



Boskalis
Dredging & Marine Experts

SOLUTIONS BROCHURE

PORT SOLUTIONS



'BOSKALIS IS A LEADING
GLOBAL DREDGING
AND MARINE EXPERT'



A PROVEN NAME IN THE PORTS MARKET



With safety as our core value we provide innovative, sustainable and all-round solutions for our clients in the ports market. Under brands such as Boskalis, SMIT and Smit Lamnalco we offer more services than any other company in our industry, making us your one-stop solutions provider.

Feasibility studies, (pre)design and construction of:

- (greenfield) ports
- waterways
- breakwaters
- quay walls
- roads and railways
- bridges and tunnels.

Operational services including:

- (long-term) maintenance dredging
- harbour towage
- salvage
- terminal services
- inspection, repair and maintenance.

Since our founding in 1910 our clients have relied on us to find cutting-edge solutions to meet their specific requirements. Our track record includes a wide variety of demanding port projects and contracts that have established our name in the ports market.

PORT OF GENOA, ITALY
Multidisciplinary project in the port of Genoa:
drilling and blasting, dredging work, construction
of quay walls, installation of caissons and moving
a bunker terminal.

OUR WORLD

OUR WORLD



OUR SOLUTIONS FOR THE PORTS MARKET

PORT SOLUTIONS



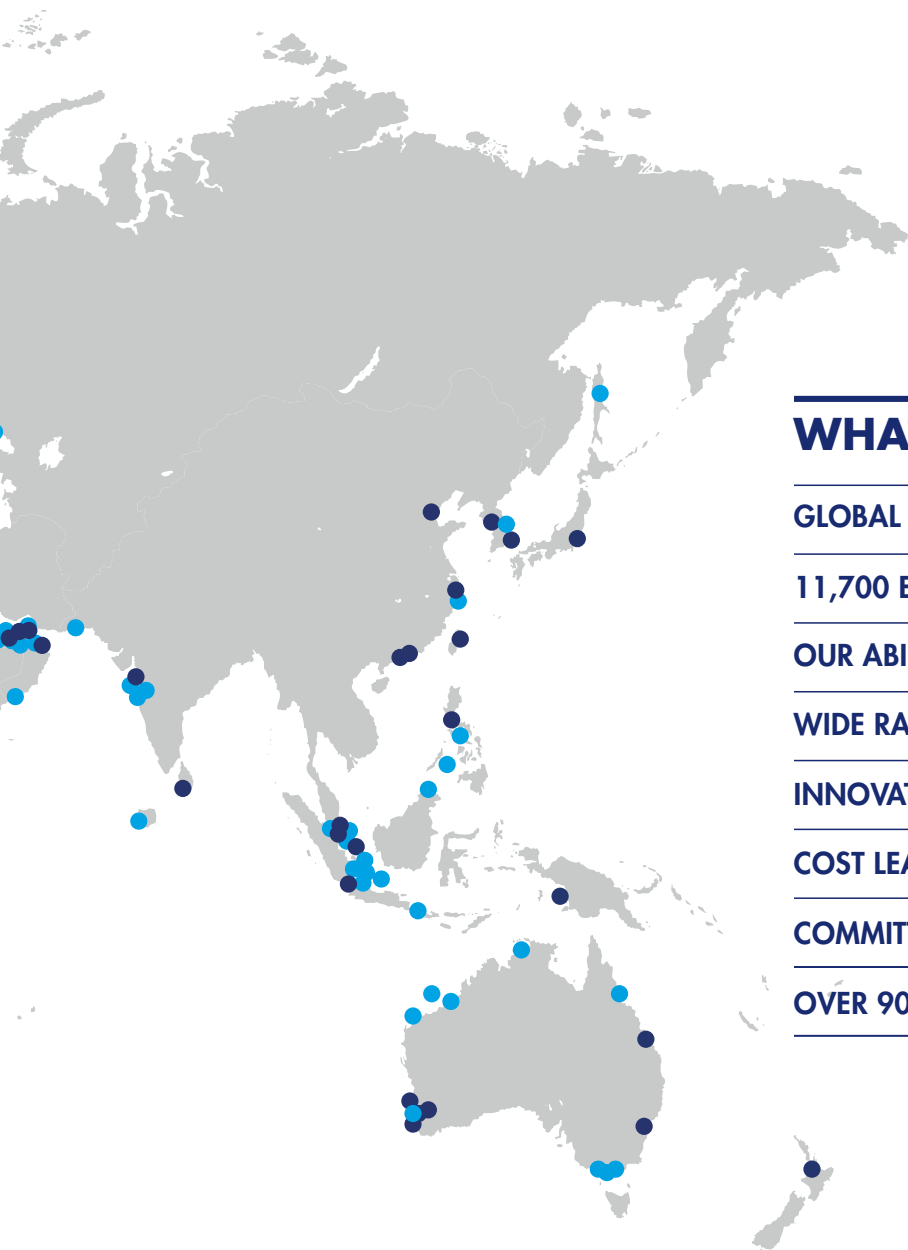
PORT DEVELOPMENT



PORT PROTECTION



PORT INFRASTRUCTURE



WHAT SETS US APART

GLOBAL PRESENCE

11,700 EXPERTS

OUR ABILITY TO MANAGE COMPLEXITY

WIDE RANGE OF INTEGRATED SERVICES

INNOVATIVE AND SUSTAINABLE SOLUTIONS

COST LEADERSHIP

COMMITTED TO SAFETY

OVER 900 MODERN AND FLEXIBLE VESSELS

- Offices
- Projects & operations



PORT SERVICES

SAFE AND SUSTAINABLE

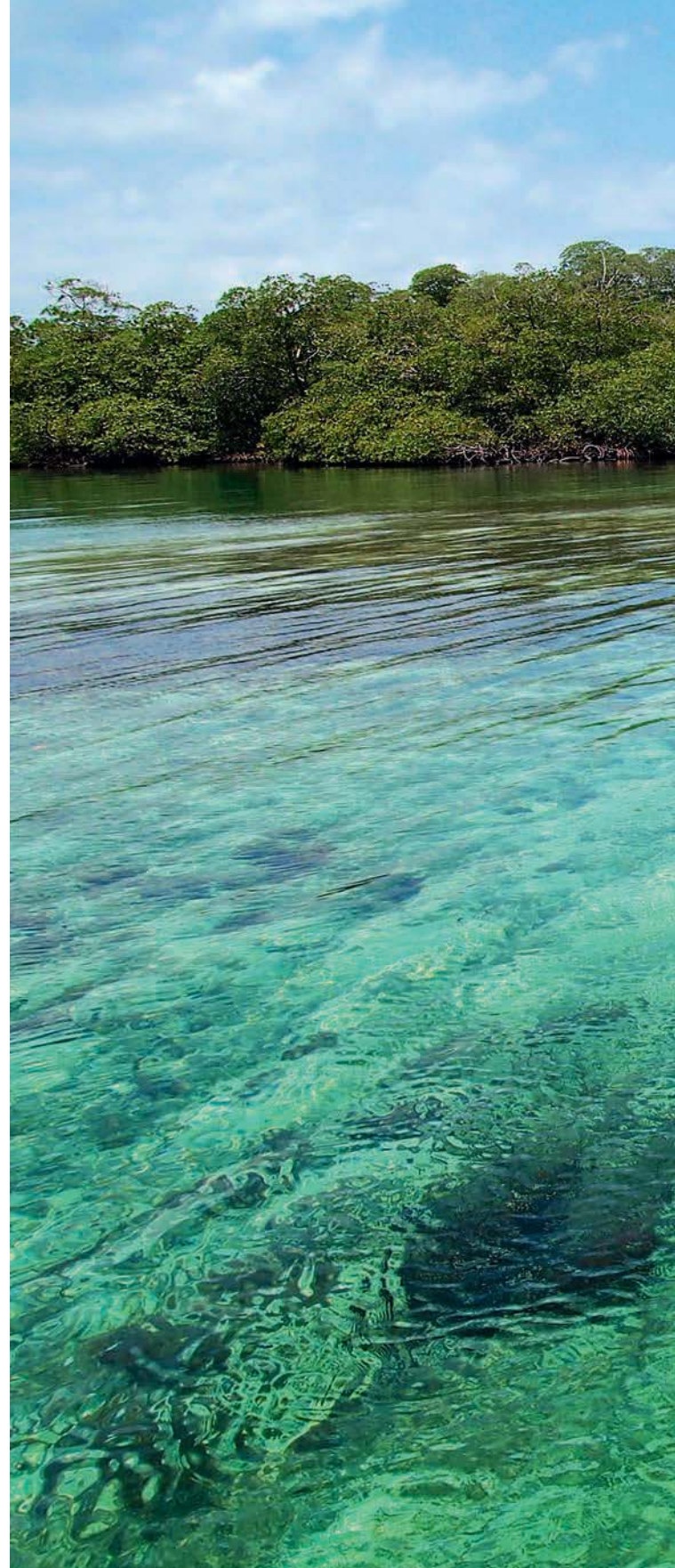
Our work goes beyond providing services. Safety has been uncompromisingly embraced within our culture and is the essence of 'NINA', our No Injuries, No Accidents safety program.

