

DOC Dublin Offshore



EXECUTIVE SUMMARY

Ros a Mhíl

A Strategic Hub for the Development and Support of the Offshore Wind Industry on the West Coast of Ireland

September 2021

Client

Údarás na Gaeltachta is the regional development authority for the economic, social and cultural development of the Gaeltacht with the overall objective of maintaining Irish as the communal language of the region. Further information can be obtained on www.udaras.ie.



About this Report

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Lead Author: Dublin Offshore

Project Team:

Scenario Creation & Enterprise Strategy – Lumen Energy & Environment.

Environmental Analysis – ITP Energised.

Economic Analysis – BIGGAR Economics.

The Project Team authored this report based on an impartial analysis of primary and secondary sources, including stakeholder consultation. The Authors would like to thank everyone that has contributed their time and expertise during the preparation and completion of this report. Special thanks go to Údarás na Gaeltachta and the Stakeholder Advisory group whose input and feedback were invaluable in completing this report.

Disclaimer

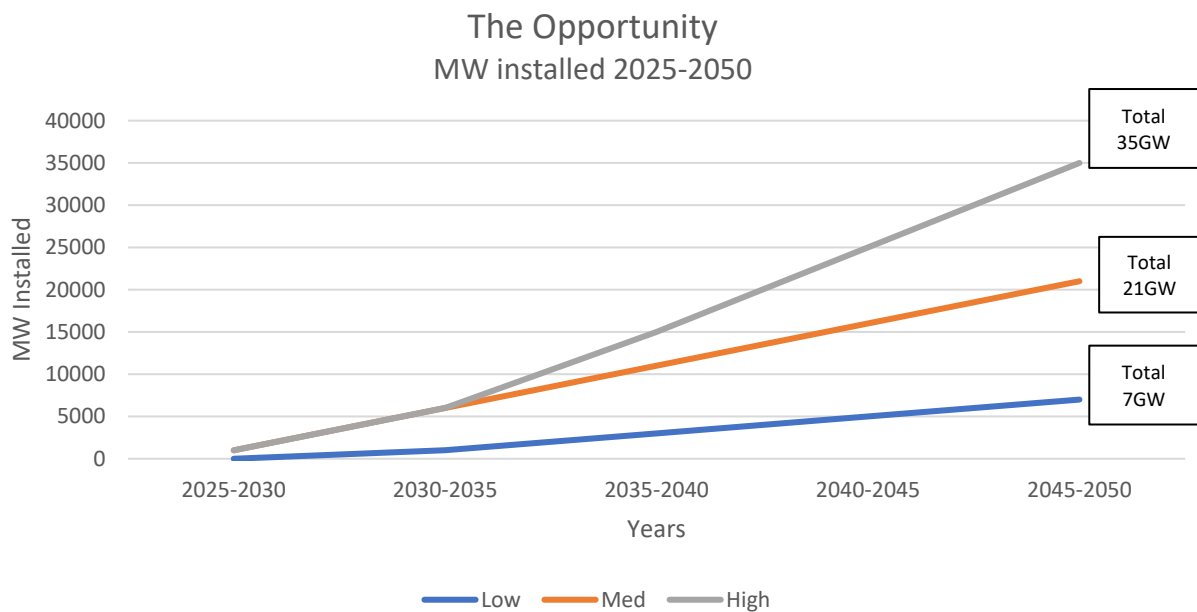
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Opportunity and Context

This report assesses the Technical, Environmental and Socio-Economic opportunities and constraints for Ros A Mhíl port considering the proposed development of Floating Offshore Wind (FOW) on the west coast of Ireland. The analysis may be used to guide decision making by all stakeholders in the long-term development of infrastructure and facilities to meet the targeted FOW market segment requirements.

Ireland has made a strong commitment to the growth of offshore wind, and environmental conditions, particularly on the west / Atlantic coast are better suited to Floating Offshore Wind Platforms – a rapidly emerging market beginning to scale up over the next decade. However, Ireland will require port and infrastructure investment to capitalise on the environmental and economic benefits from the construction and operation of new generation assets.

