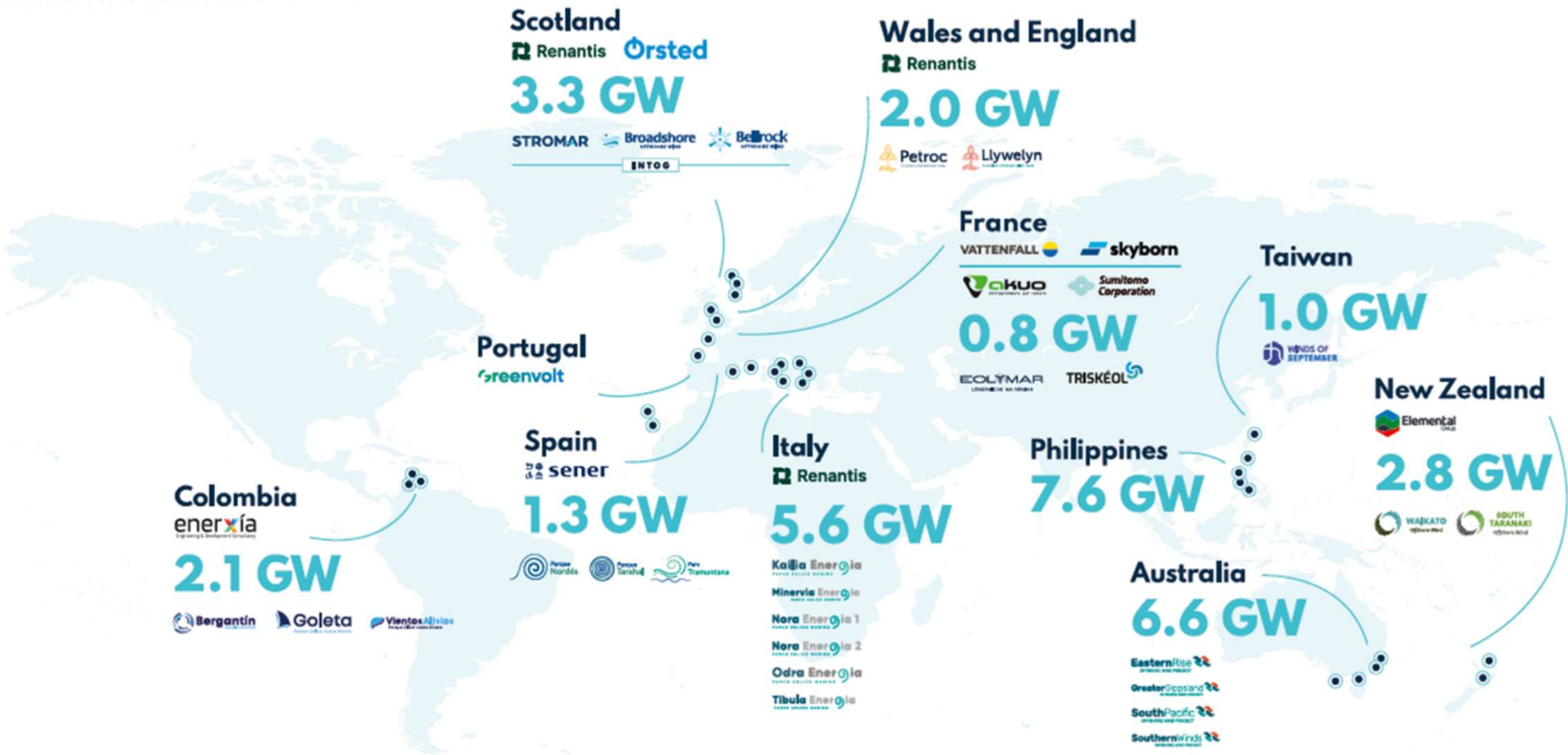


Offshore Wind in Aotearoa



Pure Offshore Wind Player

33.1 GW



Our partnership

1. We believe in harnessing the power of offshore wind to accelerate the energy transition whilst maximising benefits for local industry and community.
2. We bring together complementary skillsets to combine global offshore wind expertise with local New Zealand energy system experience.
3. We are investing in growing local capabilities.



A leading offshore wind developer with a global pipeline of fixed and floating projects



A pioneer in the offshore wind sector in New Zealand

Our Strong Aotearoa Team

Combined expertise building a project team experienced in

- Project management and support
- Environment and consenting
- Technical, and
- Partners and stakeholders





Our development principles

- Partner with Māori, as kaitiaki, co-governors, owners and joint-venture partners.
- Focus on enduring beneficial community-centred outcomes aligned with te ao Māori.
- Committed to biodiversity and marine environment restoration and regeneration.
- Collaborate with wider energy market participants and support common infrastructure solutions to reduce impact.
- Explore synergistic activities such as aquaculture and fisheries.
- Create and deliver skills, training and education.
- Prioritise local procurement and employment.
- Accelerate Aotearoa reaching its Net Zero targets.