Boskalis is known for its environmental expertise and commitment to the environment. Our clients benefit from our vast experience in preparing environmental impact assessments and environmental management plans. Our state-of-the-art monitoring programs and environmentally-friendly techniques, working methods and equipment will enable you to fully comply with environmental regulations. We are also able to offer the very best cost-effective solutions for the cleaning or containment of contaminated sediment.

By building with nature, we help preserve and even strengthen environmental assets such as coral, seagrass and benthic fauna, without compromising economic benefits.

STANDARDS OF EXCELLENCE

- ISO 14001 International environmental quality
- OHSAS 18001 Occupational health and safety
- ISO 9001 Business management
- IMCA Offshore operations





A TEAM BUILT AROUND YOUR NEEDS

A TEAM BUILT AROUND YOUR NEEDS



PORT SOLUTIONS



'BOSKALIS HAS THE RESOURCES TO BUILD A GLOBAL TEAM AROUND THE CHALLENGES YOU FACE'

Our 11,700 experts are focused on achieving the best result.

In addition to a dedicated fleet crew, you can rely on our experts from a wide range of disciplines. These include hydraulic and civil engineering, ecology, finance, morphology, geology, geophysics and marine biology.



OUR ABILITY TO MANAGE COMPLEXITY

OUR ABILITY TO MANAGE COMPLEXITY



PORT SOLUTIONS



'INVOLVE BOSKALIS EARLY ON AND WE CAN IMPROVE YOUR PROCESSES, MITIGATE RISKS, MINIMIZE UNCERTAINTIES AND DELIVER THE SOLUTIONS YOU SEEK'



- In the **pre-design** phase we can help determine the feasibility of your project.
- During the **design phase** we will create a solution that fits your requirements.
- As your **main contractor**, we build your port and streamline execution by managing sub-contractors and communicating with stakeholders.
- We can provide **cost-effective (long-term) operational services** under brands such as Boskalis, SMIT and Smit Lamnalco.

ROTTERDAM, THE NETHERLANDS

Maasvlakte 2 Port Expansion. Innovative Design, Construction and Maintenance project. Creation of 2,000 hectares with 240 million m³ of sand, 11km of sea defense, 3.5km of quay walls, 14km of railways and 13km of roads. Numerous interfaces, strict design, environmental and safety challenges were successfully met.



left EXPANSION SUEZ CANAL, EGYPT

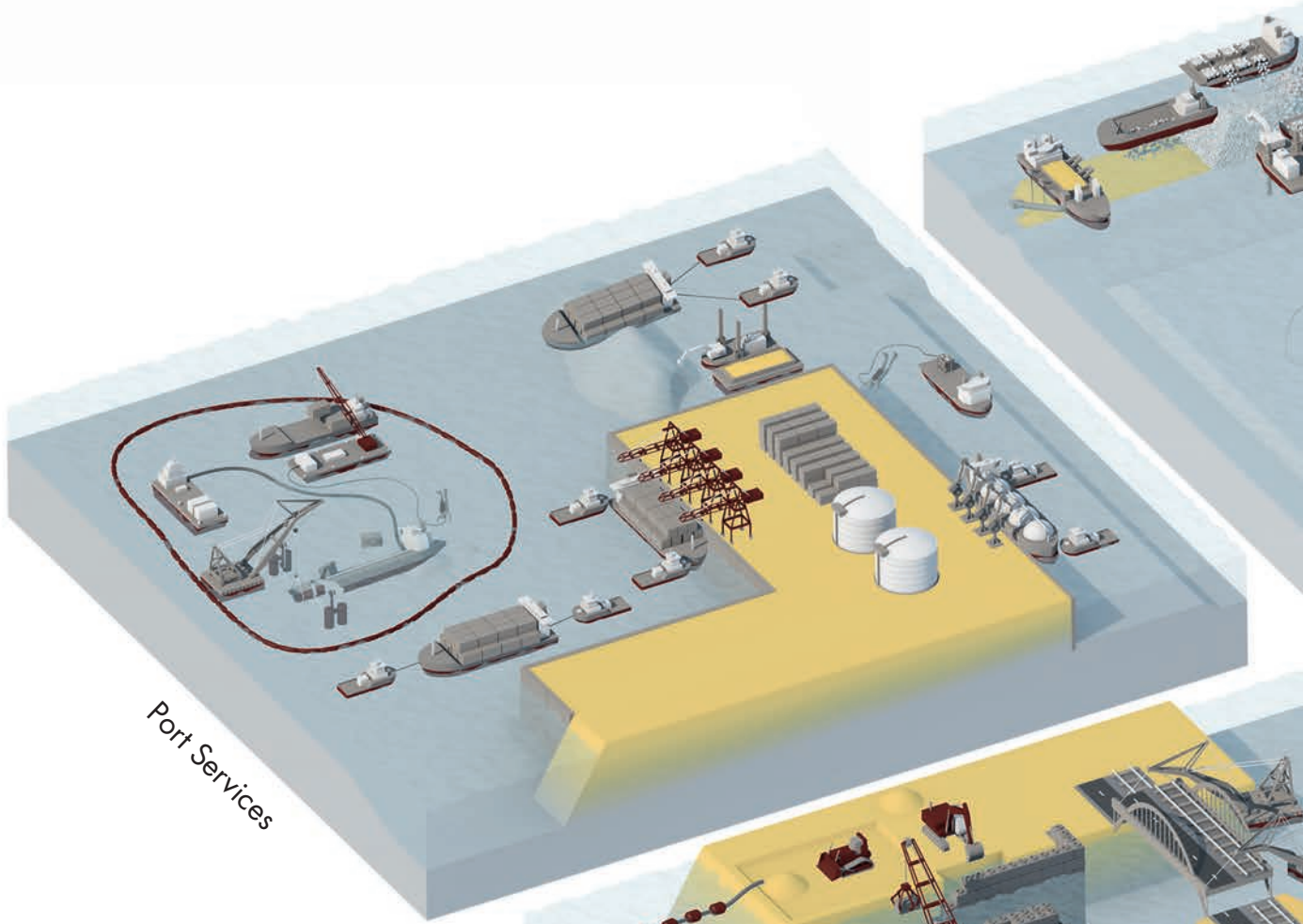
Boskalis is a member of the consortium that will dredge the 35-kilometers-long and 24-meters-deep parallel section to the present Suez canal within a year.

