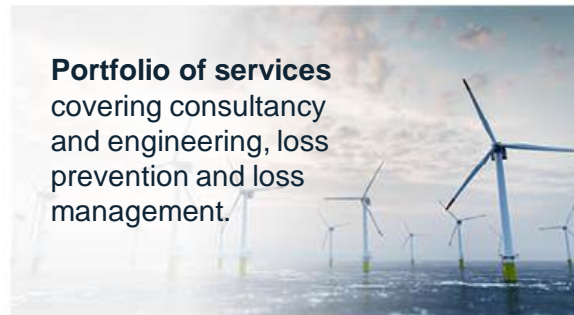
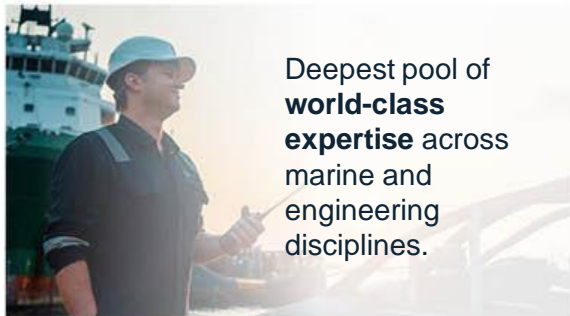


A collage of three images related to energy and marine industries. On the left, a row of wind turbines against a blue sky. In the center, a large ship, possibly a cargo or oil tanker, viewed from above. On the right, an offshore oil platform with a helicopter landing pad.

The **Energy & Marine** Consultants.

Corporate Presentation

The ABL Group



The **Energy** and **Marine** Consultants.

ABL Group is a leading global independent **energy and marine consultant** working in **energy and oceans** to de-risk and drive the transition across the **renewables, maritime** and **oil and gas** sectors, offering our customers the deepest pool of **world-class expertise across marine and engineering disciplines** from more than **300 locations** worldwide.



Seek The Truth

Quaerite vera – to seek the truth – is at the heart of all that we do and how we do it.

It is the core of our business, seeking the truth in terms of being an impartial 3rd party whether providing surveys, audits, inspections, analysis, engineering, opinion, or expert witness.

It is also at the heart of how we do business; we never compromise on quality and integrity and we are transparent and open in our business ethics.

Quaerite vera was the motto of the **Salvage Association** (now incorporated into **ABL Group**) who were established in 1856 and originally incorporated by royal charter in 1867. **Seeking the truth on the request of customers is still the core of our business.**



ABL2030 – Sustainability

*“At **ABL Group** we recognise that for our business to be successful in the age of climate crisis and energy transition, we must redefine what we do in a genuine way to put sustainability at the centre of all strategy and operations.*

*We published our first Sustainability Report in our 2019 Annual Report, this was really a statement and vision. A statement of intent with 5 key principals to guide and drive our journey. An outcome of this has been our commitment to **achieve 50% renewables or energy transition driven revenues by 2025** and **creating the foundation for our Environmental, Social and Governance (“ESG”) reporting.***

This year’s Sustainability Report will describe our actions to continually improve the integration of the **United Nation Global Compact** and its principles into our business strategy, culture and daily operations. By including this in our Annual Report to shareholders, we also show our commitment to share this information with our stakeholders using our primary channels of communication.*

*We launched a comprehensive process to establish best practice ESG reporting and to instil sustainability into the culture and forward strategy of the group last year calling it AqualisBraemar2030, I am delighted that I can rename this as **ABL2030.**” **



Reuben Segal, CEO



Our Employee Focus How we do business



Our Business Focus Where we do business



Our Markets



Our Service Portfolio



CONSULTING & ENGINEERING

- Technical due diligence
- Owner's engineering & construction monitoring
- Geotechnical & geophysical
- HSEQ & risk
- Marine operations
- Marine design, upgrade & conversion
- Site investigations
- Clean shipping
- Engineering & design
- Jack-up & wind far installation vessels
- Advance analysis & simulation
- Digital services
- Cable engineering
- Marine consulting
- Client Reps & secondments



LOSS PREVENTION

Marine surveys, inspections & audits

- Vessel and marine assurance
- Rig inspections and assurance
- Industrial standard audit
- Vessel condition survey
- Pre-purchase survey

Marine warranty survey

- Renewables
- Oil & gas
- Operations
- Project cargo
- Rig moving
- Decommissioning



LOSS MANAGEMENT

Marine casualty support & management

- Salvage & wreck removal
- Hull & machinery (H&M) claims
- P&I claims

Expert witness & litigation

- Energy expert witness & litigation
- Marine expert witness & litigations
- Marine casualty investigations

Global Partner, Local Expert



Offices



Countries



Locations



People



* Includes subcontractors on 100% utilisation basis. Calculated as an average during Q4 2021.
** ABL locate many staff strategically at maritime and offshore hubs to be able to serve clients locally
Additional note: the 39 countries number is driven by our offices, in terms of locations where we have surveyors etc we cover 71 countries, a truly global footprint



The ABL Group Family

Through targeted acquisition and organic growth, the **ABL Group** have built a comprehensive family of branded energy and marine consultancy companies offering services that are both complementary and interconnected. This allows our business lines, branded service companies, and expertise to focus closely on delivering technical excellence in engineering and consultancy, loss prevention and loss management.



ABL Group

ABL Group is a leading global independent energy and marine consultancy working in energy and oceans to de-risk and drive the energy transition across renewables, maritime and oil and gas sectors.



OWC

Project development services, owner's engineering and technical due diligence to the offshore renewables industry.



