



**HORIZON
GEOSCIENCES**

Mapping the Marine Environment



We pride ourselves on our flexibility and ability to react quickly to evolving project scopes whilst maintaining the quality of our deliverables and the safety of our people, operations and the environment

About us

Headquartered in the UAE, Horizon Geosciences provides quality marine survey, geotechnical and subsea services to clients in multiple sectors around the world.

Working through our network of offices and laboratories, our skilled teams support every stage of offshore and nearshore projects with industry-leading equipment and assets including; offshore vessels, nearshore boats, ROVs, SEPs, Bathymetric and Geophysical spreads and Geotechnical drill rigs.



Horizon Geosciences serve clients across sectors and industries including; oil & gas, renewables, civil, subsea and offshore construction.

With key projects successfully completed in a broad range of geographical locations, Horizon has established itself as a leader in its field.

As we continue to expand our services and invest in people, equipment and technology, our goal to provide tailored, cost effective solutions to our clients remains steadfast.

Our fleet of ocean and coastal going vessels are equipped with expert teams and the latest technology and equipment, ensuring accurate project data is provided in good time and within budget



Tailored Service Solutions

Survey

We offer a broad range of marine and airborne survey services with our capabilities covering all stages of offshore development as well as onshore and shallow intertidal zones. Our fleet of ocean and coastal going vessels are equipped with expert teams and the latest technology and equipment, ensuring accurate project data is provided in good time and within budget.

Whether you are looking to install an offshore asset, inspect existing infrastructure, acquire data for engineering analysis, chart the seafloor or extract samples, we can support you with this and more through the following services:

- Hydrography**
- ROV**
- Geophysics**
- Environmental**
- Airborne LiDAR Survey**
- Metocean**
- Precise Positioning**
- Shallow Seabed Sampling**
- Construction Support**
- CP Survey**

Geotechnical

Our flexible approach and emphasis on quality, health, safety and the environment, has helped us to establish ourselves as a leading provider of offshore geotechnical engineering services.

We support companies in renewables, oil & gas, civil and subsea industries across continents. Each project is assigned an experienced Project Manager, who will ensure staff and solutions are tailored to your exact project needs and objectives.

- Offshore Geotechnics**
- Nearshore Geotechnics**
- Foundation Engineering**
- Laboratory Testing**

► "We'd like to pass on our congratulations and appreciation to the Horizon Geosciences team on board ECLIPSE & Mynx . The team's professional conduct impressed us greatly, it would be a pleasure to work with you again in the future."

SBM Offshore



Project spotlights



Geotechnical Project, Manifa Field KSA
 Client: McDermott Arabia Company Ltd
 Year: 2014
 Services: Geotechnical Investigation, Engineering Analysis

Our requirement was to investigate 11 platform sites and a number of locations for buried cables and pipeline. With water depths at 5-12m, Horizon utilised the self-propelled jack-up platform (Aqua Jack 1) with a TD500 rig mobilised onto it. Boreholes were drilled to 60m (platform) and 10m (pipeline and cable) using Geobor S wireline rotary techniques to maximise recovery of the samples.

In order to expedite testing and results, a fully equipped containerised geotechnical testing laboratory was mobilised on a support vessel so that key tests could be carried out offshore and around the clock.

"Horizon use relevant proprietary software and apply regional methodologies for pile capacity assessments, drivability studies and liquefaction assessments. Additionally, mudmat bearing capacity/settlement analyses are carried out using 3D finite element methods."