right MELBOURNE, AUSTRALIA

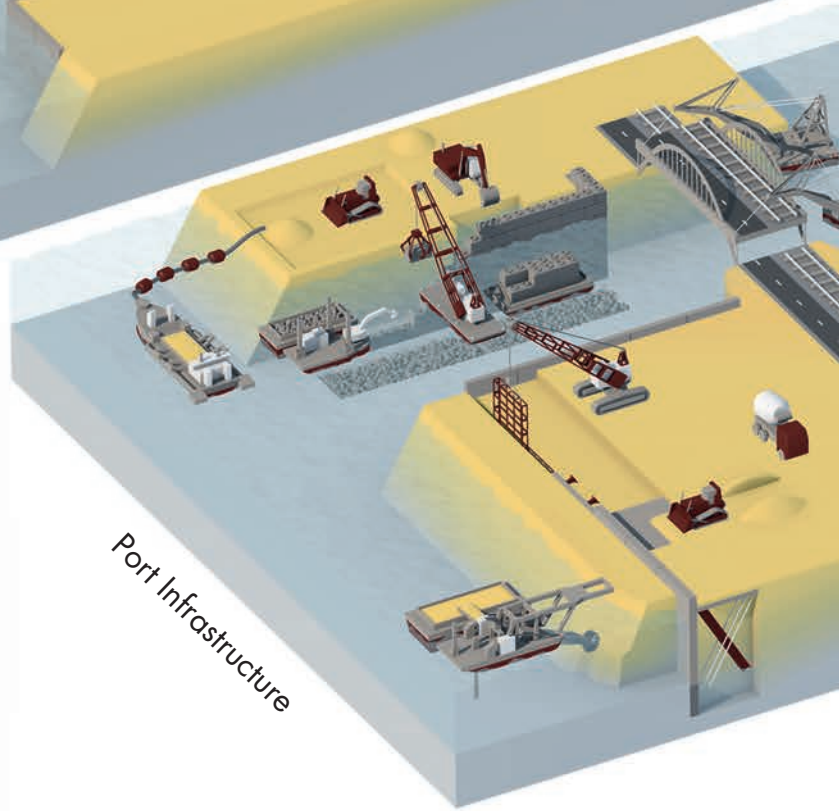
Channel Deepening Project. In an alliance contract with the Port of Melbourne Corporation Boskalis tailored innovative solutions to meet the demanding technical and environmental requirements. The project won the National Infrastructure Award in 2010.