Longitude Engineering

Independent engineering, design and analysis services for the marine, renewables, oil and gas, defence and offshore infrastructure industries.



East Point Geo

Expert Geoconsulting organization supporting all sectors; providing efficient client-focused deliverables including data assurance, ground models and quantitative risk assessment.



OSD-IMT

Established in 1989, a specialist ship design house focused on offshore support vessels and clean shipping technology.



INNONSEA

Engineering advisory, verification, research and development, concept development and consultancy for marine renewable energy.



ABL Yachts

Superyacht surveyors and consultants.



Add Energy

Asset integrity management, well engineering and management, and operations consultants.



Some Of Our Customers

Renewables



Maritime & Energy Underwriters / brokers



Oil and Gas



ABL Group Offshore Wind Experience*



33+ FLOATING PROJECTS



13+ GW FLOATING CAPACITY



260+ OFFSHORE WIND PROJECTS

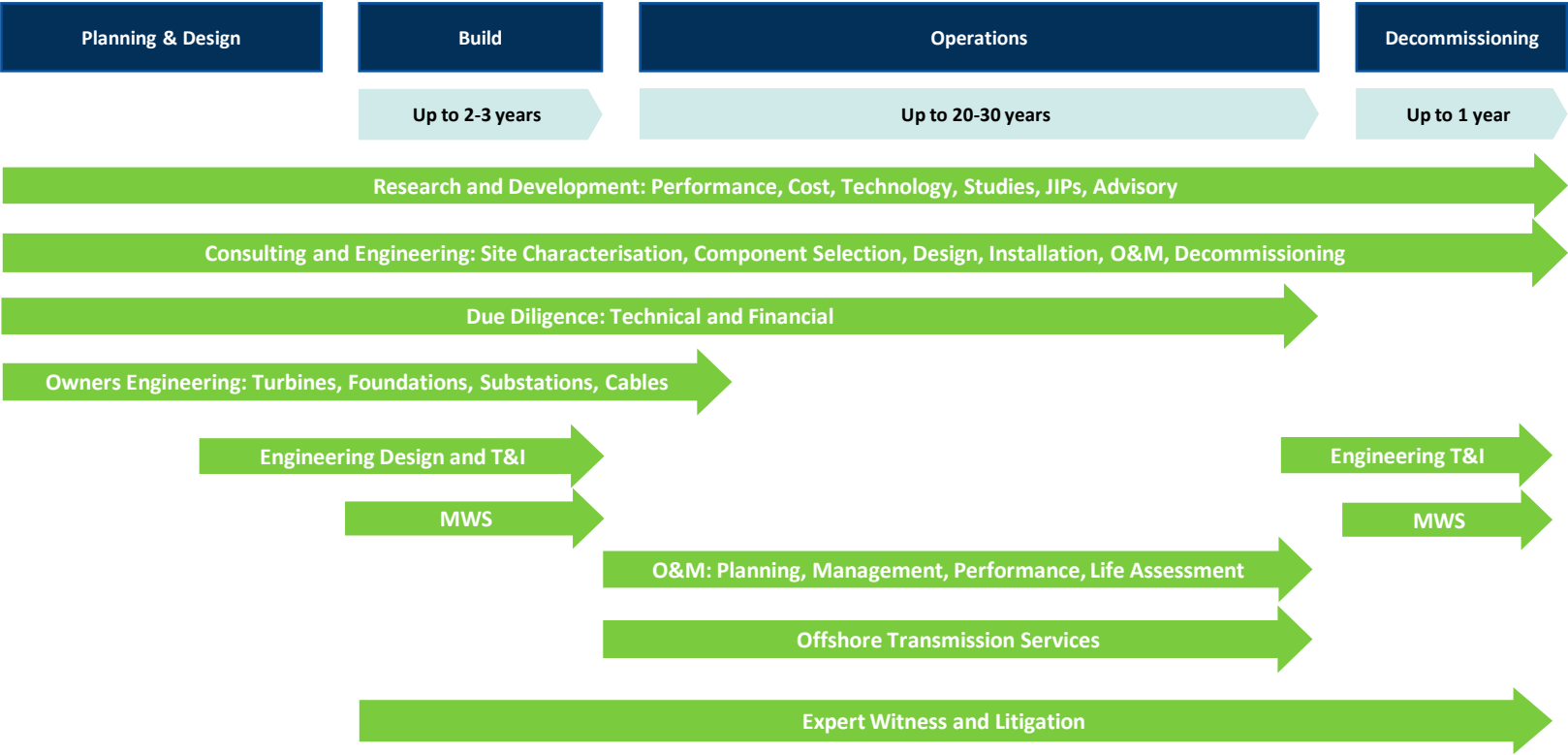


150+ GW TOTAL OFFSHORE WIND CAPACITY



Service Portfolio Spotlight

Renewables Service Offerings



A photograph of several offshore wind turbines in the ocean under a blue sky. The turbines are white with three blades each. A diagonal yellow line runs from the top right towards the bottom left, separating the image from a dark blue background.

Group Service Companies

© 2012-2022 ABL Group



Introduction

Long standing experience of developing and realising projects.