Grant Woodyard, Horizon Geosciences Engineering Manager



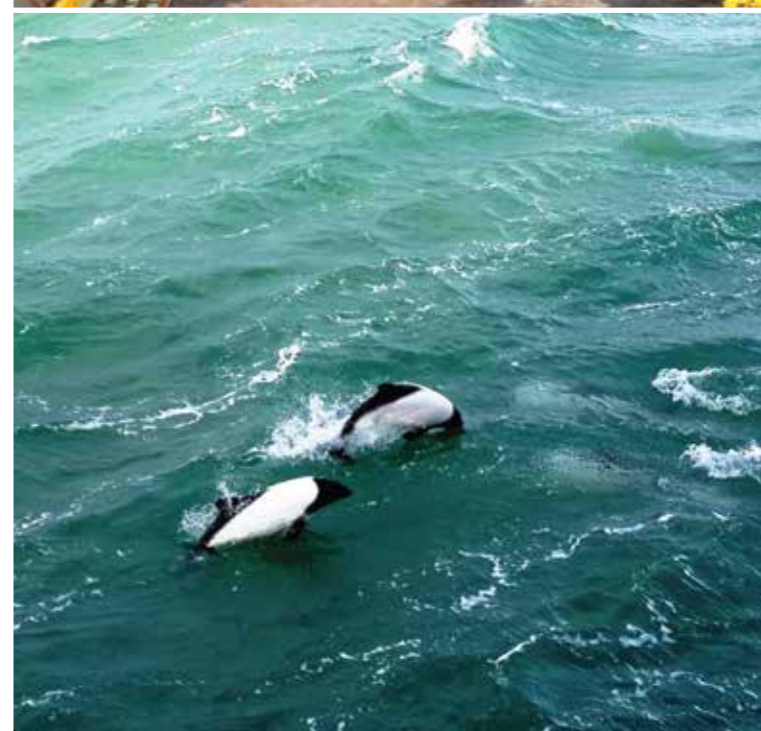
Environmental Survey, Offshore Qatar
 Client: GDF Suez
 Year: 2014
 Services: Post-Drilling Environmental Survey

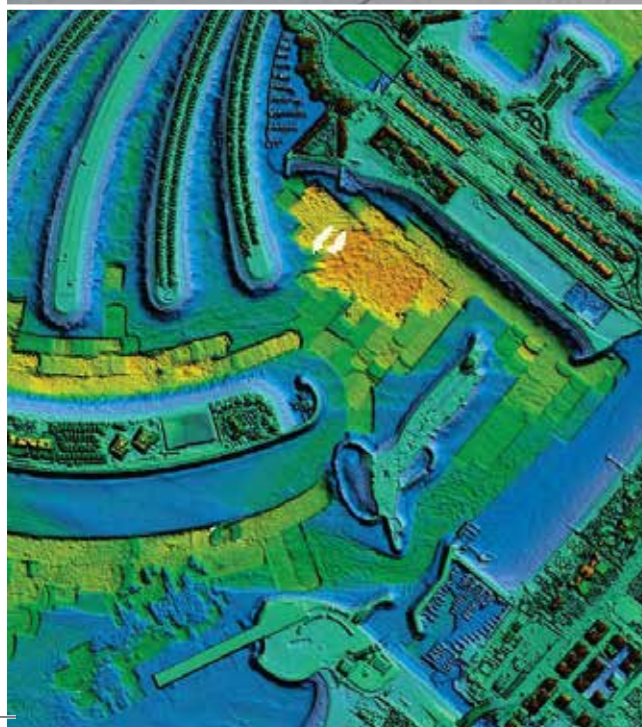
Horizon Geosciences supported GDF Suez during a post-drilling environmental survey around two well-head locations in Block 4, Qatar. The objective was to present environmental data to the client for Ministry of Environment (MoE) drilling approval.

During the campaign, water and sediment samples were extracted and analysed for pollutant levels and indicators of biological content. Both small and large organisms were monitored using a variety of techniques from zooplankton trawling, benthic sieving for microscope identification and ROV video camera transect analysis.

"Environmental Surveys are extremely important in the offshore industry and our department is experiencing increased demand for them. Studies like this highlight potential detrimental impacts to the marine environment and enable clients to make informed decisions."

Environment Manager, Horizon Geosciences





Airborne LiDAR Project, UAE

Client: **Dubai Municipality**

Year: **2013**

Services: **Airborne Laser Bathymetry (ALB) Survey**

Horizon Geosciences undertook an Airborne Laser Bathymetry (ALB) Survey of the shoreline and off lying coastal waters of Dubai in 2013. The Coastal Zone and Waterways Management Section of Dubai Municipality instructed the work.