OUR SOLUTIONS FOR THE PORTS MARKET

OUR SOLUTIONS FOR THE PORTS MARKET

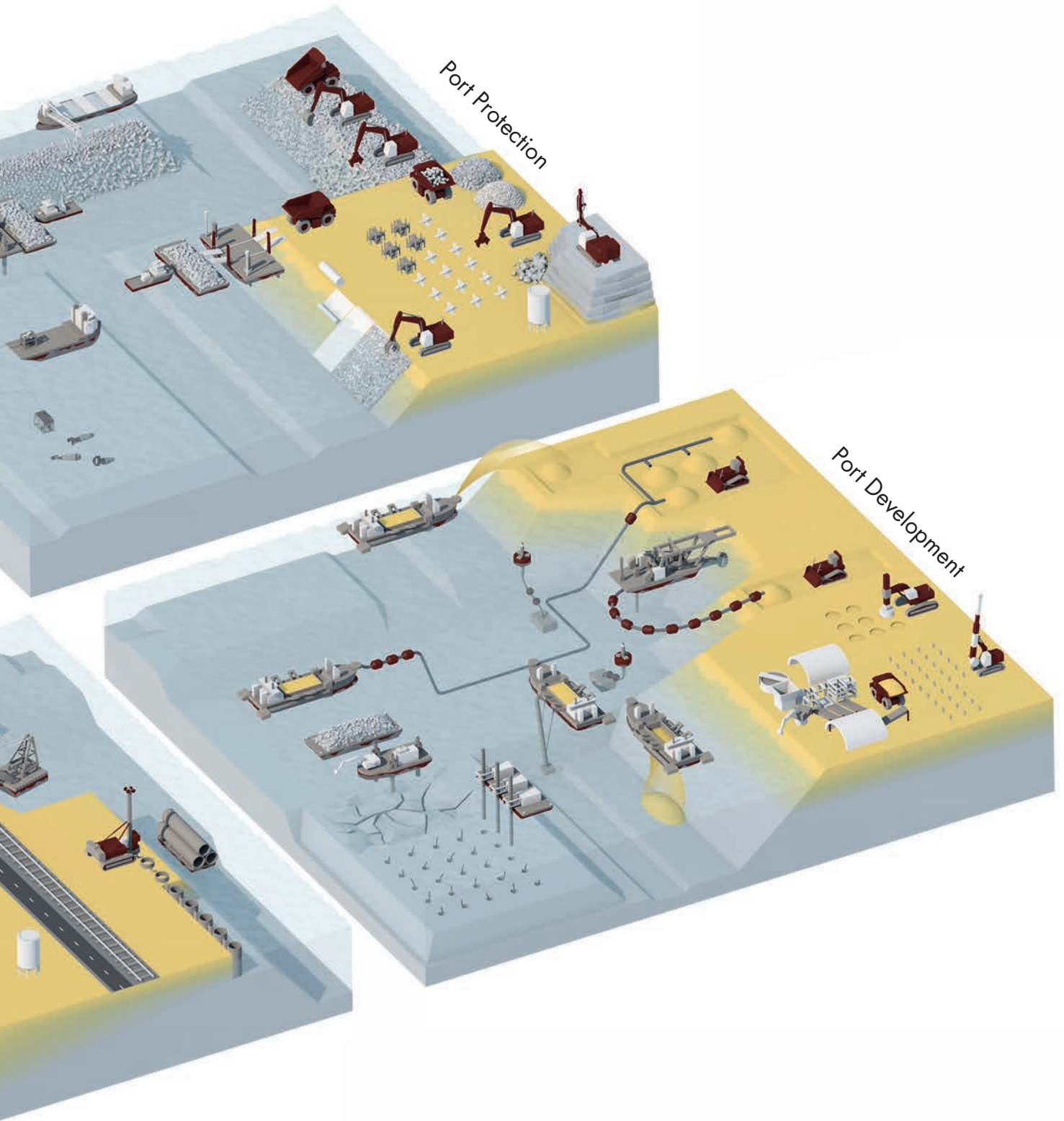


Port Services



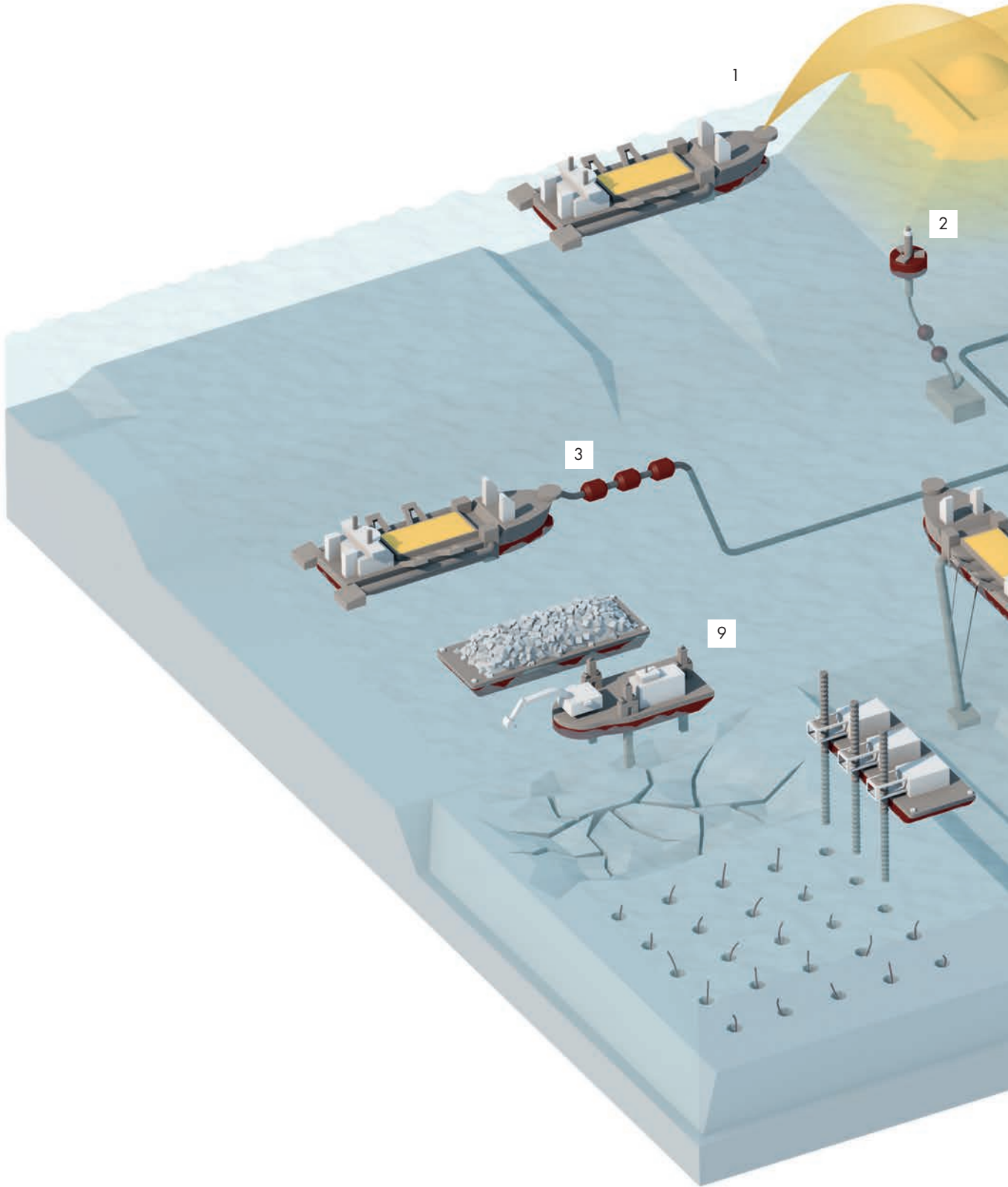
Port Infrastructure

PORT SOLUTIONS



PORT DEVELOPMENT

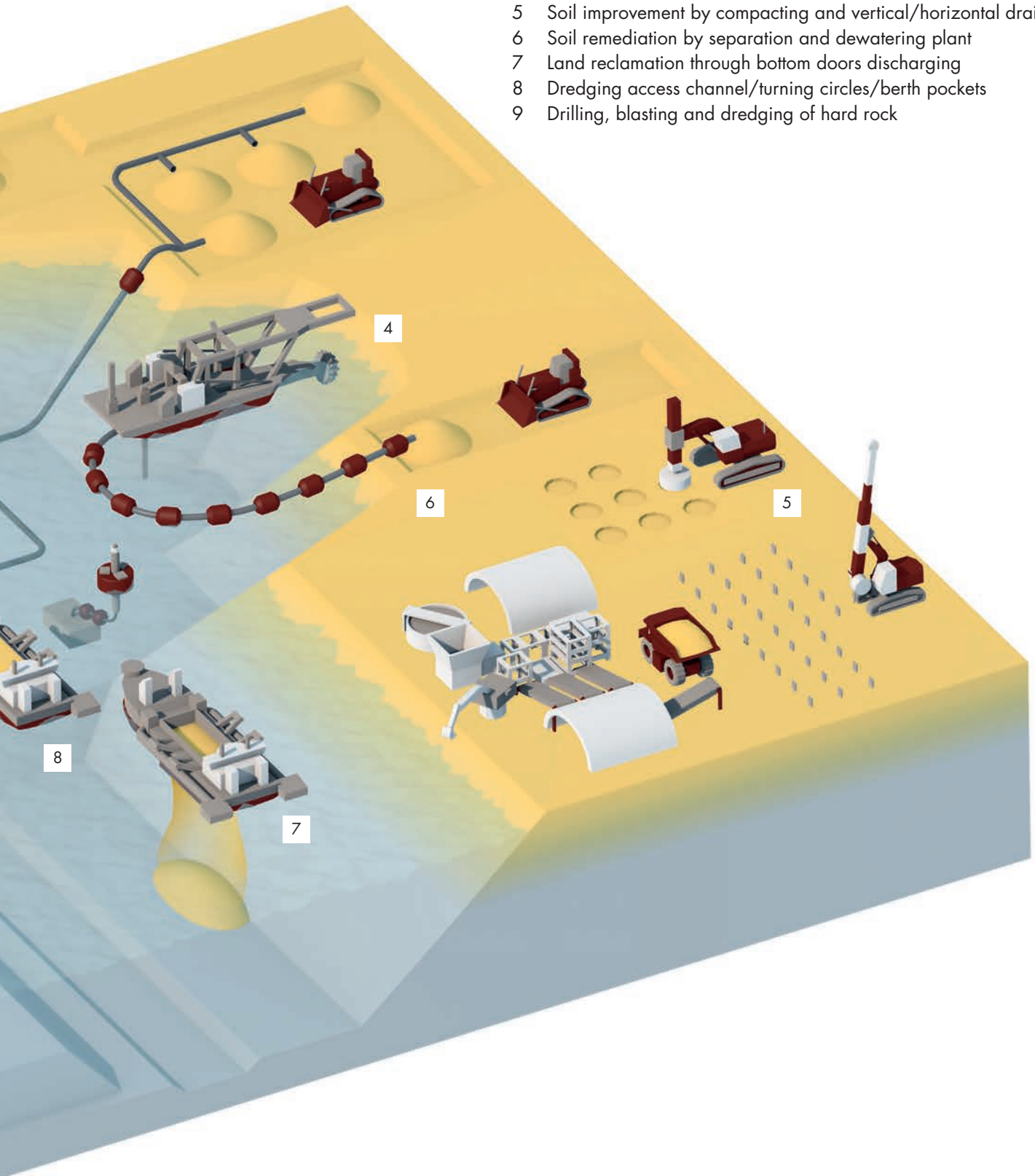
PORT DEVELOPMENT



PORT SOLUTIONS

OUR SOLUTIONS

- 1 Land reclamation through rainbowing
- 2 Environmental monitoring
- 3 Land reclamation through pump ashore
- 4 Dredging access channel through shore
- 5 Soil improvement by compacting and vertical/horizontal drainage
- 6 Soil remediation by separation and dewatering plant
- 7 Land reclamation through bottom doors discharging
- 8 Dredging access channel/turning circles/berth pockets
- 9 Drilling, blasting and dredging of hard rock



PORT DEVELOPMENT

PORT DEVELOPMENT



PORT SOLUTIONS



'FOR MOST OF OUR CLIENTS BUILDING A PORT IS A ONCE IN A LIFETIME EXPERIENCE, FOR US IT IS EVERYDAY BUSINESS'



Developing a port starts with a (pre)feasibility and design study and involves evaluating a complex matrix of interrelated parameters and uncertainties. The size and complexity of these projects mean that numerous disciplines and contractors are involved. In addition, the time-consuming nature of the design and planning phases mean that the construction phase often becomes time-critical. Greenfield facilities in remote locations, with limited access and infrastructure and a heightened environmental focus, are especially challenging.

Our track record includes a wide variety of demanding EPC projects. Our vast experience and expertise enable us to assist you with the economic and environmental assessment of your port.