Why offshore wind



Mature technology



Project scale to support decarbonisation



World class resource and proximity to load

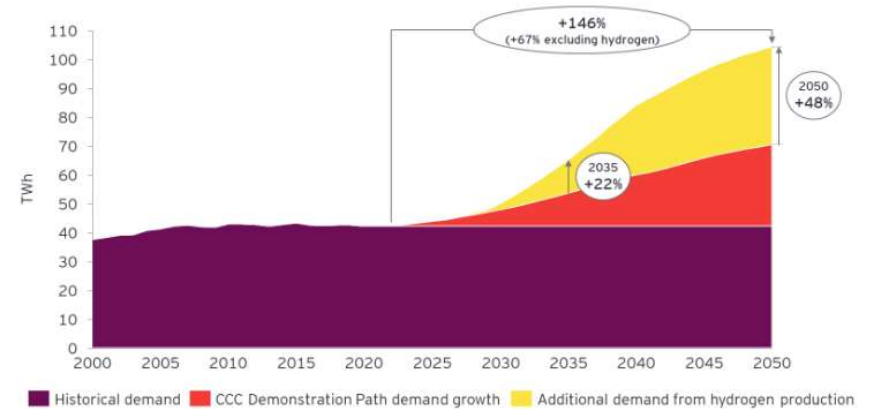


Community interests and competing land use



Catalyst for economic growth and green molecules

Diagram 4: Comparison of hydrogen induced electricity demand with the Climate Change Commission's electricity demand growth. Source: Ernst & Young





Project Concept



WAIKATO

Offshore Wind

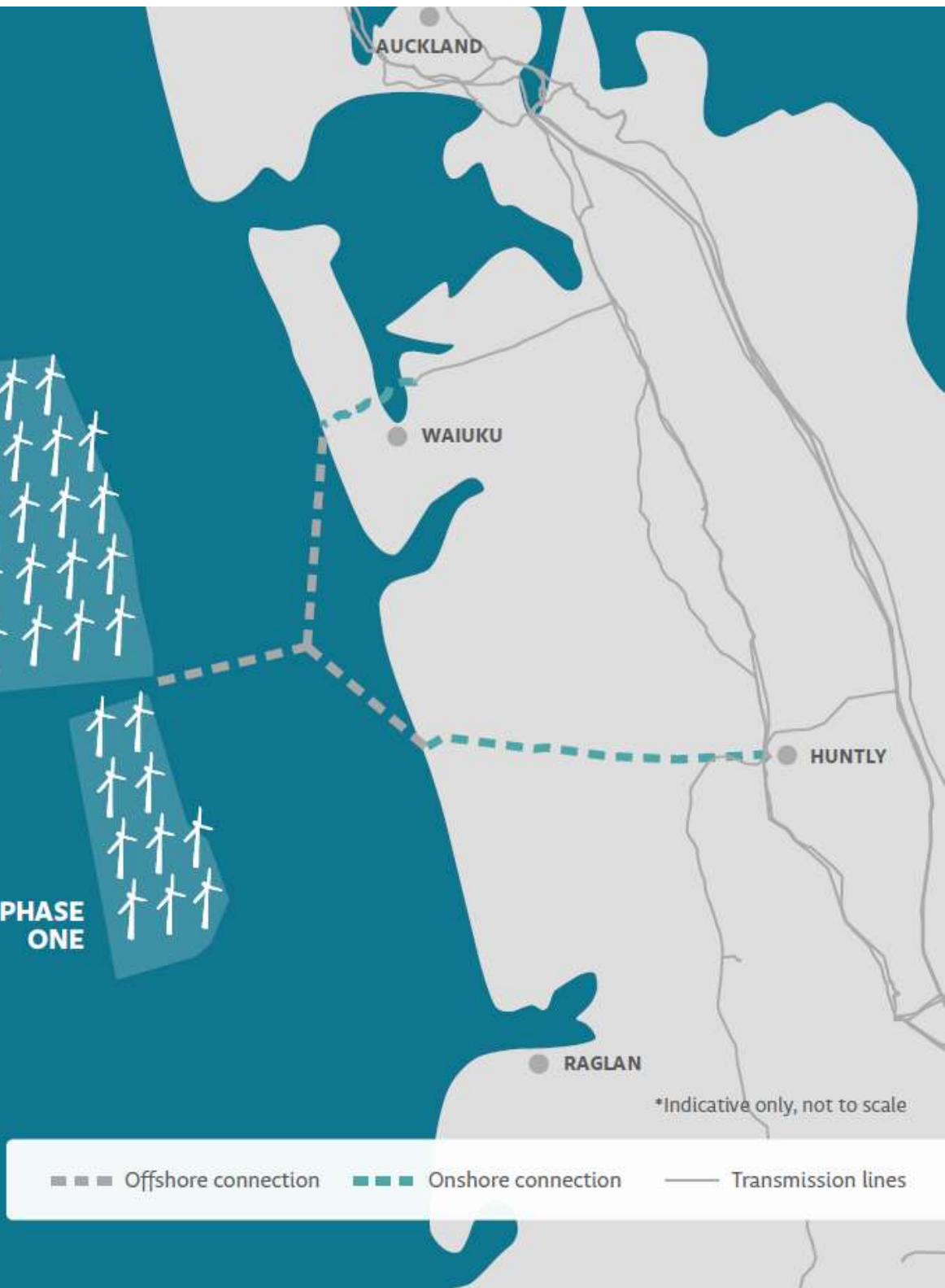


1. Outside marine mammal sanctuary
2. Access to grid & port infrastructure
3. Phase 1 – 810MW fixed foundation
 - 54x15MW turbines, 1-2 offshore substations
 - ~ 400,000 homes powered
 - Regional job opportunities
 - Operational early 2030s
4. Phase 2 – 1,125MW floating

PHASE TWO



PHASE ONE



*Indicative only, not to scale

■ ■ ■ Offshore connection ■ ■ ■ Onshore connection — Transmission lines



1. Outside marine mammal sanctuary
2. Fixed foundations
3. 60 x 15MW turbines, 1-2 offshore substations
4. ~600,000 homes powered, regional job opportunities
5. Operational early 2030's



