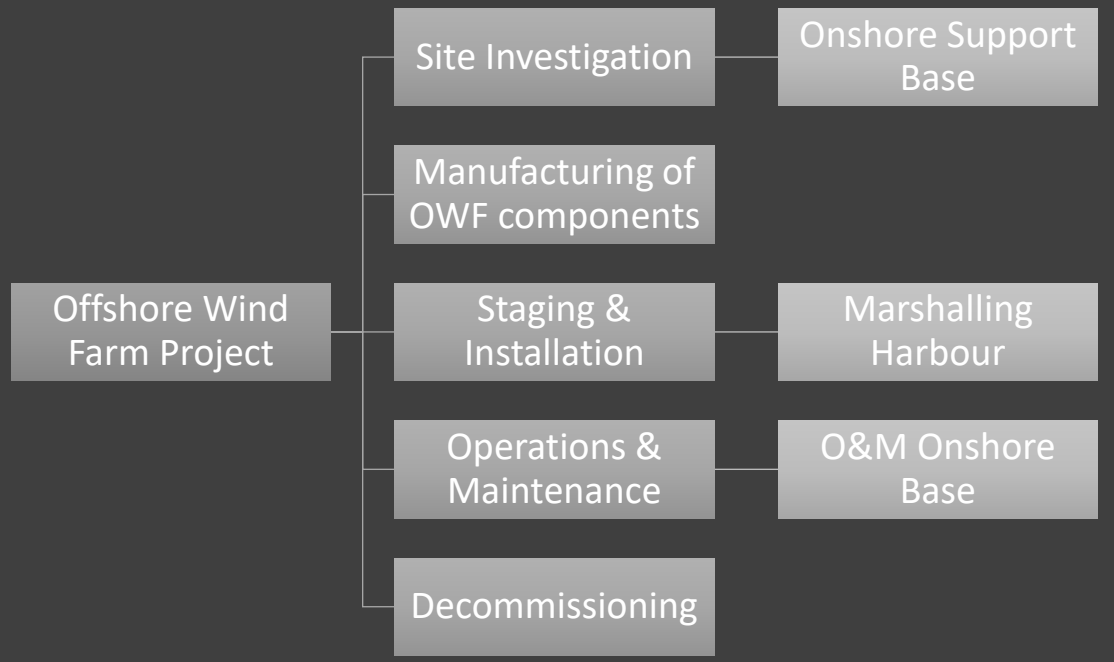






# Offshore Wind Farm

## Project Stages




Source: MarineTraffic.com

# VESSEL REQUIREMENTS

Site Investigation / Operation & Maintenance

- Loading/offloading of specialized equipment (e.g. ROVs);
- Shipping logistics (i.e. crew changes, bunkers, food & water supply);
- Shelter during long idle periods;
- Total number of vessel working at the OWF at the same time and the vessel specs vary according to the ongoing offshore works.


Source: Njord Offshore Ltd.

| Vessel | LOA / Beam (m) | Max. Draft (m) | Speed (knots) |
|---|---|---|---|
| Geotechnical Investigation Vessel (GIV) | >100 / 20 | 5 – 7 | 12 |
| Crew Transfer Vessel (CTV) | 30 / 12 | 1 - 3 | 30 |
| Offshore Support Vessel (OSV) | >100 / 20 | 3 – 5 | 10-20 |

Remark: vessel specs presented in the above table, is based on the available information on the offshore wind fleet expected to be available until 2030.

Source: Jan de Nul Group

# VESSEL REQUIREMENTS

## Staging & Installation

- Load-in / out of OWF components, parts and equipment (i.e. Monopiles, Blades or Cable reels);
- Minor / secondary works (i.e. markings or inspections)
- Pre-assembly of OWF components;
- Shipping logistics (i.e. bunkers, food & water supply);
- Shelter during long idle periods.


Source: Nexans

| Vessel | LOA / Beam (m) | Max. Draft (m) | Speed (knots) |
|---|---|---|---|
| Heavy Transport Vessel (HTV) | 160 / 45 | 5 – 7 | 10 – 12 |
| Jack-Up Vessel (JUV) | >180 / 60 | 7 – 8 | 10 – 12 |
| Heavy Lift Vessel (HLV) | 150 / 32 | 8 – 10 | 10 – 20 |
| Cable Installation Vessel (CIV) | 150 / 32 | 8 – 10 | 10 – 12 |

Remark: vessel specs presented in the above table, is based on the available information on the offshore wind fleet expected to be available until 2030.

Source: energypeople.com

# PORT REQUIREMENTS

Site Investigation / Operational & Maintenance

| Parameters | Site Investigation / O&M | |
|---|---|---|
| | Minimum | Preferred |
| I. Navigational / Access Channel | | |
| Width (m) | 20 | 30 |
| Min. Depth (m LAT) | 8 | 11 |
| II. Quay / Berth | | |
| Min. Depth @ Quay (m LAT) | 8 | 11 |
| Lateral Clearance (m) | 20 | 30 |
| Length (m) | 50 | 100 |
| III. Laydown / Storage | | |
| Area (ac) | - | 2.5 |