We design and build ports, mitigate risks and streamline execution by managing subcontractors, communicating with stakeholders, eliminating interfaces and/or acting as a specialist subcontractor. We can even provide financing assistance thanks to our close relations with financial institutions.

AÇU, BRAZIL

The break-in operation through the surfzone at the beach for the access channel to the TX2 terminal at Superporto do Açú. The scope of the project includes the dredging of an access and inner channel, turning and port basin as well as land reclamation work. Boskalis will also construct the revetments at the entrance of the port.



left FREMANTLE, AUSTRALIA

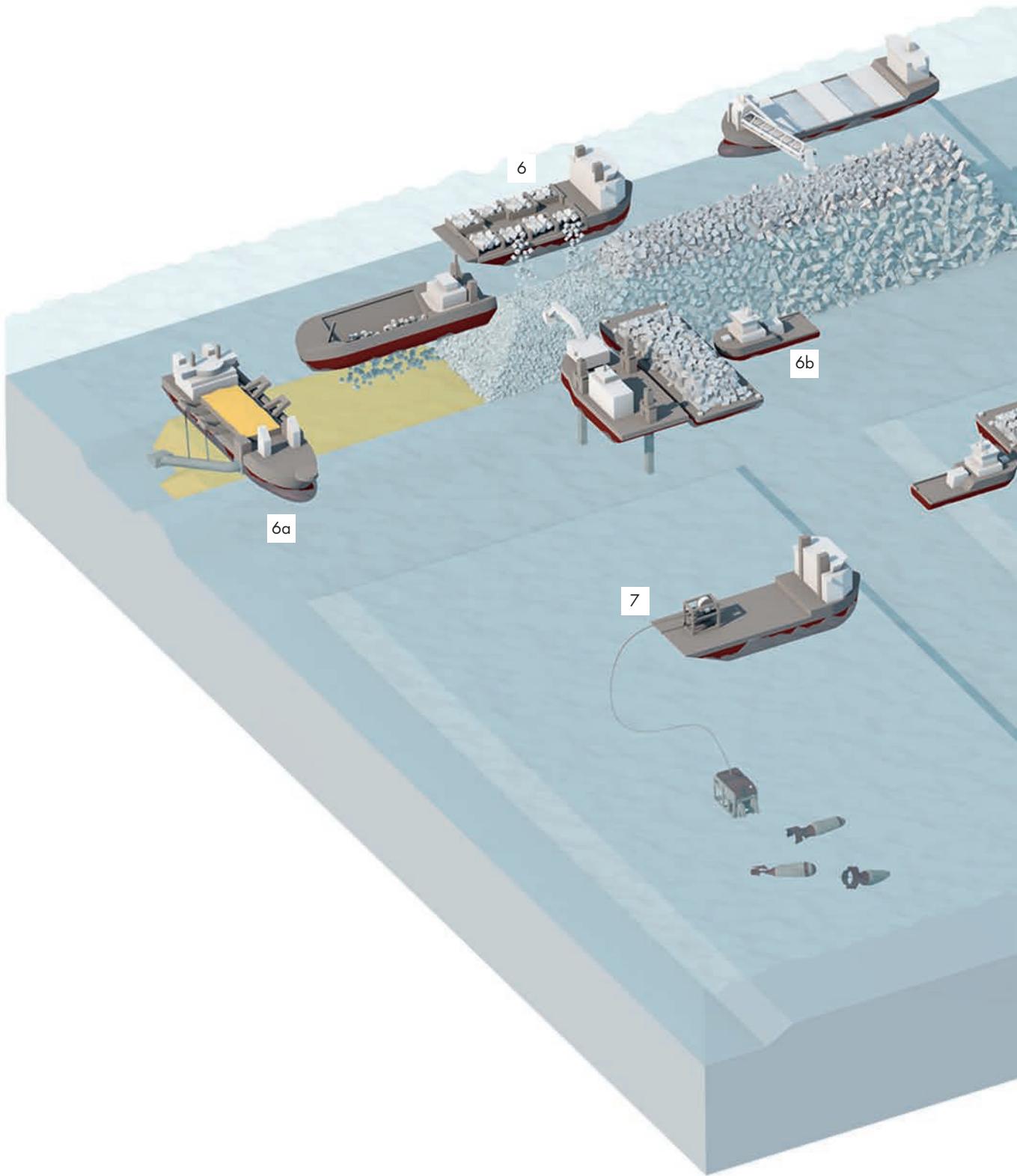
Inner port deepening project. Due to the Early Contractor Involvement approach all challenges of the port authorities were met: an expanded, sustainable port, created with community acceptance and within the specified budget.

right GÄVLE, SWEDEN

Deepening and widening the fairway to make the port accessible for container vessels and tankers with a draft of 12.7 meters and a length of 200 meters.

