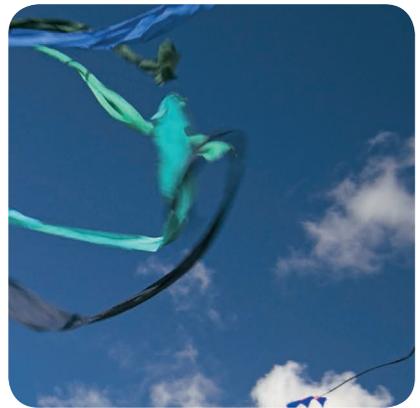


RPS

Offshore Renewables and Cables



Expertise for offshore
renewables projects



RPS Group

2



RPS is an international consultancy providing advice upon:

- project development and operation
- exploration and production of energy and other natural resources
- management of the environment
- due diligence
- health and safety of people

As a FTSE 250 company with over 5,000 employees in offices worldwide, RPS delivers a unique range of technical, environmental, planning, and management skills.

This multi-disciplinary mix coupled with a leading project management capability and extensive offshore expertise sets RPS apart from other consultancies.

We are involved in some of today's most important and challenging infrastructure, environmental, energy and development projects – shaping and influencing our world.

RPS

Offshore Renewables and Cables

The offshore renewables sector, incorporating wind, wave and tidal energy and associated cables and interconnectors is central to delivering renewable, sustainable and secure energy to meet global needs.

RPS has long-recognised the importance of this sector and since 2001 has worked on over 150 renewable energy projects worldwide, for over 50 clients, including developers, regulatory authorities and governments. Our particular expertise in offshore renewables and cables benefits from over 30 years experience in the offshore oil and gas industry and our extensive experience of onshore planning.

Our broad spread of in-house specialist skills, coupled with our track record of successfully completed projects, has helped to ensure that RPS is recognised as a leading global technical consultancy by the offshore renewables industry.

In the offshore renewables and cables sector, RPS provides all the necessary services to support project development, project inception to construction and operational support.

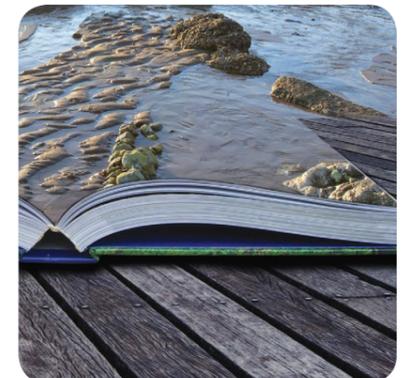
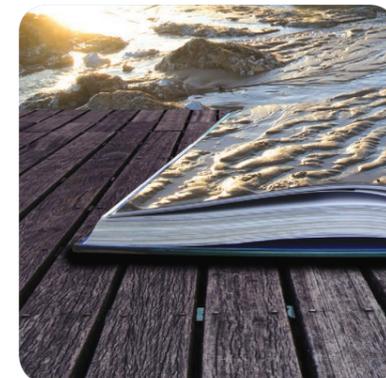
At the beginning of the cycle, we assist in site and route selection, project design and optimisation and environmental impact assessment (EIAs); we engage with stakeholders and conduct due diligence. In the survey phase, we manage geotechnical, geophysical, environmental and ecological surveys (onshore or offshore). In support of construction, we can manage tenders and contracts, health and safety, and undertake foundation and

cable installation supervision, and consent compliance.

Our practical knowledge of the entire design, consent and post-construction process means the RPS team is able to provide sustained advice through the entire sequence of development activities. In addition, RPS staff have excellent relations with many of the stakeholders involved in the consenting process.

We are able to offer a one-stop shop for project development, with all the benefits this provides, fostering an in-depth understanding of the client's needs and the inter-related aspects of developing offshore projects.

3



RPS Capabilities

A summary of the key capabilities provided by RPS is detailed below

4

Site/route selection

GIS-based spatial constraints analysis · Wind flow modelling, wave and tidal resource modelling · Metocean analysis and modelling · Onshore site, route selection and planning assessments · Cable route selection studies · Due diligence · Structural loading (wind, wave, currents) · Cable/sand wave interaction · Marine spatial planning · Habitat and species sensitivity analyses · Sediment transport modelling for cable and pipeline burial operations

Project development

· Experienced EIA project managers · Scoping through to Environmental Statement (on and offshore) · Liaison with engineering teams · Regulator and Stakeholder consultation · Development of mitigation strategies · Assessments for the Habitats Directive · Representatives for Planning examination

