

# ORBITAL

MARINE POWER



WESTRAY TIDAL ARRAY



# ABOUT ORBITAL MARINE POWER

Orbital Marine Power (Orbital) is a Scottish renewable energy company focused on the development of pioneering tidal stream turbine technology. Founded in Orkney in 2002, it is one of the islands' larger private employers, with 22 people based at its headquarters in Hatston.

Orbital now employs 43 people across Orkney, its Edinburgh operations, and remotely.

The company is committed to building a home-grown renewable energy industry in the UK. Its current O2 turbine was manufactured domestically and all prototype testing has been carried out at the European Marine Energy Centre (EMEC) at the Fall of Warness, Eday, with 70% of the expenditure associated with operating its turbines benefiting the Orkney supply chain.



*The launch of the O2 in 2021 marked the first vessel launch from Dundee since shipbuilding ended over forty years ago. 80% of the turbine supply came from the Scottish or UK supply chain.*



# ABOUT ORBITAL MARINE POWER

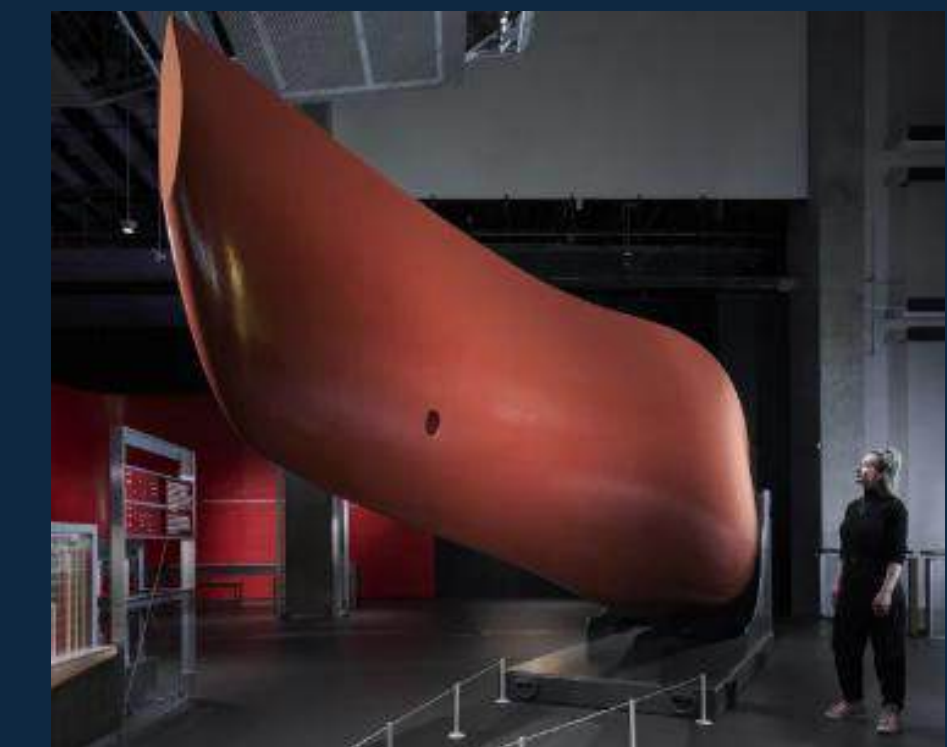
Over the past 20+ years, we have developed and refined our technology, culminating in the Orbital O2, the most powerful tidal turbine in the world. It is a 74m long floating superstructure, supporting two 1 MW turbines on either side for a nameplate power output of 2 MW. It can generate enough clean, predictable electricity to meet the demand of around 2,000 UK homes.

We have had the privilege to share our journey with dignitaries, celebrities, major news outlets, and the public, showcasing Scottish energy engineering expertise.

Orbital is now entering its next phase of growth - expanding from single-turbine deployments to the development of multi-megawatt tidal arrays to create high-skilled jobs and reduce the UK's carbon emissions.