PORT PROTECTION

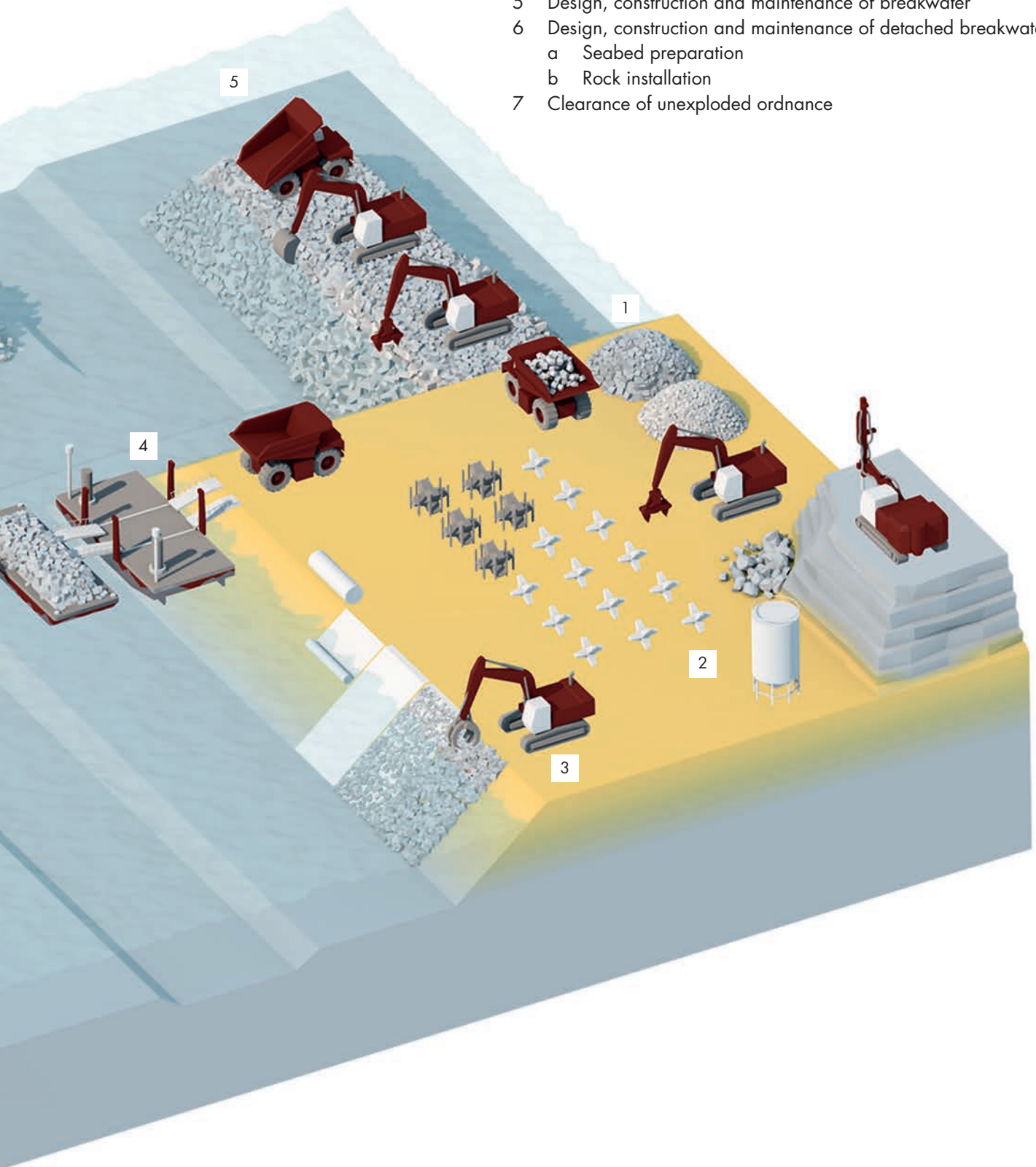
PORT PROTECTION



PORT SOLUTIONS

OUR SOLUTIONS

- 1 Quarry management
- 2 Concrete blocks fabrication
- 3 Design, construction and maintenance of revetment
- 4 Transportation of rock to site
- 5 Design, construction and maintenance of breakwater
- 6 Design, construction and maintenance of detached breakwater
 - a Seabed preparation
 - b Rock installation
- 7 Clearance of unexploded ordnance

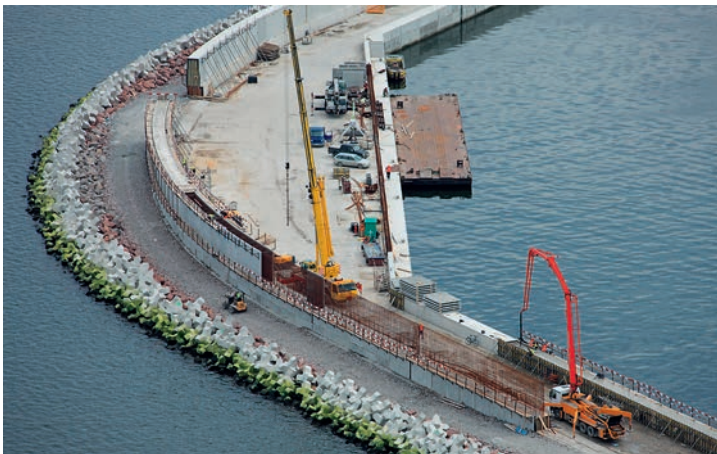


PORT PROTECTION

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PORT SOLUTIONS



ROTTERDAM, THE NETHERLANDS

The E-crane 'Blockbuster' was designed to build the sea defense of the Maasvlakte 2 port expansion. Its innovative construction enabled it to lift 50 ton blocks and accurately place them 60 meters away.



'WE DESIGN, CONSTRUCT AND MAINTAIN COST-EFFECTIVE AND SUSTAINABLE BREAKWATERS AND REVETMENTS'

Breakwaters and revetments are essential to protecting your port from the open sea and to providing safe transshipments. They have to be able to withstand the most severe wave and weather conditions and must be constructed with minimal impact on the environment. As they constitute a large part of the port investment a cost-effective solution is essential.

Our engineers employ state-of-the-art numerical wave modeling techniques, computer simulations and physical models in laboratories to identify critical points and deliver cost-effective and sustainable solutions.

Our expertise in quarry management, logistics and in-situ production of concrete elements enables us to optimize a cost-effective construction process.



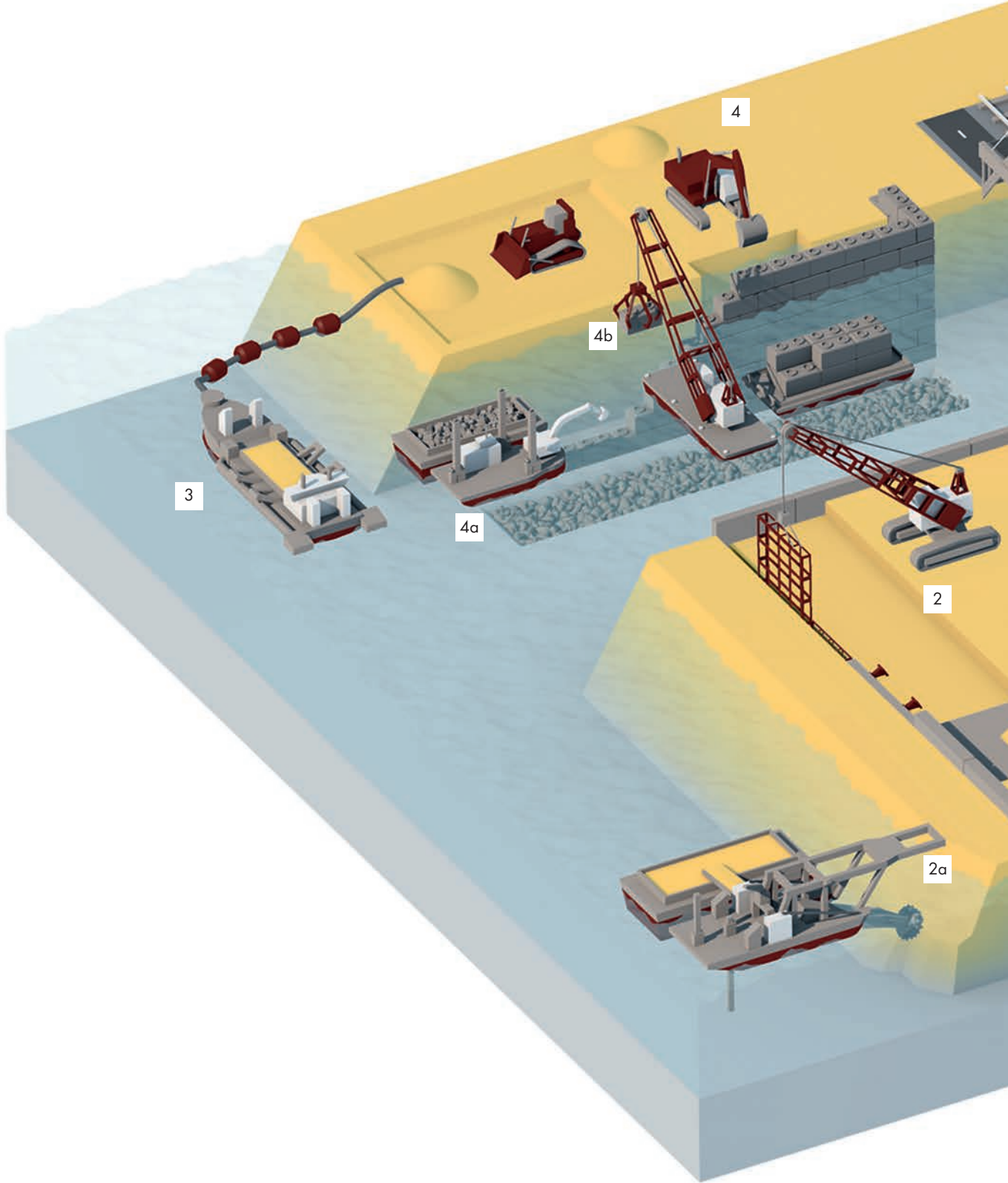
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SWINOUJSCIE, POLAND
Construction of a port including a 3.3km breakwater.

middle
BARROW ISLAND, AUSTRALIA
Installation of X-blocs to protect the LNG port which was constructed by Boskalis under challenging logistical and environmental conditions.

right
RAS LAFFAN, QATAR
Creation of the largest LNG port in the world including 20km of breakwaters and more than 42km of revetment works.