Source: nsenergy.com

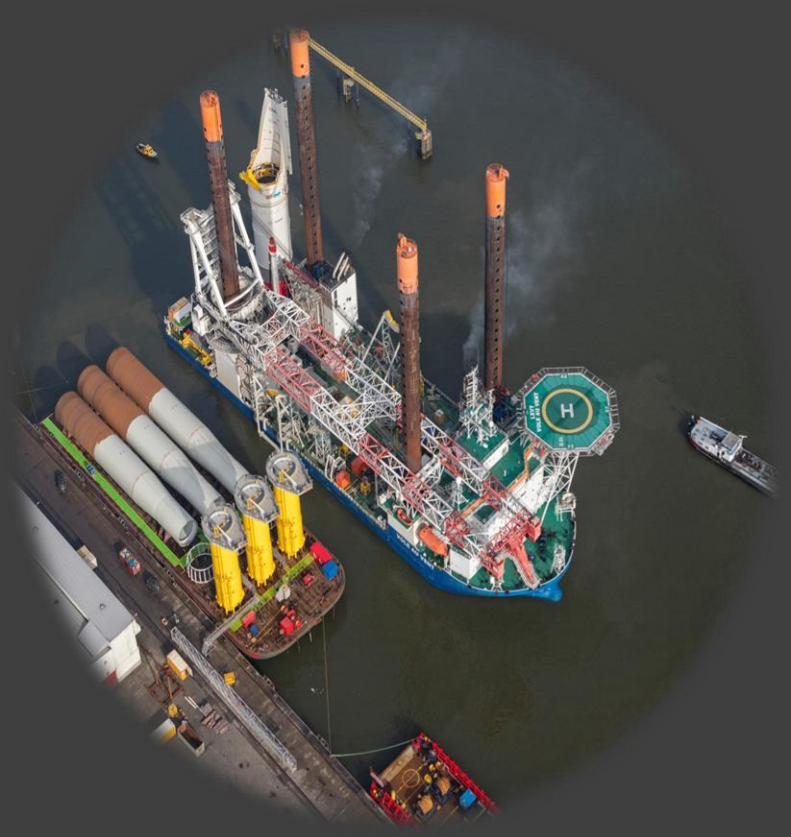
Source: energypeople.com

# PORT REQUIREMENTS

Manufacturing, Staging & Installation

| Parameters | Staging & Installation | |
|---|---|---|
| | Minimum | Preferred |
| I. Navigational / Access Channel | | |
| Width (m) | 60 | >120 |
| Min. Draft (m LAT) | 11 | 14 |
| II. Quay / Berth | | |
| Min. Draft @ Quay (m LAT) | 11 | 14 |
| Lateral Clearance (m) | 60 | >100 |
| Length (m) | 200 | 300 |
| Bearing Capacity ($t/m^2$) | 15 | >25 |
| Jack-Up (Yes/No) | Yes | Yes |
| III. Laydown / Storage | | |
| Area (ac) | 25 | 75 |
| Bearing Capacity ($t/m^2$) | 15 | >25 |