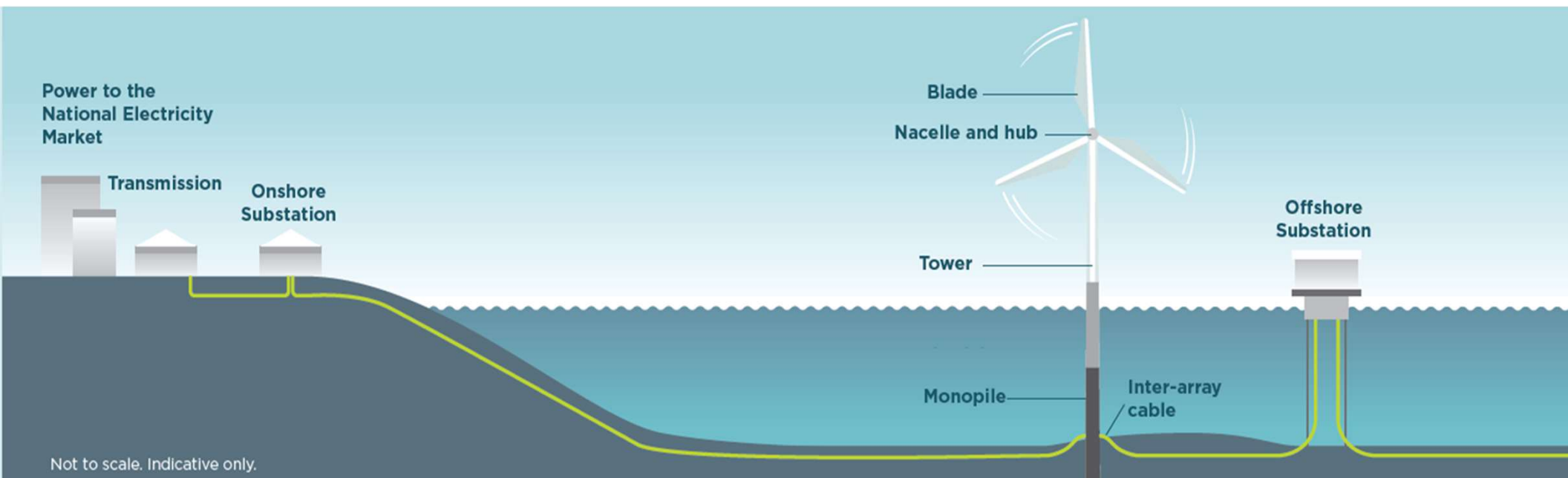
*Indicative only, not to scale

--- Offshore connection - - - Onshore connection — Transmission lines



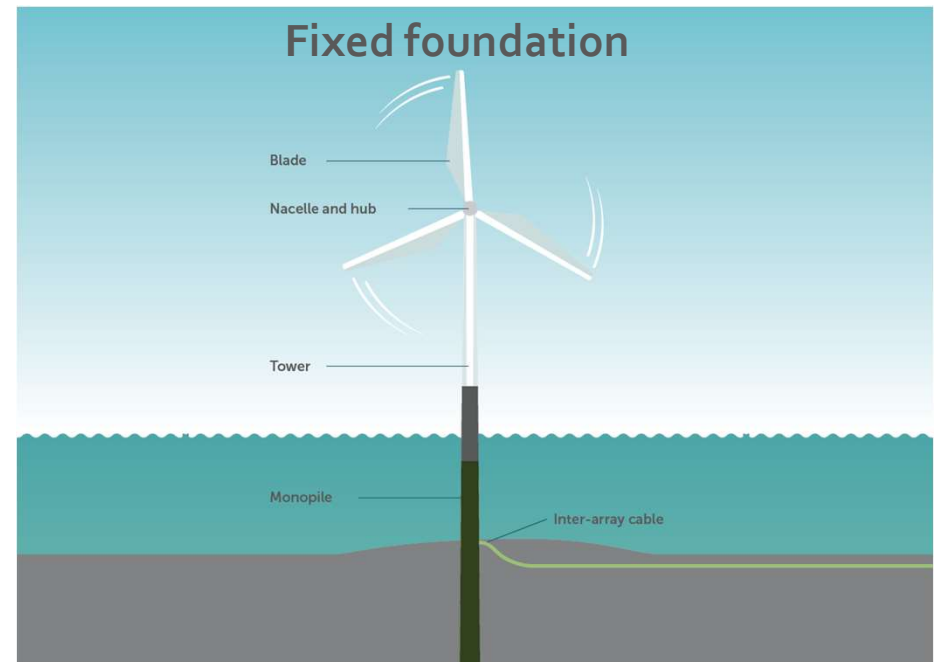
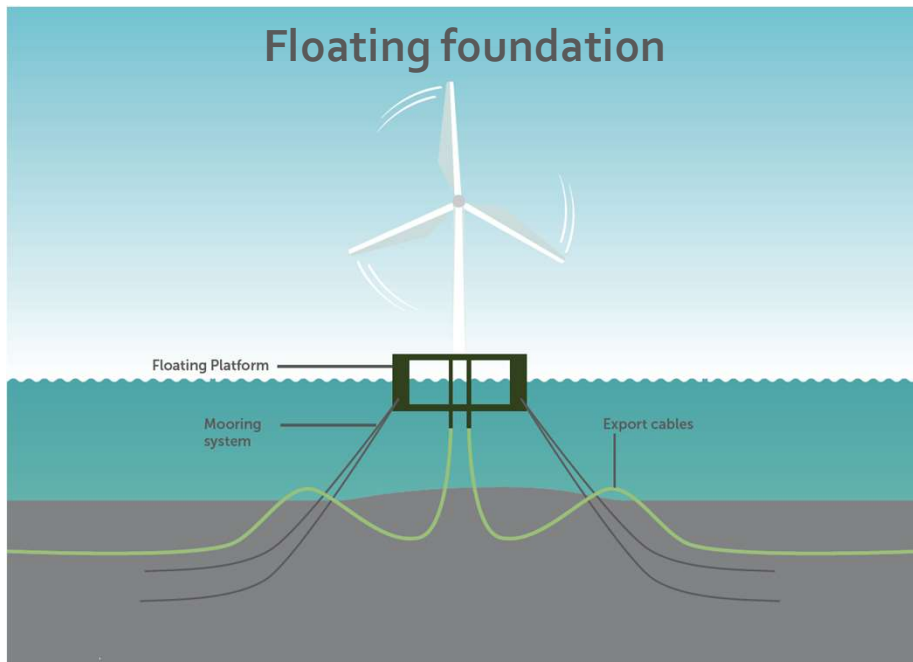
Typical Project Layout