- The **Renewable Energy** Consultants.
- **Established in 2011** by a team of experts who had been involved in offshore wind farm construction **since 1990s**
- **Global specialist** renewable energy consultancy with a **local presence**

Providing **project development services, owner's engineering** and **technical due diligence.**

- **>100 offshore wind experts** in 9 countries
- Dedicated OWC teams in **London, Edinburgh, Hamburg, Warsaw, Taipei, Tokyo, Busan, Seoul, Boston, New York, Ho Chi Minh** and **Rio de Janeiro**

Renewables segments covered

Fixed OWFs



Floating OWFs



Floating Solar



Wave & Tidal



Onshore Wind



Solar



Battery Storage



Hydrogen



owcltd.com



Services

Specialist independent Marine Renewable Energies (MRE) multidisciplinary engineering and strategy advisory consultants.

- Flexible, comprehensive and dedicate engineering and design services
- **100% focus on MRE** in 5 key markets leveraging **leading R&D**

Providing services that cover the full development cycle of MRE technologies, Innosea supports developers and technology companies.

- >30 engineering specialists incl. PhDs and business consultants
- Dedicated Innosea teams in **Nantes, Marseille and Edinburgh**
- Our values:
 - Safety leadership
 - Excellence and on-time delivery
 - Client's satisfaction & dedicated account management

Renewables segments covered

Fixed OWFs



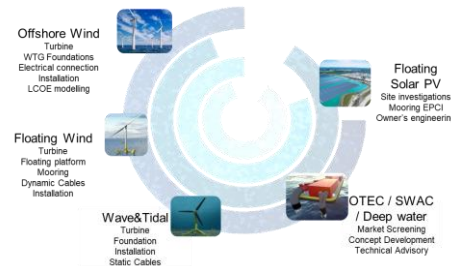
Floating OWFs



Floating Solar



Wave & Tidal



innosea.co.uk

Introduction

Independent geoconsulting for onshore and offshore projects.

- **Established** following collaborative work by the directors on **several major offshore projects**
- The founding ethos is to grow a **world leading consultancy that delivers clear answers**

Evaluating, problem-solving and guiding clients through geoscience application to **ground engineering challenges**, with experience in oil and gas, offshore wind, cable, tidal and onshore wind projects for major developers.

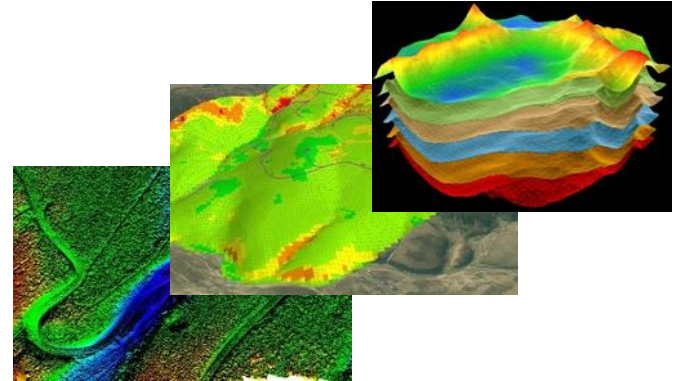
- Led by **3 directors with >50 years of collective experience**, supported by a highly qualified staff and a team of highly qualified associates
- Dedicated EPG teams in **Norwich** and **Oxford** in the UK

Sectors covered

Renewables



Oil & Gas



eastpointgeo.com



Introduction

Independent and specialist design and engineering services in the marine, offshore renewables, oil & gas, defence, and offshore infrastructure markets.

- **Established in 2006** to provide dedicated independent engineering and design consultancy, as part of the LOC Group

Consulting and engineering services are provided for **all marine structures** but with a particular focus on the **transportation, installation, construction, operations and decommissioning phases of offshore projects.**

- For **floating and fixed structures** these services are provided for the **whole lifecycle**, from concept to operations, life extension and decommissioning
- **>50 engineers in 6 countries**
- Dedicated Longitude teams in **Newcastle, London, Southampton, Exeter, Singapore and Boston**

Sectors covered

Renewables



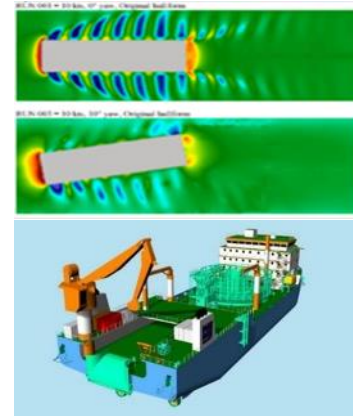
Maritime



Oil & Gas



Defence



longitude-engineering.com



add energy

Introduction

Engineering and **consultancy solutions** provider enabling **safety, compliance** and **profitability** in **operations** across a variety of sectors via specialised services in **asset integrity management, well engineering, management & control, safety** and **risk engineering** and **software solutions**.

- >140 consultants across 8 offices in 6 countries
- Services include:
 - Asset and integrity management (AIM)
 - Maintenance & reliability planning
 - Drilling, well engineering and management solutions
 - Carbon capture & storage (CCS) advisory
 - Safety and risk engineering
 - Software development
 - Technical risk services
 - HSEQ training

Sectors covered

Renewables



Maritime



Oil & Gas



Petrochemical




Manufacturing



Healthcare



addenergy.no

A photograph of an offshore wind farm with several wind turbines in the ocean under a blue sky. A diagonal yellow line separates the image from the dark blue background on the right.

Consulting & Engineering

© 2012-2022 ABL Group

Technical Due Diligence

Services

Our combined unparalleled technical and commercial expertise makes us a trusted resource during the due diligence phase of any renewables, marine or oil & gas acquisition.

