



UXO & Geosciences

27 February 2025



Geoscience Service Line

Vision: An internationally recognised **end-to-end** supplier of offshore geoscience expertise. Providing cutting **edge services and products** to **derisk** and facilitate the detailed **design** and installation of offshore wind infrastructure.



Areas of Expertise



Risk Management

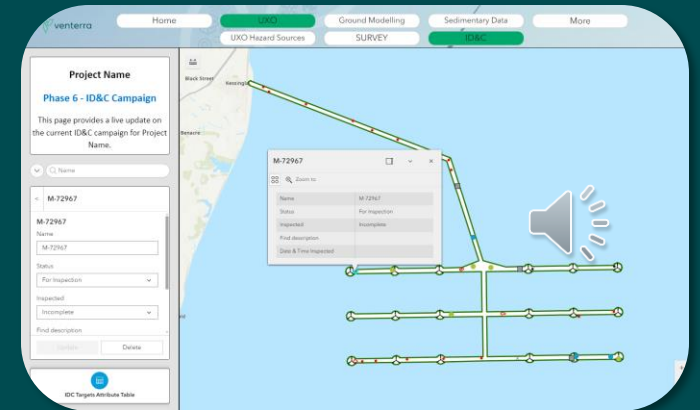
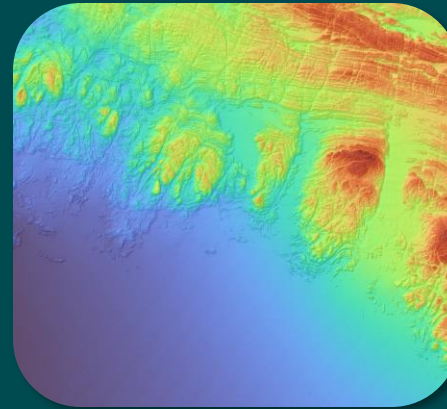
- Site Characterisation
- Risk Mitigation Strategies
- Integrated Ground Modelling
- Geohazard Registers
- UXO, MEC, & CWA
- Coastal & Marine Processes
- Archaeology
- ALARP Certification

Site Operations

- Project Management
- Survey Management
- Geophysics
- Geotechnics
- Data Quality Assurance
- Data Processing
- Seabed Inspections
- Seabed Clearance

Geospatial & Data Management

- Hydrospatial
- Data Mining
- Data Management
- The Vault 2.0
- Cloud Workspaces
- Data Custodianship
- ATLAS Library
- Geospatial Online Data Portals