1. Wind turbines are installed at sea and connected to an offshore substation with low voltage array cables. High voltage export cables bring power to shore.
2. The project connects to the national grid via overhead or underground transmission lines. Grid connection point and transmission route is not yet decided.

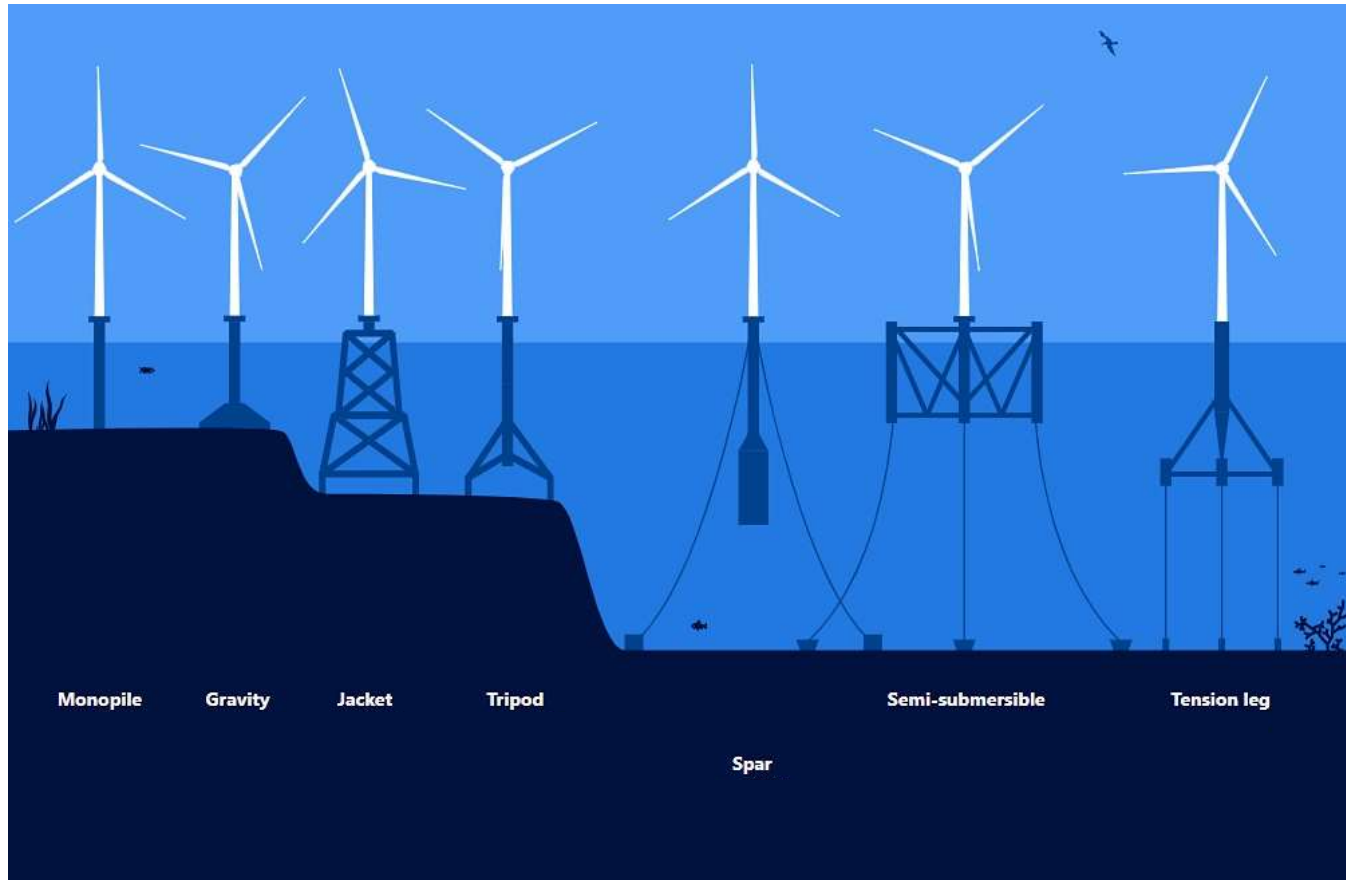


Foundation types

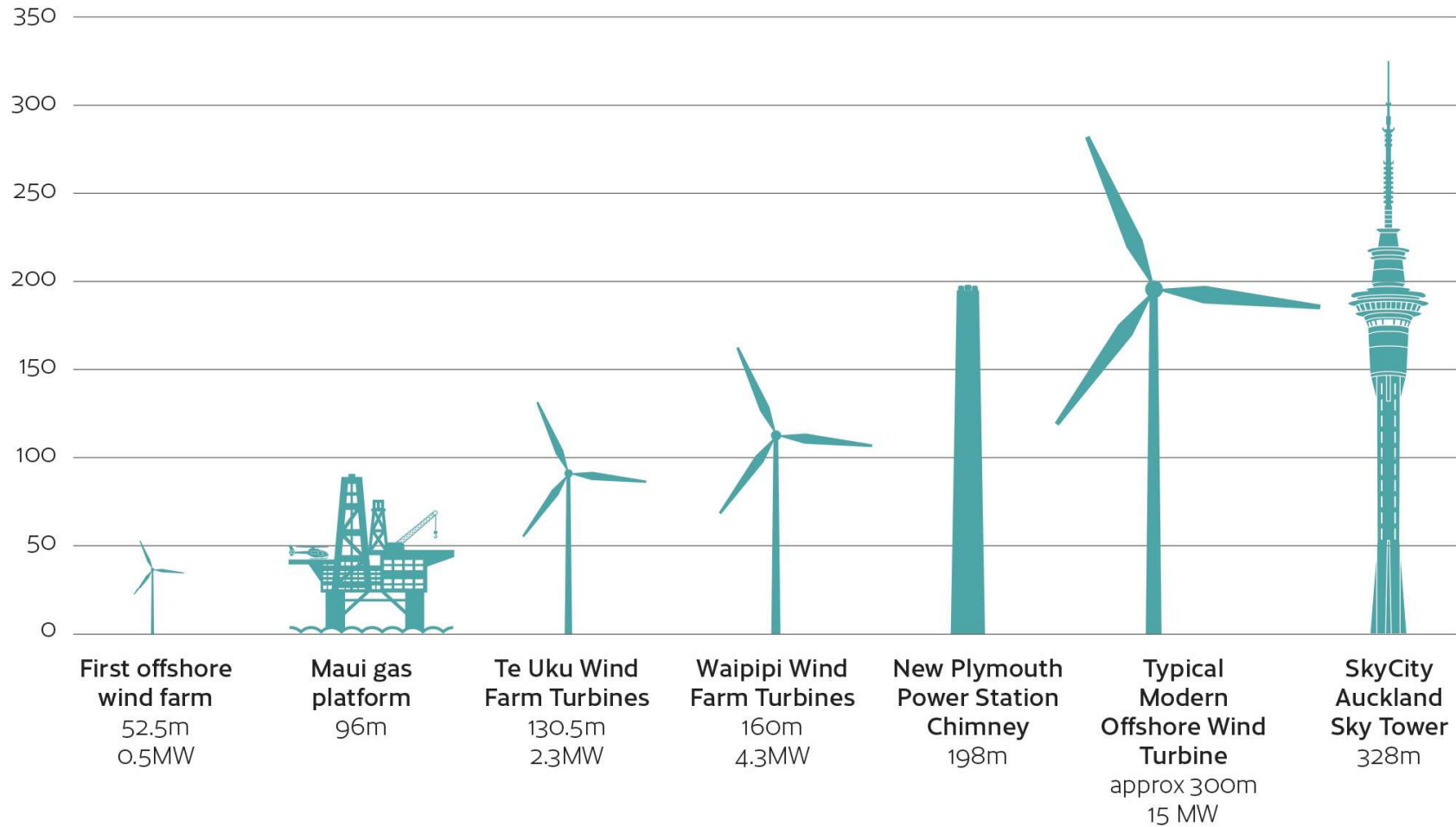
1. The choice of foundation is generally dictated by water depth and geotechnical conditions.
2. Geotechnical and geophysical surveys will be conducted after the grant of feasibility permits to determine the precise type of foundation adopted.