[Duke and Duchess of Cambridge visit the O2](#)



[SR2000 blade at Science Museum in London](#)



[Young Engineers and Science Clubs Scotland Celebration](#)



[Sponsorship of Orkney Youth Development Group](#)



[Bloomberg Originals Series: An Optimist's Guide to the Planet](#)



[Guy Martin's Great British Power Trip](#)

# THE WESTRAY TIDAL ARRAY



The tidal farm, or 'array', will comprise up to 70 O2-X tidal turbines, similar to the turbine currently deployed by Orbital at EMEC, with an anticipated operational life of 25 years.

The array will also include mooring systems for each turbine, inter-array electrical cabling connecting the turbines, and up to five export cables. The export cables will make landfall at the EMEC site at Caldale, Eday.

The final turbine layout remains subject to detailed design and ongoing assessment. The configuration is being developed in consultation with key stakeholders (NatureScot, Orkney Islands Council) and other marine users, including Orkney Ferries, cruise ship operators and local vessel operators, to help ensure safe and efficient use of the surrounding waters.



Development Boundary (red) and export cable corridor (black)

## O2-X turbine details:

- Rated Power: c. 2.4 MW
- Displacement: c. 1000 metric tonnes
- Rated Current Speed: 2.5 m/s
- Hull length: c. 90 m
- Approximate diameter of hull tube: 4 m
- Hull tube height above sea-level: 1.8 m
- Rotor diameter: up to 26 m
- Mooring lines – 4 per turbine



O2-X and Mooring system



Orbital O2-X tidal array mock-up

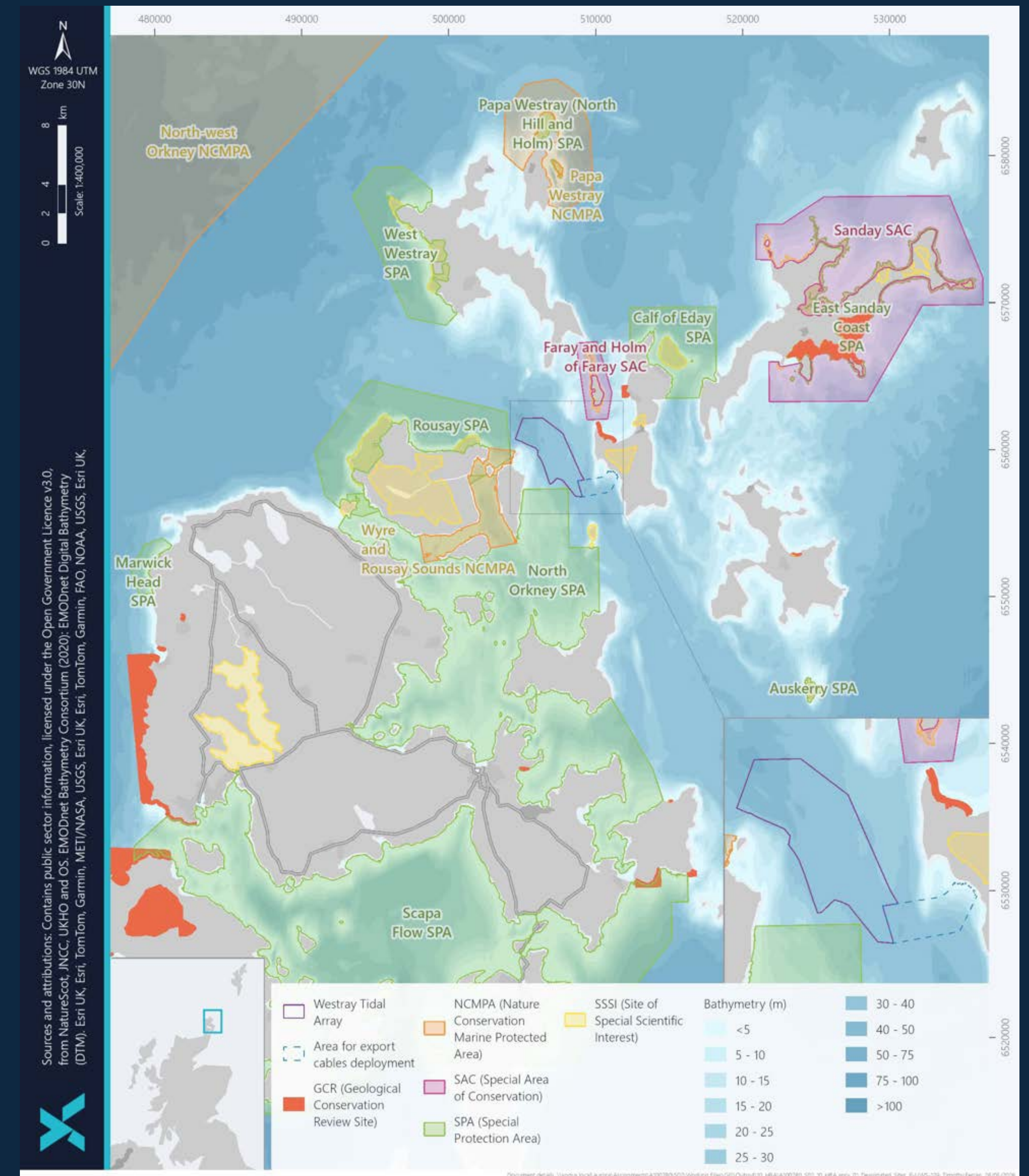
# THE WESTRAY TIDAL ARRAY – SITE SELECTION



