



Near shore marine

- Soil improvement of reclaimed land
- Liquefaction prevention
- Maintenance and repair
- Bridge construction
- Turnkey solutions
- Quay deepening
- Breakwaters
- Combi walls



Near shore marine

Keller has unrivaled global experience in providing expertise in geotechnical construction for a range of industries and applications. Whether the challenge relates to bridges, jetties, ports or marinas we are confident that Keller has the capability to address the unique construction challenges for marine works. Keller has the capacity to provide geotechnical as well as structural designs for construction solutions that recognise and mitigate risks and deliver value.

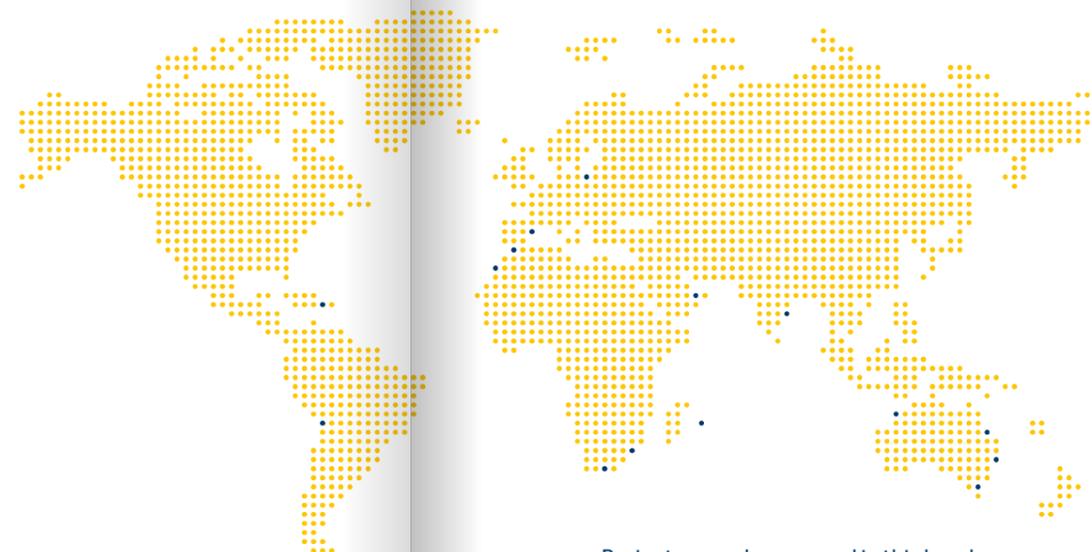
Challenges we can solve

Keller is more than a marine contractor. We combine experience, expertise, and excellence in the three main drivers defining the cost of a marine project: geotechnical engineering, structural design and methods of execution. In addition, we partner with our clients from the early stage of their project and our engineers work closely with the technical team to define and design the most suitable and cost-efficient solution.

Health and safety

Health and safety is a priority for Keller and we have a proven track record of one of the lowest accident frequency rates in our industry. The commitment of leaders and employees to our Think Safe programme has earned us awards and recognition from industry bodies as well as our clients.

We believe no one should be harmed as a result of any work we do and our ultimate goal is zero incidents.



• Project examples covered in this brochure



Turnkey solutions Overseas passenger terminal, Sydney, Australia

In the iconic bay area of Sydney, between the Harbour Bridge and the Opera House, Keller has been designing the new Overseas Passenger Terminal to accommodate the safe berthing of the most prestigious boats and respond to the increasing demand in cruise tourism. In only six months, Waterway, a marine subsidiary of Keller, has made this quay emerge from the busy waters of Sydney Harbour. During the works, marine traffic continued to be intense in the ferry terminal and special measures were taken to keep noise level low to ensure that the audience in the Opera House wasn't disturbed.

Project examples

Combi walls Webb Dock Melbourne, Australia

Melbourne port is already the largest port for containerised cargo in Australia and is still expanding. Austral Construction, a Keller company with an intense marine works activity extended and upgraded an existing quay to create two wharves for the 3rd international container terminal. In addition, the project also comprised the creation of a 920m world-class automotive terminal with a capacity of one million vehicles per annum.