The Programme for Government ‘Our Shared Future’ aims to take advantage of the “at least 30 GW of offshore floating wind power” off the Atlantic coast by 2050. Offshore Renewable Energy Development Plan (OREDPA) outlines the possibility of 27 GW of floating wind in Irish waters (7GW on the West Coast region closest to Ros a Mhíl). In order to predict which capacity in MW will be installed and require port facilities on the western seaboard, Low, Medium & High scenarios have been created with indicative installed capacity (MW) per 5-year window.



It should be noted that the Low scenario will require grid reinforcement along the west coast given existing grid capacity constraints, the high scenario requires both major grid reinforcement as well as other uses for electricity produced by floating wind, such as the production of Hydrogen, integration to a super grid and other e-fuels like Ammonia for shipping.

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Ros a Mhíl has the potential to play an important role supporting the significant pipeline of Floating Offshore Wind on the West Coast of Ireland. Its combined attributes of proximity to offshore project locations and consented 12m deep berth provide the opportunity for cost effective and timely entry into the offshore energy market for the Port. The significant economic activity associated with offshore construction and wind farm operations may be realised through long term employment opportunities local to the Port and within the region.

This analysis highlights risks and opportunities for Ros a Mhíl both as an Operations and Maintenance (O&M) port and as a base for Assembly activities during floating offshore wind development.

Target Market Scenarios

The following potential scenarios were defined and assessed as part of the analysis.

Scenario 1: defines a port that can be used as a quick reaction port for Operation & Maintenance of a FOW project, the port would include an O&M office facility for technicians and control centre for the operation of the windfarm. Technicians would access the wind farm from the port using service operation vessels, crew transfer vessels and helicopters.

Scenario 1a: defines a port that can act as a quick reaction O&M Port, but with the additional facilities and requirements to be able to store and deploy certain, smaller components required during the construction of a FOW project, this could include mooring chains & anchors.

Scenario 1b: defines a port that can act as a quick reaction O&M Port, but also act as a centre for major maintenance repairs, with the additional facilities and requirements to be able to store and deploy some of the larger components (mooring systems, cables etc) required during the construction of a FOW project.

Scenario 2: defines a 'cluster port', i.e. a port large enough to host Pre-fabrication, Assembly, wind turbine staging; all construction related activities as well as a full Operation & Maintenance service (quick reaction & major repairs).

Key Findings

- The development of Ros a Mhíl as a support port for the floating offshore wind sector would represent a major opportunity for the Galway Gaeltacht and the wider economy. Early signs of market intent for offshore wind in the region have been demonstrated by Green Investment Group's recent acquisition of the 400MW Sceirde Rocks offshore wind farm.
- Each of the scenarios outlined require additional investment in the port to become fit for purpose for all users (i.e. fishing, tourism, ferry and offshore renewables). The variation in port investment costs between €17.4M and €170.5M for operational scenarios indicates the importance of clearly identifying the targeted market segment the Port intends to service and developing infrastructure in close alignment with the industry requirements.
- Ros a Mhíl does not currently have suitable infrastructure to support large scale construction & assembly activities, and will require channel dredging, quay extension, and land redevelopment work to do so.
- O&M port selection is more geographically sensitive to location than construction phase activities. Ros a Mhíl is well positioned to compete as O&M port to wind farms from Loop Head to Belmullet.
- A focus on use of the Port only for Operations and Maintenance offers the best Cost Benefit Ratio of modelled scenarios, but the lowest Gross Value Add (GVA) benefit to the Galway Gaeltacht.
- A focus on use as an Assembly port offers similar Cost Benefit Ratio, and significant GVA benefits, compared to O&M only. However, as stated above significant marine and onshore works are required.
- Project construction activities offer economic activity earlier than O&M. Ros a Mhíl will lose their first mover advantage if progressing an O&M only strategy should adjacent ports in the region develop capability to service the construction phase first. An investment decision prior to expiration of existing planning permission is key.
- Scenario 2 requires significant additional investment in order to open up the port to a wide range of manufacturing, and assembly and operational activities. However, it does not deliver a significant additional GVA benefit compared to Scenario 1b.

Key Consideration : While all options are available to Ros a Mhíl, the potential to provide O&M plus Assembly support as captured in Scenario 1b is of particular interest for the reasons outlined above. Based on servicing 3GW of projects, which is less than half of the Low FOW deployment scenario, this has the potential to result in up to 900 direct and indirect jobs for the region.