Services include:

- Market studies
- Pre and post contract reviews
- Assessment of project schedule feasibility
- CAPEX and/or OPEX budget evaluation
- Grid connection and PPAs
- Evaluation of operating and maintenance costs
- Review of logistic concepts for construction and operation
- Review of geophysical and technical-studies
- Review of Energy yield Assessment (EPA) including check of applied uncertainties and technical loss factors
- Technology assessment
- Monitoring; construction and operational

Sectors covered

Renewables



Maritime



Oil & Gas



Offshore wind

OWC offers **specialist technical due diligence** supporting the financing, acquisition, sale and refinancing of assets, technology and companies within the offshore renewables market. **We have experience of offshore wind projects and value chain M&A from Europe to Asia.**

With our assistance, owners and financial institutions can obtain an objective expert view on the **actual project performance or asset value**, as an important input to the decision-making process related to loans, consolidation or acquisitions.

Owners Engineering

Services

When developing offshore wind farms it is vital to mitigate risks from day one. In doing so you need to fully understand all the risks associated with the project.

What we do:

- Specify project requirements
- Evaluate and understand the specific site conditions
- Technology evaluation
- Prefeed and FEED processes
- Risk management
- Contract strategy

For developers stretched and / or without adequate in-house resources available or new to the sector, we can provide the specialist guidance required during the development and construction phases through to commissioning and generation.

We cover the entire process and can either monitor or consult on a project on your behalf, or supplement your own team being fully involved in all aspects of the project.

Renewables segments covered

Fixed OWFs



Floating OWFs



Floating Solar



Wave & Tidal



OWC

ABL Group company OWC delivers **owner's engineering on fixed and floating projects in Europe, Asia and the US**. We support and ensure your project will run **on time** and **on budget** and will meet your objectives.

Owners Engineering

Services

- Site conditions and measurement
- Consents and environmental management
- Contracting strategy support
- Concept design, PreFEED and FEED
- Site investigation management
- Wind turbine selection
- Capex & Opex Assessment & Reviews
- Detailed design reviews and interface management
- Assurance strategy including project certification
- Electrical, grid and transmission
- Installation Concept Reviews
- Package Management (WTG, Inter Array Cable, Foundation, Export Cable, Onshore Grid Access, Construction, Site Investigation (soil, wave, wind), Certification, Design)
- Construction monitoring including site representation, progress monitoring, factory inspections and verification of works quality control and tests on completion
- Contract claims management
- Risk management
- Health and safety management
- Shipping and factory inspections
- Site inspections from mobilization through to commissioning, testing and take-over
- Defects and punch-listing
- Warranty, operations and maintenance support
- Preparation of Contingency Plans (Repair, maintenance & contracting strategies)



Construction Supervision and Offshore Project Management

Services

We provide teams to work throughout the construction or conversion of an offshore asset. The offshore project management team monitors the project to ensure that it is carried out in accordance with the contract, the specifications, client's expectations, flag and class requirements. Our services incl.:

- Detailed design review
- Development and implementation of project procedures
- Review of machinery and equipment purchase orders and specifications
- Development and implementation of project execution plans
- Monitoring of work progress and testing activity
- Monitoring of quality control of each activity throughout the construction
- Attendance at formal safety meetings
- Attendance at Factory Acceptance testing (FAT)
- Audits of subcontractor's facilities
- Attendance during sea trials and inclining experiments
- Reporting to the Client on a weekly and monthly basis
- Tracking of site queries, observing safety policy, monitoring quality control measures
- Maintaining electrical & mechanical completion and commissioning records and database
- Monitoring and reporting on extras and credits

Sectors covered

Renewables



Maritime



Oil & Gas



Qualification of staff

The offshore project management team consists of key personnel with the necessary skills to **ensure that the construction meets the build schedule.**

We provide teams of **experienced engineers and inspectors** of various disciplines to be utilised at different stages of the project. In addition, **dedicated planning and document control** functions are provided throughout the duration of the construction phase.

Project Development Services

Services

As more offshore renewable energy markets emerge, understanding, evaluating and securing project sites are extremely important tasks for developers. New markets bring new risks, but also new players and as offshore wind grows it becomes ever more competitive.

Via our OWC service business we support:

- The understanding new markets
- Site screening and selection
- Project concept development
- Bid preparation
- Supporting early development stages

We work with your team in the way that makes the most sense – either as a technical advisor or embedding into your development team.



Renewables segments covered

Fixed OWFs



Floating OWFs



Floating Solar



Wave & Tidal



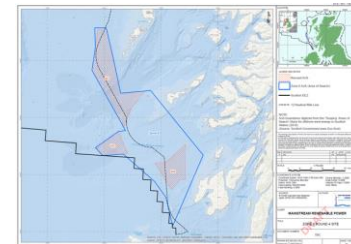
Recent experience

OWC has and is providing PDS for clients in UK's Round 4 & ScotWind leasing rounds and also in Poland, Japan, Taiwan and other jurisdictions.