Quay deepening Tanger Med 2, Morocco

Although newly built, the Tanger Med port complex is about to become the busiest container port in Africa. With its strategic location on the Strait of Gibraltar and a constant flow of mega ships passing by, the port authority decided to expand its capacity to welcome them and increase the draught of a 450m berth down to 18 meters. They selected Keller for the thorough solution we proposed for the specific conditions of a hard rock layer: a retaining wall made of piles in front of the existing quay.



Project examples

Quay deepening Levante quay Valencia, Spain

In contrast to Tanger Med port, Valencia port is over 500 years old and already the busiest container port on the Mediterranean. To ensure the port could maintain this position, the quay had to be deepened, and a specific solution was required: staggered soilcrete columns, up to 4m diameter in the sandy soil below the caissons of the quay.

Care for the client: Ensuring that operations on a wharf aren't interrupted is important to the port operator. Keller solutions always tend to keep the port in operation throughout the execution of works.



Breakwaters Port of Marrakesh Safi, Morocco

Port development on the Atlantic coast of Morocco is a challenge because one has to deal with harsh sea conditions. In addition, the bottom of the sea is so weak it needs to be improved to mitigate settlements. Keller state-of-the-art equipment for subsea stone columns installs and vibrates the stones exactly where they are needed with substantial savings on material and dredged quantities.



Project examples

Bridge construction Littoral highway Réunion Island, France

Because the old Route Nationale 1 on the west coast of Reunion Island was too exposed to rocks falling from the cliff, the French government launched a bold project: the construction of new 12km highway including a 5.4km sea viaduct a few tens meters offshore. Fast, safe, cost-effective, and with strong technical advantages, Keller subsea stone columns were selected to form the foundations of the 48 piles of the viaduct.



Turnkey solutions Kattupalli Port Chennai, India

Chennai is the 4th largest city in India. To enhance its economic growth, Larsen & Toubro developed a large harbour, 30km North of the city, in Kattupalli. This harbour started operations in 2013 with a shipyard and is now accommodating a buoyant container port operated by Adani. To sustain its growth and cater to increased demand, Adani engaged Keller to construct a 300m wharf extension. Keller's geotechnical expertise was welcome on this complex pile execution. The full scope from civil works to marine equipment installation has been done in-house.

