



envirosgroup.com

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PROJECTS & OPERATIONS



Despite our relative young existence we are already internationally established and we have been finding our way through land, sea, air and space, by actively handling unprecedented opportunities and developing tailor-made solutions for the most shifting demands faced by protagonists of the most diverse market sectors worldwide. Plenty of projects were already delivered in various parts of the globe.

Confident in our capabilities, our expansion strategy combines both organic growth and targeted mergers & acquisitions, as well as strategic alliances, with innovation, proactivity, entrepreneurship and quality assurance to enhance our portfolio, potentialize operational capability and consolidate our competitive capacity before the market.

Please have a look at our website to find the nearest office.



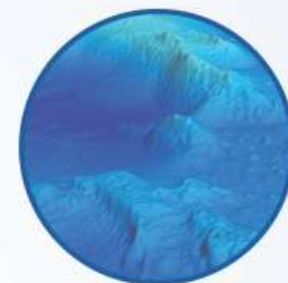
Enviros operates an Integrated Management System that relies upon severe quality controls of internal policies, processes and procedures, which work combined as a single unit audited by DNV and accredited by UKAS for the standards of **ISO 9001**, **ISO 14001** and **OHSAS 18001**. Certified scope includes the **management of worldwide geosciences and environmental services, together with decommissioning & asset integrity solutions**.

Besides the strict third party certification process, we continuously seek not only to meet the key business management standards of the industry, but also to improve our business processes and performance, with a constant concern on adopting the best industry practices and maximising efficiency in order to ensure Quality Assurance, Management of Risk and Quality Control is implemented in every aspect of the business.

OUR SERVICES

The diverse portfolio of services that Enviros has developed covers all the major operational sectors our clients demand and is constantly updated to anticipate the evolving needs of industry.

We approach each new challenge as an opportunity to grow, deepen our understanding and push through the boundaries of the achievable.



GEO
SERVICES



SURVEY
SERVICES



GEOSPATIAL
SERVICES



METOCEAN
SERVICES



ENVIRONMENTAL
SERVICES



DECOMMISSIONING
SERVICES



ASSET INTEGRITY
SOLUTIONS



CONSULTING
SERVICES



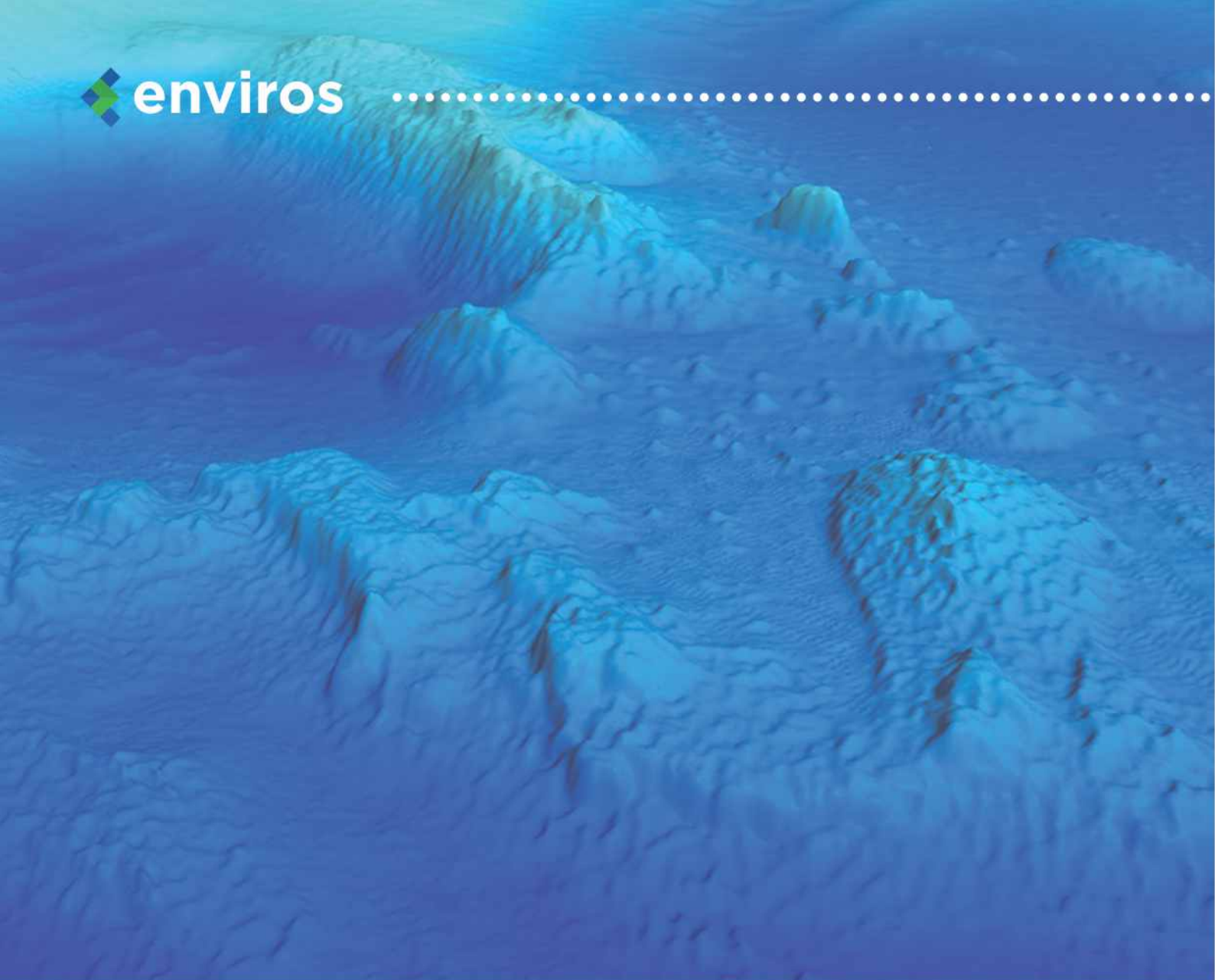
RESEARCH AND
DEVELOPMENT



TRAINING
SERVICES



TO LEARN HOW OUR SERVICES CAN
HELP YOU MOVE YOUR BUSINESS
AHEAD OF THE COMPETITION, VISIT
US AT **ENVIROSGROUP.COM**



GEO SERVICES

Enviros has created the Geo Services Division which services and solutions are based on geo-data for natural and anthropogenically changed environments. We aim to create the most qualified company for the collection of Survey, geophysical, geotechnical, geochemical, geospacial, marine and meteorological data using both remote and in situ technologies to support governments, oil and gas companies and the overall energy market in the areas of exploration, installation, production and decommissioning.

For that, Enviros Geo Services Division has set up a technical team of excellence, combining the expertise of our professionals with cutting edge technology.

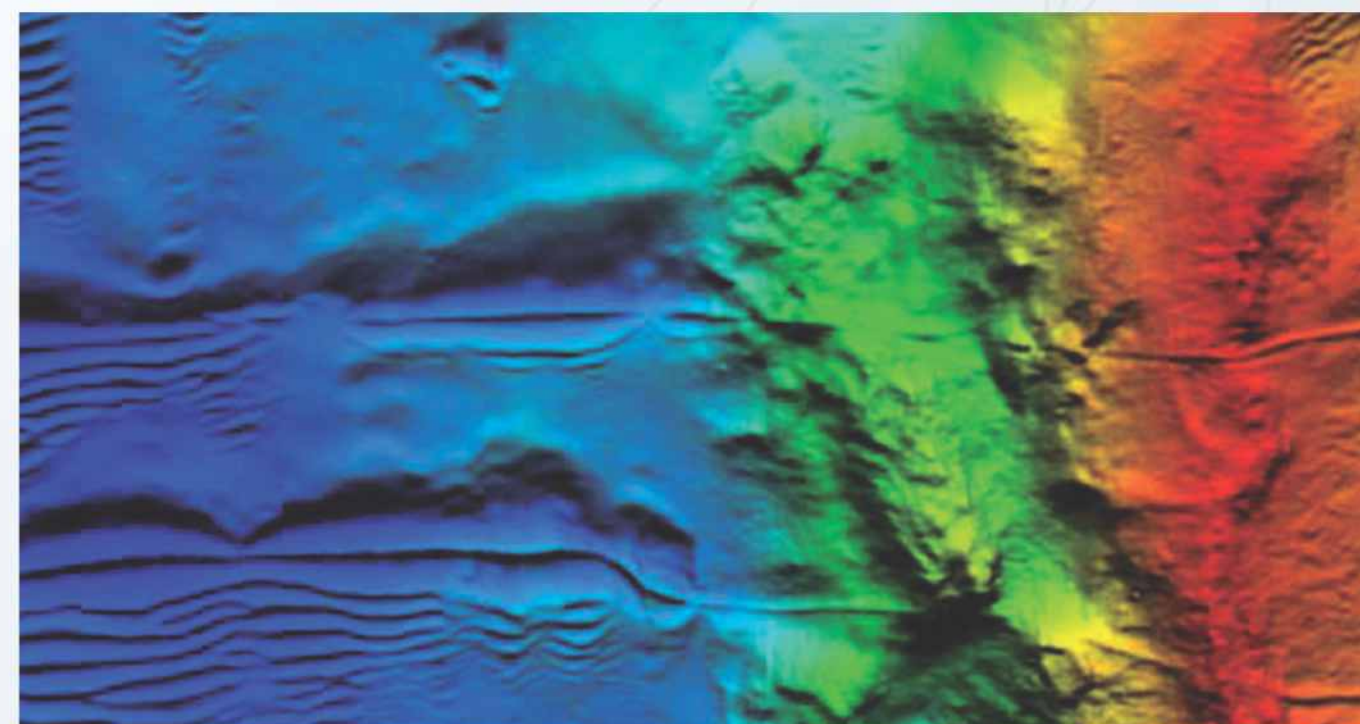
Geophysical Services

We provide a variety of geophysical services for seabed mapping projects and other multi-disciplinary surveys ranging from nearshore shallow water to full ocean depth.

