



**UPSTREAM**  
TECHNOLOGY



# MARINE GEOSURVEY

*As specialists in seabed mapping, hazard identification, and 3D volumes of seabed profiles - we deliver comprehensive geophysical services.*

*Safe, efficient, and informed marine operations are supported through advanced data acquisition, processing and interpretation.*

The Marine GeoSurvey Division delivers advanced sub-sea geophysical surveys for offshore and near-shore mineral exploration. Using Autonomous Underwater Vehicles (AUVs) and conventional systems deployed from vessels of opportunity, we acquire and process high-resolution data for accurate seabed mapping and hazard identification.

## OPERATIONAL OVERVIEW

We operate two containerised AUVs capable of operating at depths ranging from 10 to 300 meters, flying at 10m altitude, equipped with 2D and 3D Sub-Bottom Profiling (SBP), Side Scan Sonar (SSS), Multibeam Echosounder (MBE), Magnetometer (MAG), and Subsea LiDAR. This enables rapid, high-accuracy data capture, even in challenging environments.

Our team processes and interprets the data internally, supporting decisions across the exploration and mining lifecycle.

**100+**

*years of combined experience in marine survey, processing, and interpretation.*

## ADDITIONAL OFFERINGS

### Environmental Monitoring & Coring Solutions

Providing positioning solutions and project management.


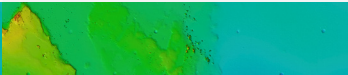
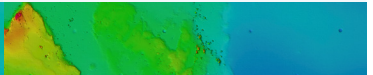
### Pipeline & Cable Laying Monitoring

For comprehensive monitoring and installation support for offshore infrastructure.

### Internal Data Processing & Interpretation

Turnkey solutions for data processing and interpretation including third-party data processing.

## SURVEY MODES

	RECONNAISSANCE BROAD COVERAGE, COST EFFECTIVE INSIGHT	STANDARD BALANCED DETAIL & EFFICIENCY	HIGH RESOLUTION PRECISION FOR CRITICAL DECISIONS
ALTITUDE	20 m	12–20 m	10 m
LINE SPACING	100 m	25–50 m	2.7 m
MBE RESOLUTION	1 m	0.3-0.5 m	0.1*0.1 m
SSS RESOLUTION	0.3*0.3 m	0.15*0.15 m	0.12 *0.12 m
SBP RESOLUTION	0.4 m	0.4 m	0.5*0.5 m
SBP Z RESOLUTION	0.02 m	0.02 m	0.04 m
			

Our AUV's feature an interchangeable payload bay with 0.11 m<sup>3</sup> volume and 1.57 m<sup>2</sup> surface area, enabling integration of various sensors-including custom payloads tailored to client needs.

### How you benefit

- ♦ Faster survey cycles, reduced turnaround time
- ♦ Dual AUV operation
- ♦ Improved geological modelling for resource definition
- ♦ Reduced cost per square metre surveyed
- ♦ High-resolution data across multiple sonar types in one pass
- ♦ Deployment flexibility with smaller vessels and rapid mobilisation

## EXECUTION APPROACH

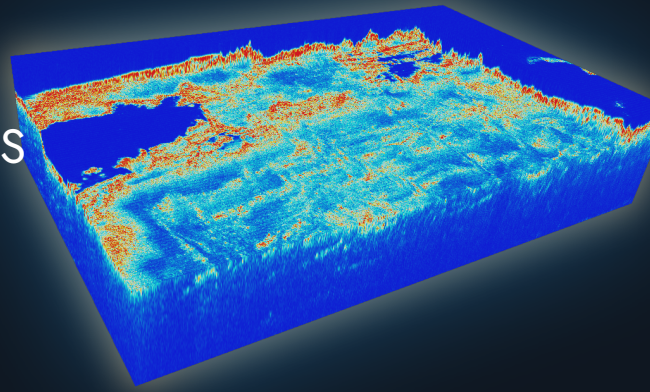
- Advanced Technology**  
Two AUVs with cutting-edge sonar and high-accuracy positioning systems.
- Containerised AUV Operations**  
Launched from vessels of opportunity worldwide.
- Established Procedures**  
Proven survey planning, execution and QA processes.
- Safety and Environmental Compliance**  
Fully aligned to marine regulations.
- Lean Expert Team**  
The Geosurvey Division comprises of a highly specialized team of 13 experts spanning offshore and shore-based, divided into two key components:
  - ♦ Shoreside Management and Support
  - ♦ Offshore 24-hour Operations

Each department brings a unique set of skills and responsibilities, ensuring seamless delivery of high-quality results.

Operations & Logistics Team	Survey Engineering Team	Surveying Team	Data Processing Team
Manage logistics, resource allocation, project oversight, and maintenance to ensure efficient operations.	Operate, maintain, and optimize survey systems for seamless data acquisition.	Plan, execute survey and post process data to secure precise positioning and accurate navigation.	Process and interpret high-resolution geophysical data to produce detailed seabed visualizations for complex offshore operations.

# ADVANTAGES OF OUR AUTONOMOUS UNDERWATER VEHICLES

Your project's success is ensured by working together to minimise risks, optimise systems, and exceed expectations in terms of time, cost, and quality outputs.

