Van Oord
Marine ingenuity

Look around and meet the world of Van Oord

Frans Pijpers | SDB Day 2018 | 06-07 June 2018

About us – Company profile

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Profile

- Leading international marine contractor
- Specialised in:
  - Dredging
  - Offshore oil & gas
  - Offshore wind
- Our Marine ingenuity is all about smart and innovative solutions
- Independent family-owned business
- Long-term view to provide marine solutions of value
- Safety, sustainability and continuity go hand in hand

About us – Van Oord in brief

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Founder's mentality

We are a Dutch family-owned company with over 150 years of experience as an international marine contractor. We value open communication with our clients and stakeholders.
Our company culture is one of entrepreneurship and engaged employees. We think and act with responsibility and focus on the long term.

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Vision and Mission

Vision

Our vision is to create a better world for future generations by delivering Marine ingenuity.

Mission

As a global maritime contractor, we focus on dredging, oil & gas infrastructure and offshore wind. We work safe and closely with our clients and stakeholders to create innovative and sustainable solutions.

About us – Company values

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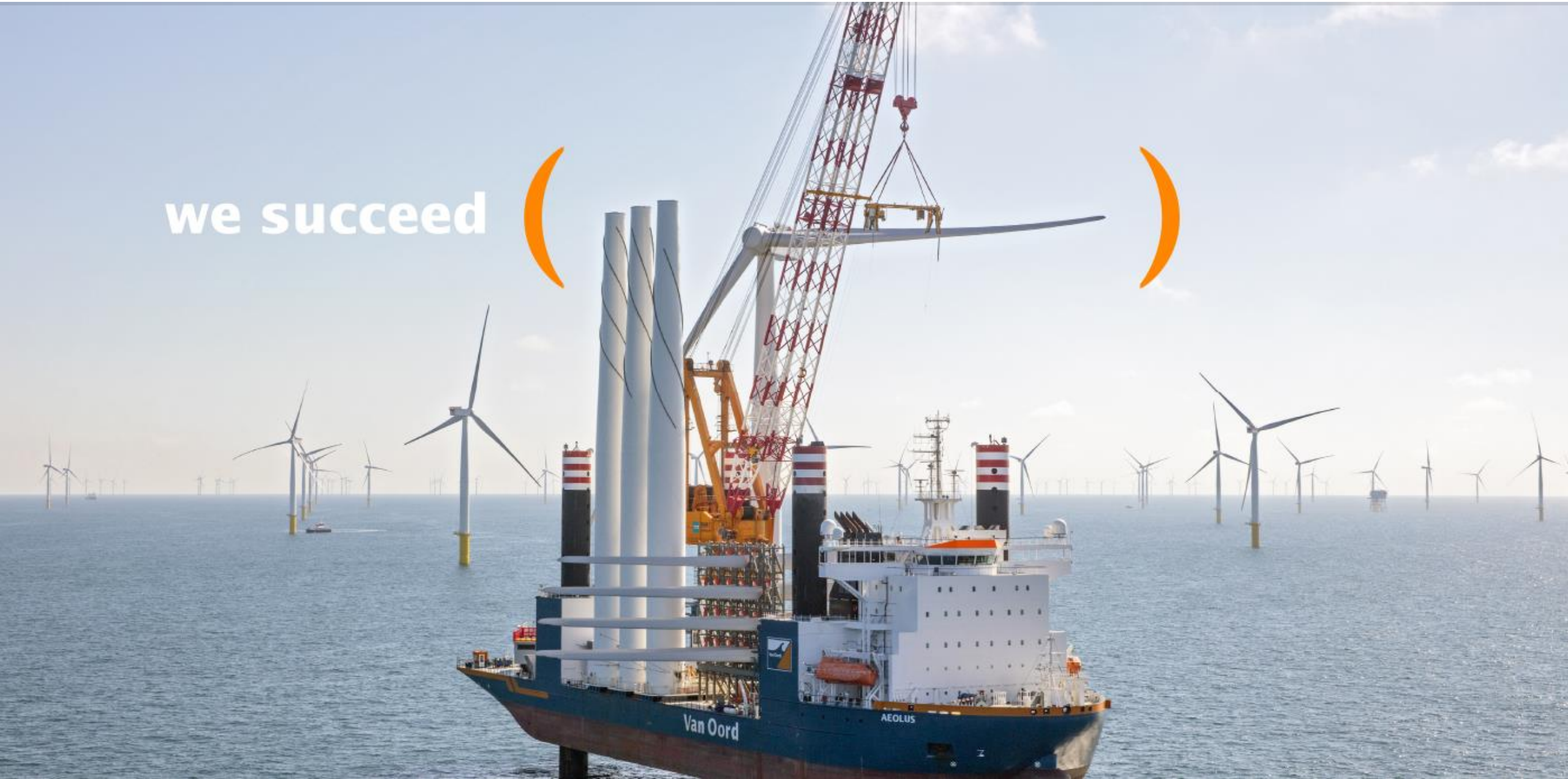

About us – Worldwide presence

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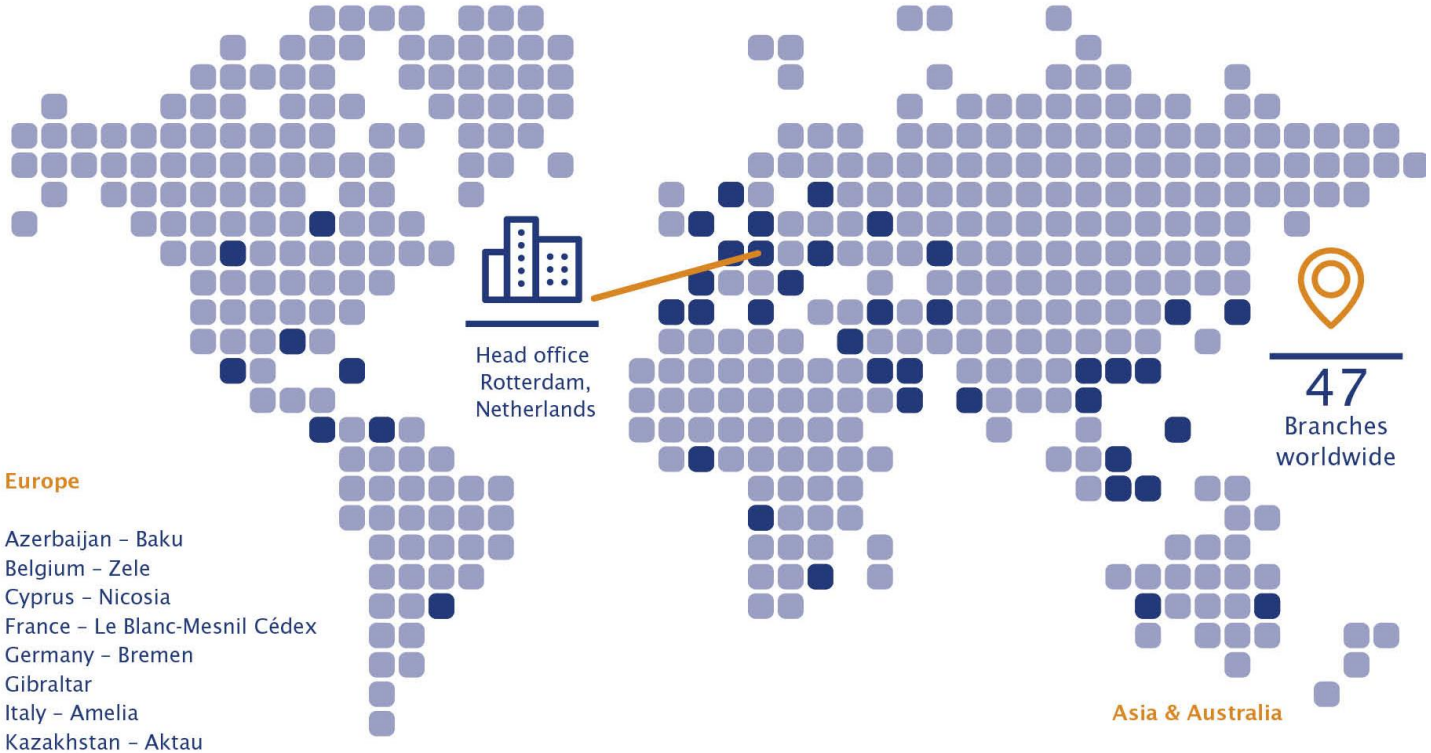
Van Oord Worldwide