AUV surveys are also available to provide valuable data that can be used for archaeological assessments and to identify seafloor and subsurface features that may have negative effects on drilling operations. Potential geological surface hazards may include faults, gas vents, surface channels, furrows, sinkholes, hydrate mounds, unstable slopes, and reefs. Subsurface geologic hazards may include gascharged sediments, faults shallow-water flow, and buried channels.

Our Geophysical Services include:

- Habitat Surveys;
- Mapping of the seabed and geological features;
- Hazard site surveys;
- Seismic surveys: 2D high resolution and 3D ultrahigh resolution, OBS surveys;
- P-Cable technology 3D seismic surveys;
- Shallow water and transit zone seismic surveys with ocean bottom seismic nodes;
- Processing and interpretation of seismic survey data;
- Pipeline and cable route surveys;
- Offshore windfarm sites investigation and windfarm monitoring;
- Hydrographic Surveys and mapping;
- EEZ and UNCLOS Services.

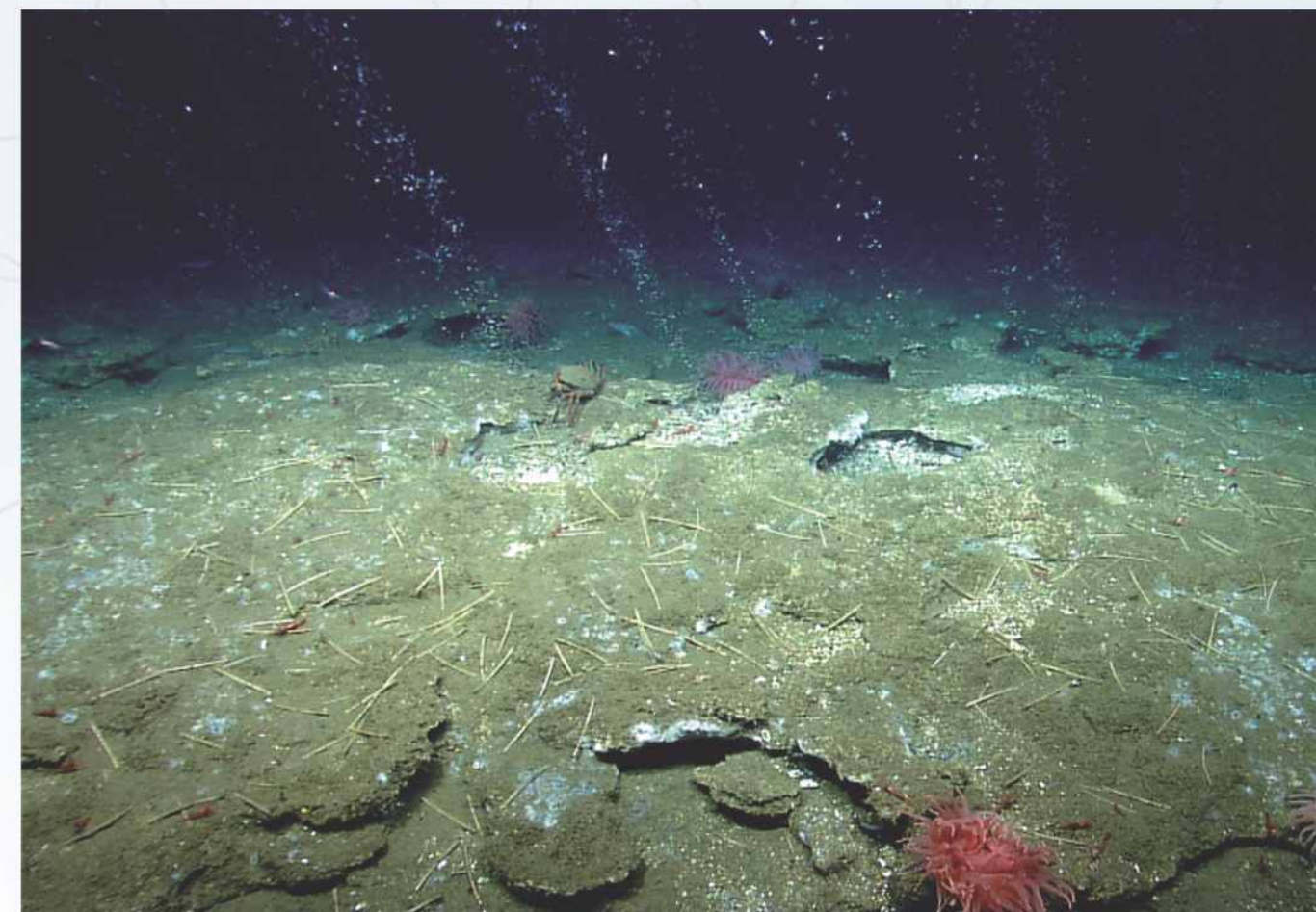


Geotechnical Services

Enviros can offer specialist geotechnical services including the latest innovative equipment designed for nearshore, shelf and also deep water applications.

Our Geotechnical Services include:

- Geotechnical site investigations;
- Geotechnical drilling using drilling vessels as well as mobile drilling technologies;
- Shallow seabed testing and sampling;
- Seabed interpretation;
- Specialist 20 ton seabed CPT for windfarm investigations and deep water applications;
- Burial assessment surveys (BAS) for submarine cables and pipelines route surveys;
- Wellhead inspections;
- Assessment of geohazards and its potential impact;
- Environmental surveys.



Geochemical Services

Enviros provide the most relevant and precise data for hydrocarbon prospection with its specialist geochemical exploration and seep hunting services, which range from survey, design, project management, field acquisition of cores, conventional and specialist laboratory testing through to final integrated and interpretative report.

Our Geochemical Services include:

- Macro-seepage geochemical surveys to predict quantity of hydrocarbon to be obtained and characterize exploration target prior to drilling;

- Micro-seepage geochemical surveys to detect and map seeps and to relate them to subsurface prospects;
- Combined geochemical and environmental surveys;
- Seabed mapping integrated with geophysical survey;
- Heat flow surveys;
- Sampling and testing.



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SURVEY SERVICES

Enviros offer a range of seabed and terrestrial survey services, as well as air based and geospatial surveys.

Aerial Survey

Our capabilities also include remote sensing technology such as airborne data acquisition and drone surveys for aerial mapping. Our imagery products include high resolution aerial photography, photogrammetric mapping and LiDAR mapping.

Some aerial data applications are: asset management, transportation and infrastructure development,

mining development and management, natural resources management, urban planning, land use planning, property assessment, economic and sustainable development, defence, emergency preparedness and response.

LiDAR Mapping

Our LiDAR mapping services includes bathymetric lidar for nearshore shallow waters mapping, digital

terrain modelling, fauna and flora habitats mapping and remote monitoring.

Drone Surveys

Enviros offer drone expertise and support for:

- RTK drone measurements;
- Georeferenced data;
- Extra survey services on top to complete mapping data where

drone surveys stop;

- Full orthophoto with accuracy 5mm - 20 mm/Pixel;
- Assured geometrically correct data to integrate easily in your software.

We also offer post processing services for DTM generation, volume calculation, risk assessment, GIS applications, Contour Maps, among others.

Land Survey

On terrestrial and geodetic applications, the combination of our experience, innovative technology (such as laser scanning, drones aerial mapping and digital terrain modelling), precise measurements (mobile mapping systems and precise electronic instruments) and 3D mathematical modelling enables us to provide reliable and cost-effective measuring solutions for various industries:

- Petroleum (Pipe routes and refineries);
- Engineering;
- Ship building;
- Mining.

Our complementary services include:

- 3D Laser scanning / Point cloud;
- Monitoring surveys;
- High-precision metrology services;
- Onshore and offshore plant surveys;
- Alignment surveys;
- Remote measurement surveys;
- Symmetry surveys;
- Photogrammetry & modelling;
- Dimensional control;
- Survey vessel calibration and verification surveys;
- Geodetic and topographic surveys;
- Ground surveys;
- 3D modelling surveys.



We also combine industry expertise and information management tools to support the planning, design, construction, management and maintenance of water and oil & gas land-based pipelines. Our expertise includes:

- Site characterisation for feasibility;
- Engineering and design studies;
- Topographic and geodetic surveying;
- Geohazards risk assessment;
- Site evaluation, selection, routing and construction support;
- Environmental impact assessments;
- As-built modelling to support inspection.

Marine Survey

Our survey services for seafloor site investigations provide high quality seismic data straight from the seabed. Data may be used for location approaching, reservoir characterisation, monitoring of production impact, detection of potential geohazards and project management decision.



Enviros has been undertaking hydrographic surveys to IHO S-44 standard in Belgium, The Netherlands and worldwide. Survey methods and equipment are continuously improving: Enviros upgrades and innovates its survey spread to meet changing demands of the hydrographic stakeholders, ranging from nearshore shallow water to full ocean depth.