Project Development Services

Services

- Understanding new markets
 - Tailored studies or reports; either as a formal deliverable or in a workshop environment to clients exploring market potentials
- Site screening and selection
 - Initial site prospecting with GIS-based constraint analysis approach
 - Preliminary analysis of the resource
 - Grid connection options (availability, onshore substations, timing, landfall areas, offshore cable routing, competing projects, HVDC vs HVAC)
 - Environmental and permitting constraints (aviation, defence, O&G infrastructure)
 - Other important siting factors and provide developers with rank-ordered development opportunities within a set geographical region
- Cost modelling
 - Development of refined DEVEX, CAPEX and OPEX models
 - Project LCOE calculation
- Project concept development
 - Identify the preliminary project boundaries
 - Undertake desktop consenting
 - Desktop geotechnical studies
 - Wind turbine selection study
 - Early conceptual design, site screening and pre-feasibility assessments / heat mapping wind resource assessment
 - Foundation screening to reduce the technical, cost uncertainties taking into consideration the site-specific physical conditions
- Propose the electrical architecture and related infrastructure including:
 - The transmission technology (HVAC/HVDC)
 - Sizing and siting of offshore substation(s)
 - Export cable route optioneering
 - Landfall and grid connection point identification
 - Port & harbour/supply chain analysis
 - Undertake high-level O&M Concept

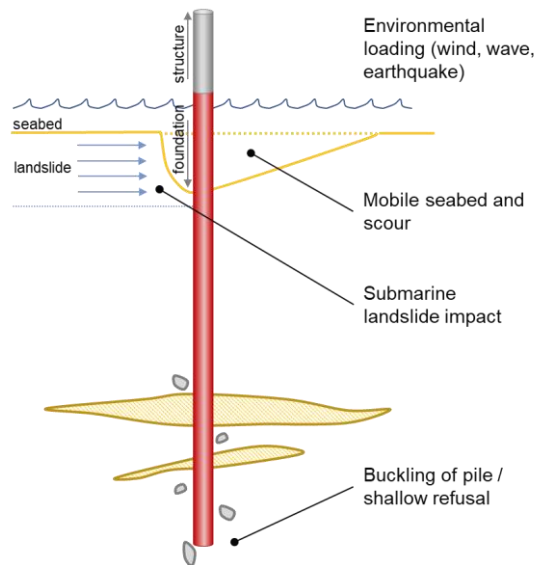


Geotechnical and Geophysical Consulting

Services

ABL Group are expert at site characterisation strategies, offshore site investigation (both geophysical and geotechnical), offshore site investigations, geotechnical design, installation analysis and jack-up leg penetration analyses for offshore oil and gas and wind turbine foundations.

- Ground Modelling & Geotechnical Interpretation
- Geospatial Analysis
- Geotechnical Design
- Foundation Installation Analysis
- Cable Route Analysis and Planning
- Jack-Up Leg Penetration Analyses
- Seismic Engineering
- Quantitative Risk Assessment
- Geospatial Data Management



Sectors covered

Renewables



Oil & Gas



Leading geoscience consultancy

OWC, East Point Geo and Longitude are leading geoscience experts across offshore and onshore wind, oil and gas and subsea power interconnectors.

- **48 offshore wind projects** of experience
- **Peat landslide risk** assessments / peat management plans / peat probing for onshore wind (incl. **SSE, SPEN, Innogy, Coriolis, Statkraft, EnergieKontor, Infinergy**)
- **Platform and pipeline field development**, ground model, geotechnical planning and interpretative reporting, seismic hazard analysis, foundation soil reaction spring assessment (**Caspian Sea, UBOC**)

Geotechnical and Geophysical Consulting

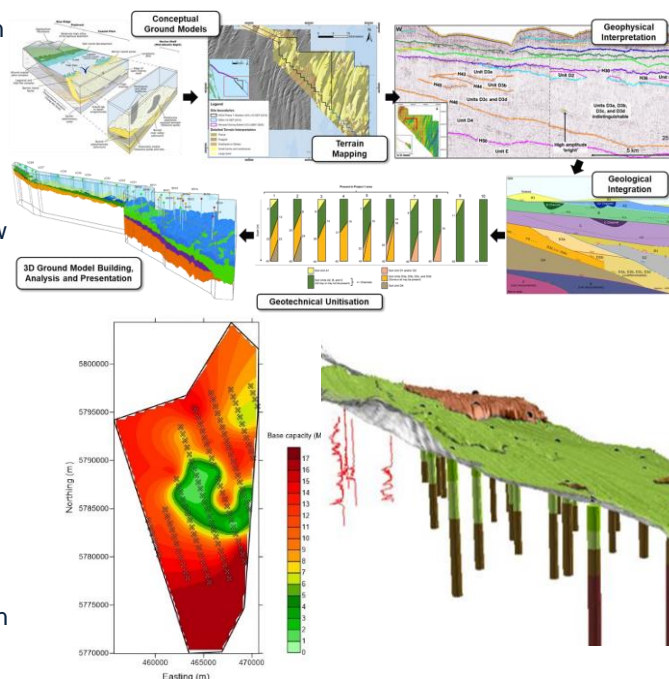
Services

- Ground Modelling & Geotechnical Interpretation

- Building of early stage ground models
- Iteratively update incorporate factual and interpretive geo-data, Incl. morphological (terrain), geophysical (subsurface) and geotechnical (soil) datasets
- Geohazard assessments and drilling/shallow hazard assessments and represent the results within 4D ground models

- Geospatial Analysis

- Spatially quantify the interaction of infrastructure using statistical and analytical models
- GIS to perform site-wide foundation screening
- GIS-based slope stability screening for geohazard assessment, sediment transport modelling, least cost routing analysis for pipeline/cable route optimisation and 3D volume difference calculations for excavation / fill applications.