Key Projects: APAC, US, UK and Europe



South Fork Wind

- Country: USA
- Capacity: 132 MW
- WTGs: 12



Formosa 1 & 2

- Country: Taiwan
- Capacity: 504 MW
- WTGs: 69



Viking Link

- Country: UK-Denmark
- Capacity: 1.4GW
- Cable Length: 765KM



Hornsea 01-03

- Country: UK
- Capacity: 5.4 GW
- WTGs: 100



Revolution Wind

- Country: USA
- Capacity: 810 MW
- WTGs: 64



Greater Changhua 01 & 02

- Country: Taiwan
- Capacity: 1.2 GW
- WTGs: 135



Borssele 01 & 02

- Country: UK
- Capacity: 752 MW
- WTGs: 94



Dogger Bank A-D

- Country: UK
- Capacity: 5.6 GW
- WTGs: 405



Empire Wind 1 & 2

- Country: USA
- Capacity: 2.1 GW
- WTGs: 138



Changfang

- Country: Taiwan
- Capacity: 540 MW
- WTGs: 57



GodeWind 01-02

- Country: Germany
- Capacity: 582 MW
- WTGs: 97



Moray East & West

- Country: UK
- Capacity: 1.8 GW
- WTGs: 160



Beacon Wind

- Country: USA
- Capacity: 2.4 GW
- WTGs: 155



Zhong Neng

- Country: Taiwan
- Capacity: 295 MW
- WTGs: 31



Le Treport

- Country: France
- Capacity: 496 MW
- WTGs: 62



Rampion

- Country: UK
- Capacity: 400 MW
- WTGs: 116





Case Study 1

Client- Focussed UXO Risk
Management Solutions

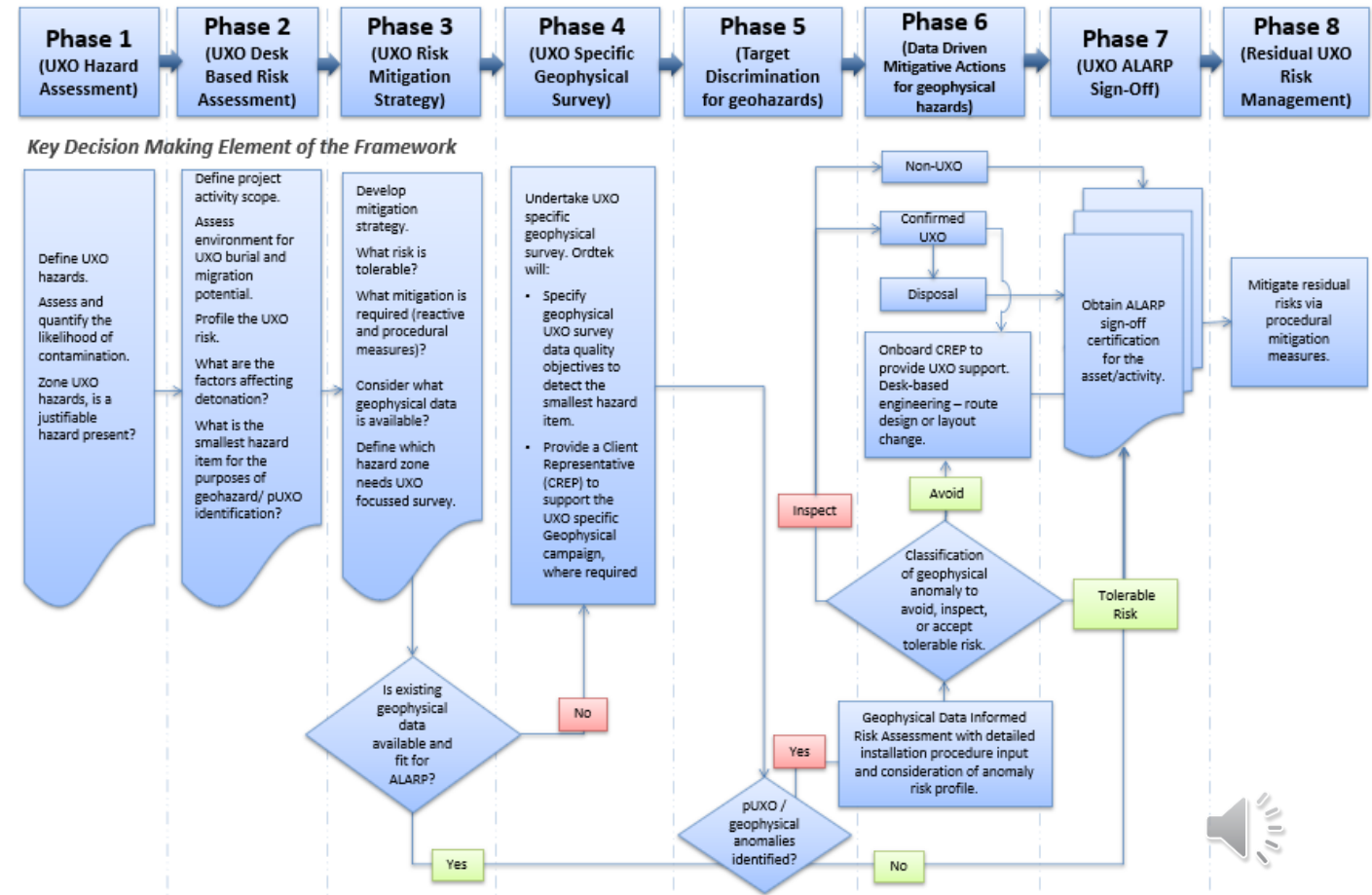


UXO Risk Mitigation Services

As a trusted authority in risk management and risk mitigation for Unexploded Ordnance (UXO), we address the liabilities associated with the detection, clearance and remediation of UXO on and offshore.