Applications for hydrography include:

- Coastal surveys;
- Pre and post-dredging surveys;
- Port and coastal developments;
- Coastal zone protection and management;
- Environmental services (assessments and modelling);
- Data acquisition and monitoring surveys;
- ROV services;
- AUV services;
- UAV services;
- Navigation charting and nautical bottom depth survey;
- Offshore surveys for oil & gas;
- Cable route surveys;
- Services for renewable and Blue Energy;
- UNCLOS and EEZ mapping.

Geospatial Survey

Through our experience in the appropriate and cost-effective acquisition, processing and management of geospatial data, Enviros offer valuable satellite mapping services which support land management, infrastructure planning, natural resources exploration and environmental monitoring.

Satellite imagery is a powerful tool used in a wide range of industries for observation and remote sensing purposes. We provide optical satellite imagery from numerous earth observation satellites and offer clients non-biased advice to select the best imagery to suit any technical requirements, budgets and timescales.

We offer clients access to archived imagery, but we also work with imagery suppliers to task new collection of imagery and apply our expertise in the processing and analysis to deliver more information than just pixels. Relevant information is a major asset to the following activities:

- Disaster response planning;
- Urban planning – Project visualization;

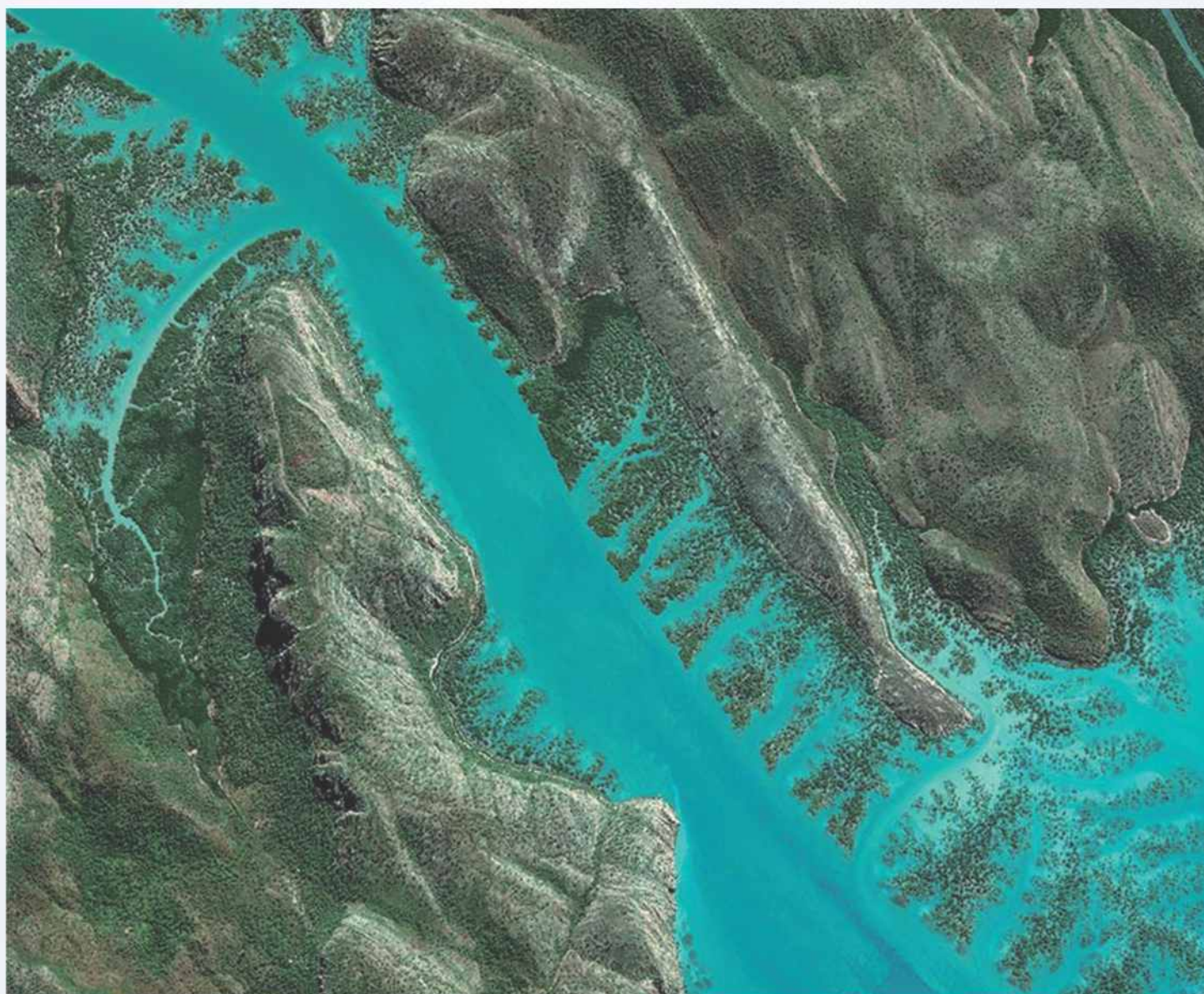
- Media and gaming visualization;
- Environmental impact assessment;
- Bathymetry and seafloor mapping;
- Agriculture and vegetation monitoring and assessment;
- Pre or post-assessment of natural disasters;
- Construction & civil engineering;
- Identifying and analysing archaeological sites.

Advantages of satellite imagery:

- Large areas are covered with similar resolutions to aerial photography;
- Collection can be made over unsafe regions, with no permits required;
- Near real-time data can be collected by satellite;
- Minimal environmental impact compared to land or marine survey.

Our products and solutions include:

- Orthorectified Mapping – pan-sharpened satellite derived mapping;
- Digital Terrain Model – satellite-derived terrain elevation modelling;
- Environmental assessment and monitoring – habitat mapping, land use/land cover, benthic habitat, wetland delineation, resources inventory, environmental monitoring and change detection;
- Resources Monitoring (natural or man-made) – crops and farms, roads, trees and forests, mangroves and others;
- Change Detection – numerous monitoring applications such as: deforestation, mangroves, oil spills, coastline, conservation areas, legal reservation and others;
- Emergency response – oil spill detection and movement, natural disasters extents/impacts;
- Urban Features – urban growth (infrastructure planning and monitoring), irregular construction detection, air quality and pollutants modelling, water quality monitoring.



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GEOSPATIAL SERVICES

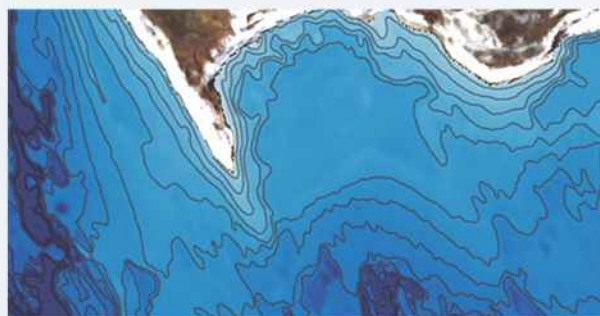
Remote sensing products provide affordable and quick data and analytics, for a variety of applications onshore and offshore, utilizing cutting edge technology and approaches where traditional methods may fail.

Satellite Derived Bathymetry

Satellite Derived Bathymetry provides water depth data in coastal and near shore areas. Depths are extracted using an attenuation coefficient algorithm that analyses the light frequency within different parts of the spectral range of the satellite imagery.

SDB can be created at several resolutions, depending upon your project size, budget and final application. By varying the satellite sensor used in production a different grid size can be output:

INPUT	GRID SPACING	RESOLUTION
WorldView 2 and 3	2m	0.46m and 0.31m
Sentinel-2	10m	10m
Landsat-8	30m	15m



Advantages:

- No boundary limitations, as there is no need for physical on site visits;
- Mobilization and permit requirements avoided, as well as health and safety risk;
- Non-intrusive method and no environmental impact;
- Tailor made to suit individual requirements;
- Time and cost saving.

