The National Decommissioning Centre
Innovation through Partnership

1495 UNIVERSITY OF ABERDEEN

Net Zero Technology Centre
Technology Driving Transition

Maximising potential of shallow ports for floating offshore wind deployment

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PETERHEAD PORT AUTHORITY

Research motivation

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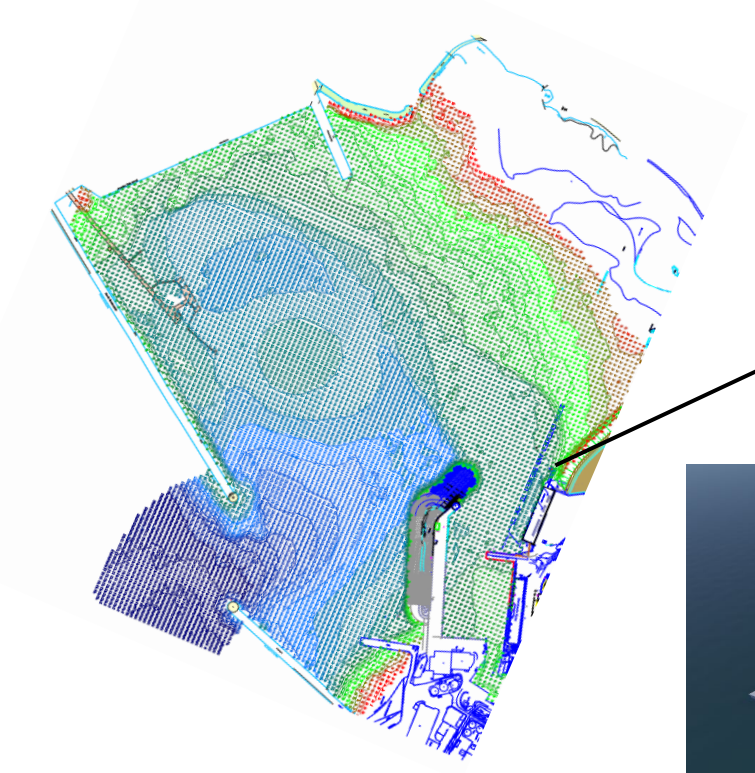
Project aims:

- To develop digital engineering models of port infrastructure relevant for FOW projects
- To develop, through simulation (rigid body dynamics), novel methods of FOW assembly/launch/disassembly/maintenance that will limit requirements for large cranes
- To evaluate though simulation vital pre-departure activities (e.g., towing within port, marshalling, mooring of floaters) and develop new, optimal methods involving use of quick connection systems (C-DART device)
- To verify the proposed installation/integration methods though virtual field trials and develop a detailed framework for FOW deployment from shallow