Offshore UXO Risk Management Framework

Applicable To all Activities and Projects in the Marine Environment in line with CIRIA C754.



Historical / Technical Data Management

The Vault 2.0 consists of thousands of primary sources, including mine maps from both World Wars, ship logs and air raid reports, modern UXO desktop studies, Ordnance clearance operations, and much more, providing us with greater insight on potential geohazards in your project area.



VAULT 2.UXO

Precision is power



Marine Data Discrimination

Geophysical Survey for Geohazard Target Discrimination

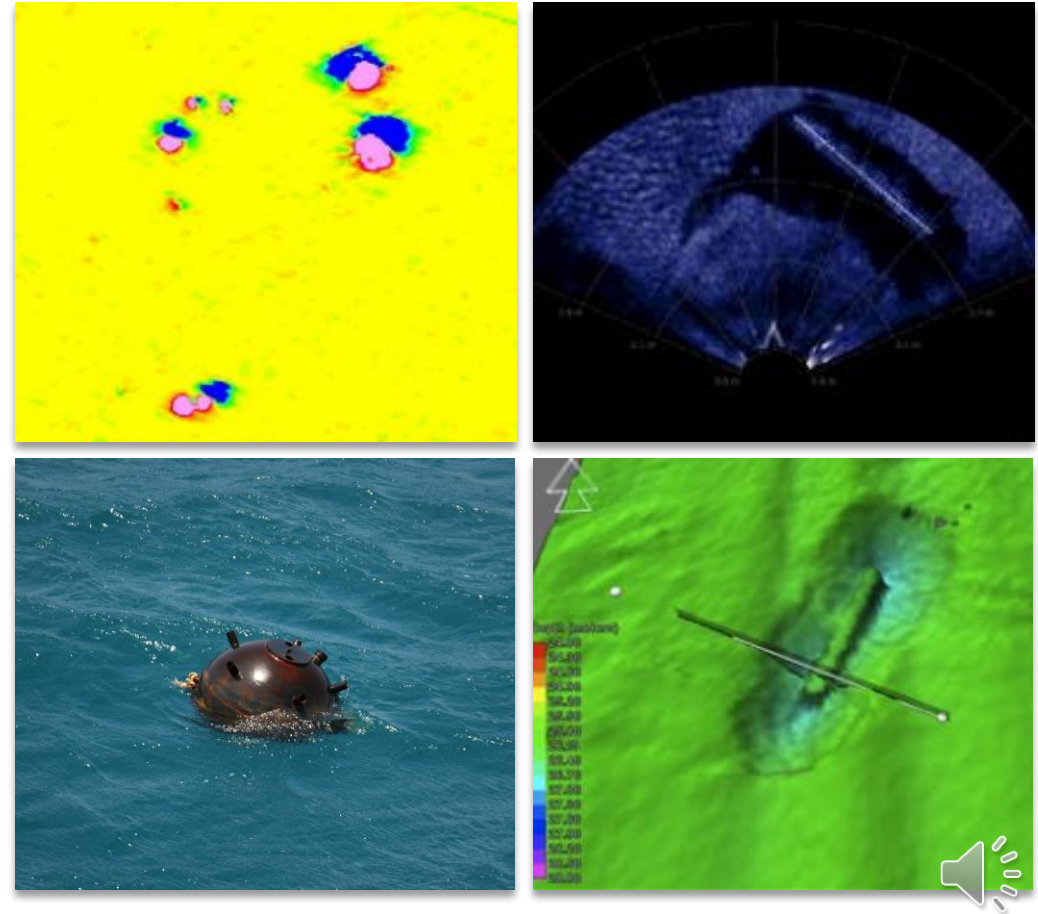
Collate and review geophysical survey data to identify potential geohazards, provide target discrimination and identify anomalies.

ALARP Certification

Vessel Assurance and As Low as Reasonably Possible (ALARP) Sign-off Certification, unique to operational project locations.

Residual Risk Management

Extensive safety protocols and training for on-site personnel to safely manage any unexpected items of UXO or other residual UXO risks.