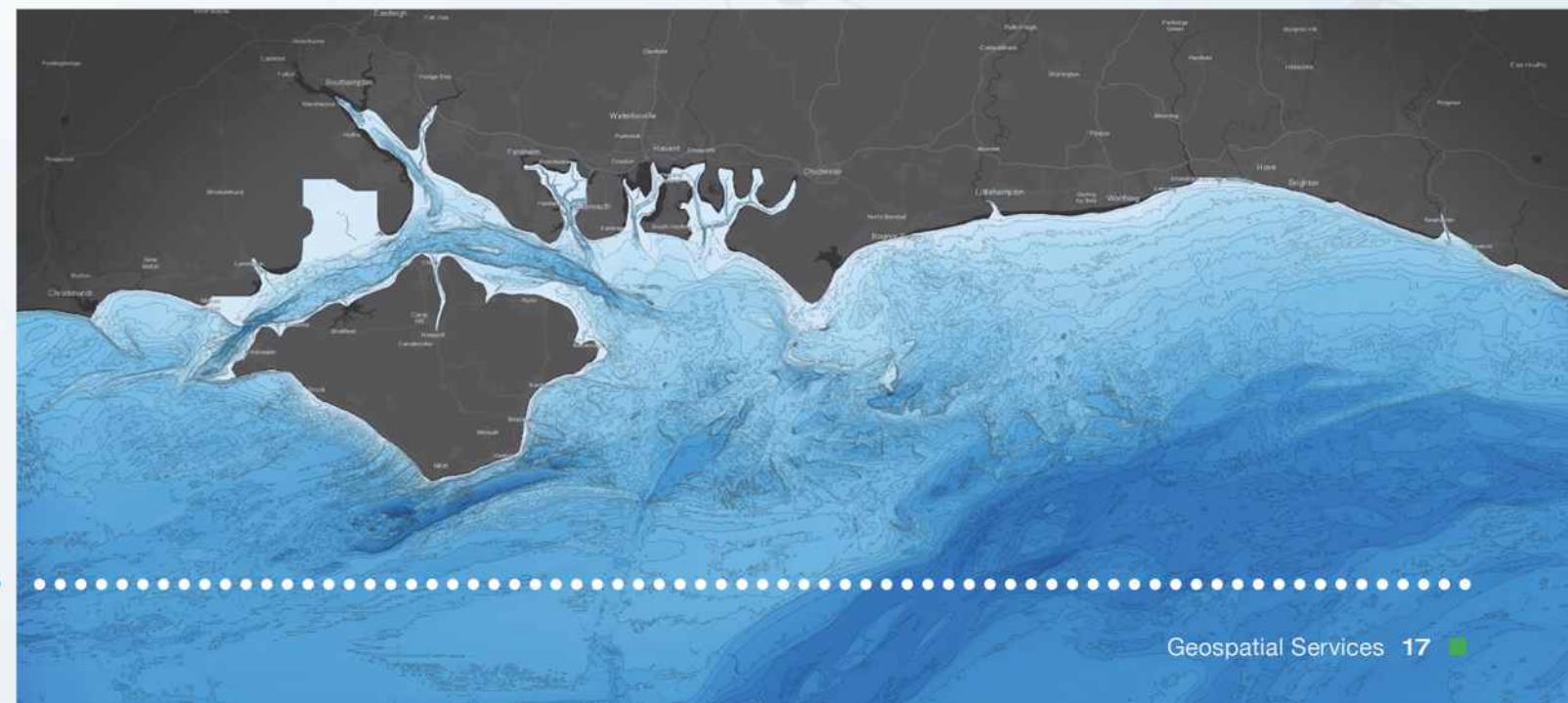
Global GIS Bathymetry

Global GIS Bathymetry Package is derived from a multitude of data sources including nautical charts, single- and multibeam survey data, Lidar, satellite derived bathymetry, altimetry data, seismic survey derived depths, and other sources to provide a level of detail superior to public domain data. The GIS data

package includes a Digital Bathymetry Model (DBM) with spot-depth values, contour lines, and high-resolution shoreline.

Applications for Global GIS Bathymetry Package include:

- Offshore geological analysis;
- Pipeline routing;
- Fisheries evaluation;
- Fresh-water lens drilling;
- Tidal energy project siting;
- Wind turbine siting;
- Marine archaeology;
- Tsunami modelling;
- Gold mining;
- Coastal defense analysis;
- De-salinization projects;
- Engineering projects;
- Dredging;
- Cable routing.





Vector Shoreline

Vector Shoreline products have a wide range of applications, currently being used in coastal zone management and environmental monitoring projects such as large-area Hazard Planning, Ocean & Tidal modelling, Climate Change modelling, what makes world's most dynamic environments easier to monitor and manage.

Detailing levels:

- Global Vector Shoreline is provided at 1:60,000 map scale;

- National Vector Shoreline is provided at 1:20,000 map scale;
- Local Vector Shoreline is provided at 1:2,000 map scale.

Topographic Bathymetry

The land water boundary has traditionally been a difficult zone to map and an important zone of economic activity around the globe. On-site surveys can be extremely costly and have associated health and safety risks. In addition, public data sources are scarce and low resolution.

Our unique Topographic Bathymetry approach combines land-based Digital Elevation Model (DEM) with our Digital Bathymetry Model (DBM) data to create a seamless high-quality 3D elevation model for the near-shore environment.

Global Topographic Bathymetry

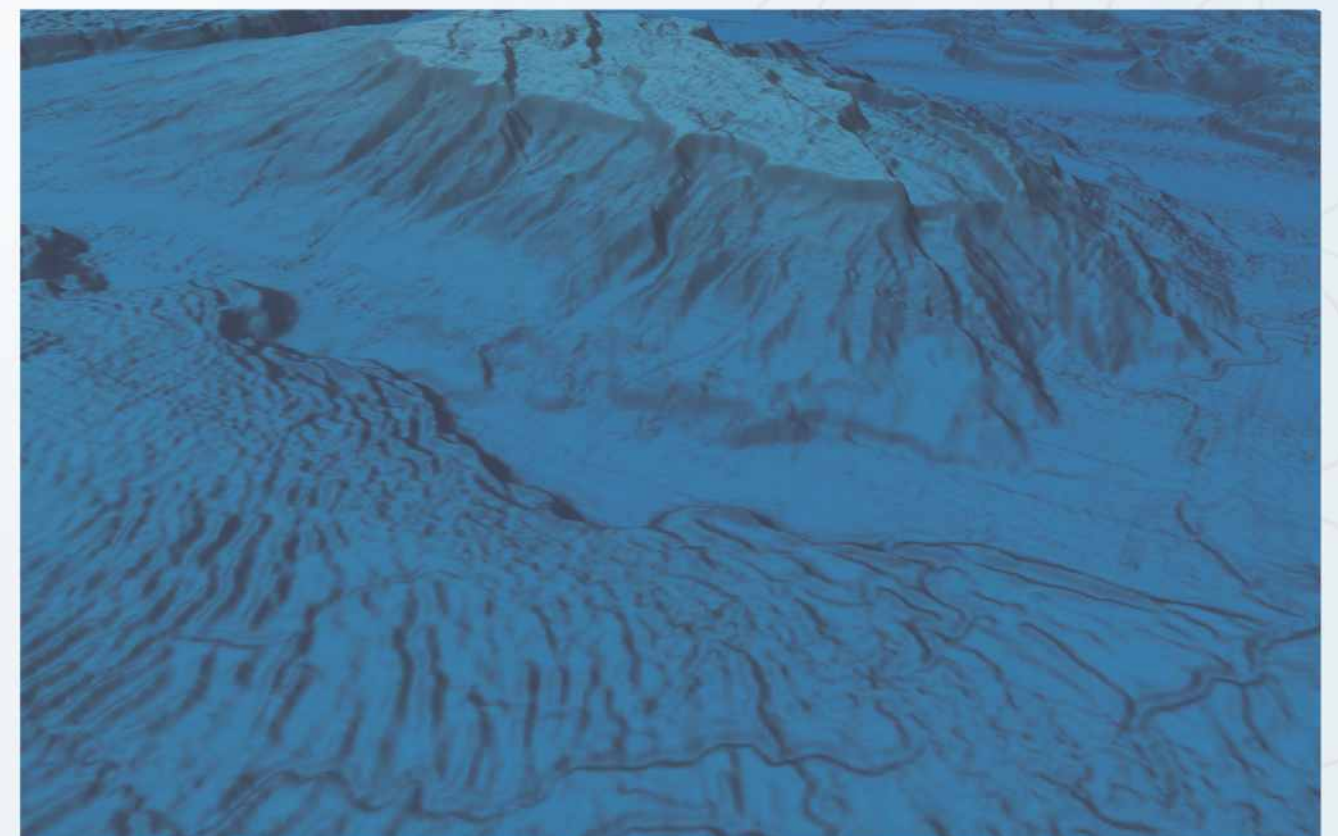
Utilizes Shuttle Radar Topography Mission (SRTM) or best available onshore DTM/DEM data combined with Global Shoreline Vector and global bathymetry data to create the Global Topographic Bathymetry a uniform product harmonized vertical reference.