Europe

Azerbaijan – Baku
Belgium – Zele
Cyprus – Nicosia
France – Le Blanc-Mesnil Cédex
Germany – Bremen
Gibraltar
Italy – Amelia
Kazakhstan – Aktau
Latvia – Riga
Netherlands – Gorinchem
Netherlands – Rotterdam
Norway – Bergen
Portugal – Lisbon
Romania – Constanta
Russia – Moscow
Russia – St Petersburg
Spain – Madrid
Turkmenistan - Ashgabat
Ukraine – Odessa
United Kingdom – Small Dole

America

Bahamas – Nassau
Brazil – Rio de Janeiro
Canada – Calgary
Canada – Ontario
Curaçao – Willemstad
Mexico – Mexico City
Panama – Panama
United States – Houston

Africa

Angola – Luanda
Mozambique – Maputo
Nigeria – Ikeja-Lagos

Middle East & West Asia

Bahrain – Manama
India – Mumbai
Qatar – Doha
United Arab Emirates – Dubai

Asia & Australia

Australia – Brisbane
Australia – Perth
China – Shanghai
Filippijnen- Manilla
Hong Kong
Indonesia – Jakarta
Korea – Busan
Malaysia – Kuala Lumpur
Singapore
Taiwan – Keelung City
Thailand – Bangkok
Vietnam – Hanoi

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Our people share a passion for water and technology, as well as developing and achieving innovative, sustainable solutions for our projects

About us – Sustainability

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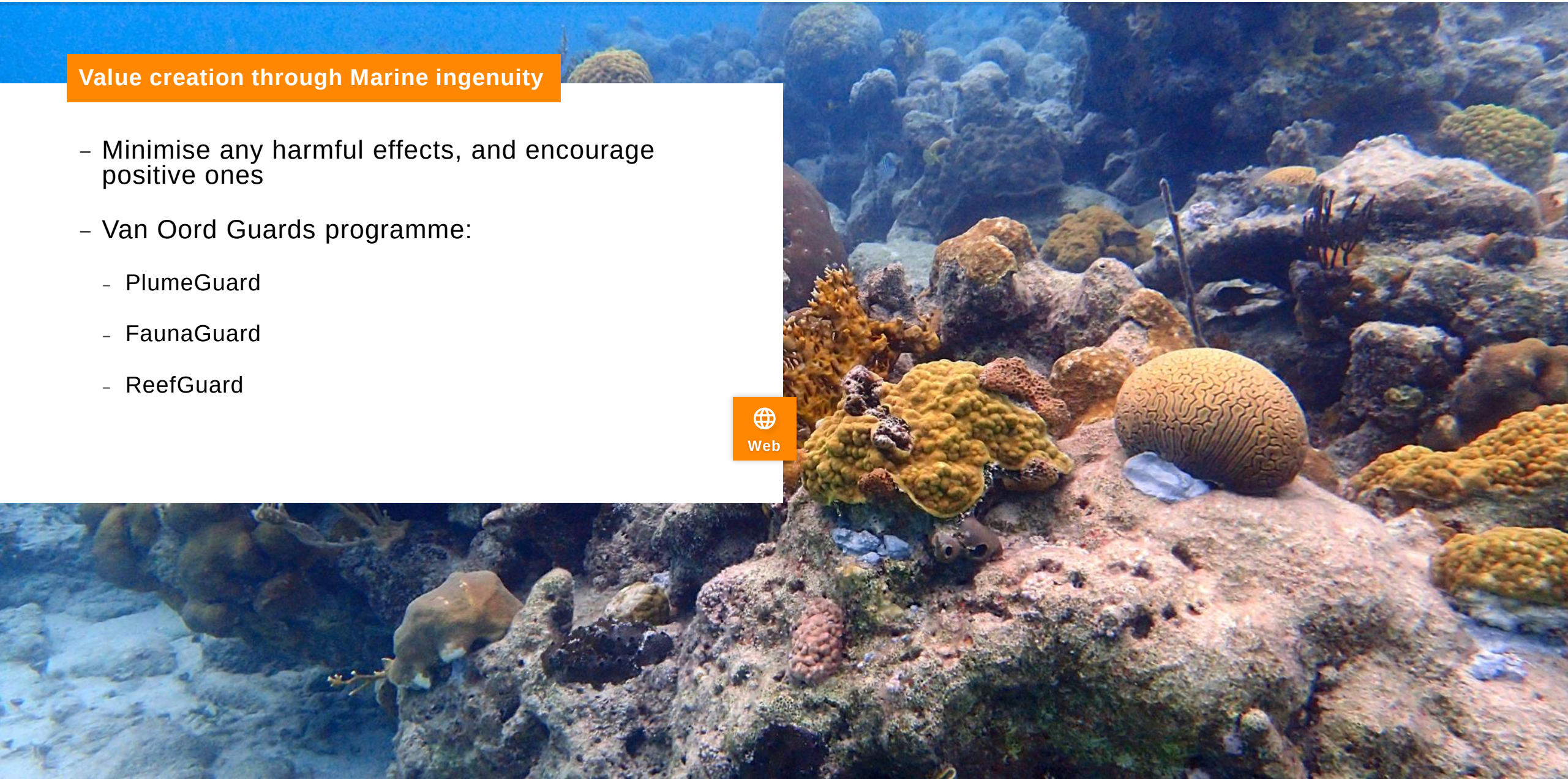
Value creation through Marine ingenuity

- Minimise any harmful effects, and encourage positive ones
- Van Oord Guards programme:
  - PlumeGuard
  - FaunaGuard
  - ReefGuard

Web



Activities – Dredging

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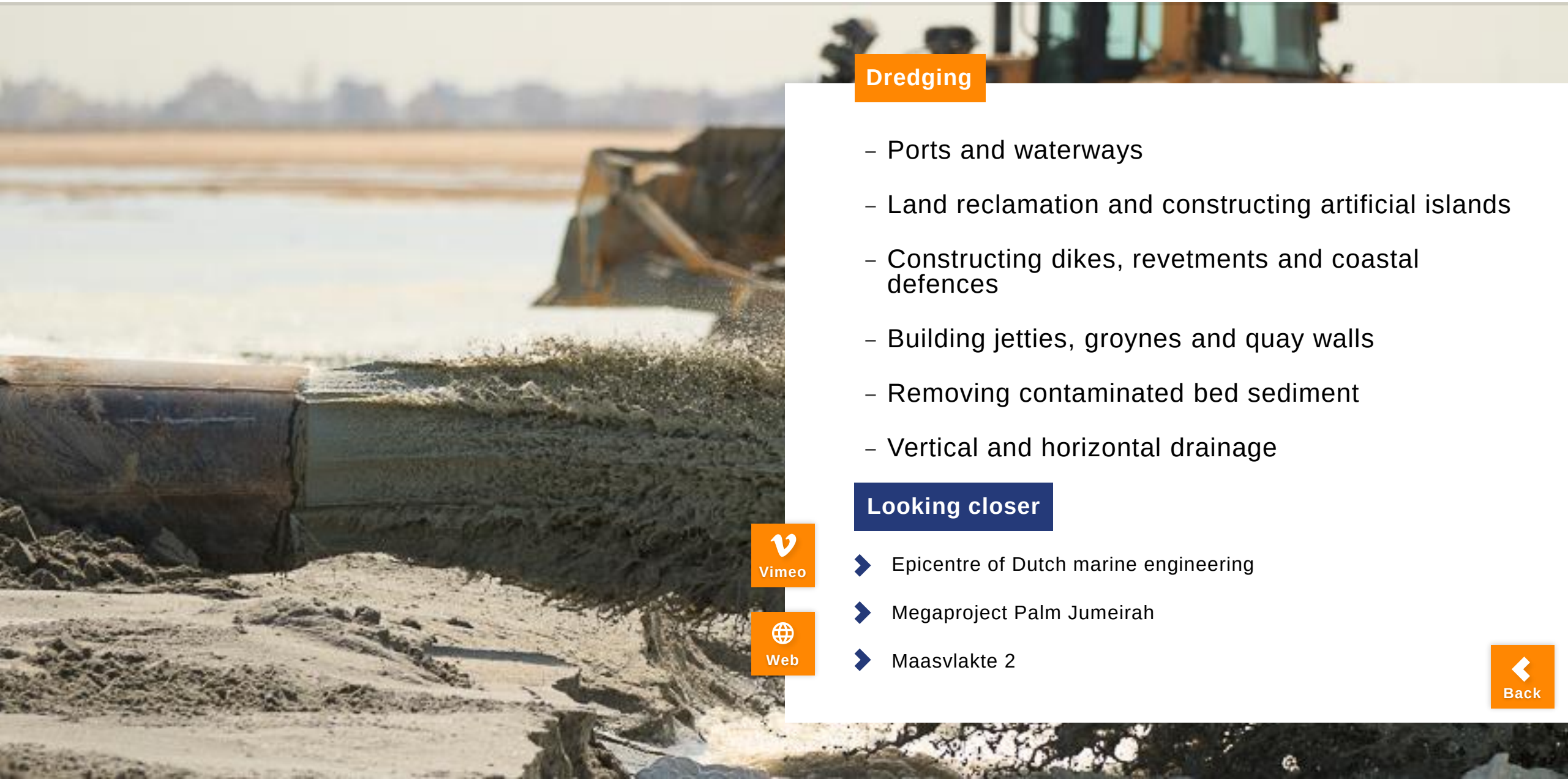

