

---

Offshore Geoscience and Geotechnical Engineering  
Consultancy for the Oil & Gas Industry



**CATHIE**



---

## Expertise, Seabed and Below.

We're a global offshore geoscience and geotechnical engineering consultancy for the oil & gas Industry. We're now the largest consultancy of our type, with over 400 oil and gas projects around the world. Our team of approachable, industry-leading experts deliver successful projects for our clients through integrity, teamwork and a drive for innovation.

We deliver geological, geospatial, geophysical and geotechnical engineering solutions, working on projects at all stages, from feasibility studies through to decommissioning, offering innovative, cost-effective solutions to clients all over the world.

## Solutions

### Feasibility

Services designed to set a project on the right path, manage risk cost-effectively and to enable key strategic decisions. These include site suitability, desk study, geohazard assessment, concept design and risk management.

### Development

Survey consultancy, data management, integration and interpretation, ground modelling, foundation optioneering, and pipeline route design services to define site conditions and inform the engineering process. Structured, proven approaches to deliver increased confidence and constructibility in a phased manner in order to quantify and mitigate risk through development stage gates.

### Design

Complete foundation design solutions from basic analytical approaches according to established codes to innovative computational methods using the most advanced finite element, finite difference and emergent methods in conjunction with machine learning. Our solutions are designed with the express intent of lowering CAPEX, managing installation risk and improving reliability for all foundation types including novel hybrid foundations. Our designs are deployed worldwide in a range of harsh and seismic environments, accounting for a wide range of geohazards.

Utilising a combination of geotechnical, geophysical, GIS and in-house modelling resources we are able to optimise and design solutions for the most challenging of pipeline and umbilical routes. We provide services such as route selection and refinement, seabed risk management, pipeline burial depth designation, advanced threat interaction modelling, development and supply of route position lists (RPL) and alignment chart production.

### Installation

Borne from decades of hands-on experience in the offshore environment, our installation design ensures that operations are reliable, efficient and risk managed. We offer practical approaches for all manner of installation issues for foundations, anchors, jackup vessels, pipelines and umbilicals. Foundation installation studies range from simple pile driveability to spatial probabilistic assessments of pile refusal and tip buckling, suction caisson installation suction requirements and GBS settlement analyses. Subsea pipelines and flexibles benefit from our trencher performance models to determine burial potential/assessment, trenching equipment suitability, equipment optimisation, performance assessment and forensic studies. Our subsidiary, G-Octopus, has over 15 years' experience undertaking onshore and offshore pile dynamic load testing and monitoring pile tip buckling risk during driving.

### Operation

We provide services attuned to operating in a dynamic marine environment where change is inevitable. These include pipeline integrity risk assessment, remedial design, foundation design re-evaluation for life-extension and decommissioning studies.

### Software

O-Pile is commercially available for pile design and we also develop bespoke, in-house software like JACA and Caisson to facilitate efficiency, repeatability and quality for our clients. These software to liberate our engineers' and clients' time to focus on improving engineering methods and interpretation.

## Research & Development

As a recognised leader in our field of endeavour, we have always sought to solve industry challenges through internal and contract research, and development projects. We bring academic and industrial partners together to develop bespoke and practical solutions to solve industry challenges.

- 1) Lateral buckling of pipelines;
- 2) Grillage foundations;
- 3) ICE-PIPE Pipelines in cold climates;
- 4) DYNDATA – database of dynamic pile test results;
- 5) Probabilistic design assessments;
- 6) Cyclic loading effects on piles and suction caissons;
- 7) RockMat foundations;
- 8) Use of dynamic FEA for interpretation of dynamic pile tests;
- 9) Trencher modelling;
- 10) Pipeline geotechnics;
- 11) API RP2GEO/ISO 19901-4 Foundations;
- 12) API RP2SK/ISO 19901-7 Anchors and moorings;
- 13) ISO 19905-1 Jackups – foundations.





**CATHIE**