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Summary Scenario Outcomes (per 500MW Project)

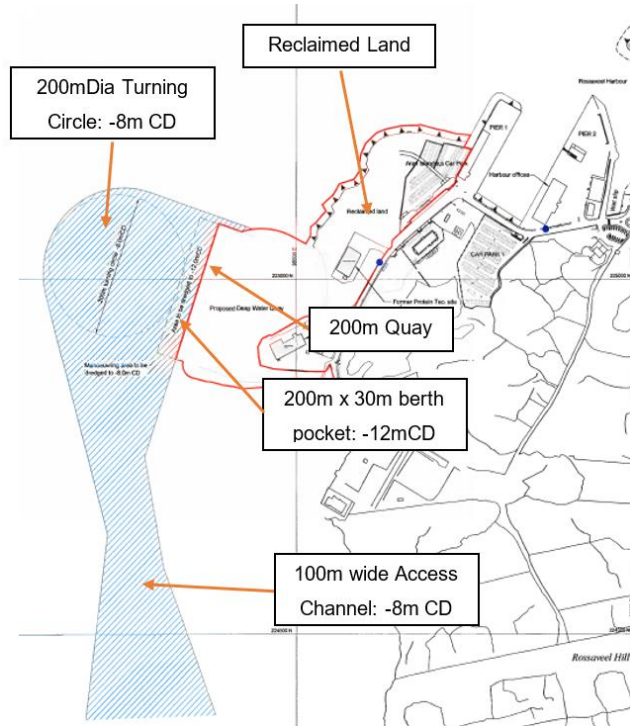
	Scenario 1	Scenario 1a	Scenario 1b	Scenario 2
Description	O&M quick reaction for 1 x 500MW project	Scenario 1 plus ancillary construction support	Scenarios 1a & Staging / Assembly	Cluster port
Port Investment Cost (€m) (Fixed Cost)	17.4	24.6	54.5	170.5
GVA (€m) – Galway Gaeltacht (per 500MW Project)	103.5	105.4	321.3	389.1
Benefit Cost Ratio (per 500MW Project)	5.95	4.28	5.90	2.28
Consenting Assessment	Minor	Minor	Significant	Significant
Environmental constraints	Low	Low – Medium	Medium-High	Medium - High
Risk	Low risk option in terms of least cost route to port utilisation. However will prevent port infrastructure development that secures wider economic benefit. Utilisation depends on the construction of a wind farm near to port and timing of O&M contracts	Scenario offers low Benefit Cost Ratio, as requires investment to be viable, but additional GVA benefits in comparison to Scenario 1 are small. Significant on-shore ground preparation and development required.	Significant marine and land development required. Under low deployment pathway scenarios there is risk of under contracting the Port. In addition, this option has greater environmental impacts and associated consenting risks.	Significant marine and land development required. Additional investment comes with high risk of securing additional port activity. In addition, this option has greater environmental impacts and associated consenting risks.
Opportunity	O&M contract opportunity offers stable long term benefit over life of the wind farm. Opportunity to develop multi use port to enhance existing port activities such as fishing.	Allowing additional activities and benefit beyond O&M (though the additional GVA benefits are not significant). Opportunity to develop multi use port to enhance existing port activities such as fishing.	West coast of Ireland does not yet have suitable assembly port facilities. In medium-high deployment scenarios, a multi-port strategy will be required. Opportunity to develop multi use port to enhance existing port activities such as fishing.	Opportunity to benefit from a clustering effect over time, as has been seen in locations such as the Humber on the east coast of England.