The Westray site has been identified as an excellent location for a tidal energy array for a range of technical, environmental and practical reasons:

- The project area lies within the Tidal Option Areas identified in the draft Scottish Sectoral Marine Plan for Offshore Wind, Wave and Tidal Energy (2013).
- The site benefits from fast tidal flows (peak flood tidal speeds up to 4.5 m/s), suitable water depths, and relatively calm sea conditions, making it well suited to offshore operations. The area is also not subject to commercial fishing activity. All project infrastructure will be located at depths of 30m LAT and deeper in line with local fishery requirements.
- It is located outside all local, national and internationally designated wildlife protection areas.
- There are no Historic Marine Protected Areas or Protected Military Remains within the proposed development area.
- The site is adjacent to the existing EMEC site, creating opportunities to share electrical export cable routes and associated infrastructure, thereby reducing construction impacts and minimising seabed disturbance.

The Westray project also represents a significant opportunity to build on existing collaboration with local supply chain companies, helping to scale up the tidal energy sector while maximising economic benefits for Orkney and Scotland.



The Westray development boundary is outwith wildlife and habitat protection areas

# ENVIRONMENTAL ASSESSMENT



The environmental assessment process helps identify and reduce potential effects of the proposed tidal array on the marine environment, local communities and other sea users. This work forms part of the Environmental Impact Assessment (EIA), which supports the planning and consent application and process.

## What is Assessed?

A wide range of topics are considered during the assessment process, including:

- Marine mammals – such as seals, porpoises, dolphins and whales
- Fish and shellfish
- Seabirds
- Benthic habitats and seabed ecology
- Marine and coastal processes
- Navigation and safety
- Landscape and seascape character
- Cultural heritage and archaeology
- Local communities and socio-economic impacts
- Tourism and recreation

Specialist surveys, modelling and consultation with regulators and stakeholders help inform the assessment.

## Consultation and Ongoing Engagement

The assessment process includes past and ongoing engagement with:

- Fisheries representatives
- Environmental organisations
- Marine users and navigation bodies
- Scottish regulators and statutory consultees

Feedback received during consultation helps shape the project design and environmental mitigation measures. We encourage you to complete one of our questionnaires.