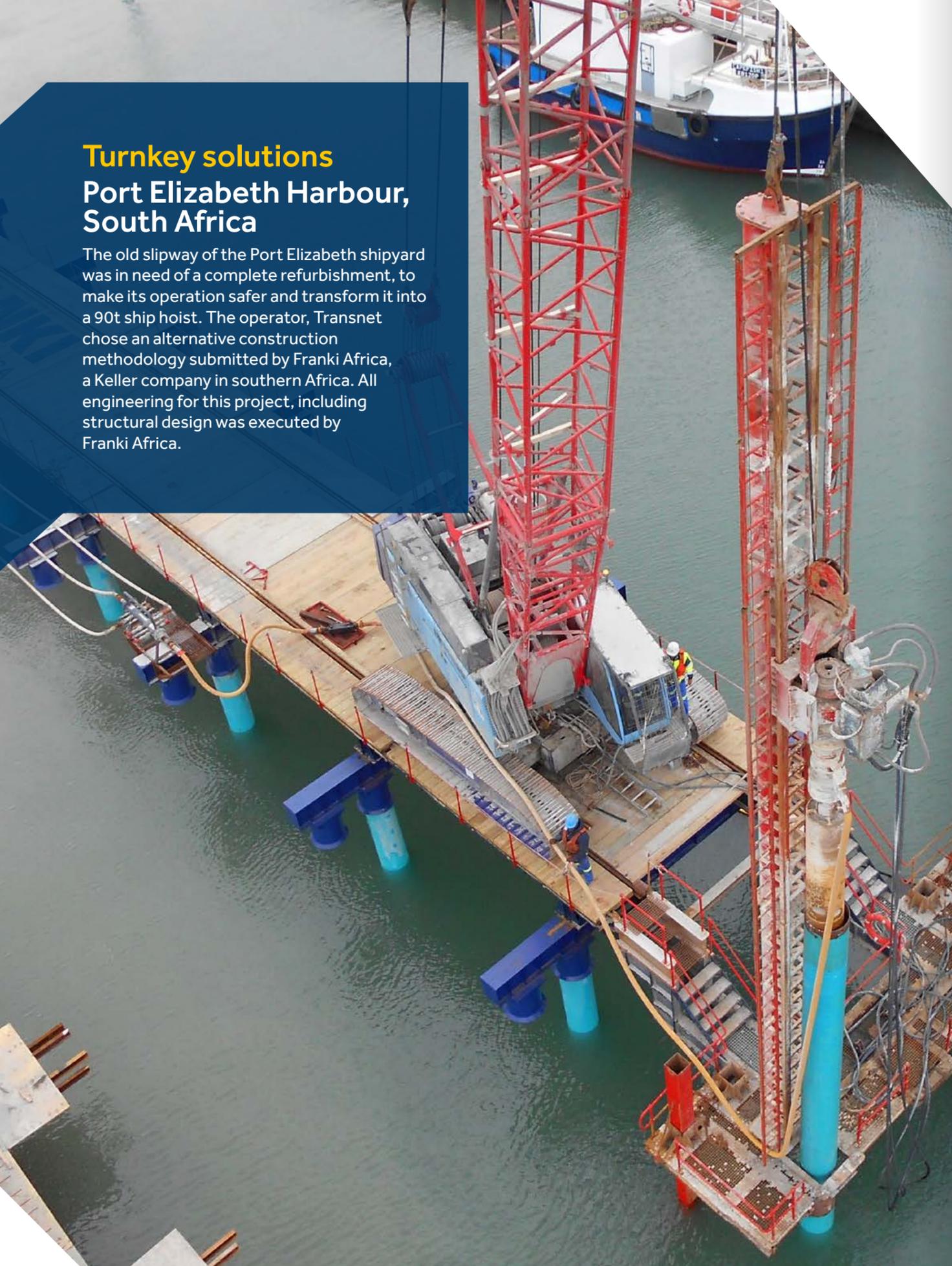
Project examples



Turnkey solutions

Port Elizabeth Harbour, South Africa

The old slipway of the Port Elizabeth shipyard was in need of a complete refurbishment, to make its operation safer and transform it into a 90t ship hoist. The operator, Transnet chose an alternative construction methodology submitted by Franki Africa, a Keller company in southern Africa. All engineering for this project, including structural design was executed by Franki Africa.



Project examples

Maintenance and repair Iquique port, Chile

In 2014, an 8.2 earthquake hit the Northern region of Chile, and its major city, Iquique. Damages occurred to the facilities of the harbour, especially severe settlements and tilting of the structure of its quays made of concrete blocks. Being a strategic port for Chile but also for Bolivia –the neighboring landlock country-, it was crucial to get it back in working order as soon as possible. Keller is proud to bring support to regions affected by disasters like this one.