Specific subtasks for Environmental Risk Assessments and EIA/ES preparation:

· Benthic Ecology · Fish and Shellfish Ecology · Marine mammals · Ornithology · Geology and Physical Processes · Nature Conservation · Marine Archaeology · UXO · Landscape and Visual Assessment · Airborne Noise Assessment and Modelling · Commercial Fisheries · Oil and Gas Issues · Comprehensive onshore in-house capabilities

Survey design and management

Geophysical, geotechnical and metocean survey design and management · Offshore environmental surveys (marine mammals, metocean, ornithological, marine ecological, fisheries) · Onshore surveys associated with onshore infrastructure (ecology, archaeology, landscape, transport, noise, hydrogeology, flood risk, protected species surveys) · Provision of project management and Quality Control (QC) services for offshore surveys · Data Management

Operational support

Post construction integrity surveys · Advice on remedial works · Geophysical and geotechnical survey design and management · Maintenance works risk analysis · Design and management of environmental surveys · Environmental consent compliance

Construction support

Tender contract management and review · HSE services · Provision of CDMc · Client representative during piling and cable installation · Marine mammal observer (MMO) services · Jack-up leg penetration analysis · Cable burial assessment · Unexploded Ordnance (UXO) assessment · In construction consent compliance · In-construction monitoring · Pollution prevention plans · Stakeholder and regulator liaison · Provision of Environmental Liaison Officers

Consent compliance

Liaison with key stakeholders · Assistance with procurement processes for developers · Contractor management · Development of construction mitigation plans

5

Project Life Cycle

Offshore renewables and cables projects require the integration of a diverse range of technical skills within an evolving regulatory and commercial environment.

RPS has a unique mix of planning, environmental, geological, engineering and regulatory specialisms that combine to assist clients in the effective design and

implementation of offshore renewables and cables.

RPS offers expertise and support in all the key life-cycle phases of projects.

We can provide input ranging from the provision of discrete, technical advice on key issues to the creation of large, multi-disciplinary teams that can take a project

from its early stages of site selection and feasibility to the construction phase via EIA, survey and consent compliance. The key is flexibility, which comes with having a large and diverse range of experts, enabling RPS to quickly and easily tailor services to the client's needs.



Site/Route Selection

6



RPS provides a detailed site and route selection service to all parts of the offshore renewables and cables sectors. We use GIS-based spatial analysis techniques to identify the location of potential offshore wind sites and cable routes as well as analysing potential wave and tidal energy sites via computational resource modelling, environmental screening and constraint mapping. RPS has also developed an in-house tool to evaluate and quantify environmental sensitivity of marine habitats and ecosystems to offshore renewable energy developments.

RPS's knowledge of the broader offshore renewables industry also enables us to provide due diligence services to potential investors seeking to acquire stakes in offshore projects.

Recent Project Examples:

- GIS spatial analysis, scoping assessments and desk-based geological and geotechnical reviews to assist developers in the site selection and bid process for Round 3 and Scottish Territorial Waters offshore wind programmes **Various Developers**
- Computational modelling and GIS assessment to identify potential tidal energy sites to assist developers in the site selection and bid process for the Pentland Firth licence awards: **Various Clients**
- Due Diligence on Sheringham Shoal offshore wind farm: **StatoilHydro**
- Tidal Resource Site Selection and Environmental Appraisal: **Sub Sea Turbines Ltd.**
- Marine Renewable Energy Strategy Framework. Three-year project, GIS constraints analysis for wave and tidal development, development of an interactive web portal, project management and stakeholder engagement: **Welsh Government**
- Offshore Wind Energy and Tidal Energy Resources Assessment: **Northern Ireland and Republic of Ireland**
- Irish-Scottish Links on Energy Study (ISLES), feasibility of developing an offshore interconnected transmission network: **EirGrid, Northern Ireland Executive, Scottish Government**
- Ecological Services Modelling for Rhode Island Ocean SAMP, development of the Technical Development Index (TDI) and Ecological Value Map (EVM)SM: **Rhode Island Coastal Resources Management Council (CRMC)**
- Developing Environmental Protocols and Modelling Tools to Support Ocean Renewable Energy and Stewardship: **U.S. Bureau of Ocean Energy Management (BOEM)**
- Evaluation of the Relative Environmental Sensitivity and Marine Productivity of the Outer Continental Shelf (OCS): **BOEM**



Project Development

7

RPS has extensive experience at the development and consenting phase of offshore renewable and cable projects, leading both the onshore and offshore aspects. We have managed the EIA process (alongside the provision of in-house topic specialists) for major offshore projects, including Hornsea Zone Project One and Project Two, Atlantic Array, London Array, Gunfleet Sands (I, II and III), Lincs and Triton Knoll, as well as providing technical input to the EIA/EIS/EA process for others, including Race Bank, Docking Shoal, Westermost Roughs, Horseshoe Shoal in Nantucket Sound and Atlantic OCS offshore Massachusetts.