## Mitigation and Avoidance

Environmental protection is considered throughout the project design process. Where potential impacts are identified, measures are developed to avoid, reduce or manage them.

Examples may include:

- Locating infrastructure away from sensitive habitats or key wildlife areas
- Designing cable routes to minimise seabed disturbance
- Timing construction activities to avoid sensitive periods for wildlife
- Using best-practice vessel management and noise reduction measures
- Implementing environmental monitoring during construction and operation

This approach follows the principle of avoid first, minimise second, and mitigate where required.

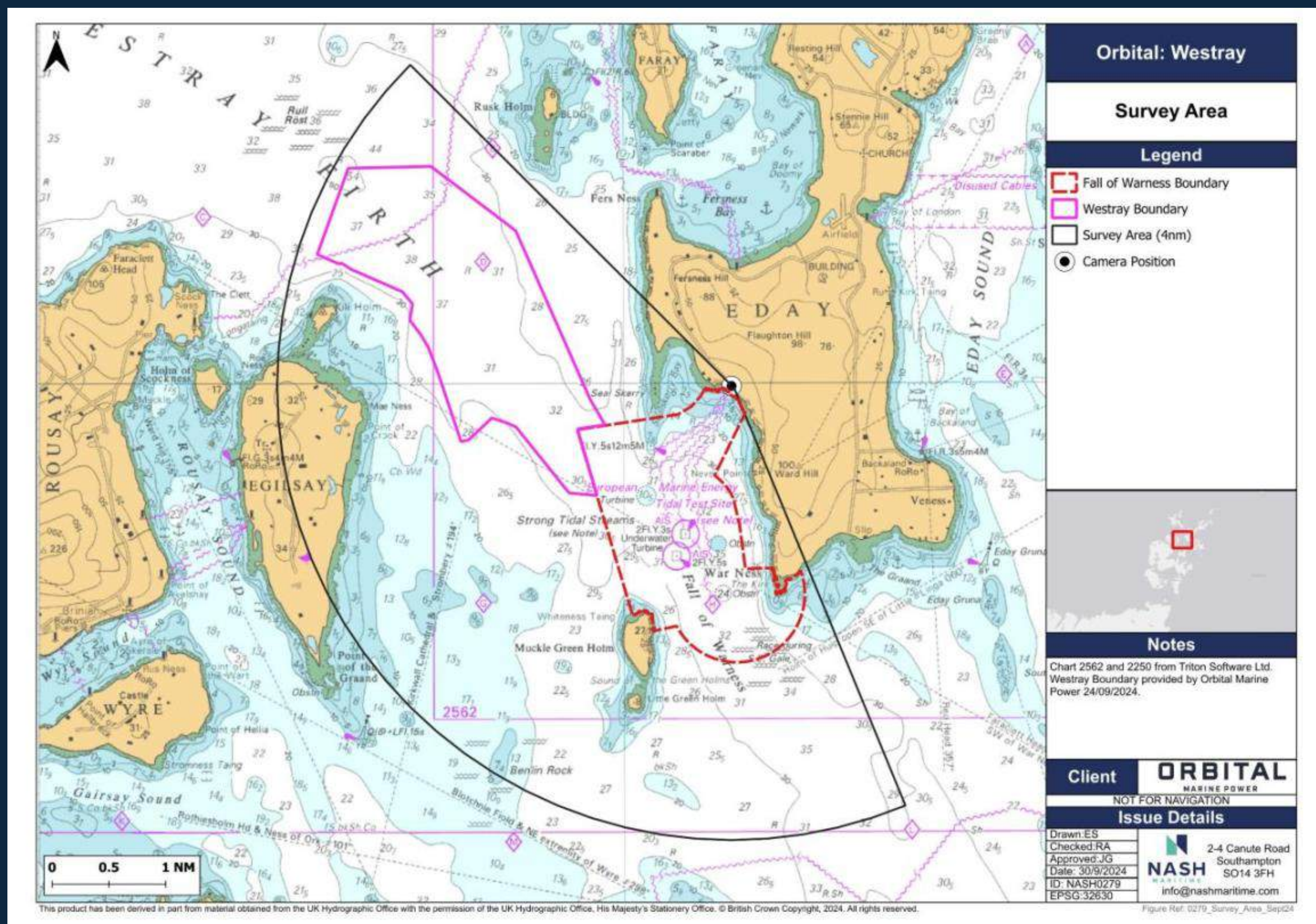
## Supporting Responsible Renewable Energy