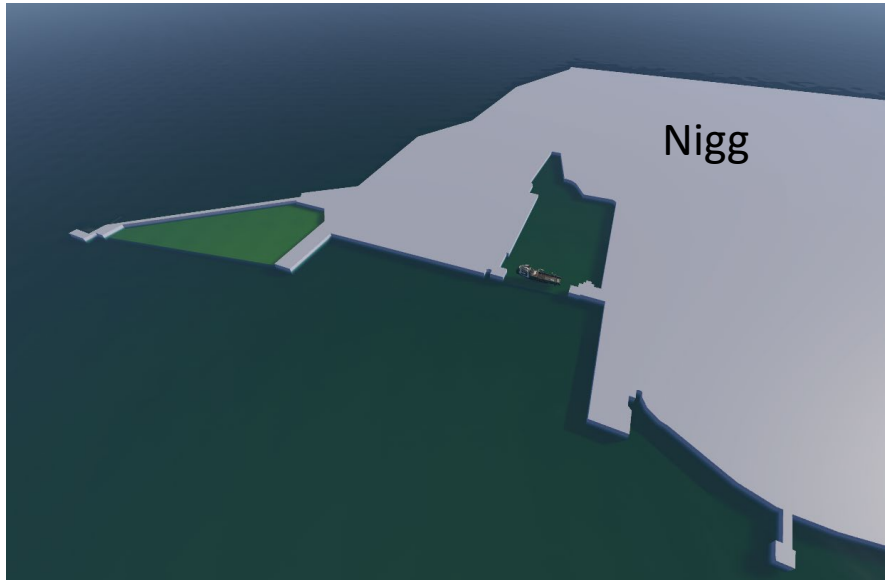
Marine Simulator

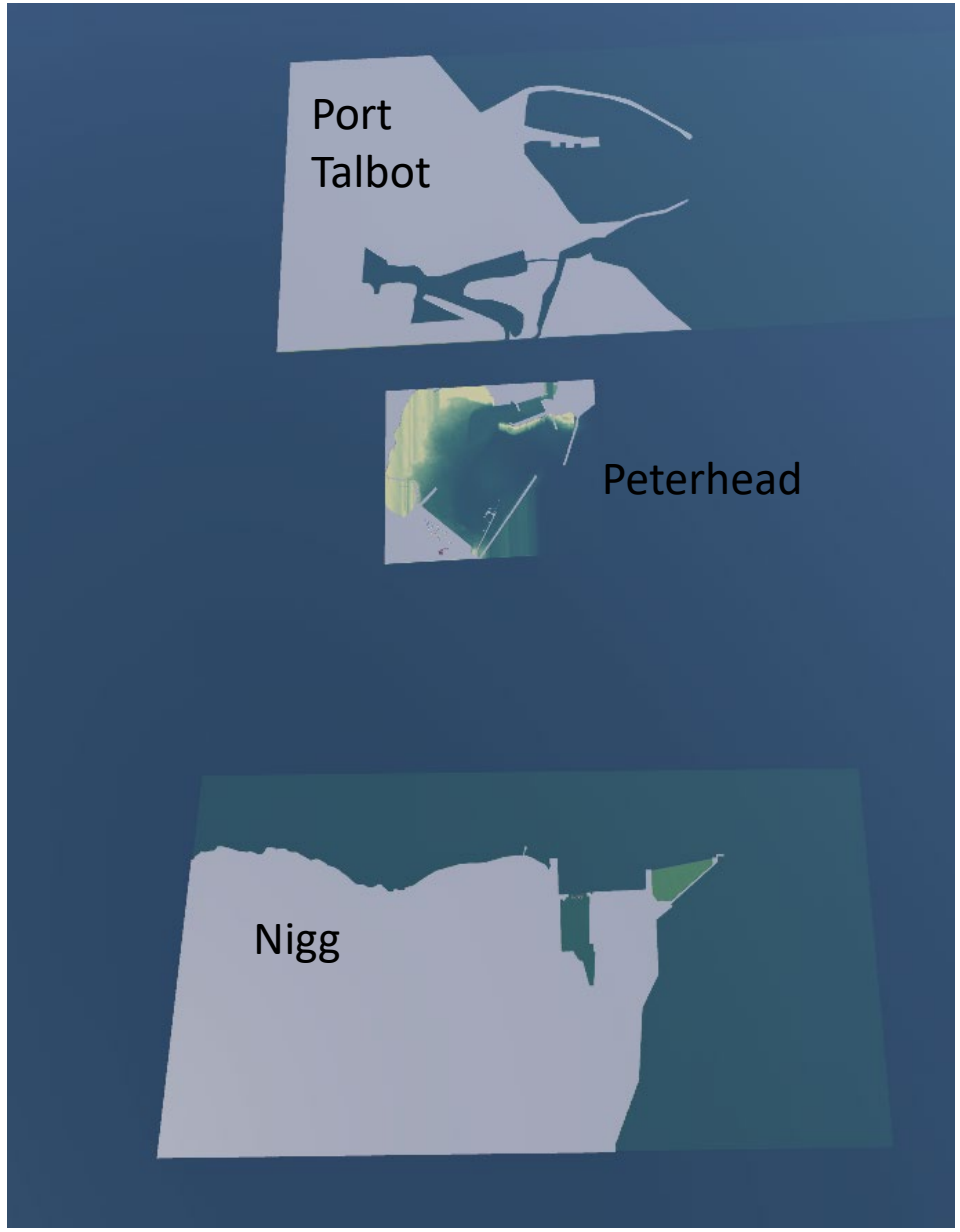
- A walk-in 300-degree, real-time physics Marine Simulator
- 4 stations with ability to assign control of any object/asset in the scene to one of the stations (chairs) for example cranes, personnel, vessels etc.
- All objects within scene have full effect from user-controlled environment, for example vessels are affected fully by waves, current, wind etc.