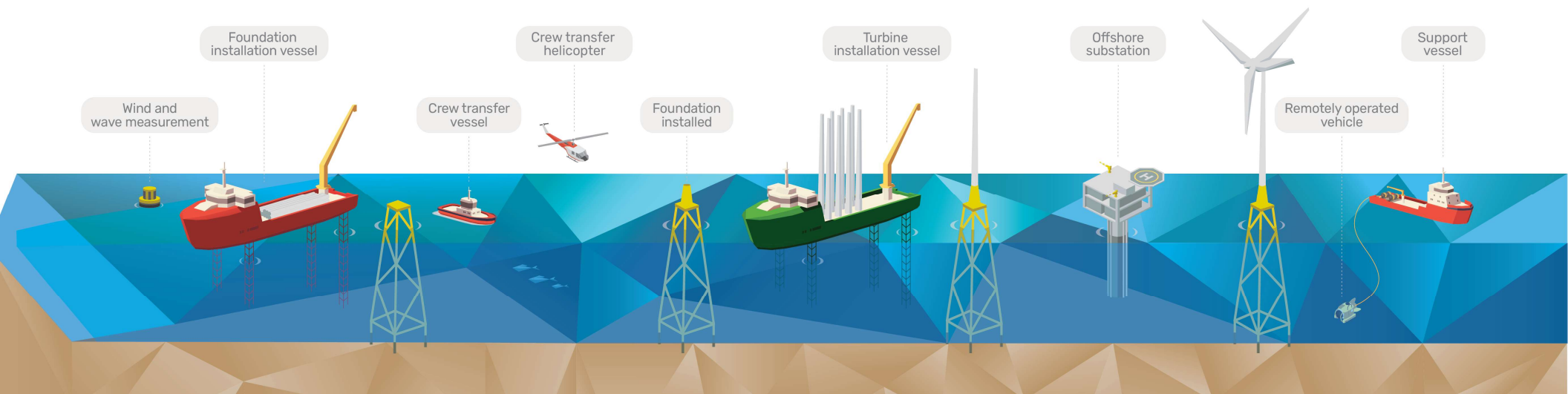
Foundation types



Turbine size



Project Phases

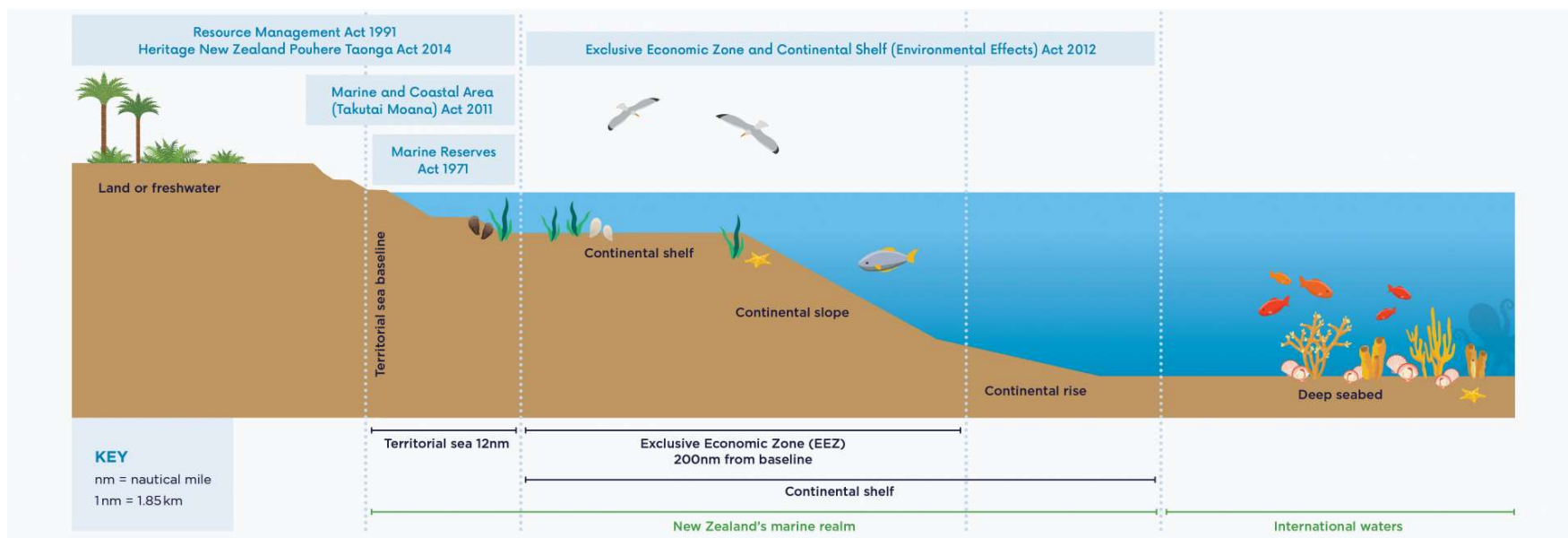


Skills lens...