Dredging

- Ports and waterways
- Land reclamation and constructing artificial islands
- Constructing dikes, revetments and coastal defences
- Building jetties, groynes and quay walls
- Removing contaminated bed sediment
- Vertical and horizontal drainage

Looking closer

- Epicentre of Dutch marine engineering
- Megaproject Palm Jumeirah
- Maasvlakte 2

Vimeo

Web

Back

Activities – Offshore oil & gas

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Offshore oil & gas

- Integrated solutions for the installation of nearshore pipelines, cables and offshore constructions
  - Landfall construction
  - Trenching and backfilling
  - Installation of shallow water pipelines, cables and buoy mooring systems
  - Installation of gravity based structures
- Subsea rock installation for the stabilisation and protection of pipelines, cables and other constructions on the sea bed

Looking closer

- U-864 counterfill project
- Tetney Sea line project

Vimeo

Web

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Activities – Offshore wind

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Offshore wind

- Engineering, Procurement and Construction (EPC) contractor
- Focus on Balance of Plant (BoP) contracts, consisting of foundations, scour protection, infield cables, offshore high-voltage substations, export cables, WTG installation and onshore works
- Focus on transport and installation (T&I) projects
- Market leader Northwest Europe
- Specialized offshore wind equipment

Vimeo

Web

Looking closer

- Gemini
- Walney Extension

Back

Activities - Equipment types

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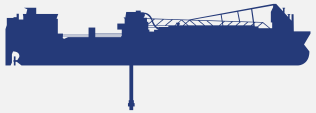
Equipment

- We operate the world's most advanced equipment
- State-of-the-art vessels
- Highest quality and safety and sustainable standards
- Continuous investment programme

Looking forward: Investments

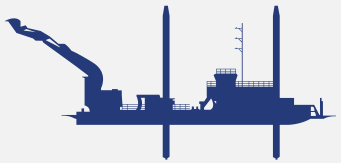
Trailing suction hopper dredger

Cutter suction dredger



Flexible fallpipe vessel

Offshore wind equipment



Backhoe

Side stone dumping vessel

Water injection dredger

Split hopper barge

Shallow water pipe lay barge

Other equipment

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Conclusion

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Summary

- Leading international marine contractor
- Specialised in:
  - Dredging
  - Offshore oil & gas
  - Offshore wind
- Our Marine ingenuity is all about smart and innovative solutions
- Independent family-owned business
- Long term view to provide marine solutions of value
- Safety, sustainability and continuity go hand in hand

150 years of Marine ingenuity

Conclusion

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This was a ‘short’ introduction to Van Oord D&M Contractors bv

Next we will zoom in on Satellite-Derived Information applications in Dredging and Marine Works

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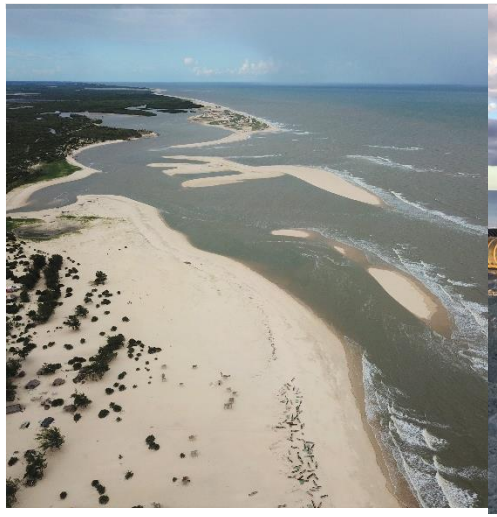
Satellite-Derived Information applications in Dredging and Marine Works



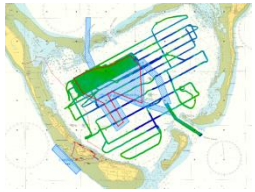
Satellite-Derived Bathymetry:

During tendering stages:

- Can provide additional information on accessibility and potential sailing routes
- Can provide additional information on nautical depths

During preparatory stages:

- Can enhance safe navigation in unknown and/or hazardous waters
- Can be beneficial in planning sailing routes, potential borrow areas and to optimize specific survey campaigns (e.g. sand search)



During execution of the works:

- Do not yet envisage the use of SDB. Depends on the specified Survey requirements and internal progress Survey requirements.
- Soon we hope to validate SDB data against our own in-house Hydrographic survey systems, which may create further support.

Satellite-Derived Imaging:

During tendering stages:

- To provide additional information on site conditions, such as coastal sabkhas (salt flats) or topography
- To provide additional information on erosion or accretion due to marine constructions / developments over time

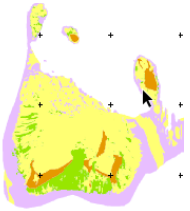
During preparatory stages:

- Same as above and to record status prior to any construction activities

During execution of the works:

- To monitor any undesired changes due to construction activities or to substantiate any allegations
- More and more a contractual obligation to provide to the Client on regular basis (for example to create a time lapse video for the progress of the works)

Seafloor and Habitat Classification



During tendering stages and/or preparatory stages:

- Can provide additional information on possible seagrass or corals or rock outcrops (serving as habitat for crabs) to be relocated or restored
- Can provide additional information on possible pipelines or other existing features on the seabed

During execution of the works:

- To monitor any effect of the construction works on the environment
- To preserve the environment as much as possible by adapting work methods and work areas.

Ongoing case study: added value of SFC for sand search campaigns, correlation of satellite data against identified samples

Water Quality Monitoring Services

Although we considered this type of satellite-based monitoring for dredging activities on several projects, this never materialized because we were either unsuccessful with the tender or the project specified more or less round the clock and on-line monitoring or full water column monitoring.

However, we will certainly consider this option to supplement the contractual requirements on water quality monitoring.