Turnkey solutions Bay of Plenty Piers Kwa Zulu Natal, South Africa

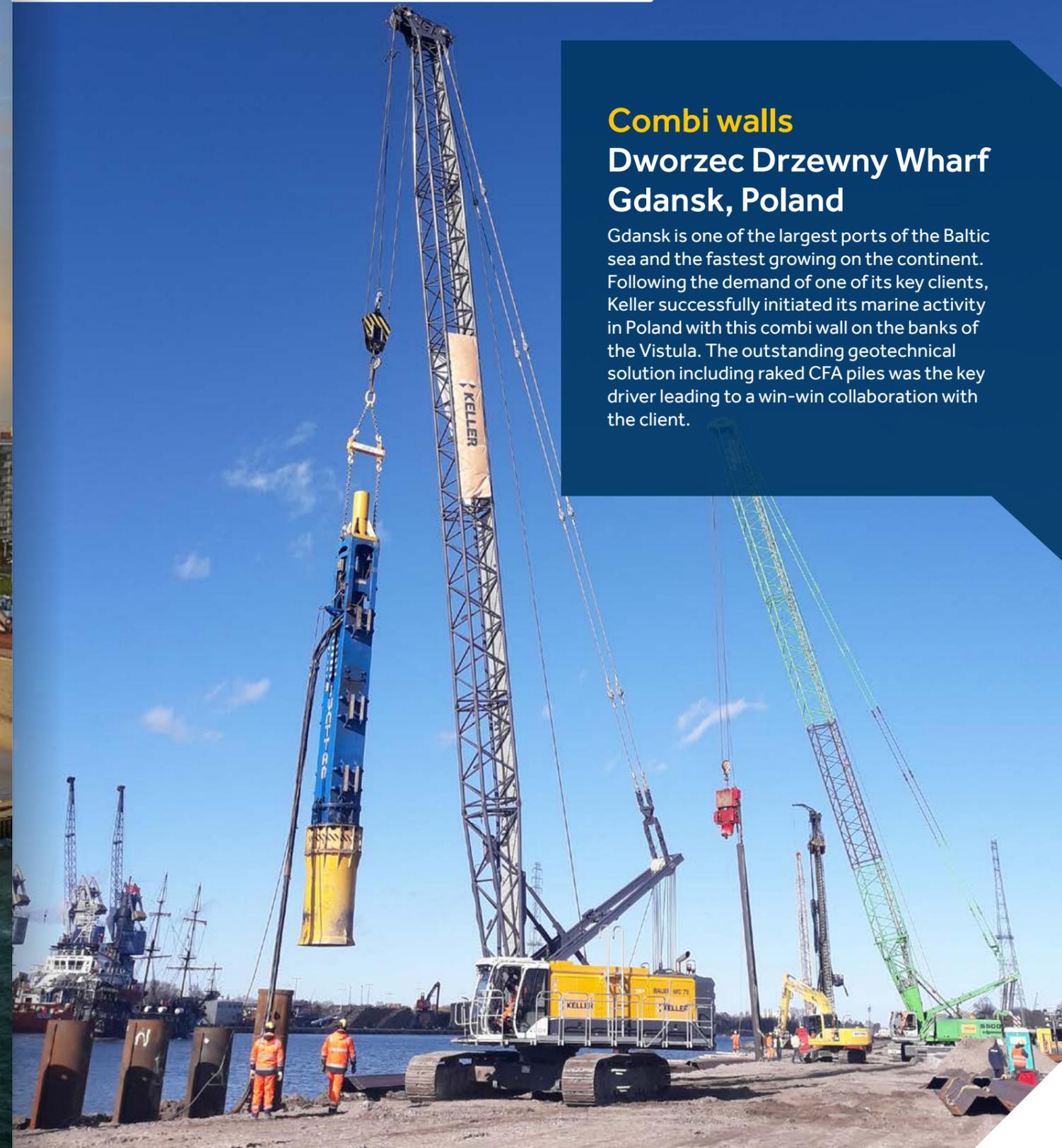
Durability is a key issue in the aggressive environment of marine works. This 75m pier was only 30 years old but its piles were already failing. Franki Africa, a Keller company in southern Africa, carried out its complete demolition and further reconstruction from foundations to concrete structures. The proposed solution included the execution of all the works from an adjacent temporary jetty and allowed significant savings in terms of time and costs.



Project examples

Combi walls Dworzec Drzewny Wharf Gdansk, Poland

Gdansk is one of the largest ports of the Baltic sea and the fastest growing on the continent. Following the demand of one of its key clients, Keller successfully initiated its marine activity in Poland with this combi wall on the banks of the Vistula. The outstanding geotechnical solution including raked CFA piles was the key driver leading to a win-win collaboration with the client.



Turnkey solutions DORMAC Dock Quay Durban, South Africa

With its strong engineering department gathering experience from all around the world, Keller is eager to find the best geotechnical solution to save time and money. The purpose of this 185m quay was to berth a floating dry dock. Franki Africa, a Keller company in southern Africa, designed an innovative solution mixing various techniques with state-of-the-art methods: CFA piling and Soilcrete®, the Keller enhanced jet grouting technology. The turnkey project, including civil works and dredging, was completed ahead of schedule for DORMAC.



Project examples

Soil improvement of reclaimed land Dubai Harbour, UAE

Dubai has a long history of growing towards the sea by land reclamation. Its latest development, Dubai Harbour, is located in the middle of two iconic landmarks: Palm Jumeirah and Dubai Marina. The material dredged in the Gulf is perfectly adapted to reclamation. Keller's unrivaled experience in soil improvement ensures it's key role in the development of the 'City of Future'.



Maintenance and repair Rio Tinto jetty refurbishment, Dampier, Australia

This jetty needed a complete refurbishment within highly restrictive conditions: the client needed the jetty to remain in operation throughout the works. Austral Construction, a Keller company in Australia, developed innovative methods to execute and ultimately reconstruct the jetty. Austral has been honored by the Rio Tinto Chief Executive's Best Global Contractor Award – 2016 for its performance on this project.