- Geotechnical Design

- Offshore foundation design of monopiles, jacket piles, gravity bases, mat foundations, ground anchors and suction caissons
- Finite Element Modelling
- Seismic and liquefaction assessment
- Foundation Installation Analysis
- Pile driveability assessments
- Site supervision during foundation installation
- Pile driving induced fatigue analysis
- Seabed preparation advice

- Mudmat design

- Cable Route Analysis and Planning
- Design and management of cable routes, ensuring the effective protection of the cable system throughout its design life
- Cable Burial Risk Assessments (CBRA)
- Installation methodologies

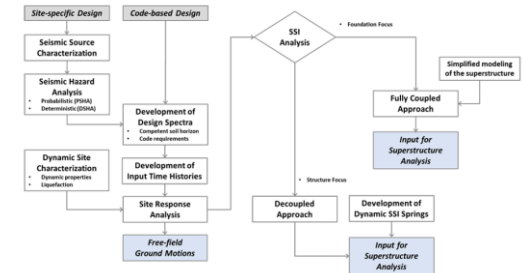
Geotechnical and Geophysical Consulting

Services

- Jack-Up Leg Penetration Analyses
 - LPAs using bespoke software to predict spudcan penetrations using the latest relevant codes and standards
 - Leg extraction analysis and scour studies
 - Experience of a massive database of previous loading and penetrations and >1000 analyses of soils worldwide
- Quantitative Risk Assessment
 - Assessment of geo-risks in context with project risks, bringing together expert judgement and analytical modelling
 - Analysis of stability of slopes, liquefaction analysis and fault displacement hazard assessments
 - Qualitatively assess risk and analyse geohazard probability and equipment vulnerability to quantitatively assess risk
 - identify risk mitigation and perform gap analyses



- Seismic Engineering
 - Consideration on seismic activities and their impact are essential for the engineering design and construction for WTGs and their foundations in seismic prone areas.
 - Probabilistic Seismic Hazard Analyses (PSHA)
 - Accelerograms Development
 - Site Response Analyses
 - Liquefaction Probability Analyses
 - Seismic Soil-Structure Interaction (SSI) Analyses



HSEQ & Risk Consulting

Services

We bring specialist knowledge of risk management, process hazard assessment, safety practices and procedures, and marine environmental issues. Our multi-discipline approach to assignments is significantly enhanced by our expertise in marine operations, casualty investigation and consulting work.

- Safety case preparation - within concept selection evaluation, FEED and detailed design support, construction activities, operational support for mobile offshore drilling units (IADC), pipelines, decommissioning / abandonment, revisions and updates to existing safety cases
- Risk Assessments / Studies - formal safety assessments (FSAs) / risk and safety studies, incl. consequence analysis, fire and explosion, dropped object, ship collision, quantitative risk assessments, ERRA, ESSA and ERRV validation trials (UK PFEER)
- Workshop Facilitation - HAZID, HAZOP, SIL, LOPA, ALARP / CBA, SVA, FMECA, Bowtie, management of change (MoC), concept selection, layout reviews and in the planning and running of associated workshops
- HSEQ Management Systems
- Regulatory Approvals - Safety Case preparation and submission, bridging documentation, interface plans, construction, operation, abandonment, pipeline, emergency response, and subject matter expertise (SME)
- Risk-Based Inspection
- Process Safety Management - Consistent with the PSM standard and in Preparation for Risk Management Plans, we conduct audits (gap analyses) of existing programs

Sectors covered

Renewables



Maritime



Oil & Gas



Marine Operations Engineering

Services

ABL Group's vast experience across marine projects, combined with access to the latest methods and technologies, via our multi-disciplinary teams of consultants, makes us the trusted choice to produce engineering, method statements, detailed procedures and design for all types of marine operations across our market sectors.

Specialising in the following areas:

- Offshore facility transportation & installation
- Modular facility transportation & installation
- Marine renewables installation engineering
- Decommissioning of offshore facilities
- Operations & maintenance engineering
- Rig moving engineering
- Moorings, umbilicals, risers & pipelines installation
- Power cable systems routing & installation



Sectors covered

Renewables



Maritime



Oil & Gas



Longitude Engineering

Deepest pool of multi-disciplined expertise and knowledge across **marine and engineering disciplines**.

Longitude's expertise is far-reaching and supports all marine structures, but with a particular focus on the **transportation, installation, construction, operations and decommissioning phases of offshore projects**.

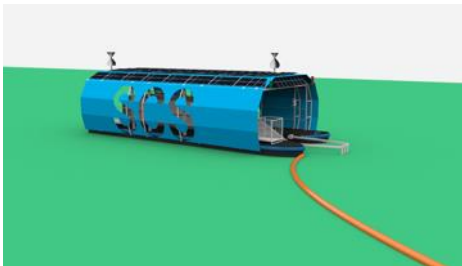
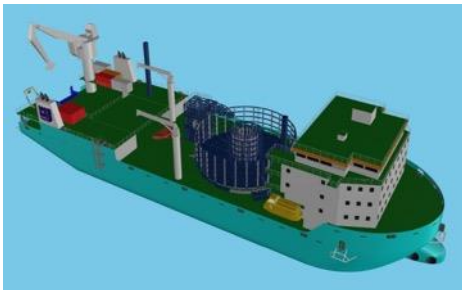
Longitude provides a **multi-disciplined approach to 1st party engineering and design of all marine operations**.

Marine Design, Upgrade and Conversion

Services

We combine technical design expertise, cross-market sector operational knowledge, and a deep understanding of classification societies – positioning them perfectly to support clients in delivering fit-for-purpose designs for any type of marine newbuild, upgrade or conversion covering:

- Floating production systems design
- Jack-up and floating rig design
- Small craft design
- OSD-IMT vessel design
- Maritime civil engineering design
- Platforms and other fixed structure design
- Geotechnical design
- Mooring system design
- Pipeline and cable system design
- Electrical power, DP and control system design
- Clean shipping systems integration and design



Sectors covered

Renewables



Maritime



Oil & Gas



Longitude Engineering

Deepest pool of multi-disciplined expertise and knowledge across **marine and engineering disciplines**.