The survey was conducted using a Hawkeye Bathymetric LiDAR manufactured by Airborne Hydrography (Sweden) in an Aero Commander 690 aircraft. The Aero Commander is a high-winged twin, pressurised turboprop aircraft. It's highly durable and capable of carrying two pilots plus an observer so it's ideal for operating LiDAR systems at low level for coastal surveying.

Bathymetric, Topographic and Imagery data was collected simultaneously along the entire coastal area of Dubai, covering land and sea. For bathymetry purposes, data was captured at 3m resolution with topography collected at 1m resolution and imagery at 0.2m resolution.

This data capture is made possible due to the Hawkeye being an integrated system that operates a green laser, which measures depth, an IR Laser, which measures the topography, and a camera, which takes imagery coincident with the LiDAR survey. The end result is a seamless terrain model and imagery mosaic of the area surveyed.



As Built Survey, UAE

Client: **Technip**

Year: **2015**

Services: **ROV**

Horizon Geosciences supported Technip on a Dubai Petroleum project in March 2015 by undertaking an As Built Survey of 13 pipelines and their associated risers across various platforms offshore the UAE.

The pipeline inspected was 123 kilometres long with diameters varying from 6 to 30 inches. The Seaeye Cougar XT was selected for this job due to its flexibility and manoeuvrability. This ROV system is an upgraded version of the Seaeye Cougar and is a compact, highly flexible machine. For this project, the Cougar XT was equipped with an As Built survey sensor package including dual head profilers, boom cameras, CP and bathy suite and successfully completed 370 dive hours in the water with minimum maintenance.

The work was completed within a demanding timeframe.

"During platform work the compact size of the Cougar XT and its manoeuvrability, even in strong currents, makes it easy to pilot inside and around structures. Its excellent payload capabilities also allow the interface of multiple survey sensors of varied configurations required for pipeline inspections."

Kamal Sawlani, ROV General Manager





Multi-disciplinary Site Investigation, UK
 Client: **Inchcape Offshore Ltd**
 Year: **2015**
 Services: **Geophysical Survey, Geotechnical Site Investigation**

Horizon Geosciences performed a combined geophysical and geotechnical investigation of the Inch Cape Offshore Windfarm for Inch Cape Offshore Limited.

The objective of the geophysical survey was to provide additional geophysical data to update the ground model and provide unexploded ordinance (UXO) clearance for the geotechnical works. The geotechnical investigation was to support the performance foundation engineering. Approximately 400km of geophysical survey lines were run acquiring bathymetric, sidescan sonar and sub-bottom data as well as magnetometer and gradiometer data.

A total of 11 locations were investigated by drilling boreholes up to 50m beneath seabed level. A program of cone penetration testing (CPT) and sampling was performed in the boreholes to provide in situ characteristics in addition to samples for laboratory testing. Less than 0.2% technical downtime was recorded during this phase of the project enabling maximum progress to be achieved during periods of workable weather.

"On behalf of the Inch Cape team here at Repsol in Edinburgh, I want to express our thanks to everyone on board the Geobay. We are pleased with the transparent and proactive approach Horizon has taken, particularly in respect to safety matters."

John Reddish, Repsol



Nearshore CP Survey, Qatar
 Client: **Halul Offshore Services on behalf of Qatar Gas**
 Year: **2015**
 Services: **CP Pipeline Survey – Trailing Wire Method**

CP is a technique used to control the corrosion of a metal surface which can occur due to a multitude of environmental and time related factors.

Horizon Geosciences performed a cathodic protection pipeline survey, nearshore Qatar, January 2016 for Halul. The trailing wire method was used whereby teams of engineers made hard wire connections at test points along the beach, these ran to the water line where the trailing wire was connected. The HS2 ran 6 X 3KM survey lines individually towing a dummy fish with a AG/AGCl cell attached.

Both the cell and trailing wire were connected to online data acquisition software to record the data, against the provided navigation. The results are then processed and presented to the client in a comprehensive report.

"Corrosion is an electrochemical process that occurs in stages and if left untreated, subsea assets can become hazardous and their restoration costly. Horizon offer a range of CP Survey services enabling clients to assess and maintain their subsea assets."