Example SDB – for planning purposes and safe navigation

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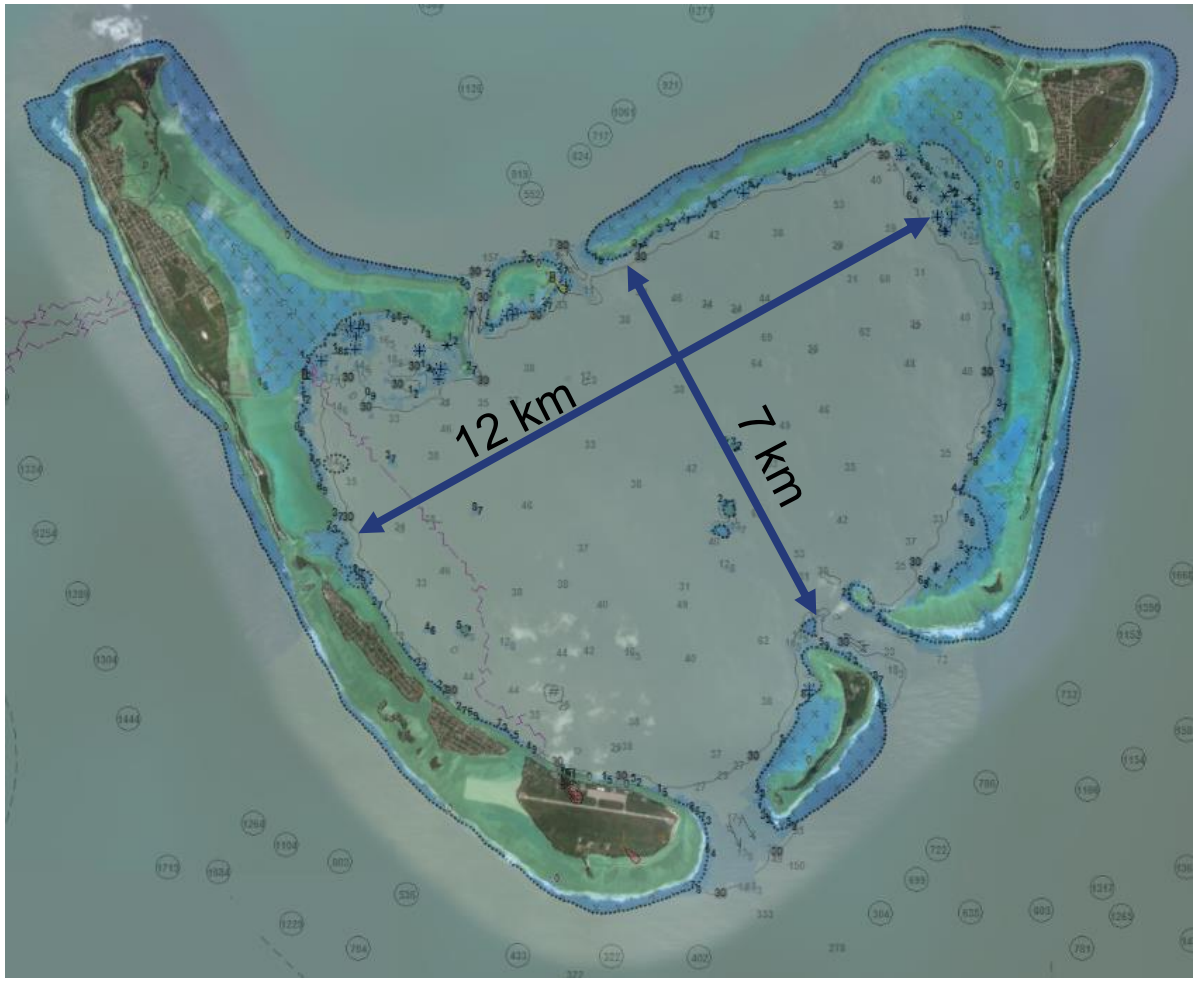
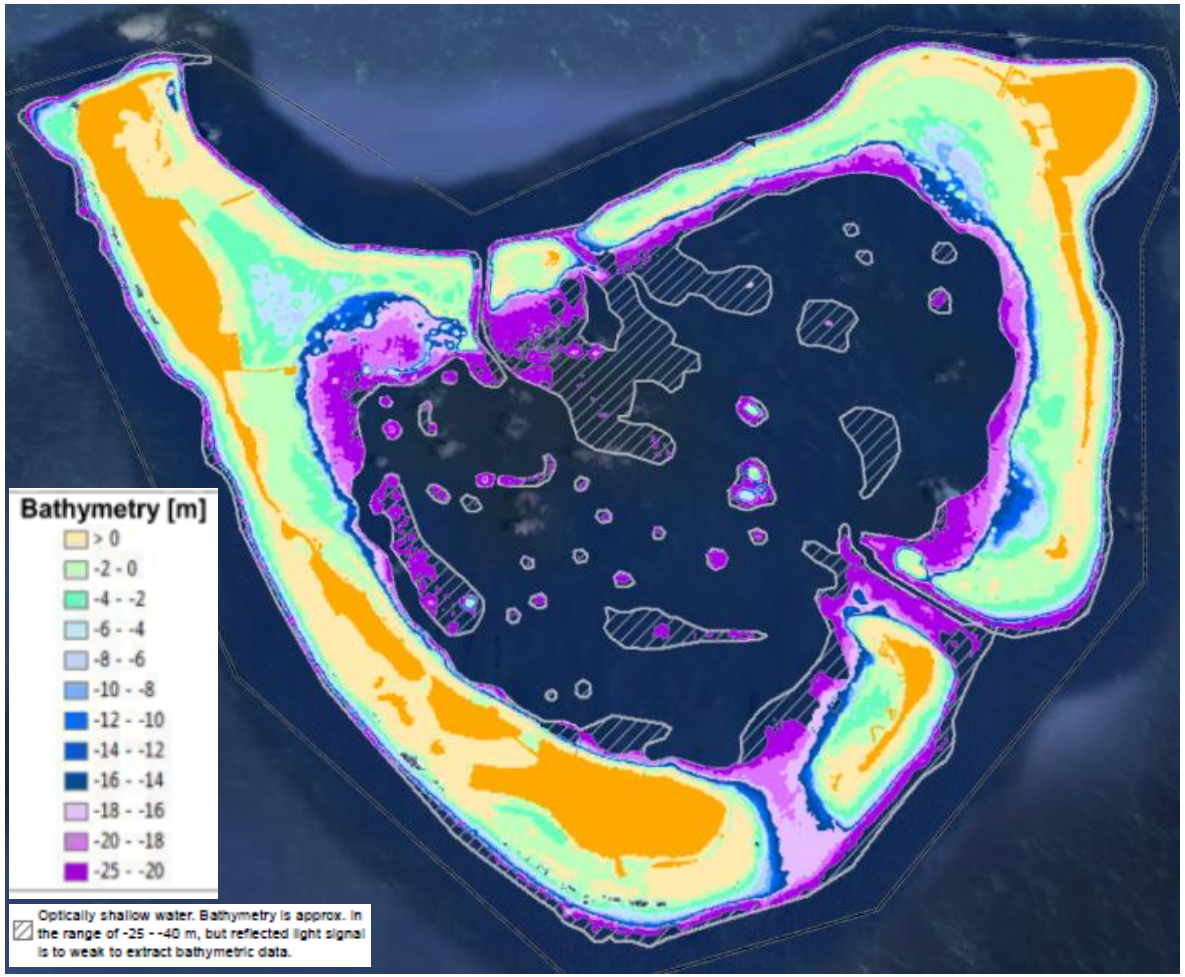
As obtained from existing electronic charts



As provided by EOMAP, area in total 200 sq km !!!!!



Survey vessel and Dredger utilized on this specific project

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Acting survey boat Blackbird

Trailing Suction Hopper Dredger Ham 318

DIMENSIONS

Length over all	: 227.20 m
Breadth over all	: 32.05 m
Length between perpendiculars	: 210.10 m
Breadth moulded	: 32.00 m
Depth moulded	: 17.12 m
Draught - Light ship weight	: 4.89 m aft / 3.19 m fore
Draught - International freeboard	: 11.74 m
Draught - Dredging mark I - 15 miles	: 13.00 m
Draught - Dredging mark II - 8 miles	: 13.55 m

CAPACITIES

Hopper volume	: 39,467.000 m³
Dredging depth - Normal	: 70.0 m / 101.0 m / 135.0 m
Dredging depth - Maximum	: 135.0 m
Trailing suction pipes - Diameter	: 2 x Ø 1.20 m
Shore delivery pipe - Diameter	: Ø 1.10 m
Shore delivery pipe - Bow coupling	: Ø 1.00 m (Ø 1.10 m optional)

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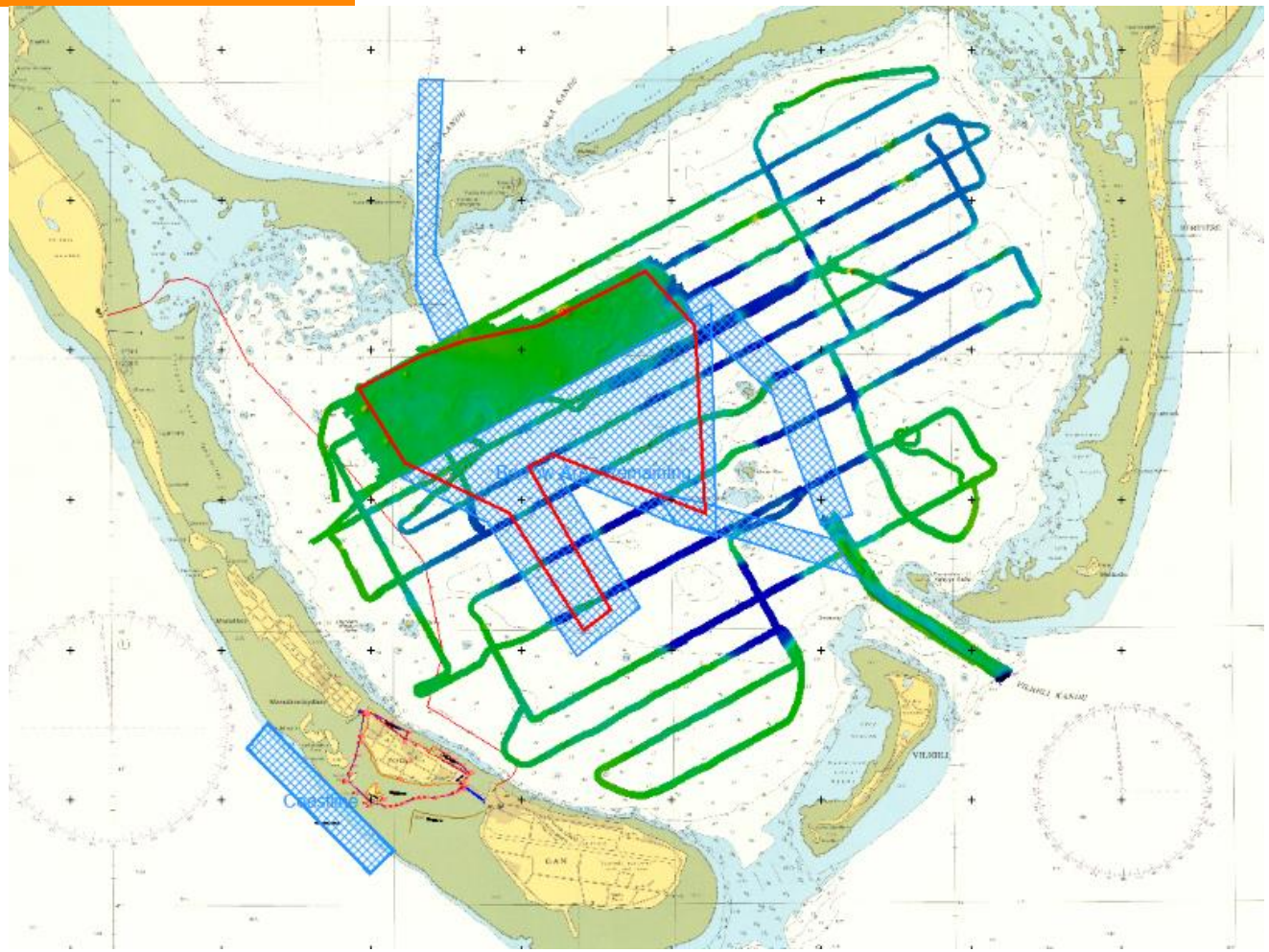
Progress status at a certain moment in time