Longitude's expertise is far-reaching and also includes a number of **industry-first innovations** supporting sustainable and **clean shipping** initiatives, as well as other green energy initiatives, such as the detailed concept design of a specialist vessel to collect river plastics from south-east Asian riverways.

Longitude now also features **OSD-IMT**, a longstanding and well-known vessel design company specialising in offshore support, SOVs, dredgers, and survey vessels and have over 100 designs and many vessels operating globally and are clean shipping specialists

OSD-IMT
Part of Longitude

Site Investigations

Services

We offer a balanced view of survey requirements, oversight and execution. We perform geophysical survey and geotechnical site investigation scoping, tender review and appraisal, as well as project managing operations and delivery and undertake vessel auditing.

- Client Reps offered from a highly experienced pool of internal and external resources with support from our office based geotechnical and management teams
- Extensive network of OCRs based across the globe, minimising travel times, meeting local resource requirements and reducing travel related carbon footprint
- OCR management and logistics teams located globally, supporting campaigns 24/7
- Experience with scoping, technical oversight and interpretation of offshore wind site investigation (SI) and geotechnical/ geophysical engineering projects worldwide
- Full compliance with clients' technical and HSE requirements
- A track record of ensuring the highest standards of data acquisition and processing
- Clear and consistent communication with our OCRs, ensuring that we are constantly aware of upcoming logistics, SIMOPS, scheduling, port calls etc., which is fed back to the client immediately
- Our investigation management team, in combination with the OCRs, prepare for upcoming logistical issues and solve them before they occur

Sectors covered

Renewables



Oil & Gas



Offshore Wind

OWC are leaders in **offshore wind geotechnical site investigations** delivering for developers in **Europe, Asia and US**.

Working with the likes of Ørsted, Scottish Power Renewables, Avangrid, Vattenfall, RWE & Blue Gem Wind, **OWC** are a **trusted partner; expert and able to deliver locally**.

OWC has geotechnical and geophysical experience of **48 offshore wind farms** globally.

Clean Shipping

Services

Comprehensive advise and technical support to clients in their transition to more sustainable shipping solutions. Our services cover support from early advisory and feasibility, through to design and build, and subsequent marine and risk assurance.

Our expertise covers:

- Ballast water systems engineering
- Exhaust gas emissions management
- Scrubber expertise
- Hybrid propulsion
- Fuel-cell and battery technology

We use our wider cross-sector knowledge to consider the full supply chain and contributing assets such as bunkering/fuelling options, port infrastructure and local recourses, to determine the feasibility of a clean shipping solution, and deliver a bankable and truly sustainable solution.

Sectors covered

Renewables



Maritime



Oil & Gas



Clean Shipping Expertise

Deepest pool of multi-disciplined expertise and knowledge across **marine and engineering disciplines**, providing group-wide support in **marine decarbonisation**:

- **Longitude**'s expertise is far-reaching and includes a number of **industry-first innovations** supporting sustainable and **clean shipping** initiatives
- **Innosea** also brings it's specialist capabilities in feasibility and analysis into this group wide capability
- **ABL Group** provides **alternative fuel consulting** and **Poseidon Principle consulting**

Jack-Up and Wind Farm Installation Vessel Support

Services

We provide unique specialised services to the jack-up and wind farm installation market from concept and design to operation.

Our expertise covers:

- Engineering and design
- Marine engineering consulting
- Marine surveys, inspections and audits
- Marine warranty survey
- Expert advisory services in legal claims, disputes and litigation



Sectors covered

Renewables



Oil & Gas



Recent experience

- Construction supervision of 4 offshore wind installation jack up vessels for OuYang Offshore Co., Ltd in China
- Expert advisory services following “stuck leg” claim at Teesside OWF
- Provision of marine advice, training and auditing to IJUBOA (Int. Jack-Up Barges Owners Association)
- MWS on O&M operations for blade and turbine replacement using jack-up WIND
- MWS on O&M with jack-up SEA CHALLENGER
- Consulting on new-build DP2 jack-ups

Jack-Up and Wind Farm Installation Vessel Support

Services

We provide a broad range of technical services to support at every stage of a jack-up vessel's work in wind farm installation:

- Desktop studies and site feasibility
- Marine warranty survey (MWS) services including field and individual location approvals
- Specification and management of offshore geotechnical and geophysical surveys
- Field categorisation of multiple turbine locations, interpretation and risk mitigation
- Metocean studies
- Leg penetration analysis with V-H interaction and leg extraction assessment
- Site-specific assessments to ISO19905-1 or SNAME 5-5A
- Liquefaction and seismic assessments
- Scour assessment and protection
- Spud can footprint interaction studies for safe installation



- Rack phase difference (RPD) studies
- Pre-load optimisation
- Planning of marine and installation activities incl. navigation studies and risk assessments
- Jack-up surveys and audits
- DP audits and surveys
- Safety cases and reliability/integrity assessments
- Lift and installation conceptual and detailed design
- Seafastening design
- Stability calculations
- Jack up modifications and strength checks
- Dry transport engineering
- Tender/bid support
- Expert advice and/or litigation support

Advanced Analysis and Simulation

Services

We provide advanced analysis and simulation to support design and engineering projects for all marine structures, but with a particular focus on the construction, transportation and installation phases of an offshore project.