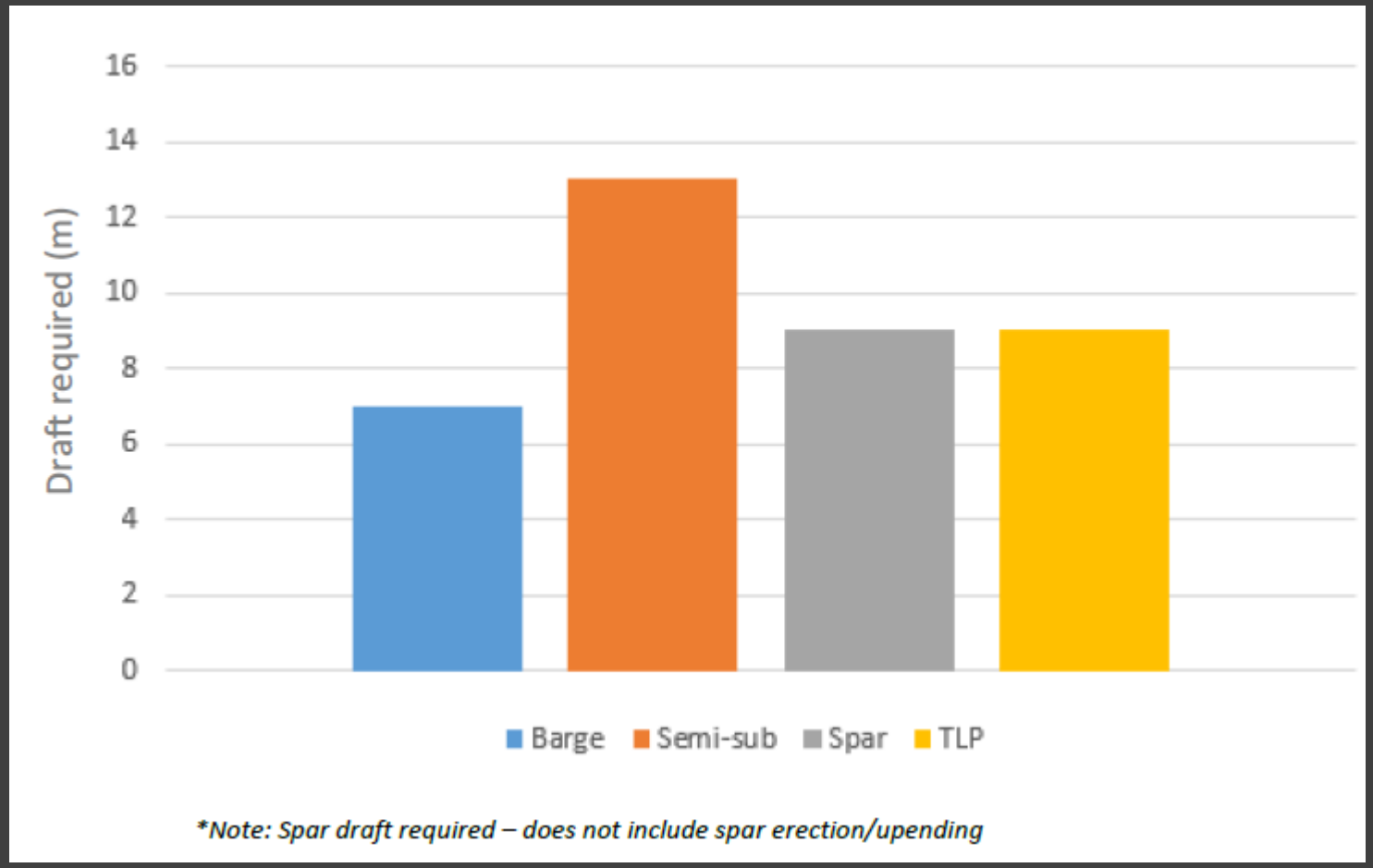
Source: nsenergy.com



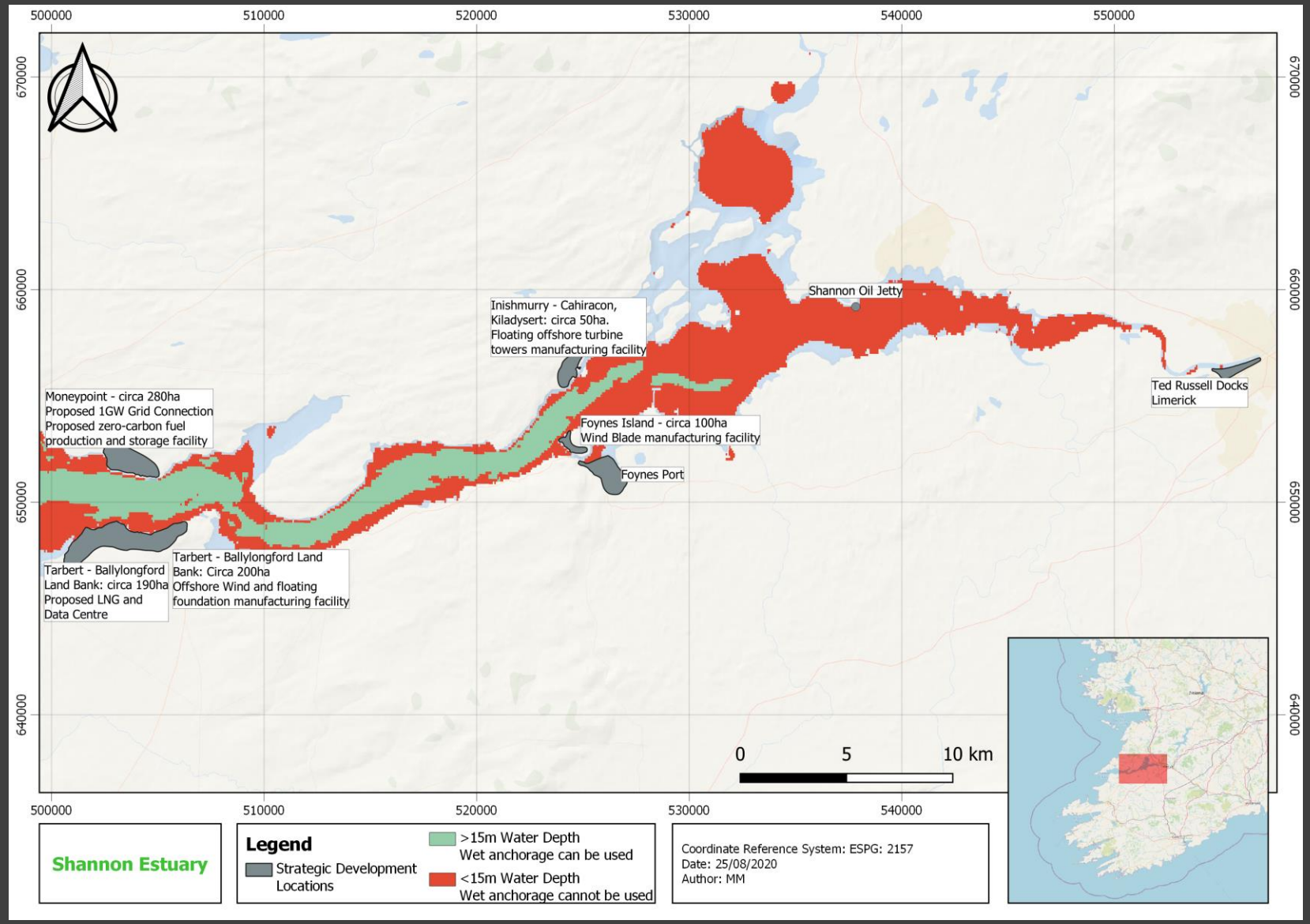
# PORT REQUIREMENTS

**Typical Floating Foundation Technology;**

Quay-side water depth requirements for assembly/load-out



# PORT REQUIREMENTS




***Quayside operations add constraints to the port requirements***

Namely **draught, quayside area, set-down area, wet storage**, and **crane capacity** all become important factors. The areas in green identify the potential areas of safe anchorage in the estuary for floating offshore components, e.g. 'wet storage'. There are numerous 'sheltered areas' along the estuary to avail of also.

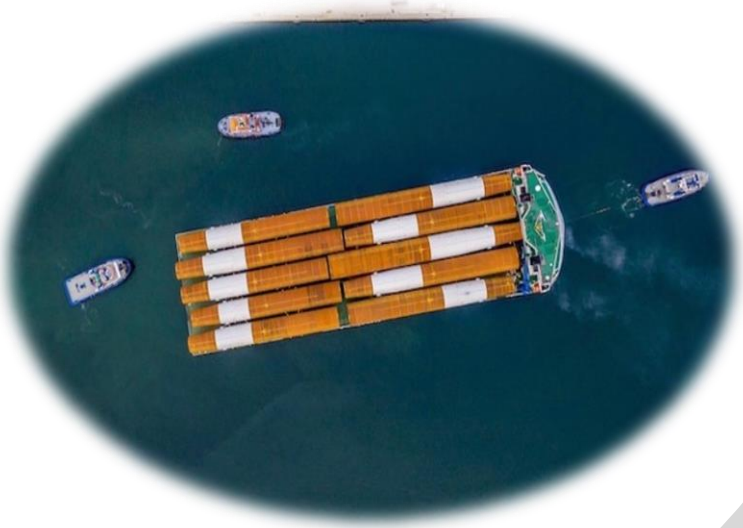
**A water depth of 15m has been used for this classification.*