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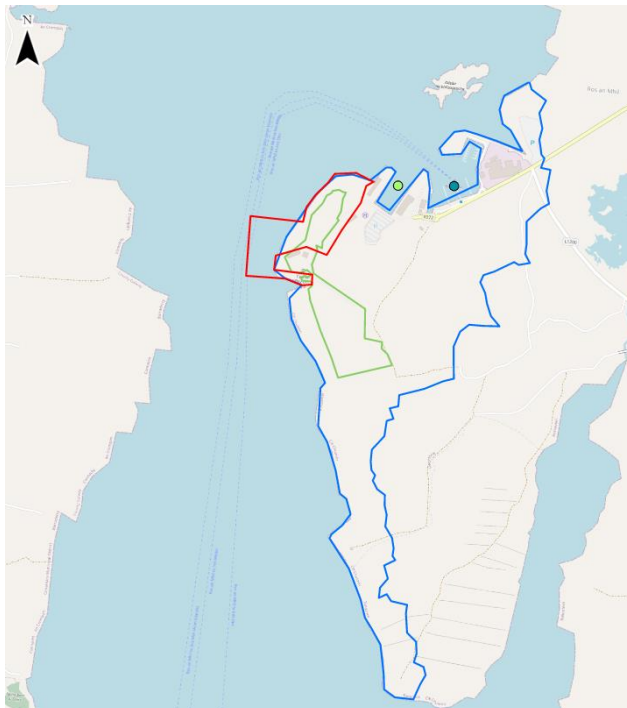
Ros a Mhíl

Ros a Mhíl does not currently have the capacity to support large scale offshore construction activities. However, planning permission granted to the Department of Agriculture, Food and the Marine (DAFM) in 2018 for a 200m deepwater quay provides opportunity to develop the necessary onshore infrastructure. Ros a Mhíl is unique among ports on the Irish west coast in having existing permission for infrastructure with the potential to support the FOW project pipeline.

The Port currently supports ferry, fishing and leisure activities with the existing harbour. The proposed additional development must consider existing port users, and infrastructure specifications are to be progressed in-line with the target market requirements and stakeholders needs.



Ros a Mhíl consented infrastructure



Land ownership in Ros a Mhíl. Planning boundary in RED. Údarás owned land in GREEN. DAFM owned land in BLUE

Ros a Mhíl benefits from a significant land bank adjacent to the proposed 12m deep-water berth, under ownership of both Údarás na Gaeltachta and DAFM. The available land supports direct access to quayside and provides growth potential for servicing significant project cargo throughput, in addition to office and workspace.

The dual functioning of the existing harbour activities and FOW support activities at the proposed development would be achievable through detailed design of the new facility footprint, and project specific logistics planning.

Its combined attributes of proximity to offshore project locations and consented 12m deep-water berth infrastructure provide the opportunity for cost effective entry into the offshore energy market for the Port.

Suitability of Consented Infrastructure

The consented infrastructure has a high level of suitability for re-purposing the development in service to the FOW industry. The quay length, berth depth and onshore landbank provide capacity for many of the anticipated O&M and cargo handling activities. The potential of the facility to directly service FOW platforms within the Port is constrained primarily by the Access Channel depth and the footprint of the deep pocket. Market segments within FOW which do not require platform access to quayside have also been identified as having a high Benefit Cost ratio relative to the investment required.

Consented Facility Traits				Yes	Requires Clarification	No
1	1a	1b	2	FOW Support Activity		
✓	✓	✓	✓	Service Operation Vessel home port.		
✓	✓	✓	✓	Crew Transfer Vessel home port.		
✓	✓	✓	✓	Project Cargo Vessels: Lo-Lo		
✓	✓	✓	✓	Anchor Handling Vessel		
		✓	✓	Platform Assembly and Deployment Support		
		✓	✓	Platform O&M Support		
		✓	✓	Permanent crannage for RNA operations: Quayside Crane.		
		✓	✓	Temporary crannage for RNA operations: Crawler Crane.		
		✓	✓	Crannage for RNA operations: Jack-Up Barge (JUB) alongside		
		✓	✓	Onshore Space Requirements	Quay Deck Set Down Area: Space required for close storage of cargo for timely assembly of WTG at quayside.	
		✓	✓		Blades: (3-unit racking)	
		✓	✓		Nacelles	
		✓	✓		Tower	
	✓	✓	✓		Anchors	
	✓	✓	✓		Chain	
	✓	✓	✓		Synthetic Line	
	✓	✓	✓		Mooring Jewellery: Buoys, clump weights, load reduction components etc	
	✓	✓	✓		Electrical Array Cable	
✓	✓	✓	✓		RNA Components	
✓	✓	✓	✓		O&M Centre	
✓	✓	✓	✓		Helicopter Access	
✓	✓				Access Channel: -7m CD, 100m Width	
✓	✓			Access Channel: -8m CD, 100m Width		
		✓		Access Channel: -9m CD, 100m Width		
			✓	Access Channel: -12m CD, 100m Width		
✓	✓			Turning Circle: -7m CD, 200m Diameter		
✓	✓			Turning Circle: -8m CD, 200m Diameter		
		✓		Turning Circle: -9m CD, 200m Diameter		
			✓	Turning Circle: -12m CD, 200m Diameter		
		✓	✓	Wet Storage: Galway Bay		