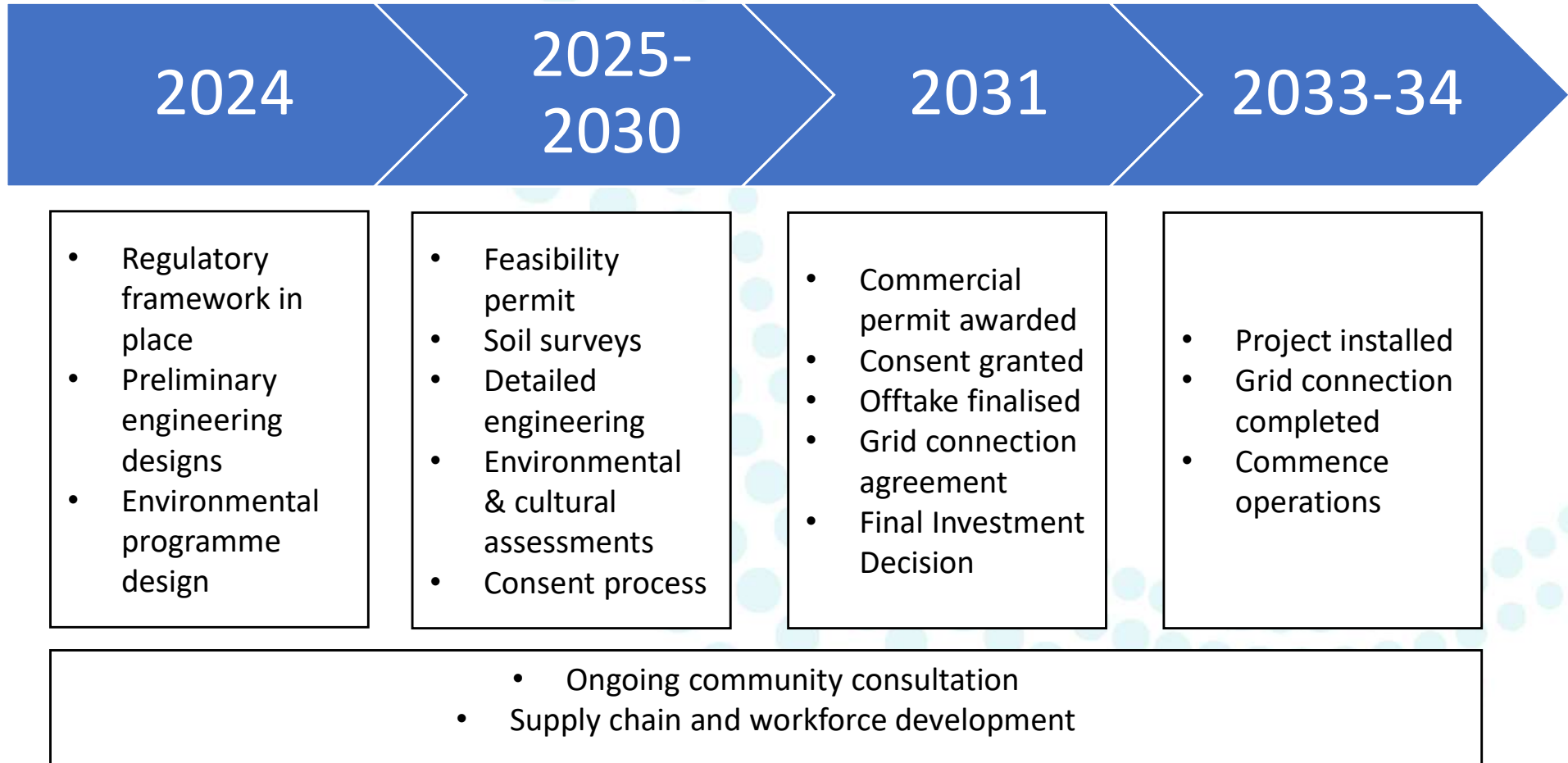
Project Phase	Feasibility and planning	Construction	Operation and maintenance
Duration (years)	4-8	2-3	30-40
Type of job profile	Planning Manager Contracts and Commercial Manager Procurement Manager Environment & Consent Manager Risk & Insurance Manager Quality Manager	Engineers (Project, Crane Inspection, Electrical Commissioning, SCADA) Cable Installation Specialist Fabrication Specialist/Manager Installation Technician Rigger Welder Site Manager Compliance Specialist Marine Warranty Surveyor Chief Engineer Package Manager Construction Manager Deck Supervisor Crane operator Marine (Coordinator, Steward, Master) ROV Technician Mechanical/Electrical Technician Apprentice Environment & Consent Manager	Asset Integrity Engineer Blade Repair Technician Transfer Vessel Crew Wind Turbine Technician Wind Yield Performance Analyst Mechanical/Hydraulics Technician Coating Inspector Control Room Technician Marine crew Rope Access Technician Radio Operator

Offshore wind regulatory framework

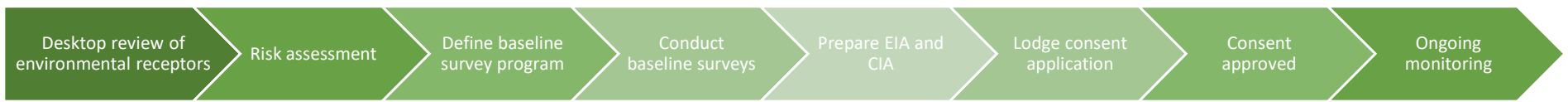
1. New Zealand does not currently have a regulatory framework to permit offshore wind development.
2. Offshore wind permit framework currently under development and expected to be in place by end of 2024.
3. Offshore wind projects will require:
 1. Consent (existing legislation)
 2. Permit (new legislation)
4. Detailed field studies (ie environmental, geotechnical) cannot begin until permits are granted (expected 2025).



Indicative Timetable



Environmental considerations



Metocean and Coastal Processes
Underwater Noise

Benthic Ecology
Marine Mammals
Natural Fish and Shellfish
Ornithology

Seascape, Landscape and Visual
Cultural Heritage and Marine Archaeology
Commercial Fisheries
Shipping and Navigation
Military and Civil Aviation
Socio-economics and Tourism
Other Considerations

Innovative technologies already in use to mitigate noise during construction

Noise Attenuation

Air bubble curtains alter the form of pressure waves, changing them from brief percussive bangs to longer, weaker waves, where the changed characteristic lessens harm to marine life which use ultrasound as orientation in water.

Noise reduction up to 90%

Interior diameter of hose
100-150 millimeters

**ScanTech
Offshore**
© ScanTech Offshore

Various Big Bubble Curtain options
available including near and far pile
noise mitigation systems



