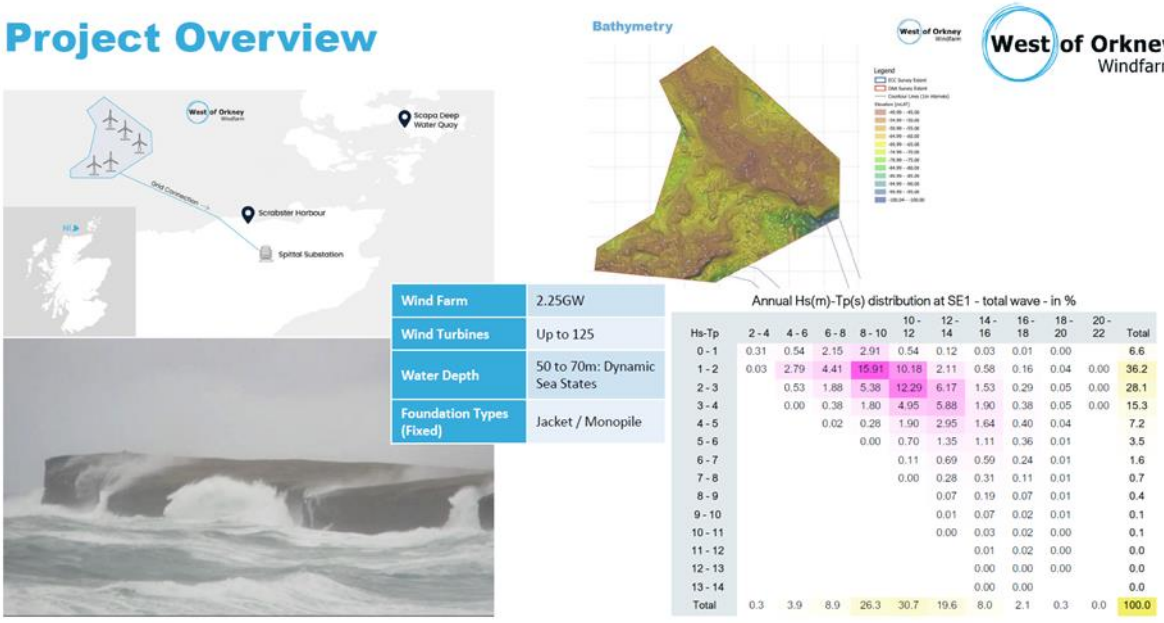
Offshore Wind R&I Programme Call Pack One

As part of the Offshore Wind Research and Innovation Programme, EMEC, sponsored by the West of Orkney Windfarm, are looking to fund several projects. Projects in this innovation call must fall under at least one of the two identified themes: metocean conditions (call pack one) and/or short weather window installations for offshore wind turbines (call pack two).

Metocean - wind, waves & current

Background: The West of Orkney Windfarm wishes to explore techniques to gain new insights into the marine climate of the project, its cable route, ports and transit routes. Primarily, to gain an insight into new or site-specific applications of science or technology to improve our understanding of the marine climate at the site, transit routes or coastal assets. Additionally, to gather measurements and explore new techniques that furnishes the project with live data or improved forecasts that allow better weather sensitive operational decisions to be made during surveys, construction or operations and maintenance (O&M). This includes the wind, wave and current conditions at site, and how these might change over the life of the wind farm.



Annual Hs(m)-Tp(s) distribution at SE1 - total wave - in %

Hs-Tp	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12	12 - 14	14 - 16	16 - 18	18 - 20	20 - 22	Total
0 - 1	0.31	0.54	2.15	2.91	0.54	0.12	0.03	0.01	0.00		6.6
1 - 2	0.03	2.79	4.41	15.91	10.18	2.11	0.58	0.16	0.04	0.00	36.2
2 - 3		0.53	1.88	5.38	12.29	6.17	1.53	0.29	0.05	0.00	28.1
3 - 4		0.00	0.38	1.80	4.95	5.88	1.90	0.38	0.05	0.00	15.3
4 - 5			0.02	0.28	1.90	2.95	1.64	0.40	0.04		7.2
5 - 6				0.00	0.70	1.35	1.11	0.36	0.01		3.5
6 - 7					0.11	0.69	0.59	0.24	0.01		1.6
7 - 8					0.00	0.28	0.31	0.11	0.01		0.7
8 - 9						0.07	0.19	0.07	0.01		0.4
9 - 10						0.01	0.07	0.02	0.01		0.1
10 - 11						0.00	0.03	0.02	0.00		0.1
11 - 12							0.01	0.02	0.00		0.0
12 - 13							0.00	0.00	0.00		0.0
13 - 14							0.00	0.00			0.0
Total	0.3	3.9	8.9	26.3	30.7	19.6	8.0	2.1	0.3	0.0	100.0

Call aims:

1. To understand the wind, wave and current conditions at site and en route to inform decisions regarding design, installation and O&M. This may include vessel choice and the activities that can be performed within specific weather windows, which need to be well defined.

2. To supply improved measurements and weather forecasts to support increased use of available weather windows and reduce the risk presented by the marine weather to people, cargo and vessels.

Priorities: Your application must include/deliver:

- A comprehensive description of your innovation, how it compares to current practice, and how it addresses this specific innovation call.
- A description of how your innovation would be implemented in a wind farm project such as the West of Orkney Windfarm, and how it would reduce the time, cost, and/or risk of delivering the project for the developing partners.
- A description and assessment of the use of the Scottish supply chain and an estimate of the likely Scottish supply chain content of the final product or service.
- Tailored solutions specific to the West of Orkney Windfarm (applicability to other projects is welcome).
- Comply with the project timescales as set out in the Scope and Guidance Document.
- A statement explaining why grant funding is required for your innovation, and of any match-funding, in-kind, or other contribution that you are willing to contribute, as set out in the Scope and Guidance Document.

Examples:

- Downscaled computational fluid dynamics (CFD) wind modelling at installation harbours.
- Cluster deployments of low cost wave sensors.
- Contribution of in-air and in-water drone technology to improved weather forecasting and observations.
- Wave and current measurements from satellite observations.
- Improvements to forecasts by using far field wind and wave measurements west and north of the project.
- Use of satellite products to visualise or improve weather forecasting and interpretation.
- In-depth analysis of forecast interpretation – identifying and improvement of blockages to absorption of forecast information.
- Synthetic-aperture radar (SAR) or radar long range remote sensing.
- Use of novel platforms such as kites or balloons to gather low cost measurements at ~ 100m above the sea surface.
- Measurement buoys/ floating light detection and ranging (FLiDAR).
- Seabed sensors and live data retrieval from sea floor sensors.
- Satellite measurements of metocean processes.
- Downscaling and coupling of ensemble forecasts.
- Other advanced modelling and prediction techniques; predictions vs actual analysis.

Information provided: To support your innovation, we can provide the following information regarding the project and site on request:

- Overall project description.
- Project site plan.
- Bathymetry.
- Metocean hindcasts, measurements and reports available to date.

Additional information: If you feel there is more information that would be beneficial to inform your innovation that the West of Orkney Windfarm might already hold, please provide a detailed description to emec@offshoreinnovation.scot. If such information is not already held but is essential for developing your innovation, please provide where such information might be obtained/at what cost and include this within your application.