Inner side of atoll is approx. 90 km2 !!!!!!!

Example SDB – Satellite-Derived Bathymetry

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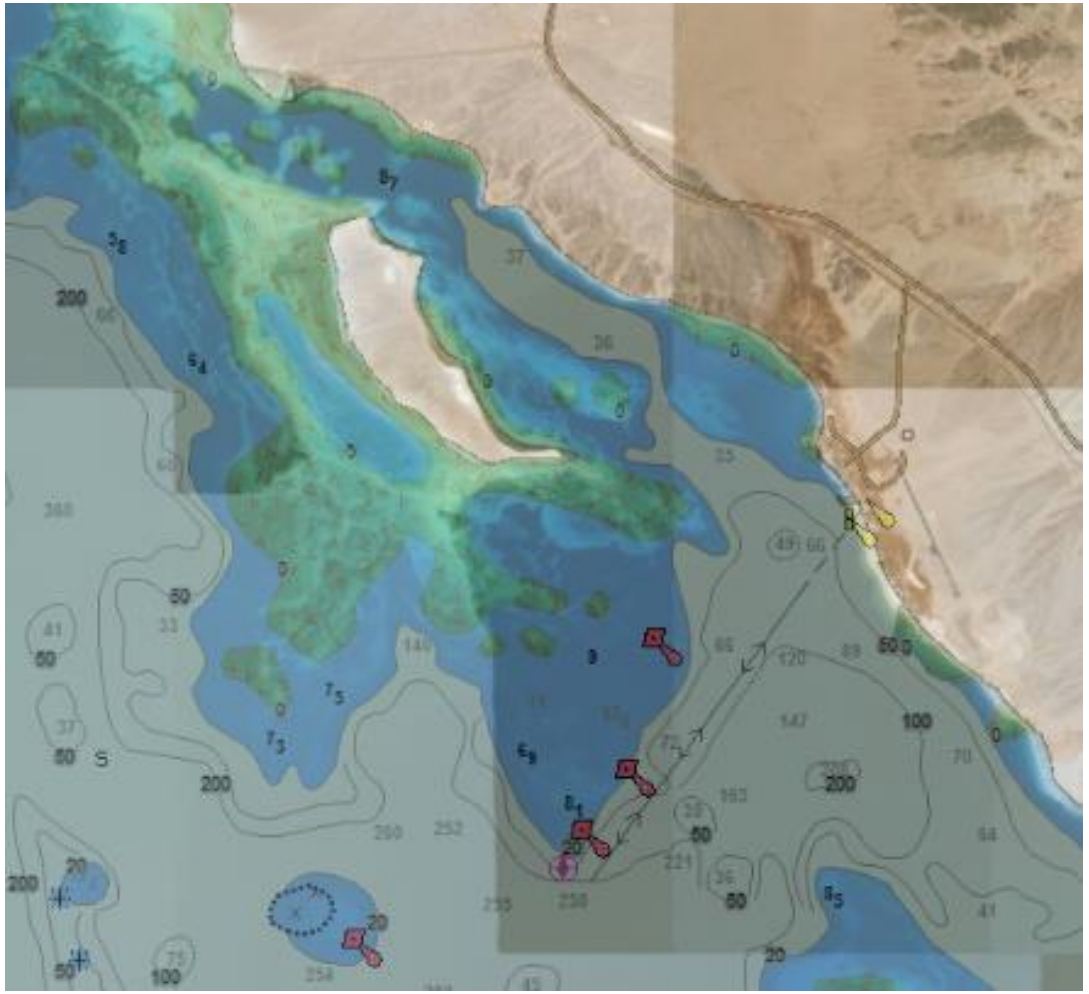
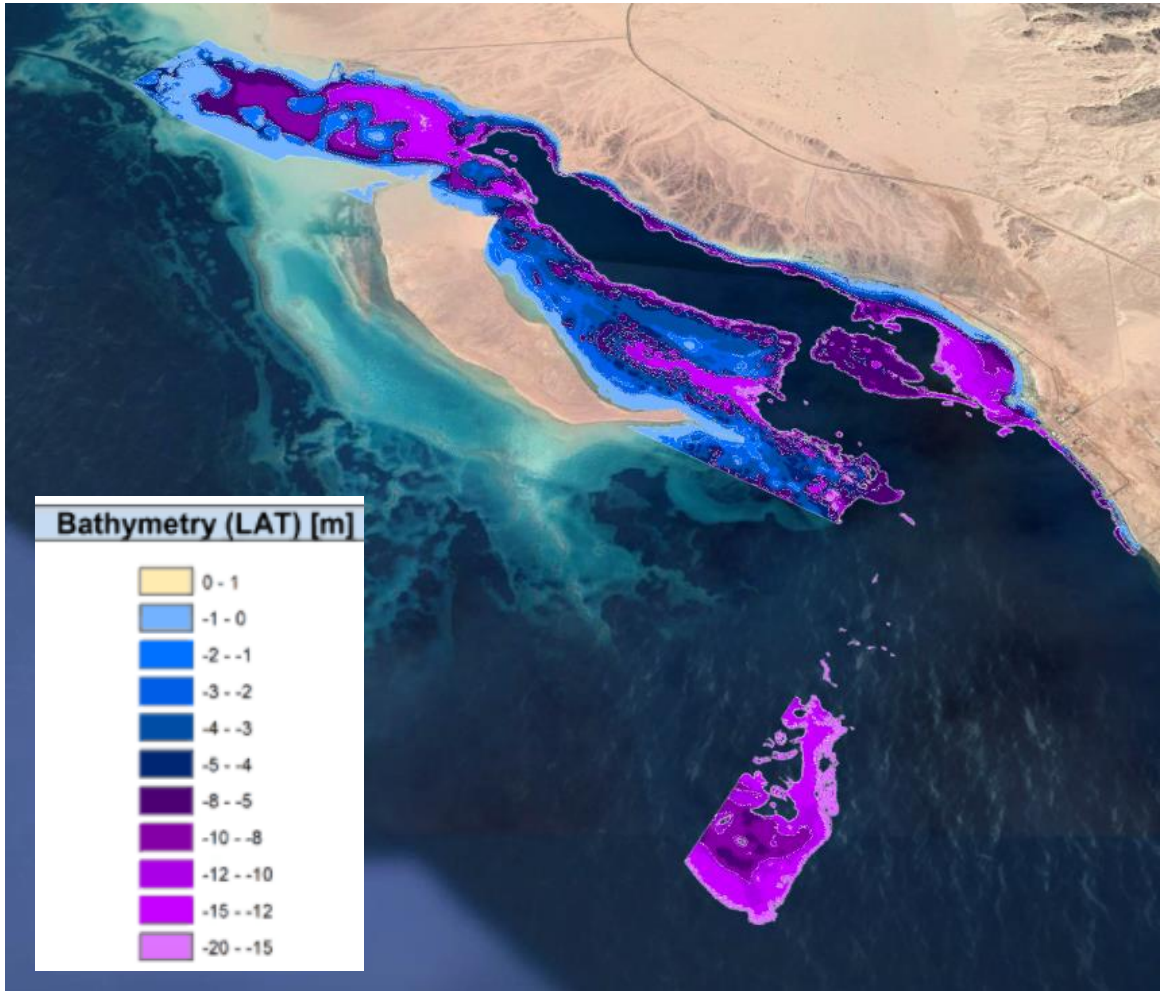
As obtained from existing electronic charts