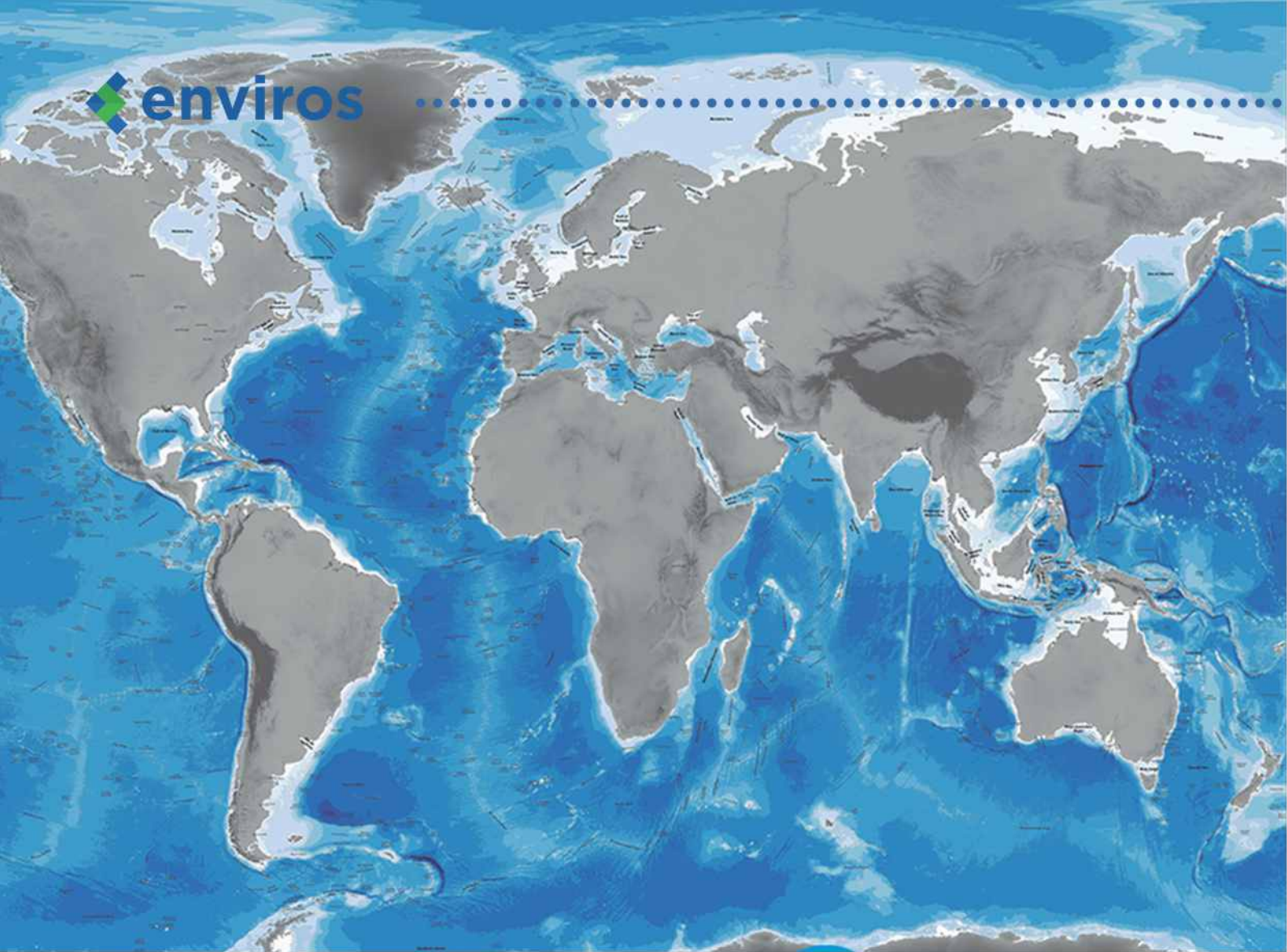
High Resolution Topographic Bathymetry

Utilizes Satellite Derived Bathymetry for water depths and creates custom Topographic Bathymetry models at higher resolutions for localized areas where high definition representation of the seabed is an important requirement.

Applications

- Storm surge modeling;
- Tsunami wave modeling;
- Risk modeling;
- Coastal zone management;
- Pipeline / Cable route planning & cost analysis;
- Virtual reality applications.





Marine Basemap

For many applications, a simple and aesthetically pleasing basemap is all that is required. We currently offer a suite of marine basemap products at global (400m), regional (90m), and local (30m) scales. A uniform backdrop for marine GIS applications.

Industrial Applications:

- Coastal defence;
- Environmental management;
- Commercial and sport fishing;
- Insurance / Risk management;
- Asset tracking;

- Oil & gas;
- Tidal and wind energy;
- Mobile applications.

Global Marine Basemap

Global Marine Basemap is derived from the best available bathymetry products – depth contours, marine feature labels, and the 1:60,000 Global Vector Shoreline are included – to supplement the perfect backdrop for marine and coastal GIS applications with more robust information than any publicly available sources.

Key Features:

- Scale-dependent display;
- Aesthetic backdrop for daily work;
- Quick display and redraw;
- Usable information in a basemap;
- Low-cost annual subscriptions;
- Offline and Enterprise installations;
- Available for developers and app deployment.

Regional Marine Basemap

We also offer regional Marine Basemaps, providing clients with a more detailed backdrop for their GIS applications. Regional models include increased contour density and detail, an extended marine feature dataset, and improved shorelines.

Marine Basemap Plus

For clients who want to add analysis capabilities to their basemap, we have the Basemap Plus option.

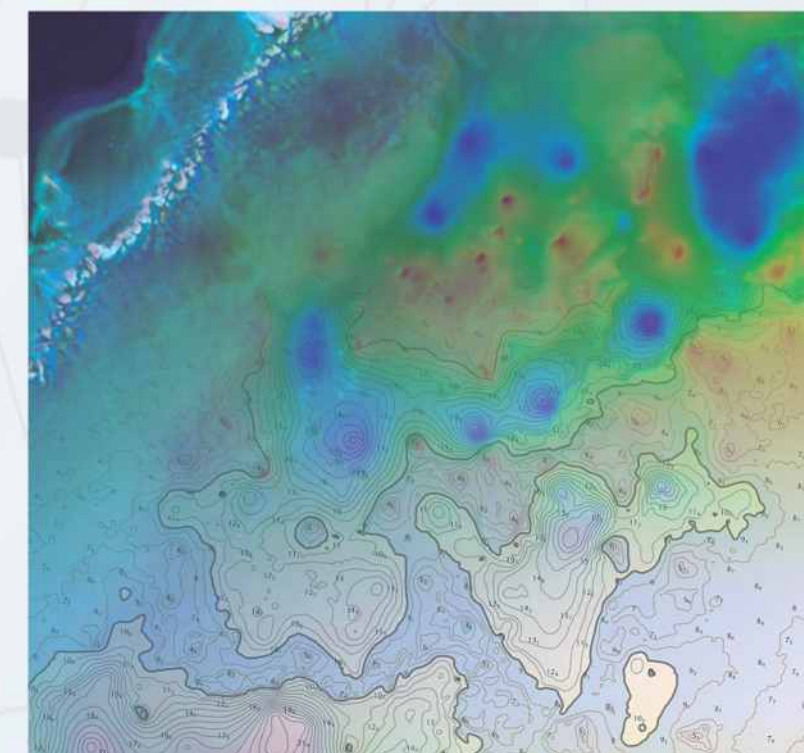
Subscribers to this service receive the standard backdrop for either global or regional models complete with contours, shoreline, and marine features. In addition, the Basemap Plus adds robust elevation data to the service, providing a complete turn-key GIS data package for analysis. Basemap Plus provides the best available uniform bathymetry data across an organization without the

Bathymetric Electronic Nautical Charts

Bathymetric Electronic Nautical Chart (bENC) products are created from Satellite Derived Bathymetry and Global Bathymetry data and consist of depth contours and depth soundings referenced to Chart Datum.

Applications:

- Coastal defence & Infrastructure;
- Dredging;
- Engineering;
- Fishing;
- Sailing;
- Exploration & Adventure;
- Luxury yacht;
- Support for Navigation (combined with official ENC).





Satellite Vegetation Monitoring

Earth observation (EO) satellites offer the opportunity to monitor vegetation assets entirely remotely. Large areas can be covered at a single moment in time, providing a consistent snapshot over wide areas. Our team of remote sensing scientists has experience monitoring a wide range of green assets for agriculture, food security and environmental applications. Our outputs have been used by decision makers, agronomists, scientists and land owners to better understand their resources and efficiently plan and manage their daily activities.

Mangroves

Mangroves are recognized as a crucial resource within the coastal and intertidal environment. They act as a natural barrier from storm surges and coastal erosion. They form a critical nursing ground for fish spawning, and they are a natural carbon sink.

It is important that Mangroves are appropriately monitored. We are experienced in monitoring multi-temporal changes in mangrove extents and quantifying the health of mangroves using a variety of different multi-spectral satellite images, including Landsat and WorldView images.

Crops and Farms

Satellites offer the opportunity to provide significant additional intelligence to farmers, agronomists, food suppliers, insurers, governments and other end users with interests in the agriculture sector.

Crop and farm monitoring products and services assist multiple end applications including:

- Improved efficiency of water use;
- Increased understanding of crop yields by specific location, contributing to better farm management;
- Implementation and management of distribution of subsidies by governments and authorities;
- Monitoring for violation in agricultural land use;
- Managing the food supply chain through forecasting food yield and supply.