PORT INFRASTRUCTURE

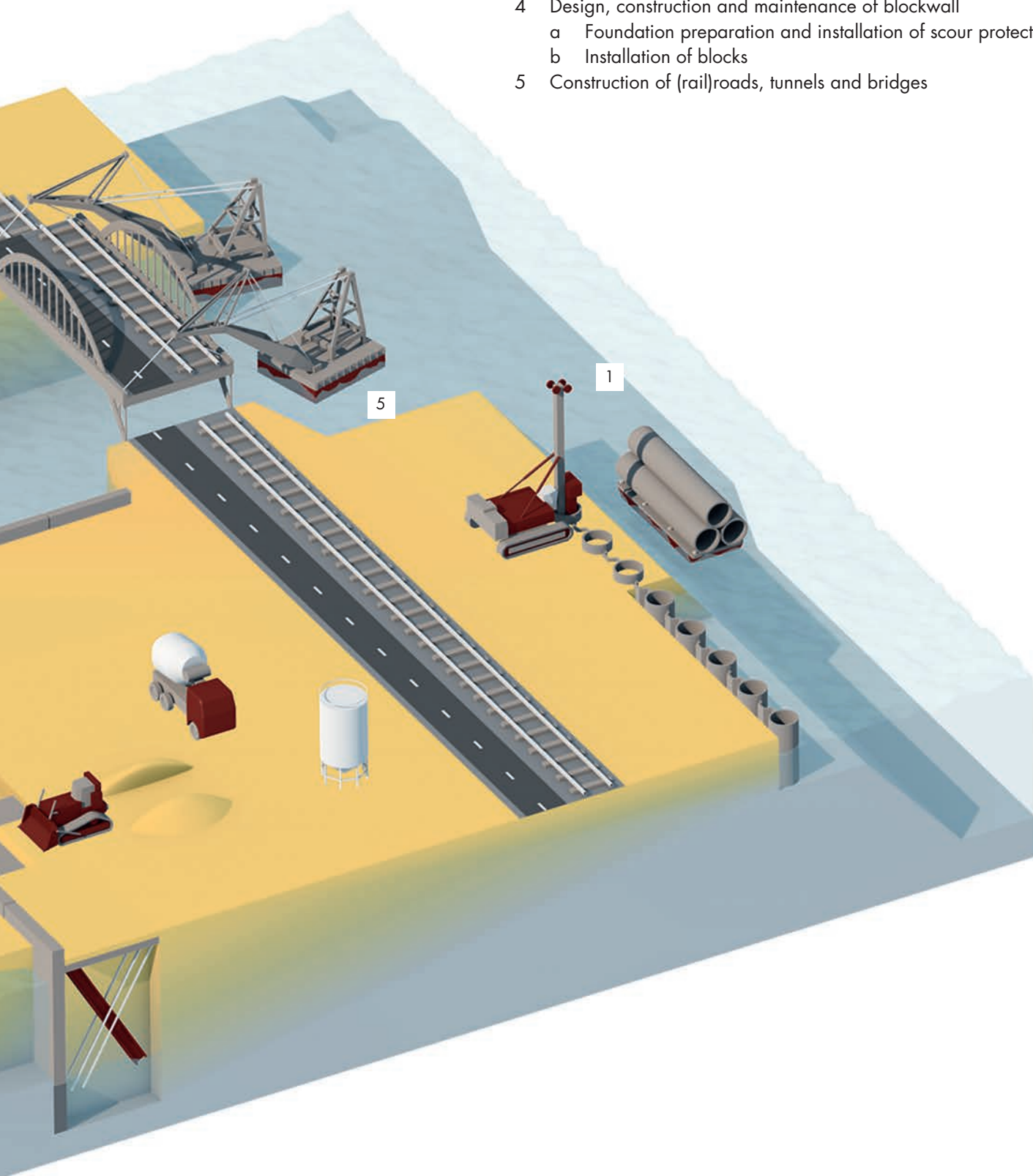
PORT INFRASTRUCTURE



PORT SOLUTIONS

OUR SOLUTIONS

- 1 Design, construction and maintenance of combi-wall
- 2 Design, construction and maintenance of retaining wall
 - a Dredging out toe
- 3 Land reclamation
- 4 Design, construction and maintenance of blockwall
 - a Foundation preparation and installation of scour protection
 - b Installation of blocks
- 5 Construction of (rail)roads, tunnels and bridges



PORT INFRASTRUCTURE

PORT INFRASTRUCTURE



PORT SOLUTIONS



'INTEGRATED SOLUTIONS FOR A FULLY OPERATIONAL PORT'

BARROW ISLAND, AUSTRALIA
Design and construction of a material offloading facility, a roll-on-roll-off facility and 200m of quay walls.



Shipping companies and agents continuously re-assess their shipping and distribution networks in pursuit of traffic volume, cost efficiency, manageable risks and increased routing flexibility. Outstanding connections with the hinterland depend on a wide variety of port infrastructure constructions.

We are able to deliver integrated solutions for a fully operational port. Our expertise includes the design, construction and maintenance of quay walls, roads, railways, tunnels and bridges. We streamline execution by managing subcontractors, communicating with stakeholders, eliminating interfaces and/or acting as a specialist subcontractor.



left
ROTTERDAM, THE NETHERLANDS
Design and construction of a retaining quay wall on the Maasvlakte 2 project. The project encompasses the construction of two innovative deep-sea quay walls, each 1.2m thick and 40m deep, and two quay walls for inland shipping vessels.

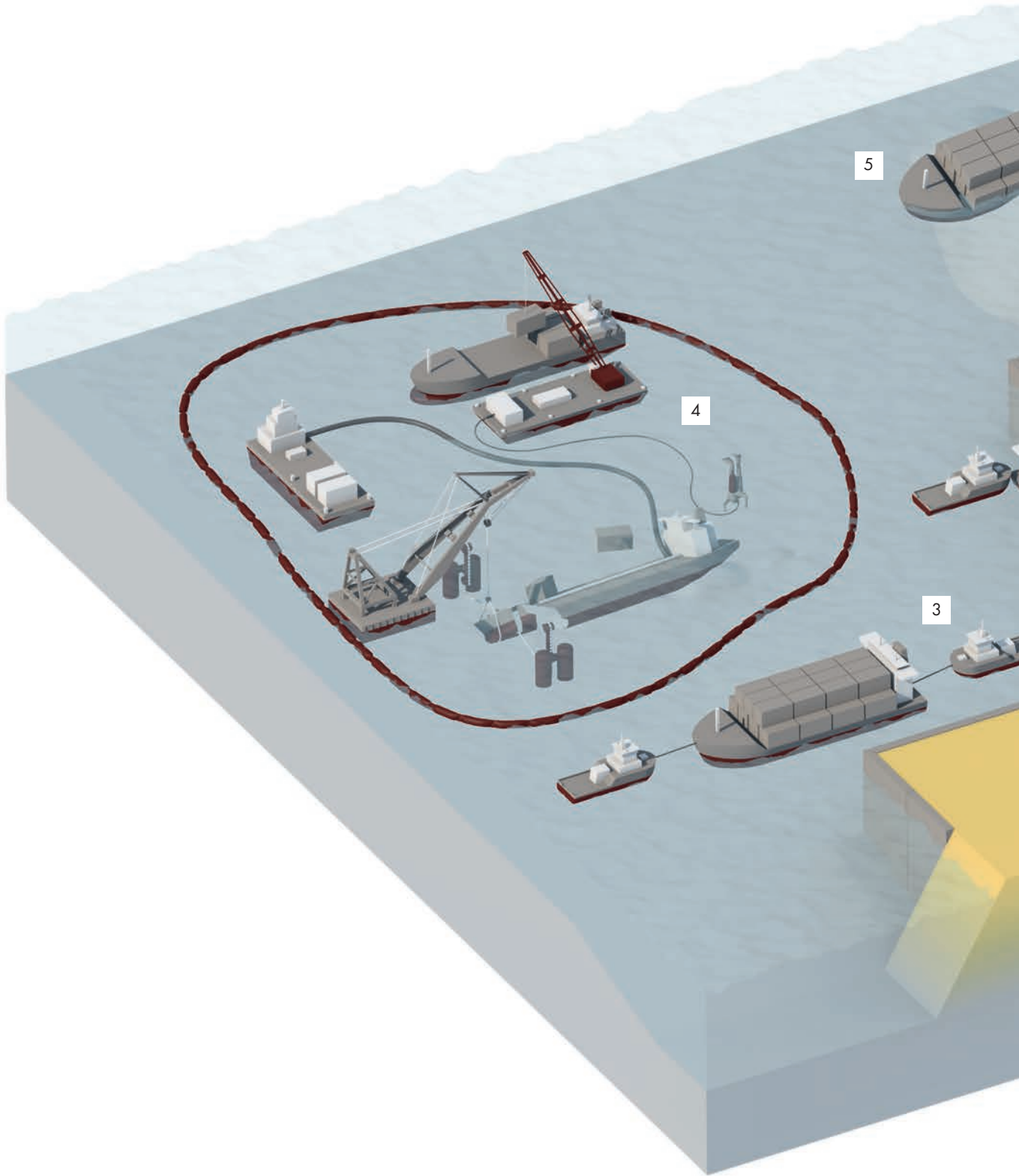
middle
VUOSAARI, FINLAND
Design and construction of 3.5km of quay walls, using the special slip form technique which is developed for ground conditions of glacial origin.

