



# FUGRO MARINE ENVIRONMENTAL SERVICES

**Offshore oilfield and civil engineering activities around the world require stringent pre- and post-activity assessments to confirm that developments will not adversely impact the environment.**

## GLOBAL ENVIRONMENTAL SOLUTIONS FROM FUGRO

Fugro provides comprehensive and integrated marine environmental services for the oil and gas, marine renewables, ports and harbours, cables and pipelines, and aggregates sectors.

We carry out environmental surveys and assessments around the globe, including the North and South Atlantic, Europe, the Middle East, South East Asia, Australasia and the Pacific.

Our highly qualified consultants and scientists provide unrivalled consultancy, survey and analysis expertise.

## GLOBAL ENVIRONMENTAL SOLUTIONS FROM FUGRO

- Site selection, feasibility studies and desktop studies
- Environmental and social impact assessment (EIA/ESIA)
- Strategic environmental assessment
- Environmental consenting and legislative guidance
- Environmental management plans
- Environmental management systems support
- Oil spill contingency plans
- Geographical information system, environmental sensitivity and data management

## SURVEY EXPERTISE

- Environmental baseline surveys
- Environmental monitoring surveys
- Biotope mapping of protected habitats, like coral reefs, seagrass beds and bivalve beds
- Marine mammal observations including passive acoustic monitoring systems
- Intertidal and terrestrial surveys
- Fish surveys and fish spawning ground surveys
- Deep water environmental surveys (more than 3,000 m deep)

## LABORATORY EXPERTISE

- Sediment, biota and water chemical analysis
- Oil spill forensic services
- Determination of sediment and water characteristics
- Marine and estuarine taxonomic analysis



### **SUBTIDAL HABITAT MAPPING**

Biotope or habitat mapping is routinely carried out in areas of environmental concern, including reefs, seagrass beds, mangroves and deep water coral environments.

Fugro has carried out habitat mapping worldwide. Using sophisticated underwater cameras in conjunction with satellite images or geophysical data, we are able to ground-truth and map the survey area, identifying and characterising any environmentally sensitive areas.

### **INTERTIDAL AND TERRESTRIAL HABITAT MAPPING**

Intertidal and terrestrial surveys are required where the impact of any development may extend to the land, such as cable and pipeline routes, or port developments.

Using satellite imagery and in situ ground-truthing data, we have done intertidal and terrestrial habitat mapping worldwide. Our surveys are tailored to the proposed development, with site-specific survey strategies and sampling techniques developed to meet client and regulatory requirements.

### **ENVIRONMENTAL BASELINE AND MONITORING SURVEYS**

Understanding the existing environment is essential for EIA and other environmental permitting processes. Fugro has unrivalled experience and expertise in designing, undertaking and reporting environmental baseline surveys and monitoring surveys. We acquire sediment and water samples from the intertidal zone to water depths beyond 3,000 m using the most technologically advanced equipment, including grabs, corers, water bottles, rosette systems, high-resolution camera systems and conductivity, temperature, density, water profilers.

Our in-house physico-chemistry and macrofauna laboratories then use state-of-the-art equipment and software to analyse and report on the samples and data obtained.

### **MARINE MAMMAL AND SEABIRD OBSERVATIONS**

Marine mammal observers (MMOs), protected species observers (PSOs) and passive acoustic monitoring (PAM) are often needed for baseline and monitoring surveys or activities where noise enters the marine environment.

We provide highly experienced MMOs, PSOs and PAM specialists (accredited to Joint Nature Conservation Committee, Bureau of Ocean Energy Management and Bureau of Safety Environmental Enforcement standards) to help clients minimise the risk of disturbance and injury to marine mammals. We also provide experienced seabird observers.

## **ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT**

Fugro is experienced in all aspects of EIA and ESIA, including screening, scoping, option selection, establishing the environmental baseline, impact assessment, proposing mitigation measures, and follow-up monitoring.

Our consultants have extensive experience of working closely with engineers and project teams, assimilating objectives, capturing key data and proposing robust mitigation measures to ensure regulatory approval in many different marine sectors.

## **OIL SPILL CONTINGENCY PLANNING**

Oil spill contingency plans (OSCPs) and oil pollution emergency plans (OPEPs) are legal requirements for many regulatory regimes, preparing operators and authorities to deal with all categories of accidental hydrocarbon release from exploration, development, workover or decommissioning activities.

Fugro has prepared many OSCP/OPEPs for offshore oil operations. All contingency plans are project specific, include detailed environmental risk assessments and provide guidance on practical actions and reporting requirements.

## **ENVIRONMENTAL PERMITS, CONSENTS AND LEGISLATIVE GUIDANCE**

Knowledge of local environmental legislation, standards and permitting requirements is key to delivering successful projects.

Our multi-sector experience of environmental consenting, permitting and impact assessment enables us to ensure regulatory approval of our clients' projects.

*Providing intertidal and terrestrial habitat mapping worldwide.*



*Our consultants offer industry advice and research.*



*We use sophisticated underwater cameras to identify and characterise environmentally sensitive areas.*





## **PHYSICO-CHEMICAL LABORATORIES**

Accurate and high-level quantification of data is essential to determine existing environmental conditions. Using the latest equipment and techniques, Fugro's physico-chemical laboratories specialise in particle size analysis and testing for an extensive range of significant marine pollutants within complex environmental matrices. We subject our equipment and samples to rigorous calibration, quality assurance and quality control checks. This process ensures that we provide accurate and reliable data to our clients at all times.

## **MACROFAUNA LABORATORIES**

Identification of benthic macrofauna samples requires highly experienced and skilled taxonomists. We employ only the best taxonomists with worldwide experience, so Fugro are able to process and report samples on time and to a high degree of accuracy. Our laboratories participate in the National Marine Biological Association Quality Control scheme.