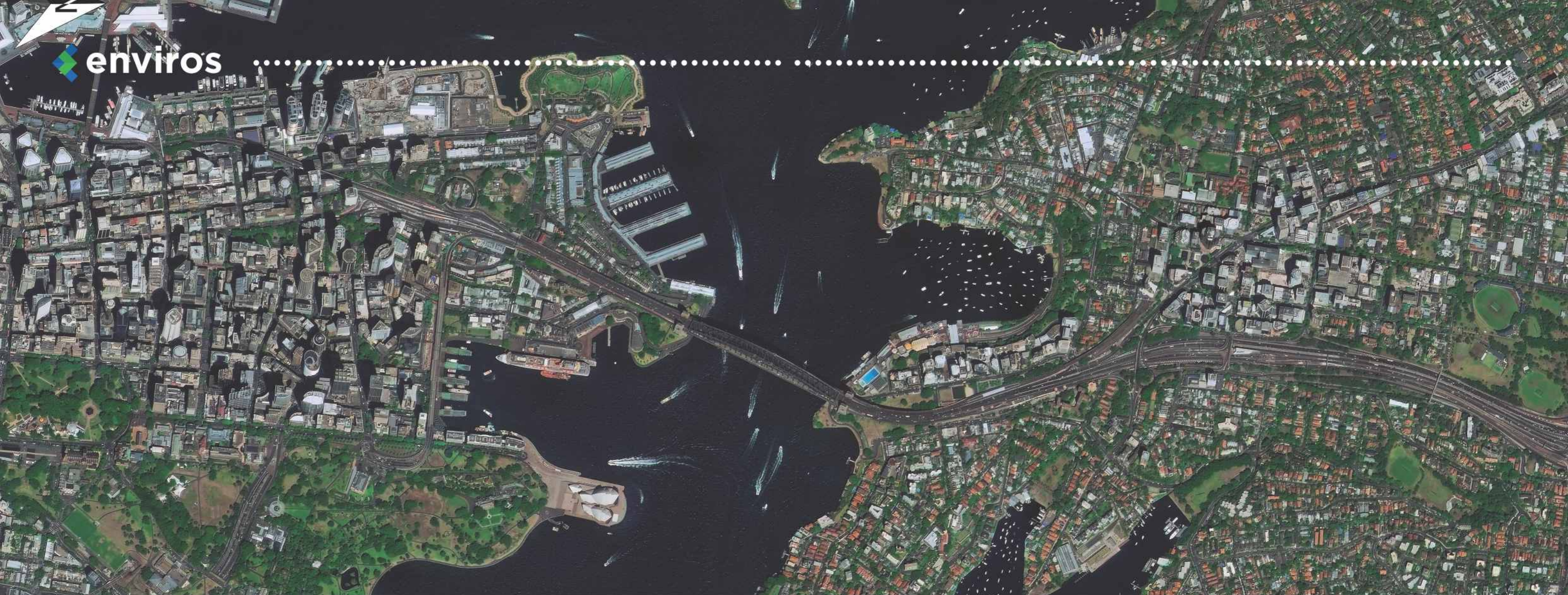
Trees and Forests

Earth observation satellites allow forest stands as well as individual trees to be mapped and monitored. Combining optimal satellite imagery with customized remote sensing algorithms, trees and forests can be accurately monitored to understand its health and status.

Our remote sensing experts deploy a multi-stage workflow that has customized and aggregated several commonly used algorithms to differentiate tree canopies and extract them from various soil conditions. Individual canopies can be captured down to 1m² in size, and attributed with indicators of health, species and spatial characteristics.

Satellite forest inventories have been used to manage and understand both natural and man-made plantations. Low-health classifications have been correlated with their causes (poor irrigation, saline groundwater seepage or insect infestation for example), so that continual monitoring with imagery can pinpoint problems and help dispatch the right solution before trees have died.

- Repeat observations can be carried out using satellite tasking;
- Tree species can be differentiated using multispectral satellite imagery;
- Individual trees can be mapped using high resolution imagery;
- Tree health and biomass can be calculated.



Land Use / Land Cover Mapping

Urban development constantly changes the face of our planet. Satellite imagery can be used to provide an up-to-date picture of the state of land use and land cover on a large scale.

Combining Earth Observation satellite imagery with customized remote sensing algorithms we classify the landscape and deliver a GIS enabled asset inventory.

We provide data at a wide range of mapping scales and resolutions and use our expert knowledge to define a landscape classification schema that is entirely suited to the final application.

For maps to be meaningful, cartographic generalization rules are implemented, many of which are automated within GIS software.

Image Classification

As part of the image processing workflow, the landscape is categorized against a classification schema. The schema is determined by the characteristics of the landscape and environment, as well as the intended end uses of the data and required thematic detail. Depending upon client needs, a mixture of natural, semi-natural as well as human land use categories can be deployed.

Habitat Mapping and Environmental Impact Assessments (EIAs)

Environmental policies and effective conservation strategies require detailed information of the state of landscape and habitats to help protect ecosystems. Satellite derived habitat mapping provides this information quickly compared to traditional survey methods, giving a snapshot of the state of environments in time that has been interpreted to help manage urbanization, infrastructure development and use of natural resources.



Water Quality Monitoring

Satellite based Water Quality Monitoring is built upon a variety of different source satellite imagery in order to track the quality of inland or off-shore water quality conditions at varying time intervals.

Possible applications:

- Monitoring dredging activities and sediment plumes;
- Establishing secchi depth by monitoring turbidity which can affect phytoplankton population;
- Detecting nutrient upwellings to inform the potential of algal bloom development that can impact on human and aquatic health;

- Detecting change in temperature that may affect coral and other habitats;
- Establishing trends in sea conditions using historical imagery for Environmental Impact Assessment.

NOAA's Moderate Resolution Imaging Spectroradiometer (MODIS) and Medium Resolution Imaging Spectrometer (MERIS) imagery is acquired, calibrated and processed on a daily basis to provide an early warning system to identify harmful algal blooms and other water quality anomalies over large areas. Where a more focused, higher detail solution is required, Landsat imagery is deployed every 16 days.

ITEM	DESCRIPTION	INTERVAL
Suspended Matter	High concentrations of sediment	Daily or every 16 days
Chlorophyll-a Concentration	Indication of phytoplankton	Daily or every 16 days
Diffuse Attenuation Coefficient	Indication of turbidity	Daily or every 16 days
Sea Surface Temperature	Sea temperature at time of image collection	Daily
Normalized Fluorescence Line Height	High chlorophyll that could indicate algal blooms	Daily



Satellite Air Quality Modelling

It is estimated that ambient outdoor air pollution leads to 4.2m premature deaths each year, with traffic being one of the most important and contributing sources. It is estimated that 91% of the world's population lives in places where air quality exceeds WHO guideline limits.

Using high resolution satellite data and air pollution modelling we create some of the most detailed air pollution maps ever produced for cities around the globe.



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PRIMARY POLLUTANT	HEALTH IMPACT
Carbon Monoxide (CO)	Affects the transport of oxygen around the body by the blood. Breathing in low levels can result in headaches, nausea, tiredness and difficulty in thinking clearly.
Nitrogen Oxide (NO2)	The most common outcomes are respiratory symptoms such as shortness of breath and cough. Nitrogen dioxide inflames the lining of the lung and reduces immunity to lung infections such as bronchitis.
Ozone (O2)	High levels of ozone can irritate and inflame the lungs. It can also irritate the eyes, nose and throat, which can lead to cough and chest discomfort. Inflammation and narrowing of the airways lead to increased sensitivity to cold air and exercise.
Particulate Matter (PM2.5)	The health effects of particle air pollution have been widely studied and include premature death and the worsening of heart and lung disease, often increasing admissions to hospital.
Particulate Matter (PM10)	Particles smaller than about 10 micrometres, referred to as PM10 and particles smaller than 2.5 micrometres (PM2.5), can settle in the airway and deep in the lungs and cause health problems.
Sulphur Dioxide (SO2)	Short-term exposure to high levels of sulphur dioxide may cause coughing, tightening of the chest and narrowing of the airways. People with asthma are more sensitive to sulphur dioxide than healthy individuals.

METOCEAN SERVICES

We use the latest innovative equipment designed in order to provide commercial metocean services and studies, from field data acquisition, site monitoring, data processing, interpretation, modelling, risk studies, data management and further related services, all on a fully integrated world-wide basis to meet and support customer needs both in offshore or coastal environments.

Oceanographic parameters include: currents, waves (height, period and direction), tides and water levels.

Meteorological parameters include: wind (speed and direction), air temperature, barometric pressure, relative humidity, surface wind vectors (SWV), precipitation (PPT), radiation, irradiation and visibility. Meteorological parameters include: wind (speed and direction), air temperature, barometric pressure, relative humidity, surface wind vectors (SWV), precipitation (PPT), radiation, irradiation and visibility.

Water quality parameters (supported by water and sediment sampling) include: sea surface tempera-

ture (SST), surface chlorophyll concentration (CHL), salinity, dissolved oxygen, turbidity, hydrocarbons, radioactivity, CO₂, pH and biopolymers.

The range of specialist numerical modelling and analytical services in meteorology and oceanography offered by Enviro to support offshore planning, monitoring and surveillance includes:

- Oceanographic data collection, with an emphasis on environmental areas (Currentometry, Geochemistry, and Naval Geotechnics);
- Metoceanographic, coastal and oceanic data collection, analysis and management;
- Data storage and management, analysis and interpretation;
- Metocean measurement services and dynamic modelling;
- Hydrodynamic modelling of water currents and sediment transport;
- Meteorological & oceanographic forecasting services;
- Metocean support for drilling and production activities;
- Metocean statistics.





ENVIRONMENTAL STUDIES AND RELATED SERVICES

For a complete solution our multidisciplinary marine consultants and environmental specialists provide a wide range combination of environmental consultancy, permitting and licensing, project management, data acquisition, ecological surveys, laboratory analysis and advisory services.

Consultative Engineering

Our staff holds the ability to work closely with the client, in order to understand and address each of its complex and even the unprecedented environmental challenges, with expertise, understanding and the skills necessary for resolving environmental issues and creating a sustainable solution for the operations.

- General Consultative Engineering, mainly for Oil & Gas environmentally related activities, focused on coastal, marine and estuarine environments;
- Elaboration of preliminary and basic projects related to environmental regulations and requirements;
- HSE consulting, auditing and management, based on legislation and environmental policy;
- Technical advice for Environmental Licensing processes (EIA), as well as in public hearings and in satisfying the conditions of environmental licenses;
- Stakeholders engagement and consultation;
- Consultancy and support for infrastructure planning, licensing, development and project management, environmental protection, adequacy and resource management.