Port modelling



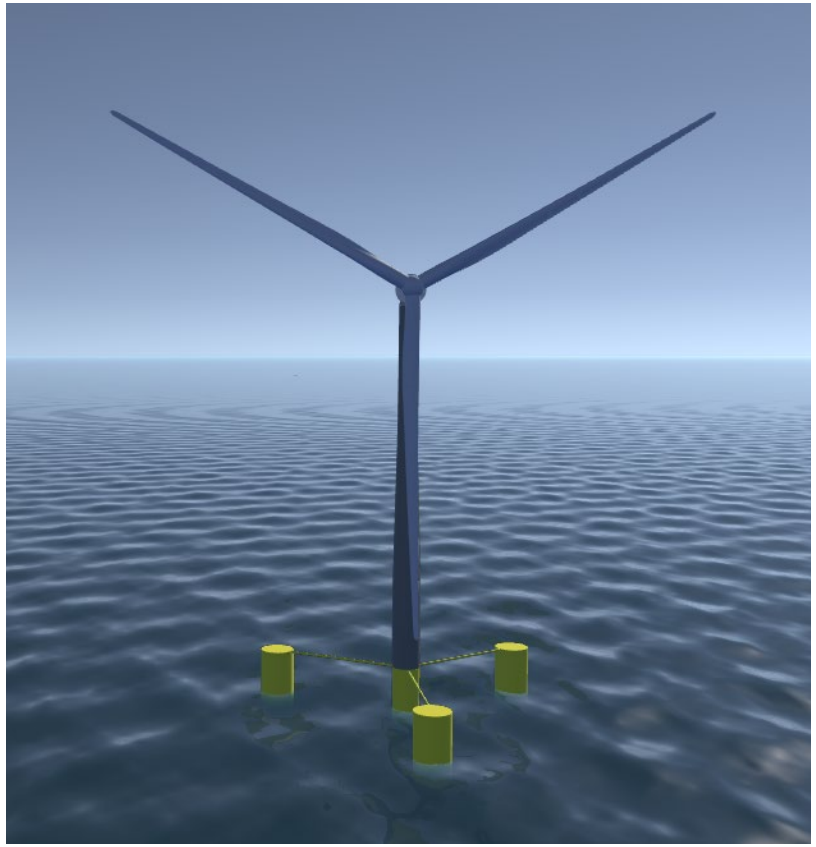
Peterhead



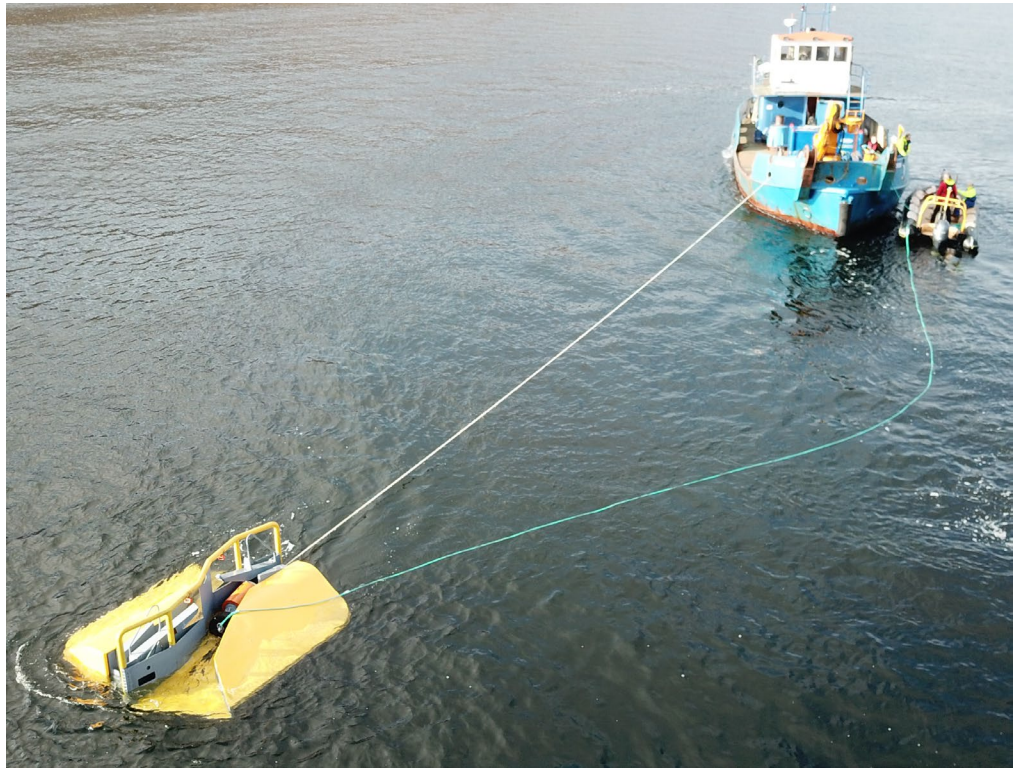


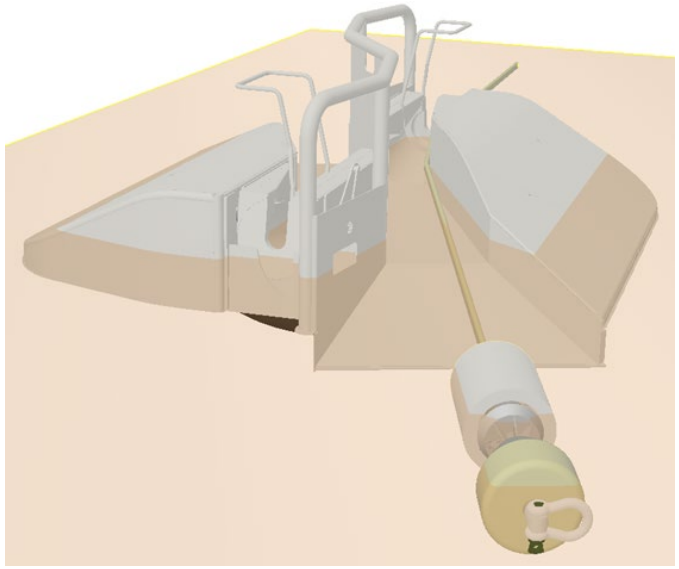
- Convert bathymetry data into detailed port model
- Incorporate any future FOW plans into the model
- Include weather buoy data to replicate real weather conditions

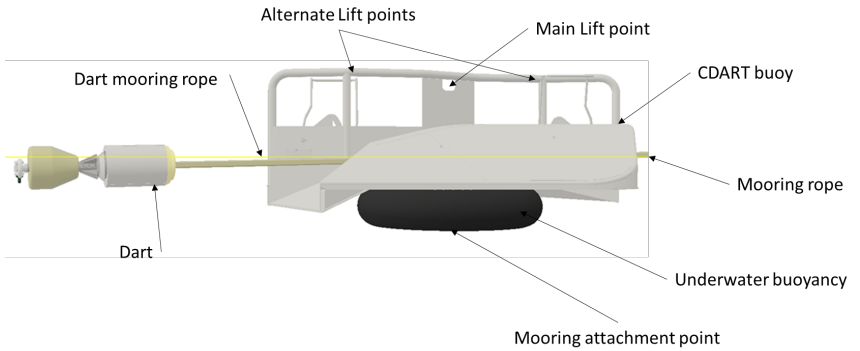
Floater mooring



- Scale up the C-DART quick connection system for 15MW IEA turbine
- Investigate optimal use of the quick connection system for floater mooring, storage etc.