Recent Project Examples:

- Lead EIA consultant for Hornsea Project One and Project Two, Atlantic Array, London Array, Gunfleet Sands (I, II and III), Triton Knoll, Ormonde (offshore and onshore work): **Various clients**
- Technical support on marine ecology issues during Planning Inspectorate (PINS) Examination Phase, including presentation of evidence at hearings, Triton Knoll: **RWE**
- Technical support during the PINS Pre-Application and Examination Phases in the applications for the consents required to construct and operate the Atlantic Array wind farm: **RWE**
- Marine mammal advisor for the development of the Beatrice offshore wind farm and associated infrastructure in the Moray Firth, Scotland: **SSE Energy/SeaEnergy**
- Omithology environmental impact analysis: **various clients in UK waters**
- Computational modelling and geological assessment of tidal demonstration device in Northern Ireland: **Marine Current Turbines**
- Metocean and geological studies offshore Vancouver: **Naikun Wind Developments Inc.**
- Marine mammal elements of Zone Appraisal Assessment for Irish Sea: **Centrica**
- Provision of lead EIA personnel for three proposed wind farms in Moray Firth: **EDPR UK**
- Specialist omithology and marine mammal input into EIA for MeyGen Tidal Stream Project: **MeyGen Ltd**
- Environmental Statement co-ordinator for Lincs EIA: **Centrica**
- Analysis of Potential Impacts from a Proposed Wind Farm at Horseshoe Shoal in Nantucket Sound: **Cape Wind Energy LLC**
- Commercial Lease Issuance and Site Assessment Activities on the Atlantic OCS Offshore Massachusetts EA: **BOEM**
- Literature Review on the Environmental Risks, Fate and Effects of Chemicals Associated with Wind Turbines on the Atlantic Outer Continental Shelf: **BOEM**

Survey Design and Management

8 RPS provides a co-ordinated service covering both the offshore and onshore elements of offshore renewables and cables projects.

The ability to provide a truly integrated service in both the marine and terrestrial environment, together with our track record of successfully managing such projects, sets RPS apart from other consultancies.

- Compilation and refinement of desk-studies
- Preparation of survey specifications and ITT documents
- Management of tender process for contractors
- Site operations HSE/QA
- QC of the data acquisition and survey reporting
- Final interpretation of design parameters and site investigation reports
- Geotechnical peer review on foundation design, cable burial and cable protection measures
- Client and HSE representation
- Vessel audits, (geophysical, geotechnical and IMCA)
- Terrestrial and marine ecological surveys
- Boat-based bird and marine mammal surveys
- Data analysis and technical reporting

Recent Project Examples:

- Design of geophysical survey campaigns for Round 3 Zones: **Crown Estate**
- Integrated the geophysics and geotechnics to develop a geological model to better understand sub seabed conditions in order to aid engineering foundation design for Dogger bank: **Forewind**
- Geophysical and Geotechnical survey strategy and management for Dogger Bank Zone developments and development of new geotechnical models: **Forewind**
- Co-ordination and management of post-construction monitoring surveys at Lynn and Inner Dowsing offshore wind farms: **Centrica**
- Co-ordination and management of during-construction omithology surveys at Lincs offshore wind farm: **Centrica**
- Tender review and provision of offshore supervision for Lincs geotechnical survey: **Centrica**
- Design and execution of marine ecological surveys at Atlantic Array and Triton Knoll: **RWE npower renewables**
- Marine Mammal mitigation implementation during piling activities at the Beatrice Wind Farm demonstrator project, including marine mammal observations and passive acoustic monitoring: **SSE Energy/SeaEnergy**
- Tender review and provision of offshore supervision for Tidal Energy geophysical survey: **E.ON**
- Bird and marine mammal surveys undertaken for MeyGen Tidal Stream Project: **MeyGen Ltd**
- Sediment Transport Analysis of Cable Installation for Block Island Wind Farm and Block Island Transmission System: **Deepwater Wind Block Island, LLC**
- Provision of Client Representative personnel during Fish Ecology, Omithological and Benthic Ecology surveys over proposed Dogger Bank wind farm site and cable route: **Forewind**
- Provision of Marine Mammal Observation, Passive Acoustic Monitoring and Acoustic Deterrents during construction piling for the HVDC platform Dolwin Alpha: **ABB**
- Management and execution of boat-based offshore bird and marine mammal surveys across the Irish Sea Round 3 Zone: **Centrica**