Various technologies under development to minimise impact on birds

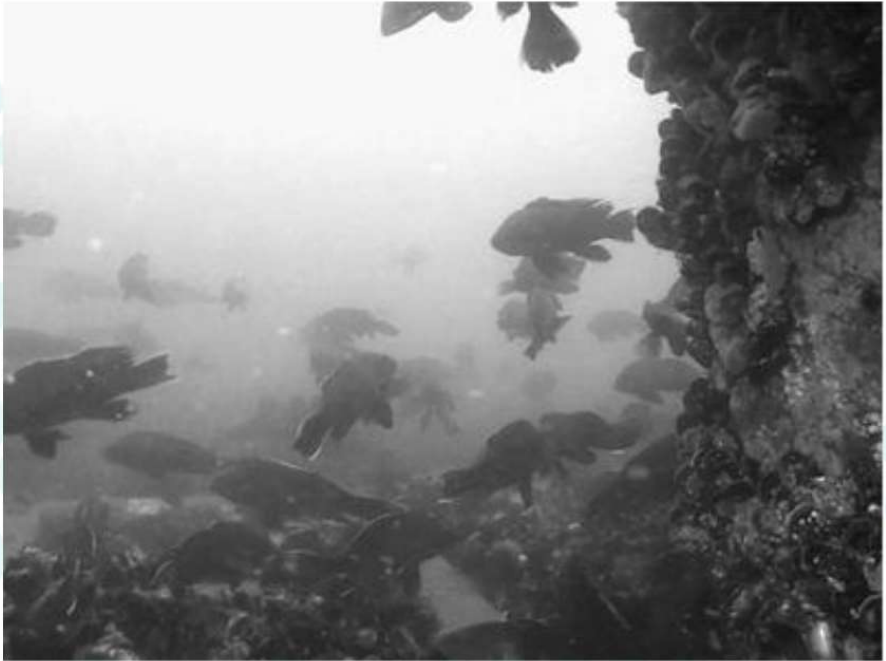
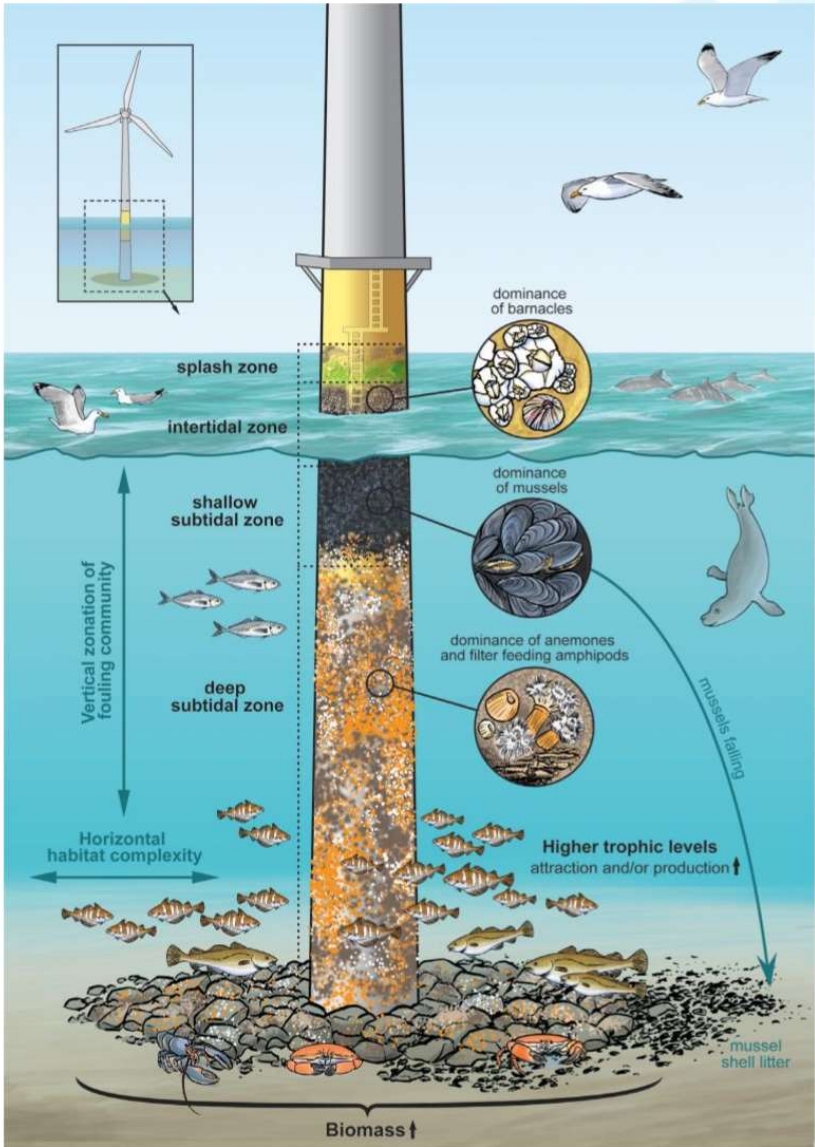
Depending on local species, this can include radar monitoring, acoustic deterrents, demand based lighting or smart curtailment systems

As the offshore wind industry grows more mature, detailed studies are providing better information about potential impacts which can inform improved future development decisions.



Wind turbine foundations have the potential to support ocean biodiversity

Some developers are exploring the potential to develop artificial reefs with offshore wind developments



100% Recyclable wind turbine blades now in production



Stakeholder engagement

1. Iwi and hapu – partnerships, environmental input, cultural assessments
2. Central Government – regulatory framework, infrastructure development, RMA reform, electricity market reform
3. District & Regional Councils – economic development, resource consents
4. Supply chain and training institutions – local capabilities, workforce development
5. Commercial fisheries – potential impacts, co-existence, synergistic development
6. Local community groups – potential impacts, community benefits programmes

Visual simulation – Ohawe Beach



Visual simulations for the Project have been prepared, with fixed-bottom turbines representative of the size proposed by the South Taranaki Offshore Wind Project superimposed on panoramic photos.

Visual simulation – Karioitahi Beach



Visual simulations for the Project have been prepared, with fixed-bottom turbines representative of the size proposed by the Waikato Offshore Wind Project superimposed on panoramic photos.

Visual simulation – Port Waikato



Visual simulations for the Project have been prepared, with fixed-bottom turbines representative of the size proposed by the Waikato Offshore Wind Project superimposed on panoramic photos.

Ngā mihi