As provided by EOMAP



Example SDB – Satellite-Derived Bathymetry

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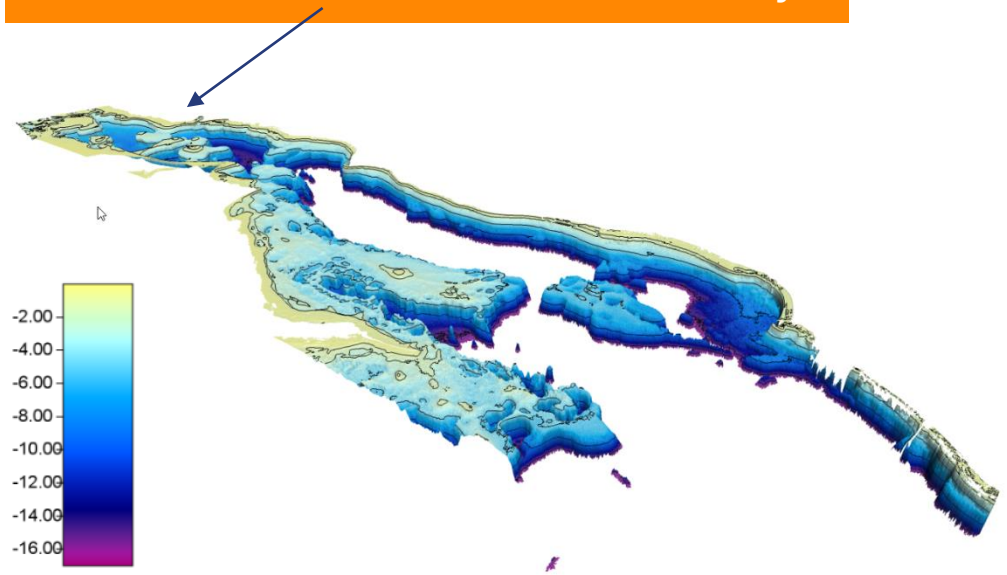
Can our csd Athena enter the area safely?



DIMENSIONS

Length over all	: 135.80 m
Breadth over all	: 27.82 m (without fendering)
Length between perpendiculars	: 108.00 m
Breadth moulded	: 27.80 m
Depth moulded	: 9.00 m
Draught - Light ship weight	: 5.62 m
Draught - International freeboard	: 6.60 m

Self-propelled cutter suction dredger Athena:

Example SFC – Seafloor and Habitat Classification

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As provided by the contract

Figure 3: Habitat map of construction area, where green indicates seagrass field and red coral colonies.

As delivered by EOMAP

Example Satellite Derived Bathymetry

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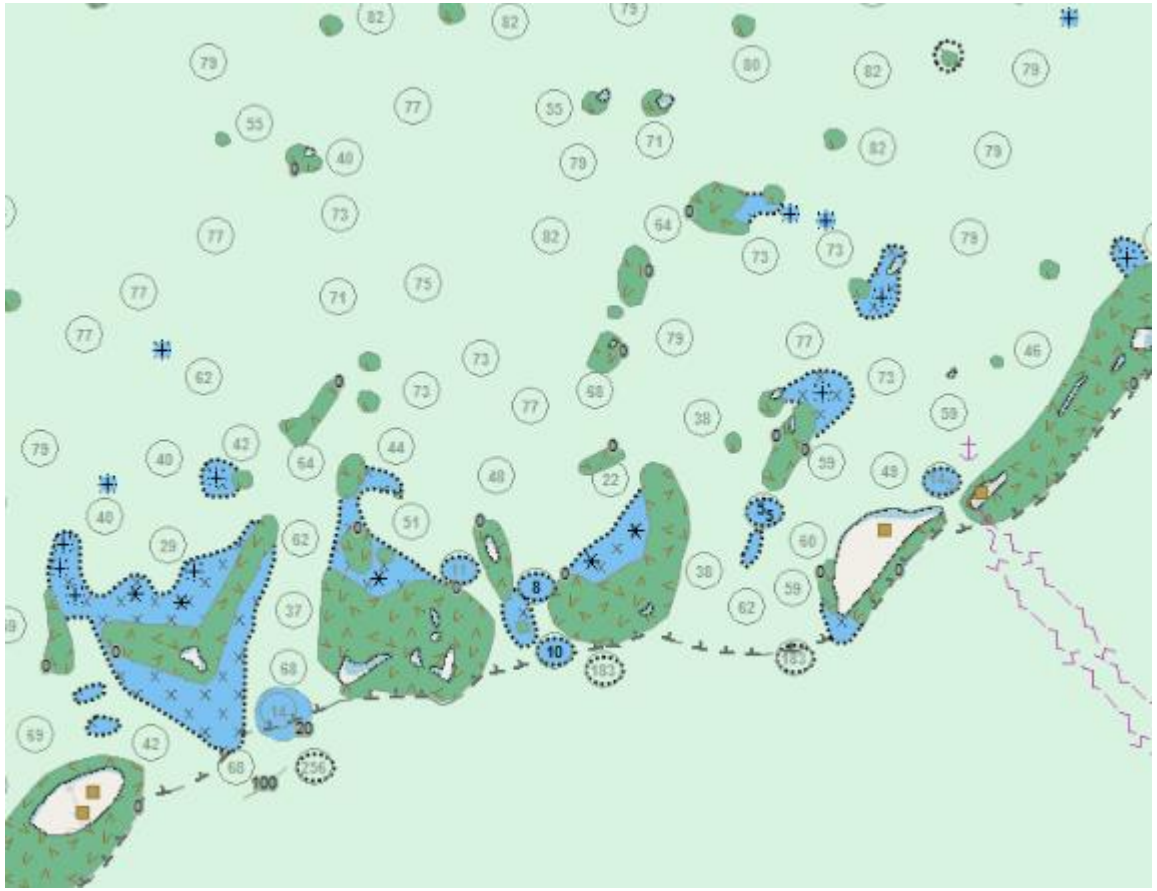
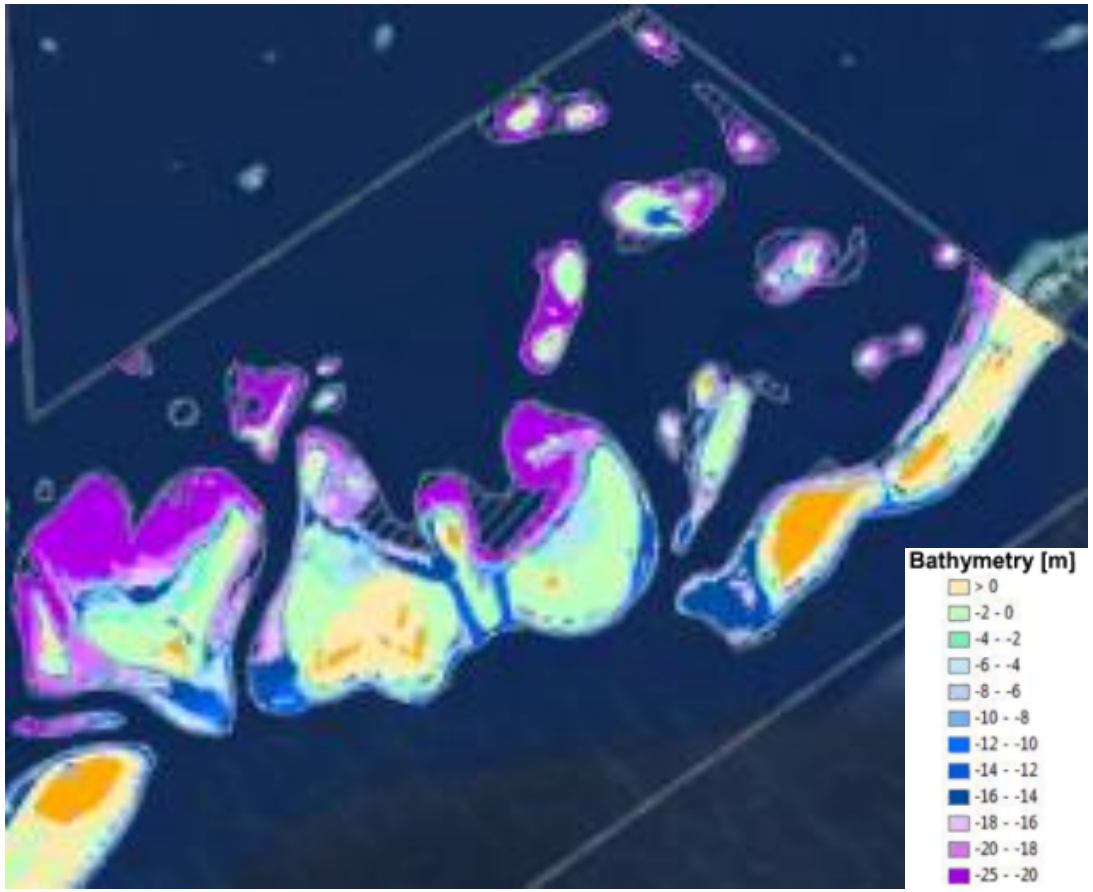
As obtained from existing Electronic Charts