Environmental Constraints

The key aims of this study were to identify:

1. If the scenario is covered under the existing planning permission and/or if additional environmental impacts to those identified in the EIS were expected.
2. If additional impacts are expected, what are they and what additional assessments and/or consents, if any, would be required.
3. Rank each scenario using a traffic light system (i.e. low, medium and high environmental and consenting risks) to determine the environmentally preferred scenario.

The assessment identified potential constraints and consenting requirements associated with each development scenario and provides recommendations for further investigations, where relevant. It does not guarantee that no other barriers to planning or development will be identified during further investigative work. Scenario 1 would result in the fewest additional impacts and consenting requirements whilst Scenario 2 would have the most. Scenario 1b would have similar additional impacts to Scenario 2.

Topic		Scenario 1	Scenario 1a	Scenario 1b	Scenario 2
Ecology	Terrestrial	Low	Medium	Medium	Medium
	Marine	Low	Low	High	High
	Designated sites	Low	Low	High	High
Landscape and visual		Low	Low	Medium	High
Geology and water resources		Low	Low	Low	Medium
Cultural heritage		Low	Low	Low	Medium
Noise	Terrestrial	Low	Medium	Medium	Medium
	Marine	Low	Low	High	High
Other marine users	Shipping	Low	Low	Low	Low
	Fishing	Low	Low	Low	Low
	Offshore wind	Low	Low	Low	Low
	Energy test sites	Low	Low	Low	Low
	Aquaculture	Low	Low	Low	Low
Transport and access		Low	Low	Low	Low
Aviation		Low	Low	Low	Low

Socio-Economic Benefit

Investment in Ros a Mhíl has the potential to lead to the creation of highly skilled permanent jobs within the Galway Gaeltacht for every farm serviced by the port. The forecasted national pipeline of projects is up to 35GW by 2050, and therefore multiples of these job numbers may be achievable subject to the pace of project deployments.

If the port were to target servicing 3GW (6 x 500MW) of wind farms it could lead to the creation of up to 366 - 1080 O&M jobs within the Galway Gaeltacht, this would account for under half of the 7000MW total predicted pipeline of projects to be installed by 2050 under the low deployment scenario.

500MW Job Creation Opportunity					
Criteria		Scenario 1	Scenario 1a	Scenario 1b	Scenario 2
Direct Jobs by Area	Galway Gaeltacht	54	54	134	160
	County Galway	63	63	23	23
	Rest of Ireland	147	147	107	81
Indirect Jobs by Area	Galway Gaeltacht	7	7	16	20
	County Galway	15	15	12	13
	Rest of Ireland	122	122	116	111
Total Jobs by Area	Galway Gaeltacht	61	61	150	180
	County Galway	78	78	35	36
	Rest of Ireland	269	269	223	192
Total Ireland per 500MW		408	408	408	408