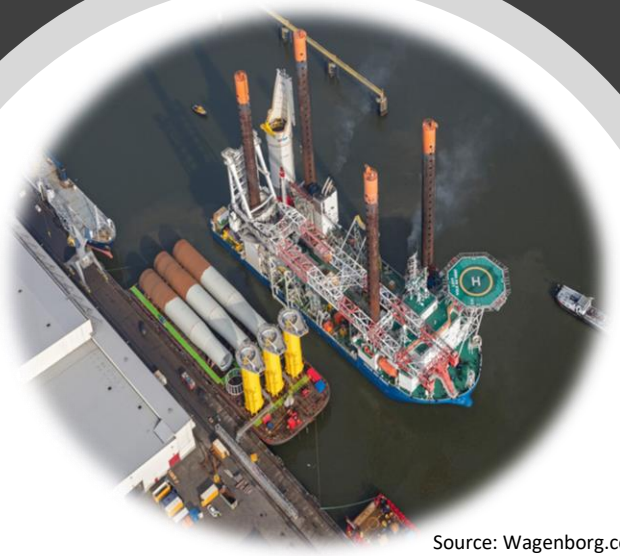
# PORT REQUIREMENTS

**Turbine Assembly and Integration will vary by floating concept.**

| Typology | Preferred location | Comments |
|---|---|---|
| **Semi-submersible** | Port-side | Shallower draught and greater stability favours integration of the turbine to the foundation at the quayside. Integration in a sheltered location would be required if the water depth is limited at the quayside. |
| **Spar** | Offshore (sheltered area) | Deep draught precludes the possibility of WTG integration at quayside. Integration can take place at an inshore deep-water location or at the offshore site subject to weather. |
| **TLP** | Port-side / Offshore (at site) | Variable by design – inherently stable designs will favour port-side integration, but stability requirements for some designs may dictate that integration is done offshore at the project site, once the substructure has been stabilised with mooring tendons. |

Source: Renews.biz





Source: Wagenborg.com

# PORT REQUIREMENTS

Other Relevant Parameters

## Craneage / Onshore Support Equipment

- Operational support (i.e. loading / offloading of parts or equipment)