Tidal energy has the potential to provide predictable, low-carbon electricity while supporting Scotland's renewable energy ambitions. The environmental assessment process helps ensure development is undertaken responsibly and with consideration for the surrounding environment and communities.

# ENVIRONMENTAL ASSESSMENT SURVEYS



- 22 site-specific boat-based surveys were carried out between April 2023 and March 2025, which provided visual and acoustic recording of marine mammals and visual surveys and counts of birds.
- Four cetacean species were recorded in the survey area (Harbour porpoise, Risso's dolphin, orca and minke whale), additionally a basking shark was recorded.
- Twenty seabird species (including diver and duck species) were regularly recorded during the surveys. In addition, six other seabird species and numerous wader, wildfowl and passerine species were encountered only occasionally.
- Summer and winter vessel traffic surveys were completed
- Geophysical surveys were completed – accurately mapping the seabed.
- Benthic (seabed habitat) surveys scheduled for Summer 2026 will inform the assessment of benthic ecology, fish and shellfish in the EIA including potential for protected features including maerl, kelp beds, seagrass, flame shell, sand eels and skate. The survey will employ 35 km-long transects of high resolution underwater remote cameras.



Vessel traffic survey coverage



Bird and marine mammal vessel survey coverage

# CREATING A HOME-GROWN RENEWABLE ENERGY SECTOR



At Orbital we believe the transition to a sustainable energy system should deliver far more than clean electricity alone. It should also create meaningful, long-term opportunities for the people, communities and industries that will help build and support it.

Our commitment to UK manufacturing reflects a broader belief that the journey to net zero should strengthen local economies, support highly skilled employment, and help revitalise Britain's industrial capability. By investing in domestic expertise and supply chains, we are helping to ensure that the benefits of the energy transition are shared across communities throughout the UK.

In Orkney, the long-term operation and maintenance (O&M) requirements of this 25-year tidal energy project are expected to create significant and sustained employment opportunities through ongoing marine operations, engineering support, vessel services, environmental monitoring, inspection and asset maintenance. This creates the potential for stable, highly skilled local jobs and apprenticeships, while supporting the growth of specialist marine and renewable energy services within the region. Over the lifetime of the project, this sustained economic activity can help strengthen Orkney's role as a leading hub for marine renewable energy innovation and expertise.

By establishing a world-leading tidal energy industry, the UK has the opportunity to deliver predictable renewable power, enhance long-term energy security, support thousands of sustainable jobs, and develop a strong export market for decades to come.