Feasibility, Site Selection and Routing Studies

Early execution of feasibility assessments, site and route selection studies will significantly reduce permitting effort and potential development issues in the latter stages of a project. Proper understanding of environmental constraints of development locations and routes should form a fundamental part of any marine project still at its concept stage.

Enviros can assist clients with a unique combination of skills and by liaising with the regulators about the project's feasibility. We help you select the optimal development location and routing, as well as provide knowledgeable advice on the suitability of proposed location/route through the completion of feasibility studies, site selection and geohazards assessments that provide clear guidance on issues that may influence permitting, consenting and operation of sites.

GeoHazards Assessment

Geohazard assessments combine complementary research fields such as geotechnical sampling, geo-environmental and seismic engineering, soil and rock mechanics, hydrology, geology, acoustic survey and 3D imagery in a multi-disciplinary approach to identify where hazardous subsurface features or unstable soil conditions exist, either on the seabed or foundation zone, and determine its location and hazardous potential.

Assessment is usually carried out prior to the construction of artificial environments to provide subsidy for site selection and resilient infrastructures design. Data is also valuable to predict related risks and develop solutions to prevent, mitigate and reduce the potential impacts of unavoidable geohazards.

Assessment focus on findings such as submarine landslides, unstable slopes, debris and turbidity flow, sediment transport, erosion, shallow gas accumulation, faults, mud volcanoes, and methane hydrates.

Environmental Assessment Services

Our experienced and actively engaged staff will help you assess the impacts of your activities throughout all of its stages to ensure that the installation, operation and decommissioning of assets will not pose significant risk to the environment. The team is also well versed in regional-scale assessment, multi-disciplinary assessment and preparation of licensing documentation.

- Site characterization;
- Environmental baseline assessments;
- Field studies / Ecology surveys;
- Seabed video and imaging;

- Environmental impact statement (EIS);
- Environmental impact assessment (EIA);
- Environmental and social impact assessment (ESIA);
- Environmental, social, and health impact assessment (ESHIA);
- Strategic environmental assessment (SEA);
- Regional environmental assessment (REA);
- Habitats regulations assessment;
- Habitat mapping and marine mammal monitoring;
- Environmental statements;
- Environmental appraisals;
- Environmental policy development;
- Environmental mitigation and adaptation.

Activities Licensing

Proper understanding of a project's potential environmental, economic and social impacts, as well as the local legislation, regulation and guidelines is essential for successfully obtaining an operating license.

Besides drafting and submitting applications, we can also help you maintain the necessary permits, consents and licenses required to operate your project.

- Permit and consent
- Feasibility studies and licensing strategy;
- Management plans (construction, environmental, spill mitigation, route selection);
- Support environmental reporting for consent applications;
- Licensing / Permitting advice;
- Environmental licensing for commissioning, drilling and production activities;
- Liaison / negotiation with key regulatory bodies to mitigate any concerns;
- Technical support on consultation and advertising responses and queries;
- License conditions review and compliance.





Nature Conservation Services

Special importance shall be given to nature conservation principles and practices. Several regulations are established for this purpose such as the UK Marine Act (2006). Nature conservation features identification and characterization is crucial to perform properly informed Environmental Impact Assessment.

But when it is too late to prevent, the best option is to remediate, and Enviros is also engaged with that:

- Examination and remediation of contaminated waters and soils;

- Physical, chemical and biological monitoring of effluents, underground waters, water bodies and soil;
- Pro biotics biodredging services performance and revitalization of water bodies.

Site Remediation Services may be performed on offshore environment oil spills, as well as on coastal and estuarine areas spills, port areas organic bottom sludge, and onshore environments, such as on gas stations, storage tanks, pipeline routes, among other possibly contaminated areas.

Waste Management Services

Waste from oil & gas activities includes hazardous materials in any of its stages. Hazardous materials final disposal is a risky activity and must be carried out to the highest standards in order to avoid environmental damage. It is worth to highlight that the waste producer is responsible to ensure that the waste is managed correctly throughout its complete journey to disposal or recovery.

Count on us for:

- Management and final disposal of hazardous waste according to local regulations;
- Sewage treatment and water bodies related services;
- Management and treatment of atmospheric, water and solid wastes originated from the oil exploration or decommissioning stages;
- Environmental impact assessments for waste and materials handling;
- Detailed procedures for regulatory compliant handling systems.

Laboratory Services

When required, Enviros also provides high quality laboratory physico-chemical and biological analysis developed by our dedicated environmental researchers, followed by state-of-art data reporting and interpretation.

- Water, sediments and biota sampling and analysis;
- Microbiology analysis;
- Ecological research and laboratory analyses in coastal and offshore environments;
- Underground waters and soils analysis.

Water quality analyses covers major chemical parameters, inorganic contaminants, and organic contaminants and support understanding toxic pollution related to metallic or organic contaminants as well as nitrogen and phosphorous compounds.

Analysis includes metals, pesticides, degradation products, PCBs, drugs and endocrine disruptors, besides assessing the bioavailability of pollutants.



Climate Changes

In spite of being a relatively young company, Enviros team has extensive and long-dated experience in climate change, including participation in the multidisciplinary team that proposed the first worldwide UNFCCC registered greenhouse gases reduction project, which has given operability to Paris Agreement's predecessor, the Kyoto Protocol.

Enviros offers its clients:

- Mitigation and adaptation strategies;
- GHG emission management strategy;
- Environmental compensation studies and strategies.

Natural Resources Monitoring & Remediation Services

Implementing a comprehensive environmental monitoring program, including biological studies will certainly help minimize impacts on the environment and its living beings. But when it is too late to prevent, the best option is to remediate and Enviros is also engaged with that:

- Examination and remediation of contaminated waters and soils;
- Physical, chemical and biological monitoring of effluents, underground waters, water bodies and soil;
- Pro Biotics biodredging services performance and revitalization of water bodies.

Site Remediation Services may be performed on offshore environment oil spills, as well as on coastal and estuarine areas spills, port areas organic bottom sludge, and onshore environments, such as on gas stations, storage tanks, pipeline routes, among other possibly contaminated areas.

Oil Spill Response

Due to a personal concern with the environment and given some large-scale oil spill events around the world, a group of senior specialists and renowned academic research centres has gathered forces and knowledge in order to provide integrated solutions for those unforeseen and potentially devastating situations.

In terms of Oil Spills, Enviros expertise focus on:

- Response training;
- Biotechnological remediation.





Bioinvasion Management and Services Solutions

Enviros carries out campaigns for the diagnosis and proper removal of invasive or exotic species bearing in mind legal compliance, the need of not greater contamination from the release of larvae into the environment.

- Pre and post frontier assessments;
- Remote visual inspection and reporting on the distribution and density of exotic species;
- Support and/or elaboration of technical specifications for prevention/inspection/control of exotic species;
- Proper removal of bioinvasion;
- Sun Coral free certificate for cross-border rigmoves and contract compliance.

Water and Effluents Treatment

In search of sustainable eco-friendly solutions to revitalize water bodies contaminated by organic load, we use the most efficient biotechnologies, in order to improve basic sanitation and reduce water pollution.

Services provided include:

- Water quality evaluation and monitoring;
- Revitalisation of contaminated water bodies;
- Detailed design and dimensioning of water and sewage treatment plants, as well as optimization, operation and monitoring.





DECOMMISSIONING SERVICES

After years of production, facilities and assets reach the end of its useful life, and the move from late life management to the decommissioning of assets can be a daunting prospect, with the challenges of project scale, cost, capability and regulatory compliance, which differs from place to place.

We help you navigate the regulatory and technical complexities of late life operations and decommissioning of offshore and onshore assets and pipelines, from CoP preparation, planning and surveys, to plug and abandonment, waste management and monitoring post removal.



Pre-Decommissioning Services

Before the decommissioning phase of an oil field it is important to map the environmental conditions as well as the integrity condition of assets such as pipelines, platforms and other installed equipment in order to decide which is the best option for its decommissioning and final destination.

There are currently 5 options for decommissioning of offshore structures and by having the best available information clients can decide the most appropriate strategy and methods for successful decommissioning.

Enviros team is ready to support you with:

- Post-drill and pre-decommissioning surveys;
- Evaluations and feasibility studies for decommissioning projects;
- Advice on decommissioning strategy selection;
- Asset integrity assessment;
- Energy balance, emissions, impact of explosives and potential effects on the marine environment;
- Decommissioning activities licensing;
- Decommissioning waste management planning and advice.

Environmental Impact Assessment Process covers the following aspects:

- Assessment of seabed condition;
- Assessment of potential impacts to marine environment;
- Assessment of atmospheric & terrestrial impacts;
- Waste management;
- Energy use associated with re-use and recycling;environment;
- Potential impacts to future users of the sea.





Decommissioning Support Services

During decommissioning ongoing collection of data is important for tracking possible impacts before they become problematic.

Enviros team is ready to support you with:

- Project management advice and processes follow-up;
- Site monitoring;
- Stakeholders engagement;
- Decommissioning waste management advice monitoring.

Main environmental concerns to be addressed:

- Waste generation;
- Marine growth;

- Cuttings and seabed debris;
- Potential socioeconomic impacts;
- Technologically enhanced naturally occurring radioactive material (TENORM);
- Direct impacts to the marine ecosystem.

Waste Management Services

Almost all of the decommissioning options, if not the total abandonment of the structures, brings the dilemma of the huge amount of waste generated.