Sean Lowe, Horizon Geosciences Project Manager





Offshore Wind Farm Site Investigation, Denmark
 Client: **Vattenfall**
 Year: **2015**
 Services: **Geophysical Survey, Geotechnical Site Investigation**

Horizon Geosciences successfully completed a complex and extensive site investigation for Vattenfall for an offshore wind farm in Denmark. The programme of work included downhole sampling and CPT testing, seismic CPT testing, pressuremeter testing, P-S Logging, vibrocoreing and seabed CPTs, utilising Horizon's own 200kN Seabed CPT System. CPT testing in excess of 1300m was completed during the project.

Horizon's revolutionary digital CPT System is designed to achieve a continuous profile to depths in excess of 40m into the ground, representing a substantial cost and time saving for clients. The importance of deep push Seabed CPT profiles across the site allows for accurate ground model generational and verification, which supports key decision making on foundation options with a greater degree of accuracy and confidence.

"Building an accurate ground model is crucial to the development of offshore wind farms, therefore a high volume of quality CPT data is needed, often within tight timescales. This is where Horizon's 200kN CPT can surpass traditional drilling expectations in terms of production and cost.

Coupled with the ability to conduct seismic CPT tests with this seabed system, tied in to pressuremeter and borehole logging data from adjacent boreholes, we provide the data for the full determination of both lateral and horizontal engineering properties across the site."

John Cudden, Senior Project Manager



Drilling Stats

North Sea & Atlantic (From 2013 - 2016)

◆ Uptime	91%
◆ Drilling	7,045M
◆ One phrase	
Downhole CPT	5170M
◆ Sampling	1757M
◆ PS Logging	433M
◆ Pressuremeter	17
◆ Seaded CPT	1572M
◆ Vibrocores	52

Middle East & Indian Ocean (From 2005 - 2015)