## Lo-Lo / Ro-Ro Capability

- Support load-in/out operations

## Marine Operational Support

- Pilot / Tug support 24/7

## Network & Accessibilities

- Port network connection to airport, suppliers, etc

## Slipway / Drydock

- Emergency repair works support

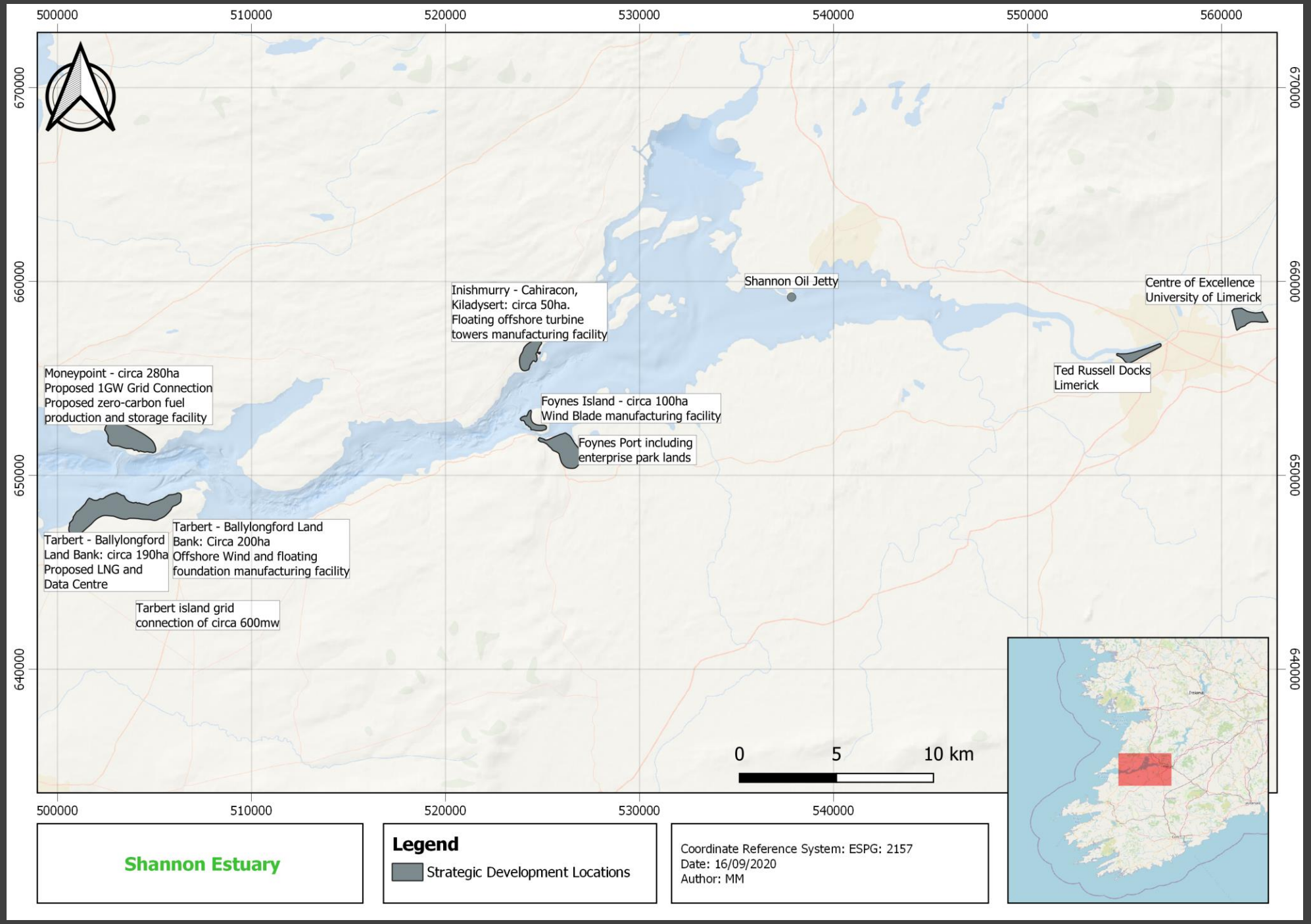
# SFPC FACILITIES VS PORT REQUIREMENTS

| Parameters | Site Investigation / O&M | | Staging and Installation | |
|---|---|---|---|---|
| | Preferred | SFPC Current Facilities | Preferred | SFPC Current Facilities |
| **I. Navigational / Access Channel** | | | | |
| Width (m) | 30 | Yes | >120 | Yes |
| Min. Depth (m LAT) | 11 | Yes | 14 | Yes |
| **II Quay / Berth** | | | | |
| Min. Depth @ Quay (m LAT) | 11 | Yes | 14 | Yes |
| Lateral Clearance (m) | 30 | Yes | >100 | No* |
| Length (m) | 100 | Yes | 300 | Yes |
| **III. Laydown / Storage** | | | | |
| Area (ac) | 2.5 | Yes | 75 | Yes |

Conclusions

- SFPC current facilities generally meet the port requirements for various areas of Offshore Wind construction
- Current crossover with other trades however mean that existing facilities are not dedicated to Offshore Wind
- Overall development required to ensure SFPC has new dedicated facilities

# Shannon Estuary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Shannon Oil Jetty
Inishmurry - Cahiracon, Kiladysert: circa 50ha. Floating offshore turbine towers manufacturing facility
Centre of Excellence University of Limerick
Ted Russell Docks Limerick
Moneypoint - circa 280ha Proposed 1GW Grid Connection Proposed zero-carbon fuel production and storage facility
Foynes Island - circa 100ha Wind Blade manufacturing facility
Foynes Port including enterprise park lands
Tarbert - Ballylongford Land Bank: circa 190ha Proposed LNG and Data Centre
Tarbert - Ballylongford Land Bank: Circa 200ha Offshore Wind and floating foundation manufacturing facility
Tarbert island grid connection of circa 600mw
0
5
10 km
Shannon Estuary
Legend
Strategic Development Locations
Coordinate Reference System: ESPG: 2157
Date: 16/09/2020
Author: MM

# Irelands Premier Deepwater Gateway


SHANNON FOYNES PORT


SHANNON FOYNES
PORT
50% of the country's wind turbines farms imported through Foynes Port

# Floating Requirements

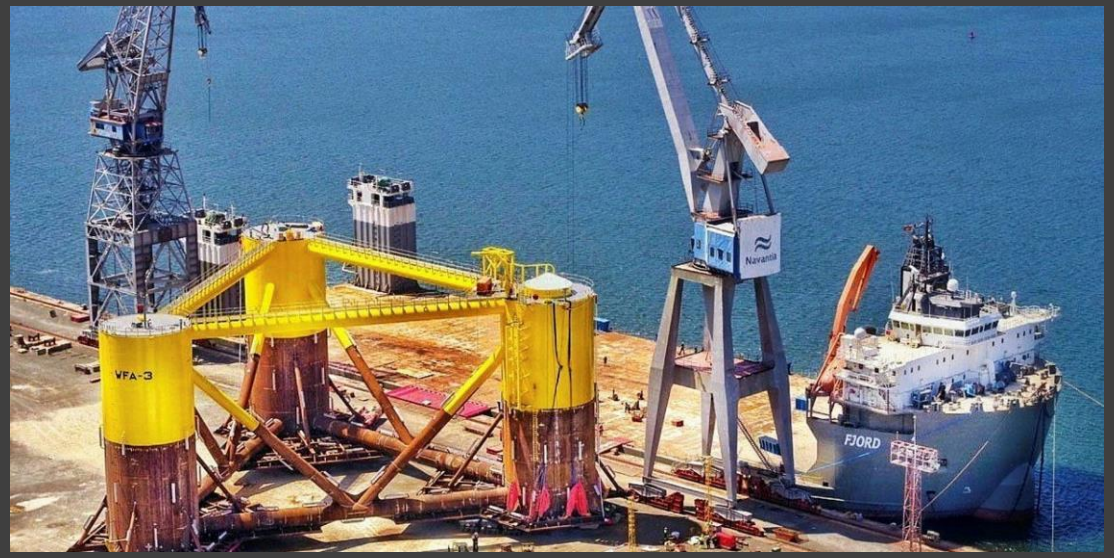
- Analysis of 96 European Ports in recent *Floating Wind Joint Industry Project (Carbon Trust, 2018)* revealed that very few ports can accommodate draught, quayside area, onshore set-down area, wet storage and crane capacity requirements needed for floating offshore wind

- Shannon Estuary could capitalise on this with added investment, though it is clear that many of the requirements needed are in fact already available, particularly:
  - Set-down area;
  - Draught; and
  - Wet storage


*Nigg Port, Scotland*

# Manufacturing

- There exists huge potential for manufacturing facilities to be established in Shannon Estuary particularly at the Inishmurry – Cahiracon (50ha), Foynes Island (100ha) and Tarbert – Ballylongford (200ha) sites, where available landbank storage is vast and there is access to the water