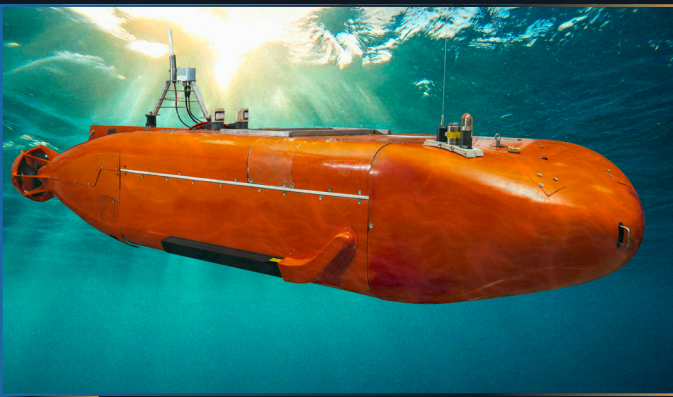


## Advantage

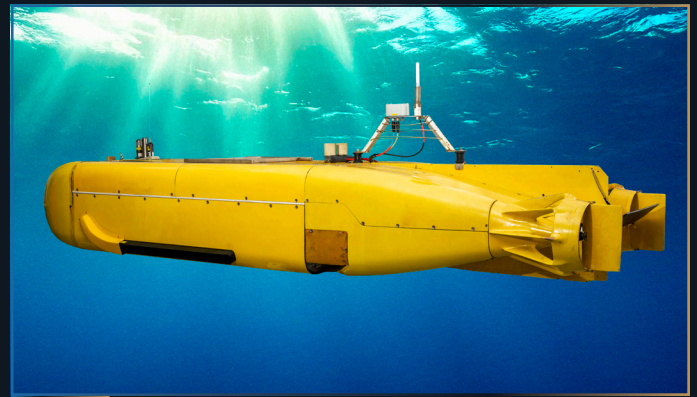
## AUV System

## Conventional System

Turnaround radius	10 or 12 meters	100s of meters
Resolution & stability	High – Close to seabed for detailed data	Lower – Operate from surface, less precise
Navigation	Precise inertial and acoustic systems	Dependent on surface systems
Efficiency	4x faster seabed coverage	Slower, larger turnarounds
Deployment	Containerised – rapid, global-ready	Larger vessel dependency
Multisensor operation	Multiple sensors simultaneously	Limited sensor integration

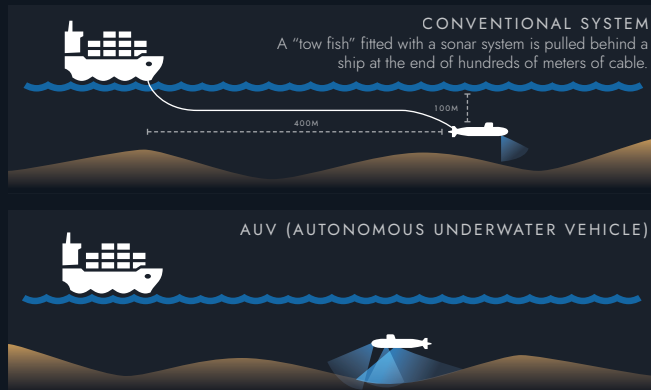


M61



M62

## AUV SURVEYS VS SHIP-BASED SURVEYS



**4x** faster seabed coverage because of a drastically lower turning radius, and rapidly deployable, cable-free design.





## WHAT SETS US APART?



### 6 REASONS TO CHOOSE UPSTREAM TECHNOLOGY FOR YOUR GEOSURVEY NEEDS

1. **Tailored Solutions:** Services aligned to specific client exploration and project goals.
2. **Specialist Team:** 100+ years of combined experience in marine survey, processing, and interpretation.
3. **Operational Efficiency:** Containerised AUV systems reduce mobilisation time and cost.
4. **Proven Data Accuracy:** Industry-leading resolution across sonar and LiDAR technologies.
5. **Three Payloads installed on AUV:** Three payloads installed on the AUV allows for a more comprehensive and diverse range of underwater data collection and analysis enabling GeoSurvey to gather information on multiple parameters simultaneously.
6. **AUV Hazard Survey:** AUV has the capability to tow a magnetometer.



### GEOSURVEY SOLUTIONS ARE IDEAL FOR CLIENTS IN TARGETED SECTORS INCLUDING

- ♦ Offshore mining and exploration projects
- ♦ Port authorities
- ♦ Cable and pipeline installation firms
- ♦ Ocean construction (e.g. offshore wind power)
- ♦ Environmental monitoring bodies
- ♦ Defence and hydrographic agencies
- ♦ Dam infrastructure managers
- ♦ Shipwreck and heritage research organisations.



As your survey and data acquisition partner, we deploy advanced, rapidly mobilised AUVs for accurate seabed mapping and hazard detection—delivering timely insights that support safe, efficient marine activities.

Partnering in technology for our future. Let's solve the hard offshore challenges together.

#### CONTACT US

**SIMANGELE SONI**  
SNR BUSINESS DEVELOPMENT MANAGER

**T** +27 10 346 5088  
**E** SIMANGELE.SONI@DEBEERSGROUP.COM

**KHANYA ZILWA**  
GEOSURVEY  
**T** +27 21 658 3229  
**E** KHANYA.ZILWA@DEBEERSGROUP.COM

JOHANNESBURG, WEST CAMPUS | RECOVERY FACILITY  
Cnr Crownwood & Booyens Reserve Roads, Theta, Johannesburg, 2013

CAPE TOWN, GOLF PARK | HEAD OFFICE  
DBM Gardens, Golf Park 2, Raapenberg Road, Pinelands, 7405