right
ROTTERDAM, THE NETHERLANDS
Realization of the Maasvlakte 2 port infrastructure, including railways, roads, tunnels and bridges.

PORT SERVICES

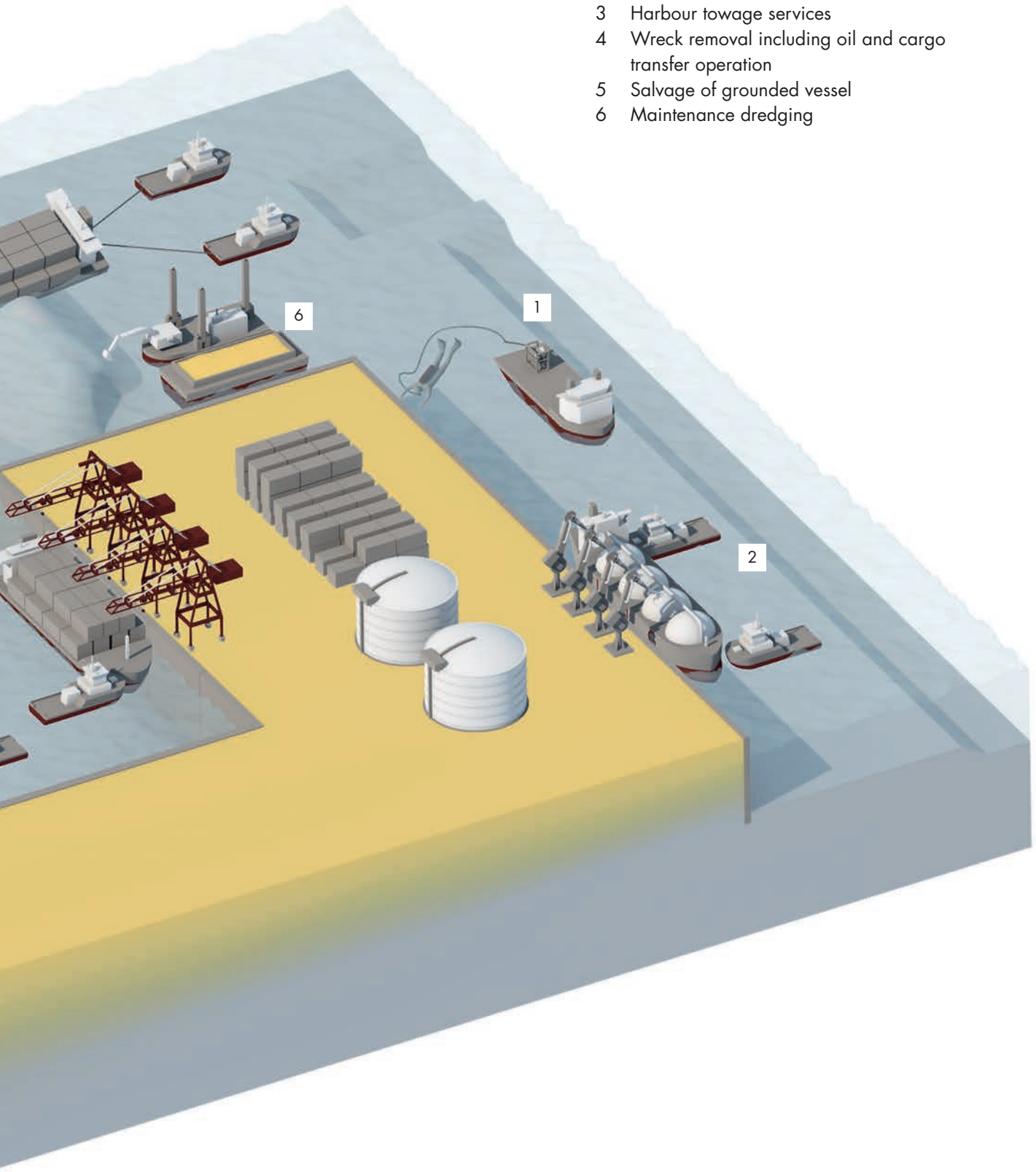
PORT SERVICES

PORT SOLUTIONS



OUR SOLUTIONS

- 1 Inspection, Repair and Maintenance of quay walls, jetties and buoys
- 2 Terminal services
- 3 Harbour towage services
- 4 Wreck removal including oil and cargo transfer operation
- 5 Salvage of grounded vessel
- 6 Maintenance dredging



PORT SERVICES

PORT SERVICES



PORT SOLUTIONS



'WE REDUCE COSTS THROUGH RELIABLE (LONG-TERM) OPERATIONAL SERVICES'



In order for your port to retain its place in the premier league it has to meet the rising demands of the global maritime industry. Maximizing safe and efficient ship handling is key in this respect.

Ensuring continued accessibility for ever larger ships is essential. We provide cost-effective (long-term) maintenance dredging services including sustainable disposal of dredged material. If you involve us in the design phase of your port we can optimize the maintenance process by including future maintenance requirements.

Ships calling at your port have to arrive and depart on schedule. With our harbour towage services we provide the vital link between ship and berth. Through the Smit Lamnalco, Keppel Smit Towage and SAAM SMIT Towage partnerships and the joint venture with Kotug we operate more than 450 vessels in over 90 ports in 35 countries.

Wrecks must be removed when they pose a threat to safe navigation or obstruct access. Ports must have a plan for preventing, containing or cleaning up **oil spills**. SMIT's highly trained and experienced salvage teams are geared up to provide instant 24/7 response, in case of an emergency anywhere in the world, delivering cost-effective compliance in accordance with OPA'90 requirements.

PANAMA, PORT OF BALBOA
Maintenance dredging and harbour towage services.



left
Two SAAM SMIT Towage harbour tugs assisting a container vessel in Canada.

middle
Inspection, Repair and Maintenance services.

right
INDONESIA
Floating sheerleg SMIT Cyclone removing the wreck of a sunken car carrier near the port entrance.

LET'S TALK



| LET'S TALK

'TELL US ABOUT
YOUR CHALLENGES'

For over 100 years, Boskalis has helped clients meet some of the toughest challenges.

How can we help you? Give us a call and tell us about your challenges. Or look at our portfolio on www.boskalis.com. You can download our corporate brochure and our other solutions brochures for Infra and Energy.

| PORT SOLUTIONS



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