*Images taken from the WindFloat Atlantic Project, Viano de Castelo, Portugal*



# FOYNES ISLAND AND PORT

**30 year Masterplan setting out a Port Development Strategy**.

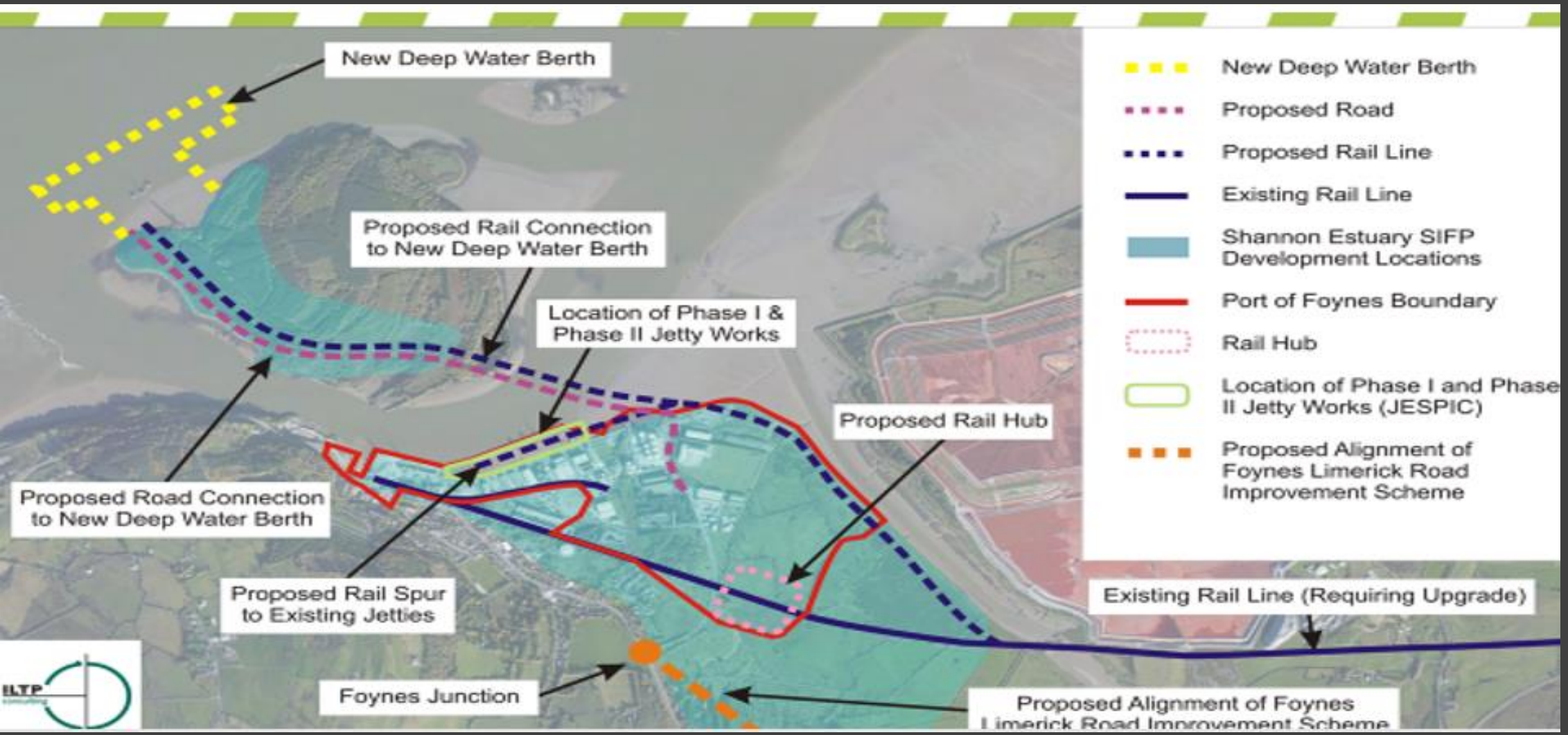
This can be achieved by:

- **Expansion of jetty infrastructure (€47m)**
- **Reinstatement of Rail line (€30m)**
- **Environmental sustainability**
- **Upgrade of road network (€400m)**
- **New deep water berth (€175m)**
- **Social Integration of Port**

# FOYNES ISLAND AND PORT

## Expansion of current Foynes Port infrastructure

# FOYNES ISLAND AND PORT - Proposed Deep Sea Berth and Rail Integration



# FOYNES PORT

## Supply Chain Enterprise Park


Foynes is a large facility with open storage along with 1.2 hectares of warehousing with significant total quayside length of 657m. The port has multiple mobile cranes including a crane capacity of 124t. There is also a concrete manufacturing plant in close proximity of the port. Foynes is the principal general purpose terminal on the Estuary and currently caters for dry bulk, break bulk, liquid and project cargoes.

- Length of Jetties: West 271m; East 295m; Tanker 100m
- Standard length of vessel: 210m (ability to support 229m under certain parameters)
- Max draught at berth: 10.5m, (18m+ at Foynes Island)
- Max Beam: 32.5m
- East and West Jetty connection works will add approx. 1.2 ha of additional shoreside storage
- Unloading Rate: Depends on crane/material; see Cargo Handling Equipment and Storage pages for further details
- Bunker availability: Manifold (West Jetty) or truck
- Fresh Water: Yes
- Stores: Yes – no truck access to tanker jetty
- HFO Discharge: All pipes (oil & chemical) are 8 inch (West Jetty 10 inch); contact terminal operator for pumping rate

# INISHMURRY - CAHIRACON

## Floating Offshore Turbine Tower Manufacturing Facility


## Key Features

- 65.94 Hectares of zoned land available for development;
- Adjacent to existing port of Foynes and Foynes Island SDLs forming a key strategic marine industry cluster;
- Water depth 15m+;
- A considerable area of hinterland available in close proximity to the R473;
- Proximity to Shannon International airport;
- This SDL benefits from both statutory and policy support at local and National level;
- A well sheltered location with an existing pier offering direct access to a large pocket of well sheltered deep water and the main navigation channel;
- A previously permitted major industrial development on the site;
- An opportunity to redevelop and re-use existing marine infrastructure at the existing pier

# INISHMURRY - CAHIRACON

## Additional Services

- The 220kV line runs in close proximity to the site with local electricity supplied up to 35kV;
- The Galway to Limerick high-pressure Natural Gas pipeline (70 bar pressure) is located approx. 0.5km to the west of the site, a spur from the main pipeline would be required to bring gas to the site;
- Public water is supplied by the Killadysert Public water supply sourced from Gortglass Lough/ Cloonsnaghta Lough. There is sufficient treatment capacity to cater for future expansion.