World Record Pipeline Installation

Your partnership has been instrumental in achieving our project goals [...]

[...] delivered from concept to commissioning in record time (17 months) and has now become a benchmark of what is achievable in the industry.

Scope: Venterra Geosciences conducted a UXO desk-based study using historical data to assess pUXO hazards and developed a mitigation strategy aligned with the ALARP principle. Geophysical data analysis based on rational methodologies for threat items detection, and the use of existing survey data ensured that operational campaigns were feasible, cost-effective, and maximised the value of existing assets.

Outcome: Project completed in a record 17 months, this project showcases the impact of efficient collaboration in offshore operations. Venterra Geoscience remains dedicated to delivering cost-effective solutions across industries.



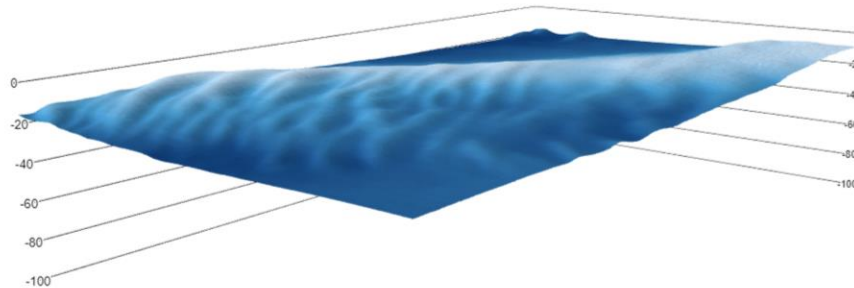


Case Study 2

Multidisciplinary Marine Hazard
Clearance Certification: Shallow
Gas & UXO



Site Characterisation & Ground Modelling



Our dynamic ground models evolve as the project progresses, resulting in increasingly accurate and comprehensive insights

Desk Studies

Desktop studies, conceptual ground models & site investigation recommendations.

Data Quality Review & Analysis

Quality check and assurance, acceptance and analysis of hydrographic, geophysical and geotechnical data.

Data Visualisation & 3D Models

Project repository development to visualise geoscientific data in 2D and 3D environments.

Owner's Engineer Support

Support during tendering, offshore survey and design.

Ground Models & Risk Registers

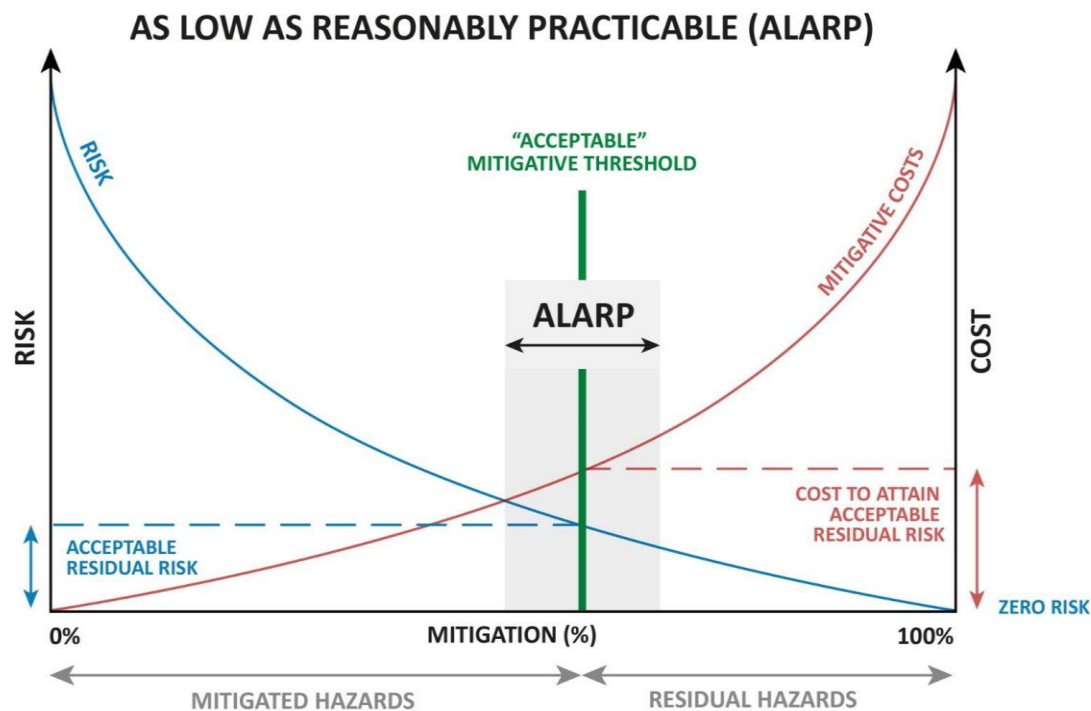
Constant Preliminary and detailed ground model development.