Consent Compliance

RPS has first-hand experience of ensuring compliance with all key offshore and onshore planning and consent conditions. With our unique in-house combination of qualified planners, environmental consultants, marine scientists and technical specialists, we are uniquely placed to make sure offshore renewable and cable projects move smoothly from consent award to construction and beyond in line with consent conditions.

Our well-established relationships with key stakeholders and regulatory entities helps ensure an efficient and professional solution to consent related issues. RPS also offers the possibility of seconding staff directly to offshore developers, to perform the role of consent managers within individual project teams.

Through our survey design and management service, RPS provides planning and management of geophysical and geotechnical surveys and the detailed environmental monitoring programmes typically required for offshore renewable projects.

9

Recent Project Examples:

- Managing post-construction monitoring programme and providing consents support during Operational and Maintenance phase activities at Lynn and Inner Dowsing offshore wind farms: **Centrica**
- Managing during-construction omithological monitoring requirements for Lincs offshore wind farm: **Centrica**
- Managing during-construction and post-construction monitoring programme for Ormonde offshore wind farm: **Vattenfall**
- MMO consent compliance work at Gunfleet Sands: **DONG**
- Onshore environmental audits: **DONG**
- HSE manager on Ormonde: **Vattenfall**



Construction Support

10

As part of a "total life-cycle" service to the offshore renewables and cables sectors, RPS can supply either individual project managers or project teams to assist our clients with the planning and implementation of the construction phase of offshore projects. Our personnel are chosen specifically to meet the clients' needs and to supplement their own staff. RPS personnel have a thorough working knowledge of the offshore industry with expertise in:

- Development and issue of ITT's to contractors
- Project management support
- Provision of HSE personnel
- HSE audits, safety systems and safety case
- Offshore supervision (owners representative/QC) during installation
- Jack-up leg penetration analysis
- Geodetic support, dimensional control and survey
- Post construction survey management and support
- Consents and Environmental toolbox talks / instructions to contractors
- Provision of CDMc

Recent Project Examples:

- Supply of construction team personnel to Round 1 and Round 2 projects: **Centrica**
- Jack-up leg penetration analysis: **Smit Marine Projects and A2SEA**
- FEED and anchor design for construction plant: **Marine Current Turbines**
- Supervision of piling operations on Burbo Bank: **DONG**
- Preliminary Engineering design for turbine foundations and cable connections: **Solway Offshore Ltd/Offshore Energy Resources Ltd**
- Project Management of Installation at EMEC: **Open Hydro**
- Consents and Environment Manager for Lynn & Inner Dowsing: **Centrica**



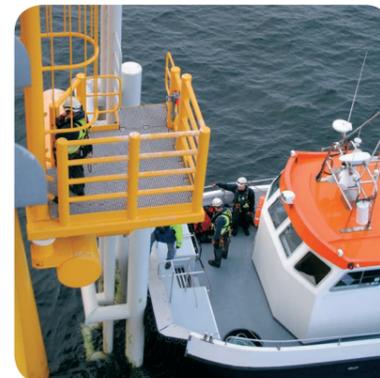
Operational Support

During the operational phase of a project, RPS offers a wide range of services to our clients.

Key services available during the operational phase include design and management for monitoring surveys, HSE, consent compliance, environmental monitoring, analysis of cable integrity surveys and advice on remedial works.

Recent Project Examples:

- Operational phase consent compliance and management of post construction monitoring and reporting for Lynn & Inner Dowsing offshore wind farm: **Centrica**
- CDM Planning Supervisor – Kentish Flats offshore wind farm: **Elsam**
- Operational phase consent compliance for Lynn & Inner Dowsing offshore wind farms: **Centrica**
- Advice on remedial works for Arklow Bank: **GE Energy**





For further information
please contact:
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UK | USA | Australia | Canada | Malaysia | Russia | Middle East | Brazil | Singapore