# TARBERT - BALLYLONGFORD

## Key Features

- Presently used as a 620MW fuel / oil powered power station (by SSE Thermal);
- Existing jetty is 317m long, capable of accommodating 250m LOA x 14m draught vessels;
- Approx. 398 Hectares of zoned land available for development (Kerry Co Co Dev. Plan);


# TARBERT - BALLYLONGFORD

## LNG / Alternative Fuels and Data Centre


- Extant planning permission is active for Ireland's first LNG terminal with up 200,000 $m^3$ capacity including a re-gasification facility, with estimated total capacity circa 500MW;
- Huge potential for integration between terminal and new dedicated data centre;
- Opportunities also exist instead for storage of hydrogen gas produced from new offshore wind farm sites;

# TARBERT - BALLYLONGFORD

## Offshore Wind Manufacturing


- In addition, 200ha site can be dedicated to the manufacturing of offshore wind components and floating foundation technologies.

# MONEYPOINT

## Zero-Carbon Fuel Production and Storage Facility

## Key Features

- 280 hectares of zoned land available for development. 53 ha of which is in addition to the existing Moneypoint Power Generating Station;
- Directly opposite Tarbert SDL which contains a Power Plant Hub, including NORA Strategic Oil Reserves;
- Accessible Water depth of 20m+;
- A considerable area of hinterland available in close proximity Direct access to the N67 national primary route;
- This SDL benefits from both statutory and policy support at local and National level;
- Moneypoint is an existing, strategically important energy hub, with the 915 MW generating station distributing electricity through a network of 400, 220 and 110kV power lines;
- Already home to significant maritime infrastructure including a large commercial jetty currently accommodating vessels up to 250,000 tonnes DWT;
- At full output, the station consumes approximately 7,000 tonnes of coal per day around two million tonnes a year with all imports through the commercial jetty.

# MONEYPOINT

## Additional Services

- Power available via a 440, 220 and 110kV lines which run directly  from the site;
- High voltage submarine cable running from Moneypoint to Kilpaddoge on the opposite side of the Estuary;
- The Galway to Limerick high-pressure Natural Gas pipeline (70 bar pressure) is located approx. 1.0km upstream from the site, a spur from the main pipeline would be required to bring gas to the site.
- Readily available potable Water Supply to the site;
- Upgrade required to the existing Waste Water Treatment Plant in;
- Kilrush High Quality Telecommunications with two broadband services providers in the area.

# MONEYPOINT

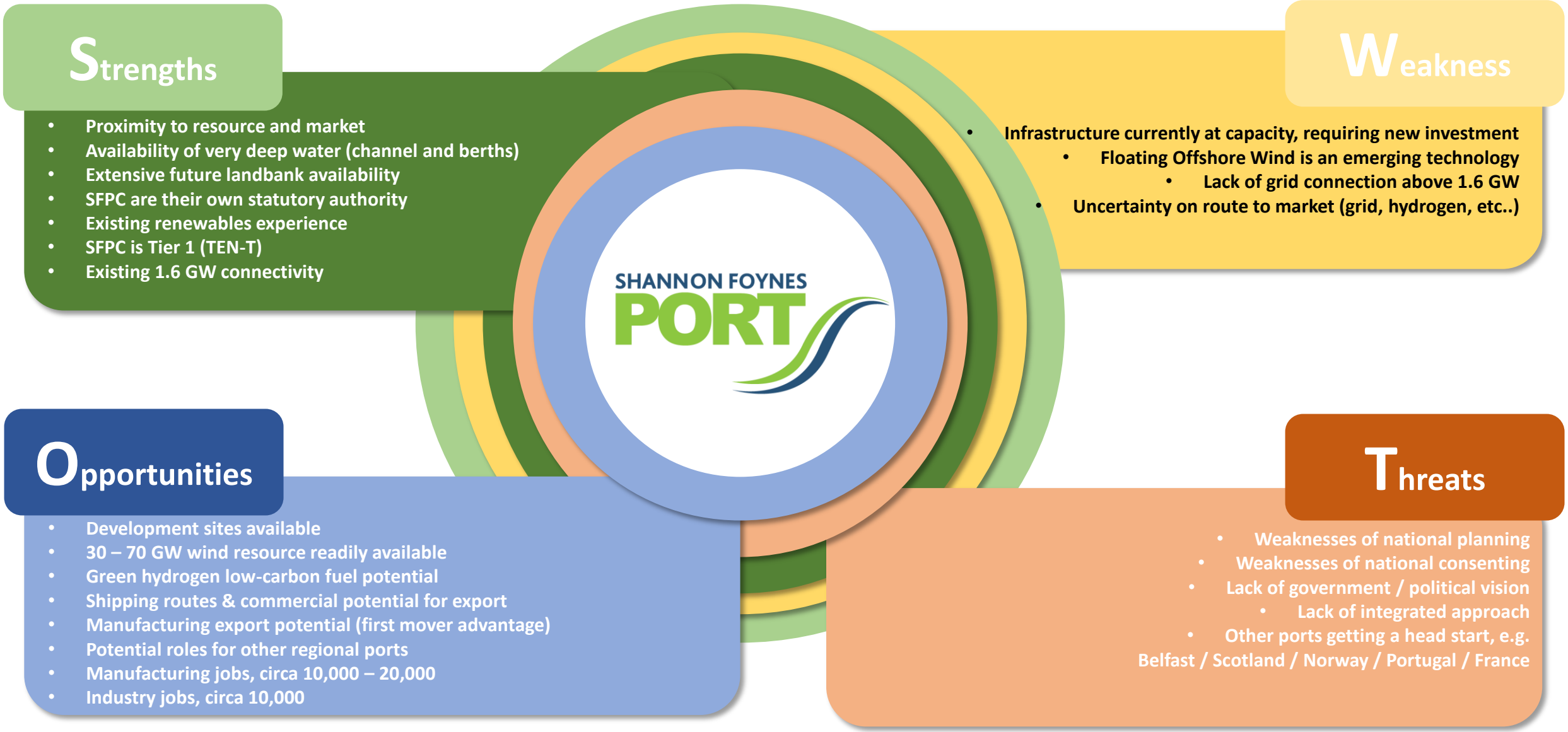
## Decommissioning Plans

- The power station site is expected to be decommissioned no later than 2025 when its current licence expires
- Decommissioning shall effectively free up approximately 170 hectares of optimal development land with direct access to the 380m jetty which has circa 25m available water depth
- The site is also immediately adjacent to the National Road Network including the N67 / N68 / N18 network connecting the site to Clare and Limerick