Project examples



Liquefaction prevention Quai des Avisos Fort-de-France, French West Indies

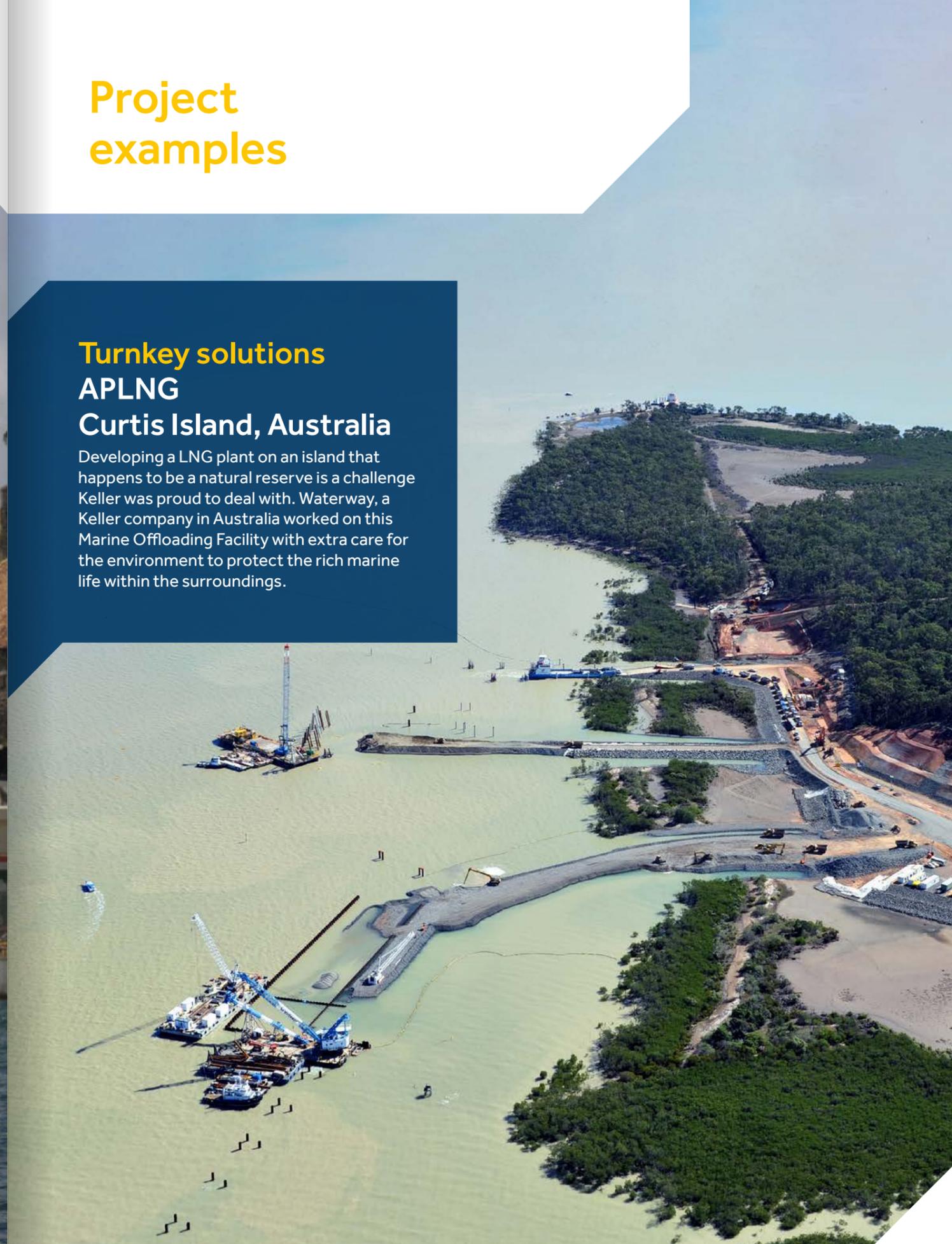
The Quai des Avisos was constructed in 1967 for the French Navy to exercise its sovereignty on this remote location. During the process of its refurbishment and deepening to accommodate two frigates, the project had to comply with new seismic regulations preventing liquefaction. Keller brought both a high quality geotechnical solution and state-of-the-art equipment to implement within the required time frame, whilst saving valuable natural resources.