- Computational Fluid Dynamics covering
 - Custom-developed Tools and dedicated in-house services
 - Aerodynamics, Hydrodynamics and Thermal Analysis
- Advanced Finite Element Analysis
 - Mooring of vessels in tandem alongside a quay, such as in the case of a floating LNG terminal
 - DP capable vessels working in track target mode close to an FPSO or FSO
 - STS operations where a smaller vessel may be in the lee of a larger vessel
 - Heavy lift operations with multiple floating cranes
- Multibody Hydrodynamics
 - Advanced Hull form modelling
 - Fine Mesh control
 - Validation of Response Amplitude Operators (RAOs) and Quadratic Transfer Functions (QTFs)
 - Calculation of vessel motions and accelerations for design and operability analyses.
 - Mooring analyses
 - Operability Assessments
- Dynamic Simulations
 - Specialist Dynamic Simulations
 - Structural Dynamics Analysis
 - Hydrodynamic Analysis

Sectors covered

Renewables



Maritime



Oil & Gas



Casualty and dispute resolution

We also provide independent technical support and advice to owners, salvors or insurers following a shipping casualty, during salvage or wreck removal operations or as part of subsequent casualty investigation for dispute resolution.

Subsea Cable Engineering

Services

We provide market-leading consultancy services for subsea cable risk, installation studies and vessel mobilisation. We provide the services our customers require to fulfil their mission of designing cable routes and understanding risk, installation, vessel mobilisation and protecting cables, maintaining and repairing cables for their offshore wind projects and subsea interconnectors.

- Cable routing
- Review of site data to ensure optimal routing of cable lines with respect to practical and economical considerations
- Cable Burial Risk Analysis
- Anthropogenic and natural hazard determination and assessment using enhanced CBRA methodology
- Burial Assessment
- Tool selection and achievability based upon in house experience
- Cable protection
- Installation
- Ongoing support to ensure continued protection of cables including post lay analysis and review of protection measures and cable-soil interaction studies

Sectors covered

Renewables



Oil & Gas



Longitude Engineering

Our operational-focussed submarine cable installation services include skidding moorings, cable lay and pull, analysed in simulations using **Orcaflex** – the industry standard software applied to these operations.

Longitude, has also developed its own tool for automating the pre- and post-processing of cable installation analyses, allowing us to handle an increasing number of environmental cases, as requested by the Marine Warranty Surveyors (MWS).

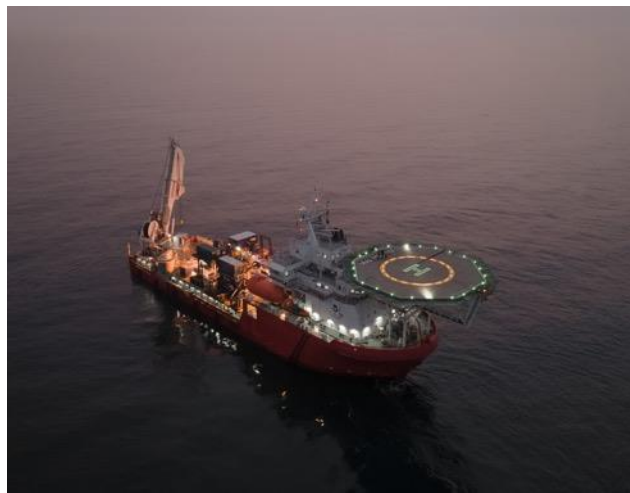
Client Reps – Offshore Wind

Services

We are a market leader in the provision of Offshore Client Representatives (OCRs), with a dedicated in-house and highly experienced OCR management team who supply projects on a global basis.

Included but not limited to:

- Geophysical OCRs
- Geotechnical OCRs
- Cable T&I OCRs
- Foundations T&I OCRs
- WTG T&I OCRs
- MWS
- Vessel Inspectors
- Loadout reps
- Construction Supervisors
- Diving Professionals



Sectors covered

Renewables



OWC

To support our OCR services, **OWC** has in-house staff with the experience and capabilities to undertake various roles requiring specific expertise for offshore oversight.

In addition, **OWC** maintains an extensive network of well established, highly experienced offshore professionals, which can be accessed to support extensive efforts or to fulfil more specialised roles.

Client Reps – Transport and Installation (T&I)

Services

We are a market leader in the provision of Offshore Client Representatives (OCRs), with a dedicated in-house and highly experienced OCR management team who supply projects on a global basis.

We provide unique solutions to complex marine operations from loadout and transportation to installation of high-value offshore assets.

We assist with:

- Inspection and Supervision
- Transportation Engineering
- Floatover Installation
- Jacket Floating Installation
- Jacket Launching and Lifting Installation
- Loadout
- Lifting Installation
- T&I Feasibility



Sectors covered

Renewables



Oil & Gas



Offshore Wind

In addition to OCs, we have been providing T&I Package Managers exclusively to some of Europe, Asia and US's biggest offshore wind developers.



Secondments

Services

Our staff are also sought after for secondments into client projects. We can provide engineers and project managers for all roles throughout all the stages of offshore wind projects.

We provide unique solutions to complex marine operations from loadout and transportation to installation of high-value offshore assets. We assist with:

- Package Management such as WTG, Inter Array Cable, Foundation, Export Cable, Onshore Grid/electrical, Construction, T&I, Site Investigation (soil, wave, wind), Certification, Design)
- Technical contract negotiations
- Technical specification – ITT management & support
- Interface management
- Risk management



Sectors covered

Renewables



OWC

ABL Group company **OWC** has been providing project management and engineering secondments for 10 years.

Our teams have experience of floating and fixed offshore wind projects and we supply secondments to projects in Europe, Asia and the US.



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