*"The focus for the future of Moneypoint is offshore wind, that is the only way Moneypoint is going to generate electricity into the future. The ability to generate energy from offshore wind is far greater off the West Coast, it needs to happen in Moneypoint."*

Dr. Michael Harty, Independent TD, July 2019

# Summary


Strengths
Proximity to resource and market
Availability of very deep water (channel and berths)
Extensive future landbank availability
SFPC are their own statutory authority
Existing renewables experience
SFPC is Tier 1 (TEN-T)
Existing 1.6 GW connectivity
Weakness
Infrastructure currently at capacity, requiring new investment
Floating Offshore Wind is an emerging technology
Lack of grid connection above 1.6 GW
Uncertainty on route to market (grid, hydrogen, etc..)
SHANNON FOYNES PORT
Opportunities
Development sites available
30 – 70 GW wind resource readily available
Green hydrogen low-carbon fuel potential
Shipping routes & commercial potential for export
Manufacturing export potential (first mover advantage)
Potential roles for other regional ports
Manufacturing jobs, circa 10,000 – 20,000
Industry jobs, circa 10,000
Threats
Weaknesses of national planning
Weaknesses of national consenting
Lack of government / political vision
Lack of integrated approach
Other ports getting a head start, e.g. Belfast / Scotland / Norway / Portugal / France

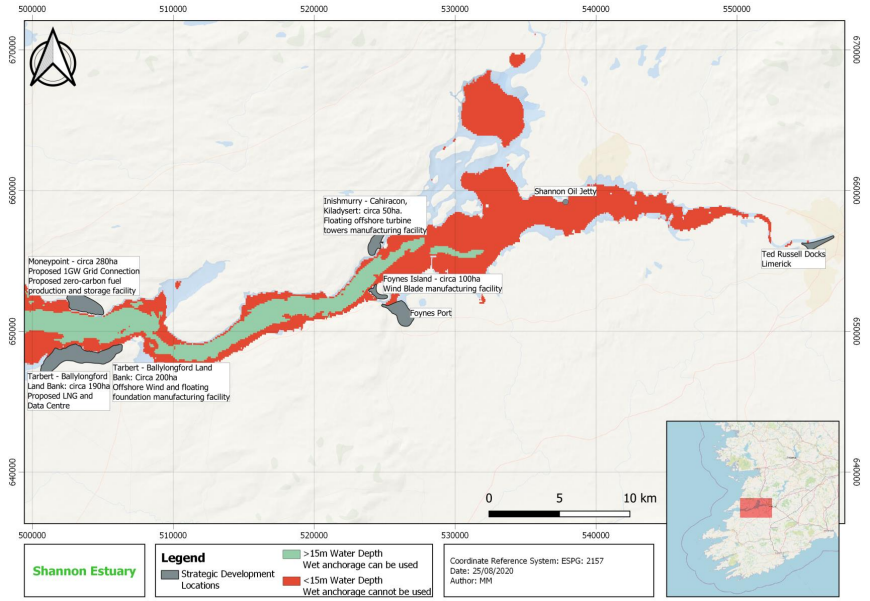
# Shannon Foynes: The Atlantic Offshore Energy Hub

**Shannon Foynes is best placed to service the future offshore floating wind market, both the domestic market and as a global exporter of energy and technology.**

- ✓ **Deepest Water Port and Channel in Western Europe ;**
- ✓ **Huge Landbank for Future Manufacturing Potential ;**
- ✓ **Close Proximity to West Coast Wind Resource ;**
- ✓ **Large River Areas Available for Wet Storage of Floating Units ;**
- ✓ **Many Development Sites to Support Staging, Assembly, Manufacturing, Etc…**
- ✓ **Good Transport Connectivity**

Offshore Floating Wind is Rapidly Expanding and therefore now is the time to capture the potential from this early stage sector. Given the timelines to develop the required infrastructure, now is the time to commit the investment and ensure Ireland Inc. capitalises on the global opportunity as first movers in this exciting space.

**SFPC is the vehicle to maximise the benefits to Ireland Inc. from the floating wind market.**




# TESTAMENTS

**Strategic Integrated Framework Plan for the Shannon Estuary (SIFP), 2013**

- ***"The growth of the offshore renewable energy sector presents an opportunity for the Shannon Estuary in respect of new infrastructure and supply chain opportunities, including servicing the assembly of towers and turbines, their transport to offshore sites, installation and decommissioning engineering services, the provision of operations and maintenance services and on-shore back-up services."***

# TESTAMENTS

**A Review of Irish Ports Offshore Renewable Energy Services (IPORES), 2018, IMDO**

- ***"SFPC is well located or an ORE hub on the west coast of Ireland. It has the space and facilities for locating a manufacturing, assembly and servicing centre for the ORE sector. The SFPC masterplan "Vision 2041" identifies the ORE sector as a potential growth sector for the port and has indicated that the demand for offshore renewables will require the port to consider this alongside its traditional commercial activities."***

# TESTAMENTS

**Supply Chain Study for Offshore Wind in Ireland (Final Draft), Oct 2019, IWEA**

***"From a construction point of view, only Shannon-Foynes port is currently best placed for the provision of 'staging' given the availability of area at the port."***

# Shannon Estuary