Offshore Wind in Aotearoa
Pure Offshore Wind Player

33.1 GW

Scotland
- Ørsted
- 3.3 GW

Wales and England
- 2.0 GW

France
- 0.8 GW

Portugal
- Greenvolt
- 1.3 GW

Spain
- sener
- 1.3 GW

Italy
- 5.6 GW

Philippines
- 7.6 GW

Australia
- 6.6 GW

Taiwan
- 1.0 GW

New Zealand
- 2.8 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
Project Concept
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
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
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

- Monopile
- Gravity
- Jacket
- Tripod
- Semi-submersible
- Tension leg
- Spar
Turbine size

- First offshore wind farm: 52.5m, 0.5MW
- Maui gas platform: 96m
- Te Uku Wind Farm Turbines: 130.5m, 2.3MW
- Waipipi Wind Farm Turbines: 160m, 4.3MW
- New Plymouth Power Station Chimney: 198m
- Typical Modern Offshore Wind Turbine: approx 300m, 15 MW
- SkyCity Auckland Sky Tower: 328m
Project Phases

1. Site selection
2. Feasibility
3. Development & consenting
4. Construction, installation & commissioning
5. Operations & maintenance
6. Decommission or refurbishment

Offshore wind project lifecycle

- Site selection: 4 - 8 years
- Feasibility: 2 - 3 years
- Development & consenting: 30 - 40 years
- Construction, installation & commissioning: 1 - 2 years

Wind and wave measurement
- Crew transfer vessel
- Foundation installed
- Turbine installation vessel
- Offshore substation
- Remotely operated vehicle
- Support vessel
## Skills lens...

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

2024
- Regulatory framework in place
- Preliminary engineering designs
- Environmental programme design

2025-2030
- Feasibility permit
- Soil surveys
- Detailed engineering
- Environmental & cultural assessments
- Consent process

2031
- Commercial permit awarded
- Consent granted
- Offtake finalised
- Grid connection agreement
- Final Investment Decision

2033-34
- Project installed
- Grid connection completed
- Commence operations

- Ongoing community consultation
- Supply chain and workforce development
# Environmental considerations

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<th>EIA Topics</th>
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<td>Other Considerations</td>
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- Desktop review of environmental receptors
- Risk assessment
- Define baseline survey program
- Conduct baseline surveys
- Prepare EIA and CIA
- Lodge consent application
- Consent approved
- Ongoing monitoring

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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

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

© ScanTech Offshore
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 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.
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Ngā mihi