As provided by EOMAP



Example Google Earth and matching SFC

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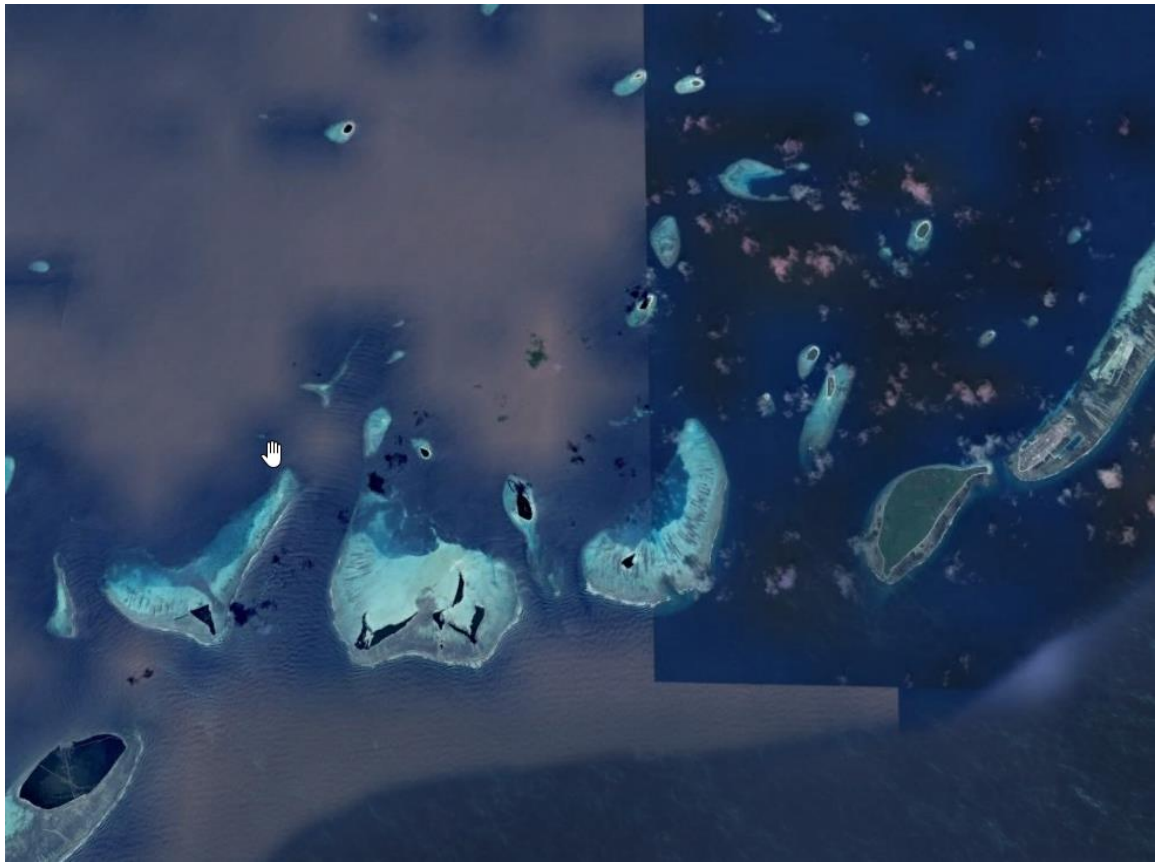
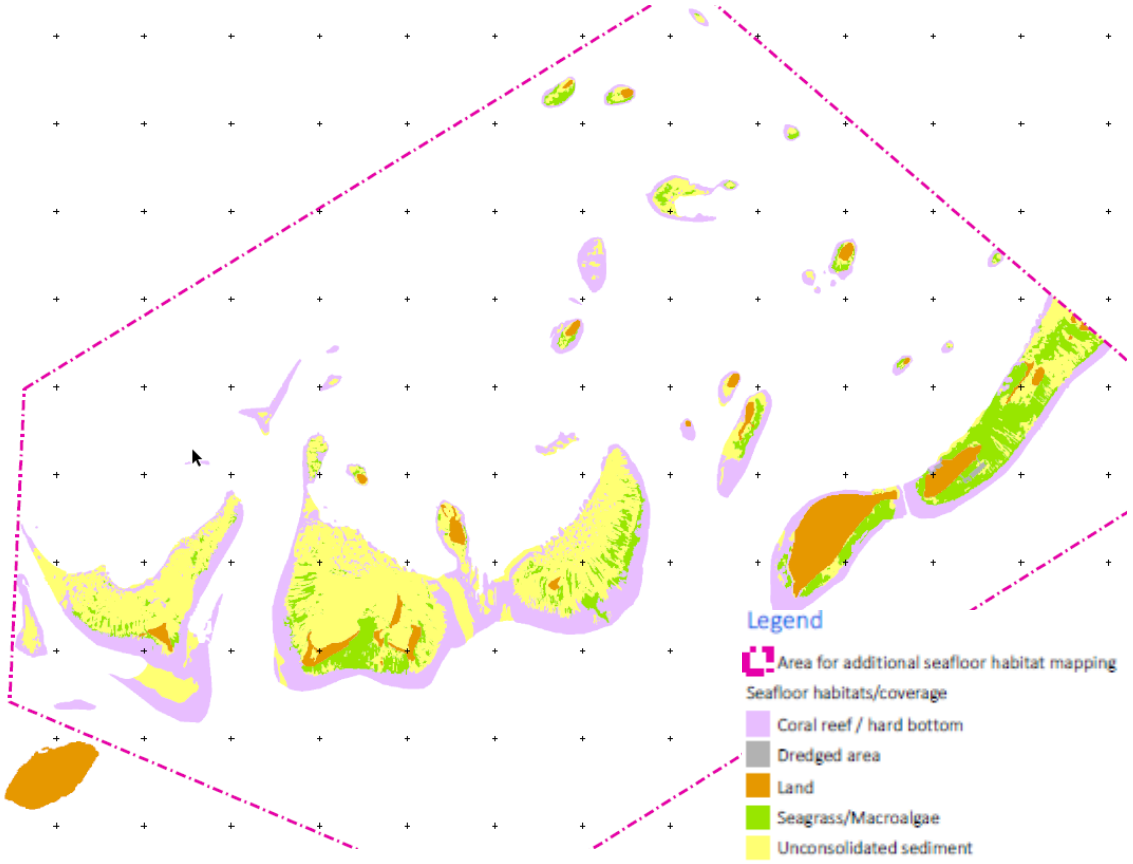
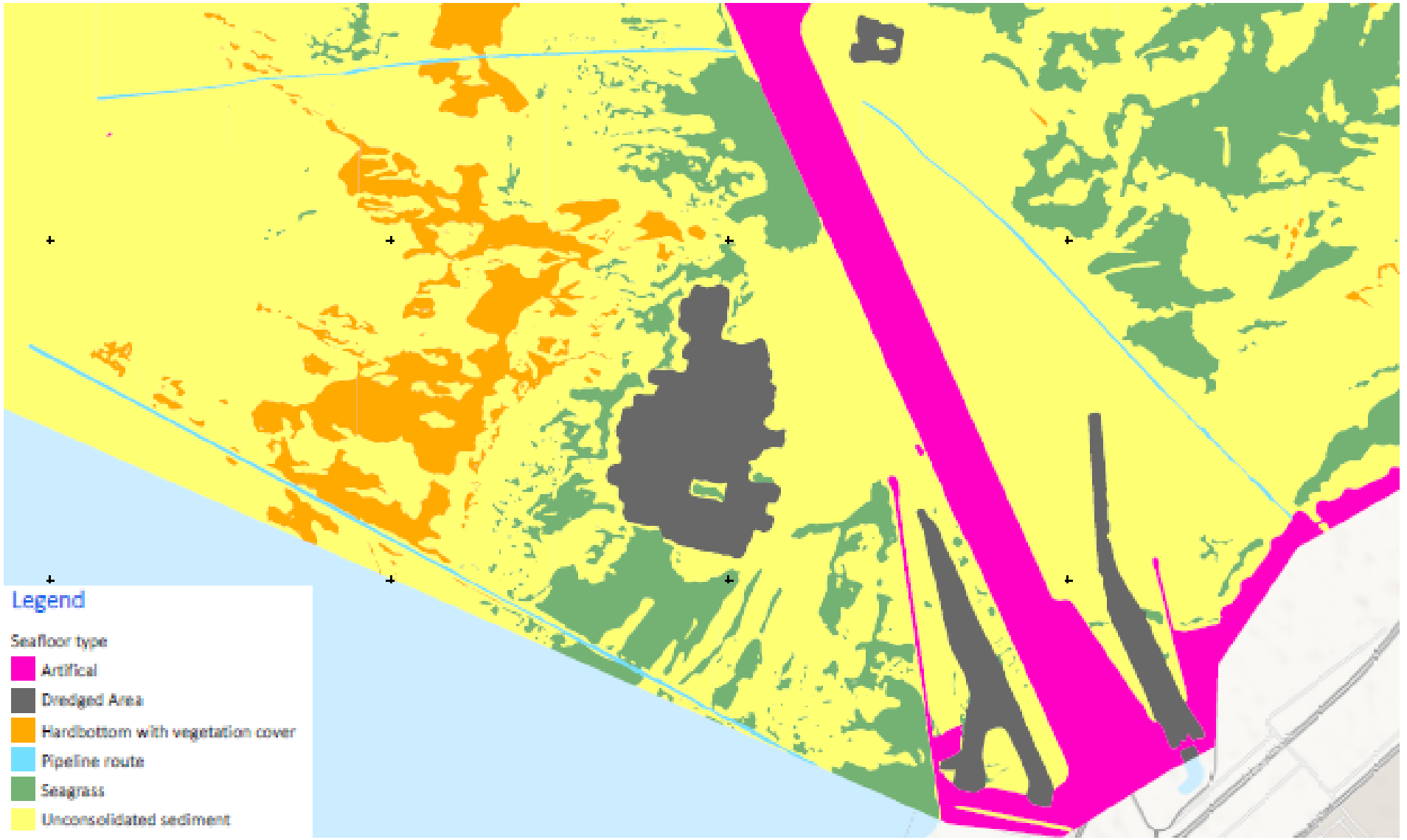
Google Earth snapshot