Geotechnical Interpretive Report (GIR)

Interpretation of all available CPTs, BH and geophysical survey data.



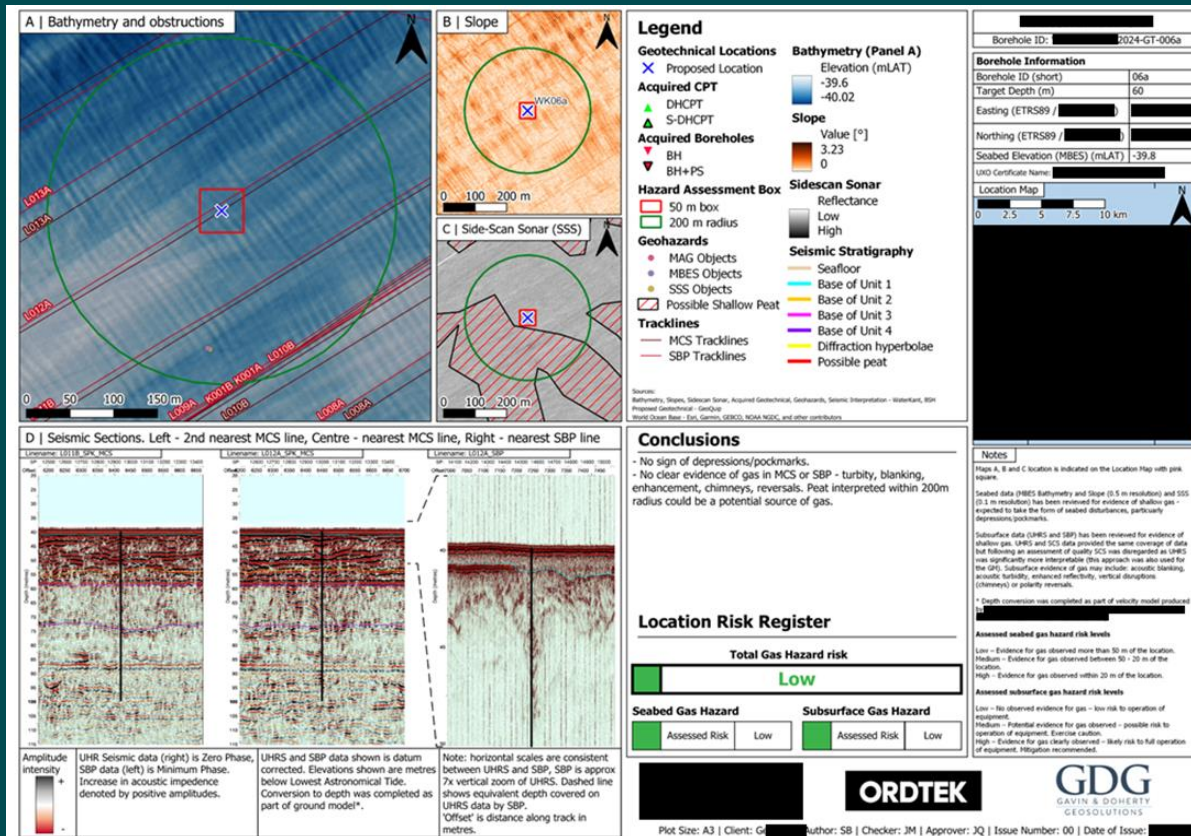
Combined Hazard Clearance Solutions for ALARP Certification



- Palaeo-Channels Seabed Morphology
- Underwater Landslides
- Thermo-Resistant Soils
- Soil Liquefaction Susceptibility
- UXO
- Debris Wrecks
- Boulders
- Cables & Pipelines
- Archaeology
- Shallow Gas
- Tectonic Faults



Multidisciplinary Clearance Certification



Scope: A Shallow Gas Hazard Assessment (SGHA) is essential to derisk the presence of potential shallow gas at geotechnical locations.