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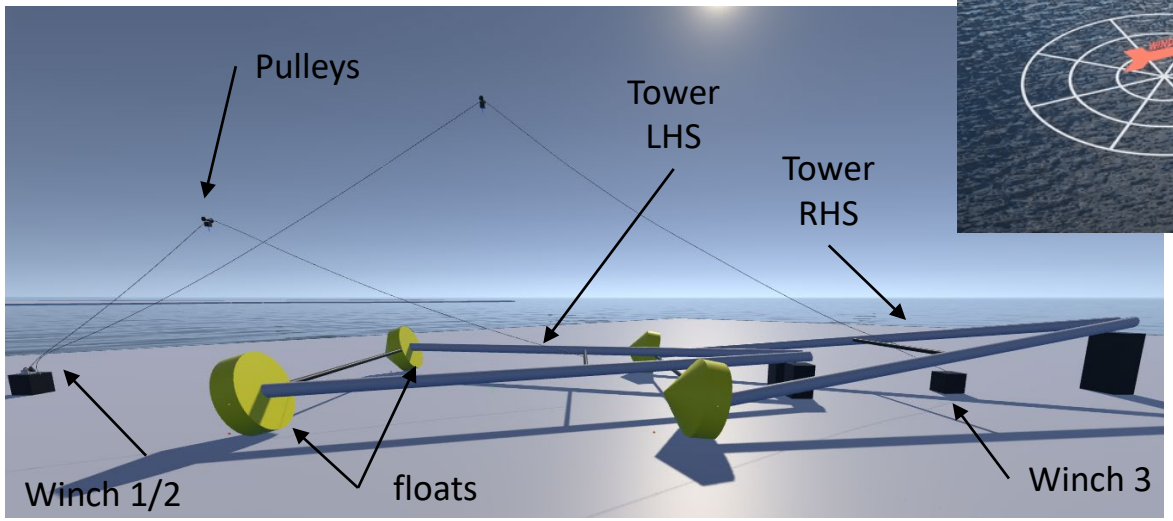
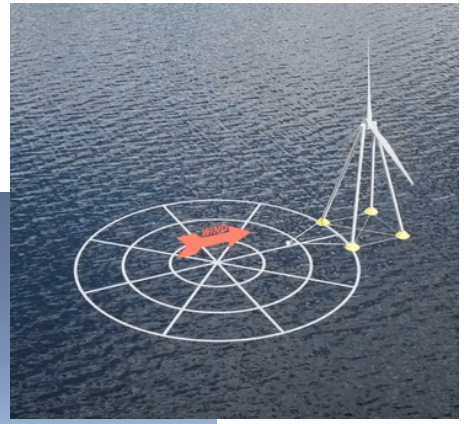
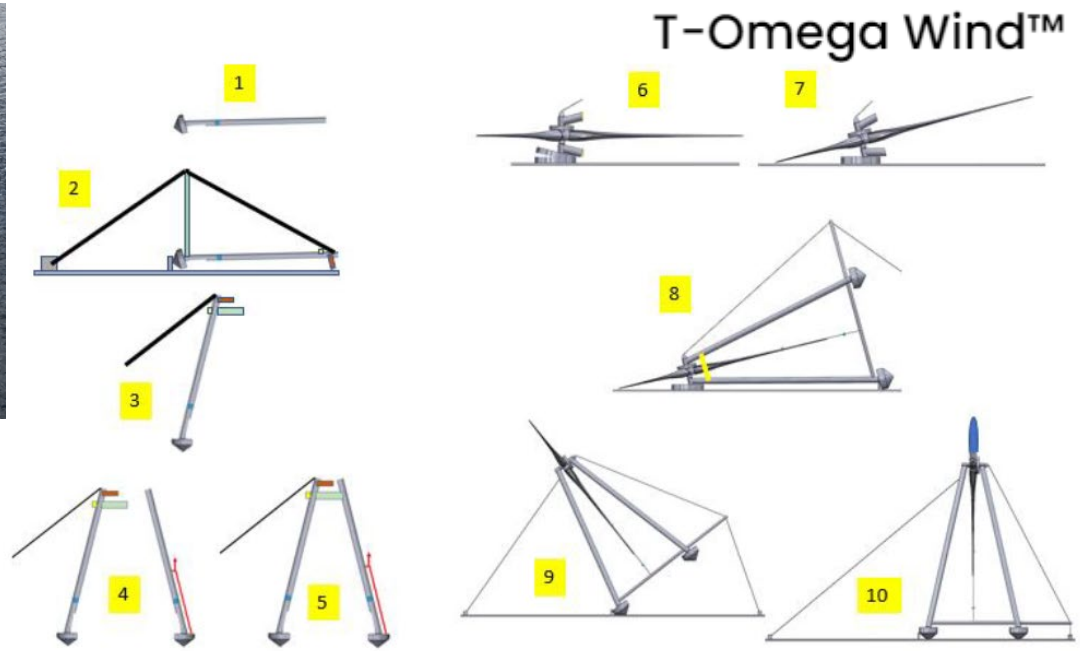
Turbine assembly







- Expedited built up of modular sub-assemblies, ground-level and tilt up strategy for assembly
- Tipping the turbine back upright by cables controlled by ground level winches
- Compare against established large crane assembly methods.