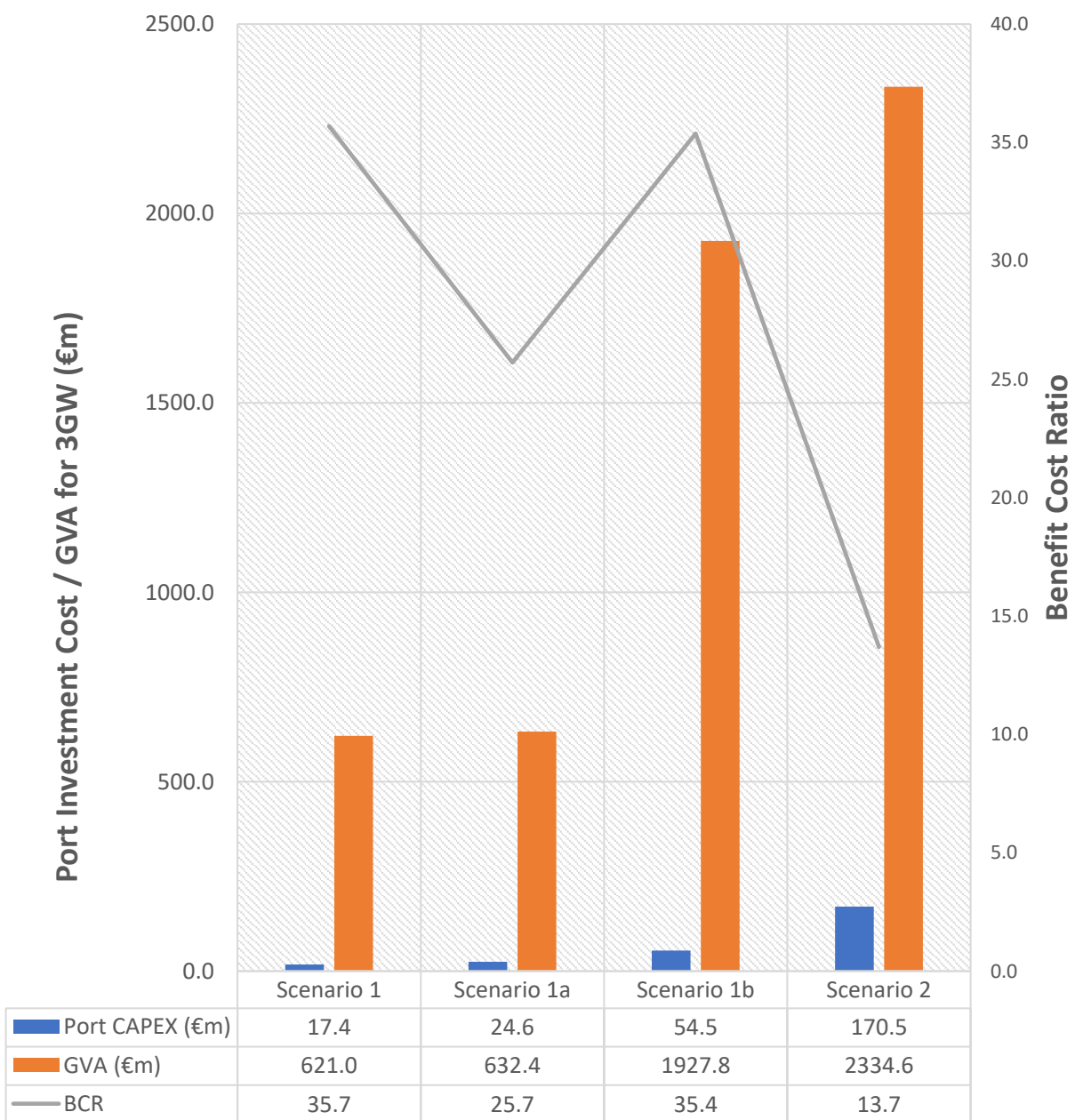
For Scenario 1b, by servicing 3GW, which is only 10% of the Programme For Government targets, the port of Ros a Mhíl would create 900 permanent jobs within the Galway Gaeltacht. This development has the potential to support retention of the local population and return of regional emigrants within the area.

Each of these scenarios will rely on additional investment in the port. The variation in port investment costs between €17.4M and €170.5M for operational scenarios indicates the importance of clearly identifying the targeted market segment the Port intends to service and developing infrastructure in close alignment with the industry requirements. A key decision is related to the investment required to enable platform access directly to quayside, and the impact on dredge volumes and CAPEX associated with the necessary navigable water depths. Bringing platforms alongside, as considered in Scenario 1b and Scenario 2, allows for step changes in the GVA delivered for the region, but with significant impact

for cost, planning and logistics. The role of cranes, given the cost and supply issues for cranes sizes required for FOW, is key to establishing the most beneficial role for the Port. Cost effective pathways to initially deliver least-cost support options, potentially followed by future upgrades to realise the greater economic benefit of increased capability, may be worth detailed consideration in advance of investment.

Summary of Costs & Benefits based on 3GW O&M activities (achievable even within the low roll out scenario) to 2050 is given in the following table. It's important to note that while the investment costs are fixed the GVA outlined per 500MW is factored by the project capacity secured by Ros a Mhíl port.

Summary of Costs & Benefits based on 3GW to 2050





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