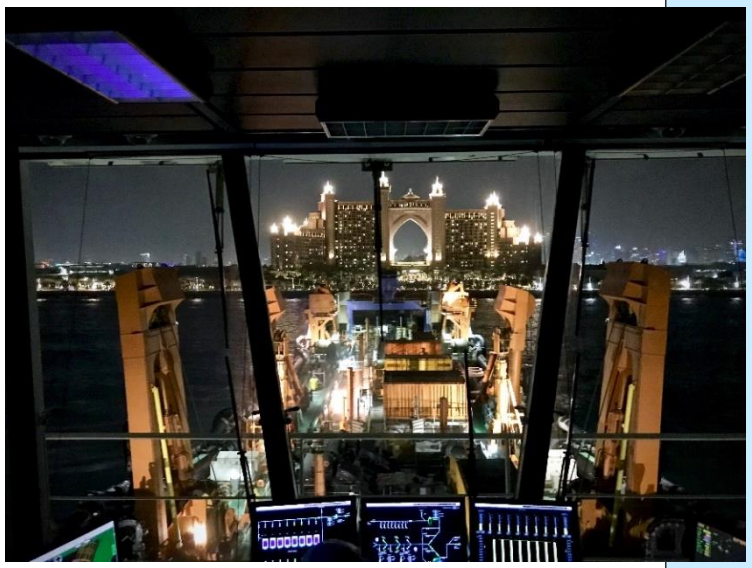
SFC

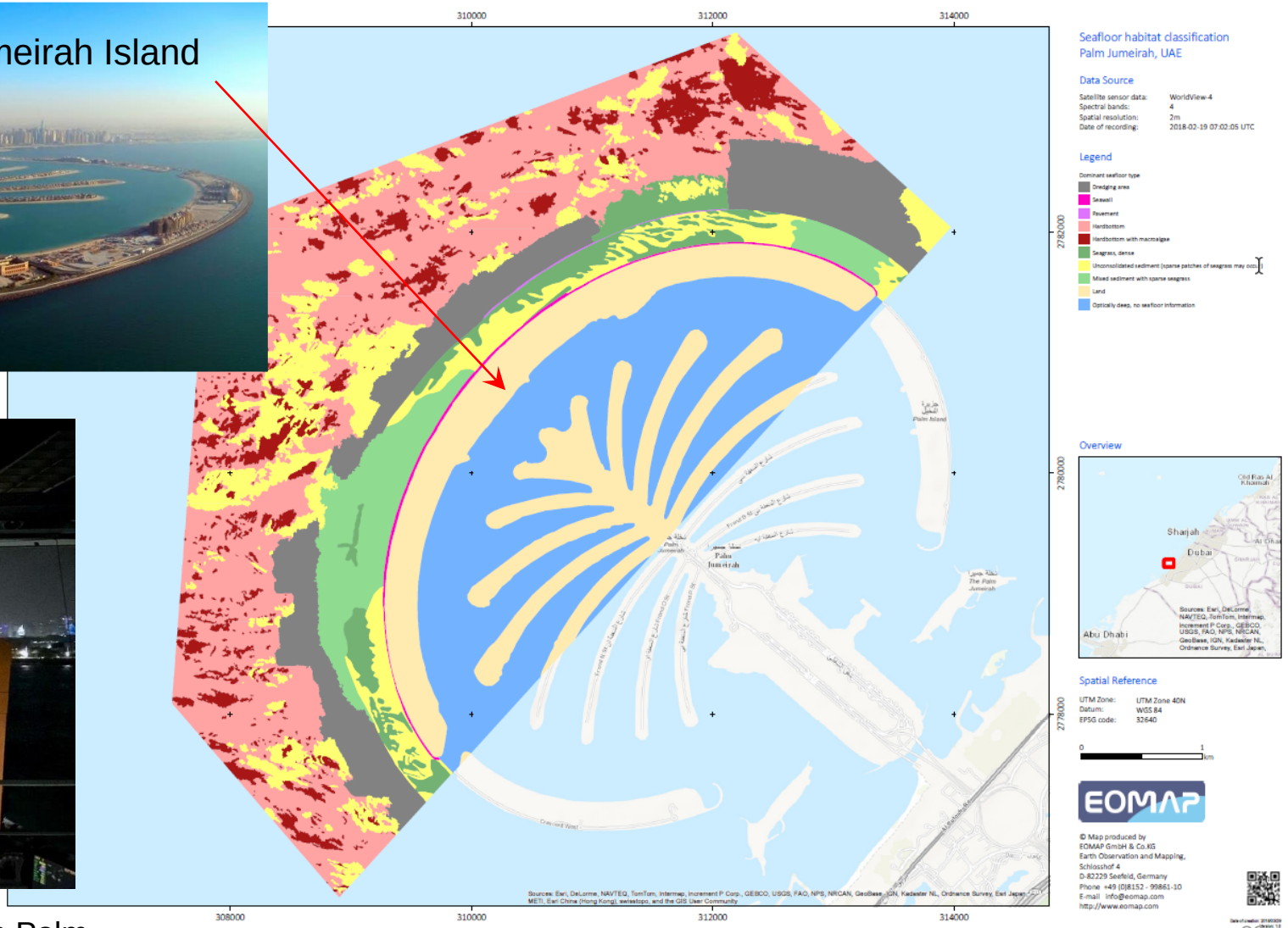


Example SFC – pipeline detection



Thank you for your attention, any questions please let us know





Tshd Rotterdam sailing towards Atlantis The Palm

SDB Day 2018 – Satellite images - how we used to do it

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Back in the early days 'we' had to send our Dutch astronaut, Andre Kuipers, into space to obtain some images from the Palm and the World Islands, which is a lot easier and faster nowadays……

Thank you for your attention……

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Will the below ‘survey techniques’ now be outmoded by SDB?