O2 fabrication and assembly team at Dundee



O2 being commissioned at EMEC with local workboats

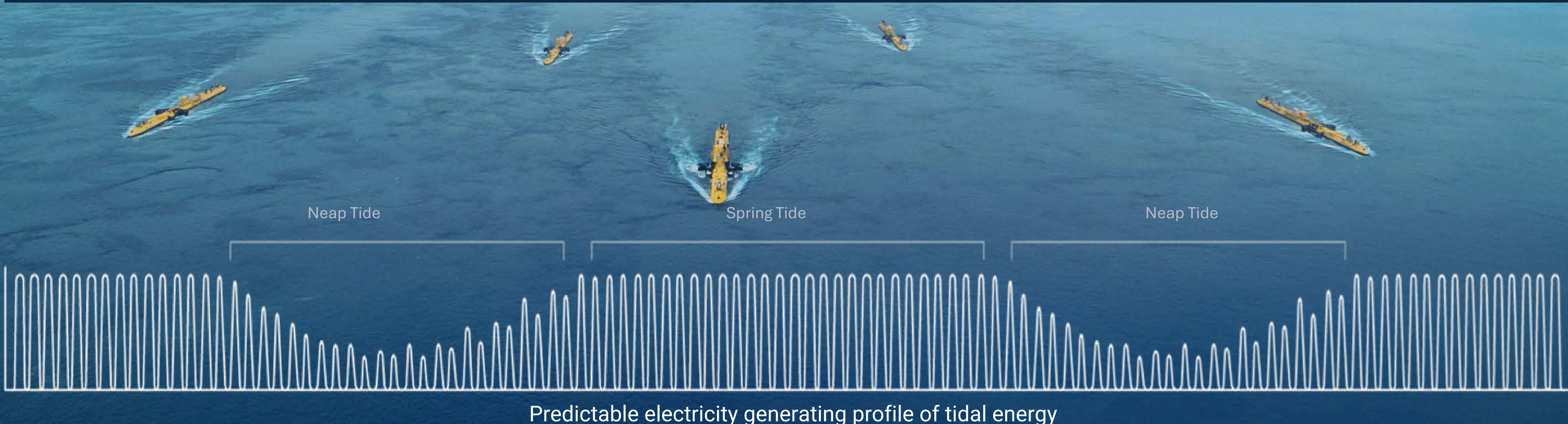
# REDUCING CARBON EMISSIONS



Tidal stream energy is one of the most predictable and reliable forms of renewable electricity generation because tidal currents are driven by consistent gravitational forces from the Moon and Sun. Unlike solar and wind power, which depend on changing weather conditions and daylight availability, tidal stream systems can generate power with highly accurate forecasting years in advance. This predictability improves grid stability and reduces the need for large-scale energy storage or backup generation.

While energy is required during the construction phase of tidal energy projects, primarily through the use of steel in turbine manufacture, these emissions are typically offset within one to two years of operation. Beyond this point, projects provide net low-carbon electricity, helping to reduce reliance on fossil fuel generation within the UK grid. In practice, this reduces the need to burn natural gas for electricity generation, lowering carbon emissions while also strengthening long-term energy security.

Orbital's turbines are also compatible with newer, lower-carbon methods of steel production, including Electric Arc Furnace (EAF) technology, which uses recycled steel and avoids reliance on traditional coal-fired blast furnaces. This positions the company to source low-carbon steel from UK manufacturers, supporting both emissions reduction and the future growth of the UK steel industry.



# PROJECT TIMELINE



**2026**

**End 2026**

**End 2027**

**2028 - 2030**

**c. 2031 - 2060**

Community and Stakeholder Engagement. Complete environmental assessments

Submit planning applications (marine license and Section 36 consent application) to Marine Directorate on behalf of Scottish Ministers

Planning consent (subject to Scottish Ministers determination timescales)

Detailed Design, financing and procurement

Project construction and operation

# LEAVE YOUR FEEDBACK



Thank you for taking the time to join us at this event and for your interest in the Westray Tidal Array. We would very much value your feedback as we seek to review and refine our plans and would be grateful if you could take a few minutes to share your views and any comments on our proposal.

Please fill out the feedback form and leave it in the box provided or go online and submit feedback through our website, [www.orbitalwestray.com](http://www.orbitalwestray.com) or via email at [westray@orbitalmarine.com](mailto:westray@orbitalmarine.com)

You can also return the form to:

Orbital Marine Power  
Innovation Centre – Orkney,  
Hatston Pier Road  
Kirkwall  
Orkney  
KW15 1ZL.

The closing date for feedback is **13<sup>th</sup> July 2026**

Please note that any comments received are not representations to the Scottish Ministers. When a planning consent application is submitted, there will be a further opportunity to make a direct representation on that application to the Scottish Ministers.