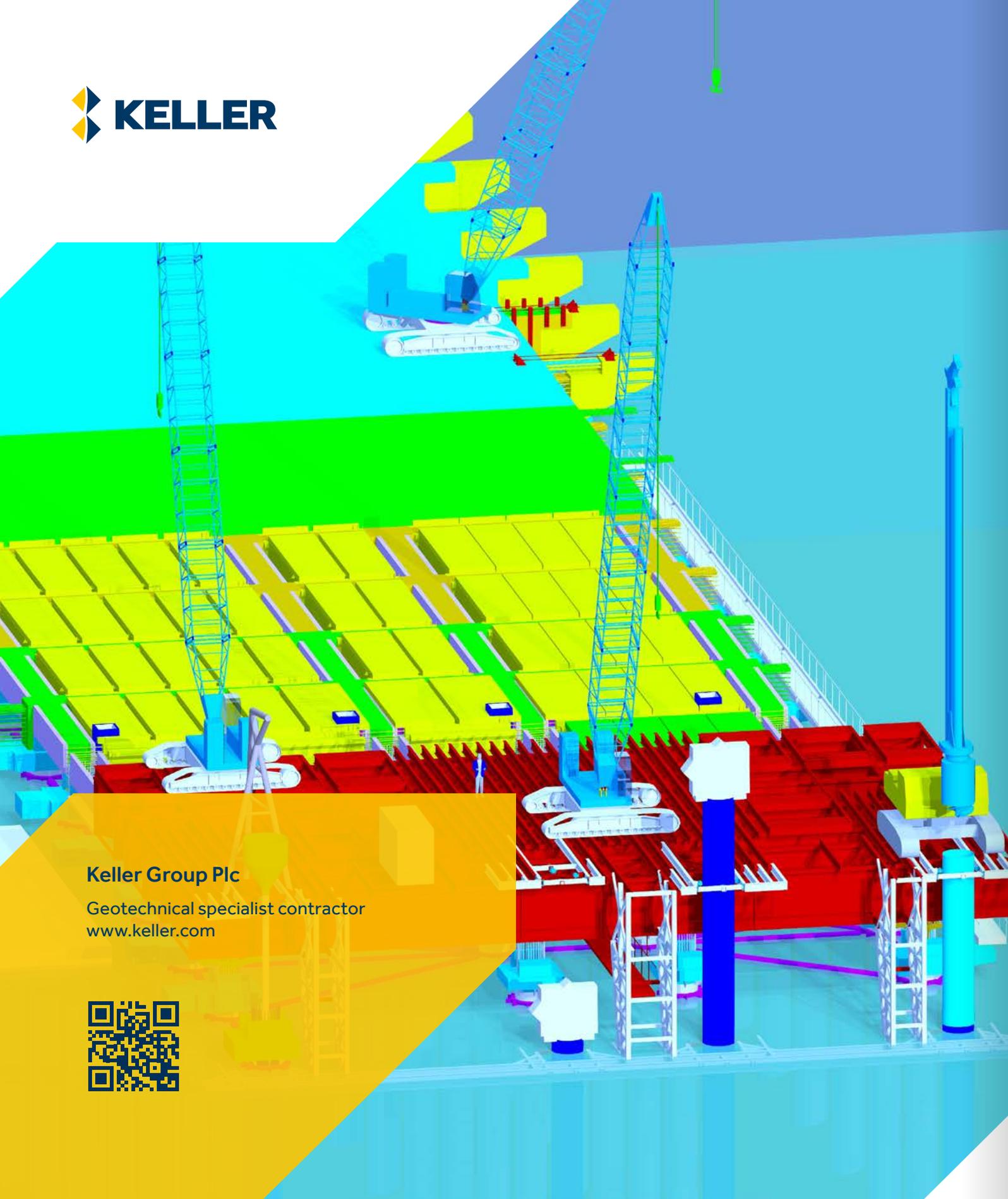


Project examples

Turnkey solutions APLNG Curtis Island, Australia

Developing a LNG plant on an island that happens to be a natural reserve is a challenge Keller was proud to deal with. Waterway, a Keller company in Australia worked on this Marine Offloading Facility with extra care for the environment to protect the rich marine life within the surroundings.





Keller Group Plc

Geotechnical specialist contractor
www.keller.com

