



Deliverable 7.9

Ethics brief on environmental issues for planned marine operations

Version 2.1

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Executive Summary

This ethics report is an evaluation of current environmental regulations in the Belgian North Sea (the Belgian Federal Public Service's Health, Food Chain Safety and Environment's Marine Spatial Plan) at the site of operations, in relation to planned operations in MARCO BOLO WP4. The report also includes a summary of safety mechanisms for collision avoidance in the operation of ROVs and USVs. MARCO BOLO operations are planned outside of Marine Protected Areas, but it's also worth noting that the Marine Protected Areas in the Belgian North Sea allow industrial operations such as fishing and sand extraction.



Task 4.4 in Work Package 4 will demonstrate the new developments in geolocation, automated data processing and reporting and sensor networks in fieldwork near Ostend, Belgium, near a major industrial shipping port in the North Sea. As part of this demonstration, Work Package 4 will operate two vehicles: a miniaturised remotely operated vehicle (ROV) from the RV Simon Stevin and an uncrewed surface vehicle (USV). This Ethics Brief is to review the region and each vehicle and address any unplanned impacts on the working environment during the Task 4.5 demonstration.

The Belgian North Sea: The Belgian North Sea is shown in Figure 1. VLIZ have been operating in the coastal region extending from Ostend for years, including weekly operations of the RV Simon Stevin. *Industrial activities:* Note that the only Marine Protected Areas (MPAs) in this region are Vlaamse Banken to the west and Vlakte van de raan in the east, where commercial fisheries are active, including continued trawling operations. The current MPAs include heavy commercial shipping traffic, and industrial sand extraction and dumping sites. Offshore wind infrastructure is being planned in the Vlaamse Banken MPA.

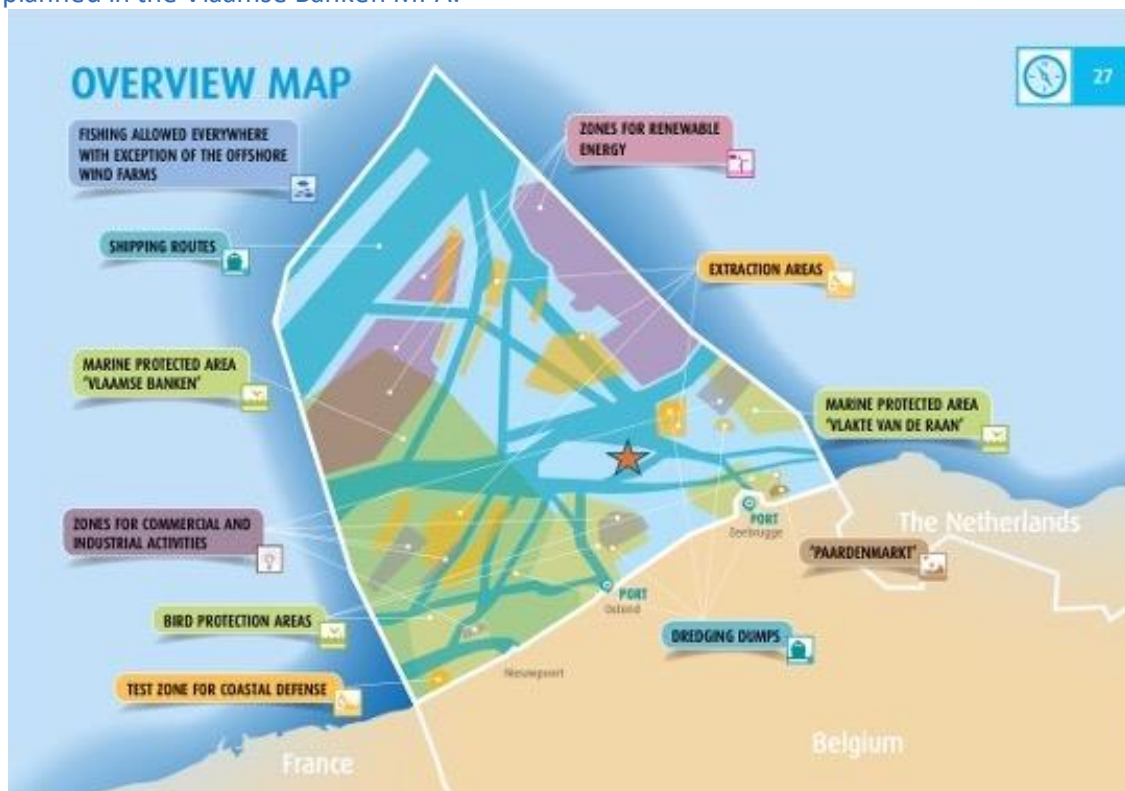


Figure 1. Marine Protected Areas in the Belgian North Sea (Vlakte van de raan and Vlaamse Banken) won't be impacted in MARCO BOLO. Industrial activities in the Belgian North Sea include commercial shipping, dredging, sand extraction and dumping and offshore renewable energy – all activities which take place within designated MPAs. MARCO BOLO plans to operate uncrewed surface vehicles and remotely operated vehicles in the southern Belgian North Sea at VLIZ's regular monitoring site (Grafton site, indicated by orange star in map above). Figure from https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/brochure_something_is_moving_at_sea_2020.pdf

VLIZ and LifeWatch ERIC operate ships and deploy sensors on landers in the southern Belgian North Sea (Grafton site, orange star, Figure 1) regularly and is the area that we have prioritised for MARCO





BOLO marine operations. Acoustics data from a lander at the Grafton site show this region to be active and populated by marine mammals, dominantly porpoises. The benthos here is comprised of very fine sediment. Task 4.4 will target this specific region for ROV and uncrewed surface vehicle operations.

Vehicle operations: ROV and USV vehicle operations do not occur without previous knowledge of the region's habitats including bathymetry, and without permission to operate in local waters, following the maritime code of practice for safe operations here: <https://www.maritimeuk.org/media-centre/publications/being-responsible-industry-industry-code-practice/> and country-specific codes of practice, where they exist. The sensors used in WP4 are intentionally non-destructive and non-invasive, based on optical, genomics and acoustic sensing rather than harvesting organisms from the environment.

BlueROV: There is no seagrass in Belgium and the benthic habitat is mostly comprised of fine sediment. MARCO BOLO's ROV operations avoid benthic reef-forming worms, which do not occur at the Grafton site (Figures 1, 2). The BlueROV will operate above the seabed without disturbing the sediments.

Uncrewed Surface Vehicle: The Grafton site is just south of a major shipping lane (Figure 1) and the USV is the largest vehicle operated in Task 4.4 (9.0 x 2.5 x 3.0m), with a collision avoidance system to prevent detriment to animals, habitats or substrates. USV operations here will be below 4 knots, required for operations of one of our sensors (the Underwater Vision Profiler or UVP6). This speed is easily avoided by marine mammals. This is the typical cruising speed for a pinniped (5 knots) and seals and porpoises are capable of bursts of speed from 10-15 knots.





MARCO-BOLO

STRENGTHENING BIODIVERSITY OBSERVATION IN SUPPORT OF DECISION MAKING

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