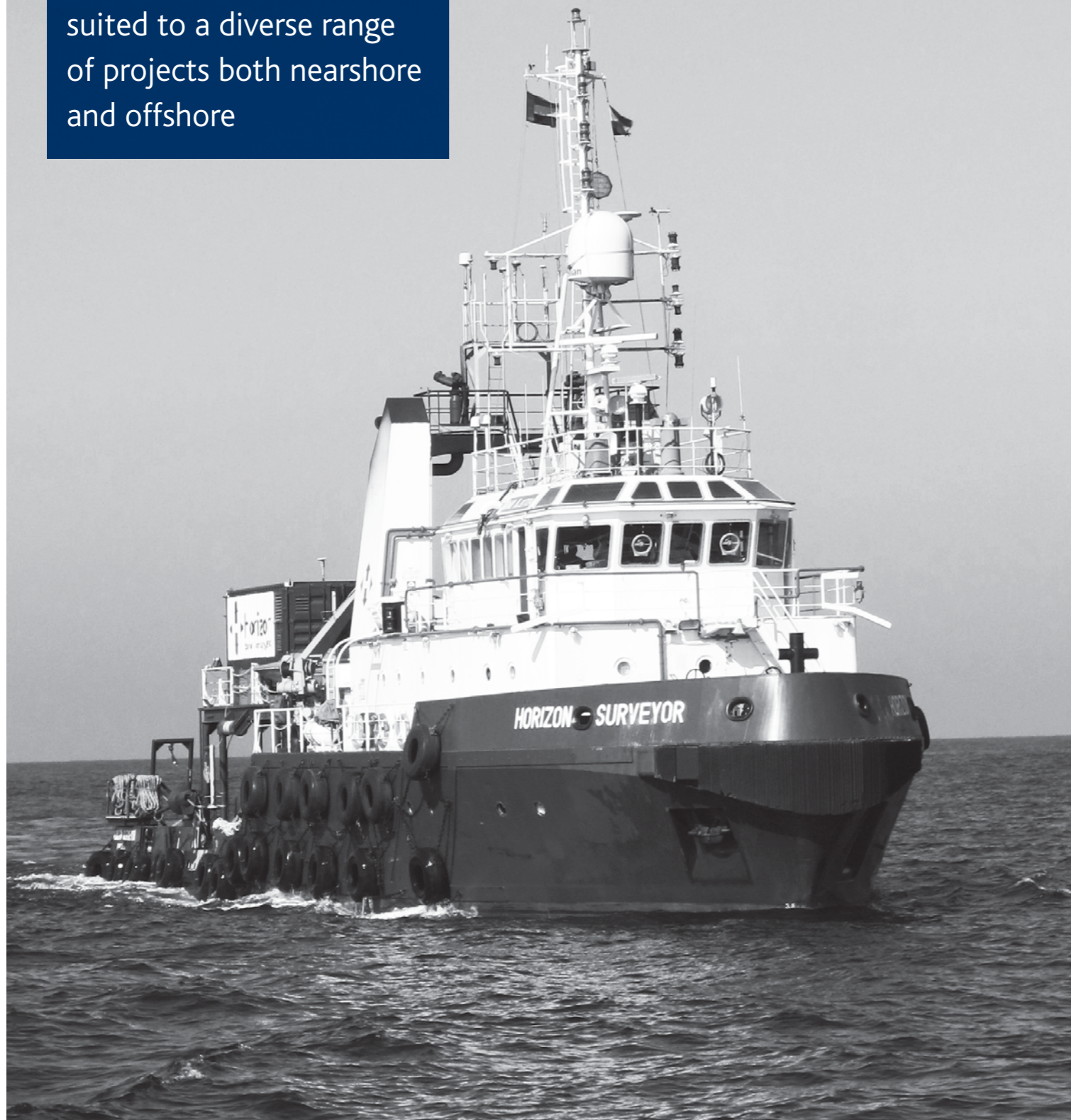
◆ Uptime	95%
◆ Drilling	20,385M

"The Horizon Geobay was used as a platform throughout the whole campaign and has proven to be a very capable DP2 vessel, especially as shallow water conditions were prevalent.

All operations were conducted safely and in-line with HSE requirements by the entire crew. A dedicated engineering team has been working alongside both the offshore fieldwork as well as the onshore engineering phase, as the project continues into the lab testing phase."

Vattenfall Project Manager

We own a fleet of OVID and IMCA-approved multi-purpose vessels suited to a diverse range of projects both nearshore and offshore



Our fleet

We own a fleet of OVID and IMCA-approved multi-purpose vessels suited to a diverse range of projects both nearshore and offshore.

Shallow sampling equipment including vibrocorer, drop corer & piston corer as well as Roson CPT can be mobilised on any of our vessels. Additionally, we have digital 2DHR spreads and a range of multipurpose ROVs available upon request.

► "Thank you for the hard work put into making this project a success and for going the extra mile."

Leighton O&M

Quest Horizon



65m DP2 Geotechnical Site Investigation Vessel
Operating in the Middle East and Indian Ocean

Horizon Geobay



87m DP2 Geotechnical Site Investigation Vessel
Operating in the North Sea and Atlantic Ocean

Horizon Surveyor



40m Geophysical & ROV Survey Vessel
Operating in the Middle East and Indian Ocean

Kommandor Stuart



61m DP1 Geophysical & ROV Vessel
Operating in the North Sea and Atlantic Ocean

Our other vessels: ♦ H27 SEP ♦ Terra Surf SEP ♦ Nearshore Survey Boats



Why choose us?

Quality marine science is at the core of everything we do. Our continued investment in specialised technology and equipment enables us to provide integrated, innovative, multi-disciplinary solutions that can be tailored to your specific project needs in a broad range of geographical locations.

Your assigned Project Manager will be a dedicated resource for the life-cycle of the project, managing our teams on the ground and consistently ensuring the project objectives are being delivered on time and within budget.

At Horizon Geosciences, transparency and trust are central to our business operations and clients remain our driving force.

► “I would like to express my gratitude and thanks for the great effort. I’m particularly impressed by the extra effort that Horizon has put in; something that we don’t see that often with other service providers.”

Qatar Shell



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