To maximise efficiencies in responding to and mitigating various hazards across a site area, Venterra Geosciences leveraged our multidisciplinary team to provide a combined clearance certificate for both Shallow Gas and UXO, certifying the risk to ALARP for multiple hazards in a single deliverable.

Outcome: Shallow gas and UXO assessments for geotechnical locations enables an all encompassing certificate to be issued to satisfy HSE requirements and synthesize hazard reporting into a single deliverable.





Case Study 3

Ground Modelling & Site
Assessments

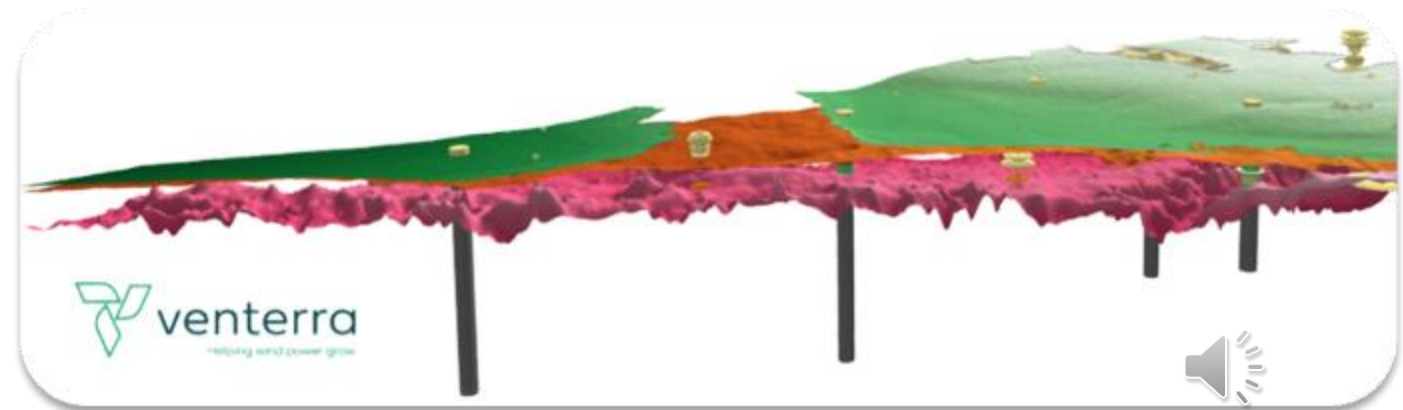


Kriegers Flak II North & South

- Integrated new geophysical and geotechnical data to refine ground models.
- Developed velocity models to convert seismic data to depth.
- Defined geotechnical zones for site-specific analysis.
- Created 3D visualizations to enhance site understanding.
- Compiled risk registers identifying potential hazards.



- Ground modelling project on behalf of the Danish TSO Energinet
- Introduced new data processing tools to improve efficiency and accuracy.



(Schematic of integrated ground model with seabed and sub-seabed interpretation, geohazards assessment, and geotechnical modelling)



Implementing phased solutions for UXO consultancy support across all project stages, ensuring rapid site clearance to accelerate development.

Integrating multiple disciplines to mitigate hazards and constraints through a unified procurement process and specialist consultancy.

Enhancing methodologies to challenge industry standard approaches, and refine ground modelling by leveraging project assets and advanced data tools for greater efficiency and precision.



Project Experience: **Australia**

- UXO Desktop Studies
- Ground Modelling
- Geotechnical Desktop Studies
- Geohazards including Shallow Gas
- Foundation Designs
- Owners' Engineering





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