Our experts with in-depth knowledge of diverse market sectors and global industry best practices is ready to advise and support all of the stages waste management challenges.

Besides the consultative services, Enviro also provides:

- Decommissioning strategies and corporate procedures;
- Decommissioning studies, costings and planning;
- Materials Inventory & Waste Characterization;
 - Detailed inventory with identification, quantification, characterization and mapping of hazardous materials and substances with ensuing Human Health Risk Assessments as part of Decommissioning Programmes to feed into the decontamination and dismantling design phase;
 - Strategy for waste quantification, removal, transportation and onshore management.
- Asset resale and reuse;
 - Identification of plant and equipment for resale and reuse with comparisons to scrap values taking into account H&S, costs and processes for deplanting and selling on assets;
 - Tag and track;
 - Estimated optimal recycling rates for topsides, jackets and subsea bearing in mind H&S, cost, programme and compliance.
- Regulatory Compliance;
 - Advice on compliant and documented waste management and disposal

solutions for those wastes not recyclable nor reusable;

- Consultancy including review of H&S plans and systems; review of method statements and risk assessments; regular site audits and waste assurance; regulatory compliance support and liaison.

Post Decommissioning Monitoring

Regular periodic monitoring of environmental conditions post-decommission is also recommended to ensure any remaining structures do not decay and cause problems over the long term.

- Post-decommissioning site monitoring;
- Examination and remediation of contaminated waters and soils;
- Physical, chemical and biological monitoring of underground waters, water bodies and soil;
- Pro Biotics Biodredging Services performance and revitalization of soils and water bodies.



KNOW MORE ABOUT OUR SERVICES FOR ALL DECOMMISSIONING PHASES AT [ENVIROSGROUP.COM](https://www.envirosgroup.com)



ASSET INTEGRITY SOLUTIONS

Enviros provides inspection and monitoring of the integrity condition, performance and regulatory compliance of critical infrastructure. By early identifying structural vulnerabilities clients may optimise maintenance programmes and extend the life of assets, reducing operational risks and costs, and enhancing the long-term safety and integrity of assets, as well as safeguarding human life and protecting the environment.

Enviros follows all applicable API guidelines, best industry practices

and comply with local and international laws and regulations. Furthermore we are corporate and/or committee members of various industry authorities including AINT, BINDT, IMCA, SUT, HSB and Decom North Sea.

Subsea Systems Services

Advantages of Subsea assets and pipeline inspection programmes:

- Avoid asset failure;
- Mitigate integrity risks;
- Minimize unscheduled downtime due to activities such as corrective

tion readings;

- Cathodic disbondment performance evaluation;
- Flooded member detection;
- NDT inspections;
- Repair and maintenance planning;
- Life extension support.

Data may be acquired using ROV and AUV combined with interferometric synthetic aperture sonar (SAS), side scan sonar (SSS), multibeam echosounder, sub-bottom profiler, 3D bathymetric laser, high-resolution photo mosaic system, hydrocarbon detectors and magnetometer. AUVs range may vary:

- Shallow water (up to 100m);
- 100m to 300m;
- Up to 1000m;
- Up to 3000m;
- Up to 6000m, upon advance request.

- Secure reliable subsea production systems and boost performance;
- Provide subsidies for life extension projects of existing facilities;
- Enables operator to evaluate and estimate remaining life of the equipment.

Enviros offers subsea inspection and monitoring services below the waterline up to 3,000 metres depth, including:

- Subsea video and data acquisition;
- Remote asset integrity inspection;
- Pipeline inspection;
- Seabed inspection;
- Drilling monitoring;
- Impressed current cathodic protec





Diverless UWILD Inspection

Enviros carries out underwater offshore inspection and monitoring through remote and unmanned technology, which significantly reduce the time exposed to risk and reduce cost to deliver Class Society Inspections requirements for Oil and Gas MODU and MOPU vessels. All with the advantage of a safe operation due to divers mothballing.

Our high quality remote specialist solutions for Underwater inspections in lieu of dry docking (UWILD) employs Multi-Purpose ROVs that allow unparalleled flexibility and efficiency, including:

- Standard visual fly-by inspection of the hull structure and specific niches;
- Non-destructive testing (NDT)

such as thickness gauging and cathodic protection readings;

- FPSO hull, turret inspection and mooring lines inspection;
- Cavitation cleaning.

For the mooring lines, capabilities extend from the splashzone until the seabed, with special focus given up to 30m below the waterline and up to 30m above the seabed, including dimensional check, CP test and NDT with work class ROVs and Go-no-Go gauges. If required, Enviros may include vessel and TMS provision for an integrated solution.

Through our strategic partnerships, Enviros are ABS, DNV, BV, Lloyds and RINA recognized external in-water survey specialist service provider.



UAV SERVICES BENEFITS

REDUCE **RISK**
EXPOSURE

BETTER INFORMATION
TO BASE **SHUTDOWN**
PLANNING

MORE **PRODUCTIVE**
AND **EFFICIENT**
SHUTDOWNS

HIGH RESOLUTION
STILL AND VIDEO IMAGERY
FOR CLOSE VISUAL AND
THERMAL INSPECTIONS

UAV Services

A safe way to inspect “at height” or difficult to access areas, Unmanned Aerial Vehicle inspections provide high-definition data to support critical maintenance decisions.

UAVs has been deployed in a variety of inspection applications, both onshore and offshore, and its limits are still being explored:

- General visual inspections (GVI);
- Pre-Decommissioning inspections / Decommission observation;
- Windfarm assests inspections
- Topside inspections – Derrick / Crown Block / Top Drive / Flare;
- Underdeck and Splash-zone Inspections;
- Close visual inspections (CVI);
- Collision-tolerant confined space inspections;
- Infrared thermal inspections.

UAVs offer the unique opportunity to perform visual inspection while the asset is in operation, even before a planned shutdown. The cost savings of avoiding a downtime are clear, but unmanned, battery operated UAVs also reduce the risk exposure. The resultant data also allows

clients to fully plan and budget shut-downs, locating and diagnosing potential issues in advance, covering all angles both visually and thermally.

Enviros offer drone expertise and support for:

- RTK drone measurements;
- Georeferenced data;
- Extra survey services on top to complete mapping data where drone surveys stop;
- Full orthophoto with accuracy 5mm - 20 mm/Pixel;
- Assured geometrically correct data to integrate easily in your software.

We also offer post processing services for DTM generation, volume calculation, risk assessment, GIS applications, Contour Maps, among others.



KNOW MORE ABOUT OUR ASSET
INTEGRITY SOLUTIONS AT
ENVIROSGROUP.COM



CONSULTING SERVICES

Our specialist consulting services involve a range of geophysical, geotechnical, geochemical, geospatial, environmental, hydrological, oceanographic, geological, ecological, meteorological, atmospheric, engineering, biochemical, microbiological, and relevant disciplines to support conceptualization, design, construction, installation, operation, compliance, inspection, maintenance, repair, deactivation and decommissioning activities for all attended markets, including: Oil & Gas, Wind Power Generation, Nuclear Industry, Mining, Ports, Governments, Military & Defence, Science & Research.

Experts in all of our service-related matters are available to provide knowledgeable advice and guidance for a multitude of applications. Please contact us for a tailor-made solution.

RESEARCH AND DEVELOPMENT

In order to continuously improve our services and expand our market reach, we maintain a dynamic internal structure, composed of industrial and academic researchers, tasked with applied research in technological and scientific fields, toward innovation and enhancement of intellectual property, capable of providing R&D in fields such as underwater robotics applied to geostudies, asset integrity management and environmental monitoring; as well as biotechnology applied to bioremediation and biodispersant solutions.

On the scientific field, our scientists are focused on the research and development of sustainable and eco-friendly solutions for oil spills and hydrocarbon contamination.

On the business field, our market specialists seek constant interaction with its target markets to learn its needs and provide real-time feedback during the research and development process. This allows Enviro to develop solutions that keep pace with even the most shifting of needs.

On the technological field, our engineers are fully committed with the development of new solutions for deep water oil fields, holding wide experience in developing new technologies for services in areas such as UWILD, risers, mooring lines, subsea pipelines and subsea structures in general.

We explore the boundaries of robotics and artificial intelligence with expertise, focused on the development of effective, computer-controlled devices that make our work easier and safer.



READ MORE ABOUT OUR RESEARCH
AND DEVELOPMENT PROJECTS AT
ENVIROSGROUP.COM



TRAINING

Training and professional capacitation hold important role both for companies to maintain and enhance its workforce performance and for available candidates to improve their employability.

Depending on the kind of training required, our tailor-made courses can be held at any suitable location, such as client's onshore facilities, offshore – during operations –, or even online. Interactive and dynamic training techniques enhance content retention and lead to effective results. Enviros provides specialised training for offshore legal compliance on the following subjects:

- Waste management;
- Emergency Response (Drills and tabletops);

- Stakeholder management;
- Environmental training;
- Marine mammals observer (MMO).

We also offer a wide range of corporate training solutions and customise specific project and operations training programmes for any industry. Core subjects include:

- Applied Project Management
 - o Leadership skills;
 - o Team building;
 - o Tasks and timelines;
 - o Budgeting;
 - o Risk Management.
- On-the-job experience
 - o Hands-on training;
 - o Emergency simulation.
- Personal competence
 - o Performance and career coaching.



READ MORE ABOUT OUR TRAINING AND PROFESSIONAL CAPACITATION AT
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