



THE POWER OF PREPARATION

WHITEPAPER | MAY 2025

# BOAT LANDING REPLACEMENT

## OVERVIEW

Late 2019, Mammoet Qatar was approached by Dopet, one of the contestants of a boat landing replacement project. As the offshore specialist, Conbit was requested to provide input. During a concept development session with all stakeholders, a new replacement method was developed.

Dopet's initial thoughts concentrated on adding a lot of steel to create an overhang. A crane vessel would perform the complete lift. There were many questions raised during the first meeting and the project partners led by Conbit came up with a more cost-effective solution. This solution became the winning bid and Qatar Petroleum awarded Dopet with the prestigious project.

After reading this whitepaper, you will be able to start on your boat landing replacement project. Reach out to Conbit for further assistance in the process and feel confident with the outcome of your project.

***Mammoet Qatar collaborated with Conbit for a cost-effective boat landing replacement.***



## INTRODUCTION - PROBLEM DEFINITION

Replacing boat landings at offshore facilities is a challenging task. Without proper planning and engineering, Lost Time Incidents, budget overruns, and loose production will occur. Working in the splash zone, above and under water at the same time, makes the project complex. You will require a few service partners to complete the project, and you will need to manage all those interfaces.

In this whitepaper, we will share the lessons learned as well as the pitfalls from many boat landing replacements and other lifting projects, and the actions that will prevent you from facing failure.

This whitepaper is written primarily for project managers and engineers in the oil and gas, and the offshore renewable industry. It is a must-read for all those involved in replacing boat landings offshore.

### WHAT BOAT LANDINGS DO WE CONSIDER IN THIS WHITEPAPER?

There are many types of boat landings, therefore, further narrowing down the specifics is required to establish the basis for this whitepaper. The boat landing's primary function is to prevent vessels from hitting the platform, which is typically located on the side of the main crane. The boat landing is not used for personnel access, rather only as an escape route in case of emergencies. The weight of boat landings varies from 5 tonnes at offshore wind turbines to more than 150 tonnes at oil and gas production platforms.

## SAFETY

Some pitfalls that cause potential safety hazards:



### Lifting through a splash zone.

The boat landing has a large horizontal surface that provides stability during the lifting operation.



### Limited weather window.

Lifting near the offshore asset requires control over the lifted load. Both the sea and the wind impact the lifting operation, limiting the available time slot for lifting.



### Connecting large structures below the sea line.

When connecting or disconnecting large structures below the sea line, you should limit the use of divers, as sudden movement of the lifted object might cause the diver to be trapped or worse.



### Human interfaces.

The project requires many different disciplines. The interfaces between those disciplines might result in errors offshore.



### The difference in motion between crane and offshore asset.

When using a crane which is not on the offshore asset, the motions of the crane will be different. This happens if you use a crane vessel or a jack-up barge to lift the boat landing to and from its installation location.

Other hazards need to be addressed during the engineering and project preparation phase. Additional hazards are that of a typical project, lifting and marine spread hazards, therefore, having experienced contractors on site will prevent most hazards from occurring. However, each project should be prepared in detail without relying on the track record of one contractor.

## TIME CHALLENGES



The boat landing is a critical part of the logistics of the platform. Supplies, replacement components, and crew rely on the availability of the boat landing. When the boat landing is out of operation, there is a significant impact on the operation.



It is generally accepted that the longer an offshore project runs, the more risks are involved in the project. It is more likely that a Lost Time Incident will occur within a month than within a week, for example:

The boat landing replacement project affects the production of the offshore asset. Production should be stopped or delayed for the shortest possible time. The pressure of lost production on the team can be intense and requires additional attention.

*"The project lead time should be minimized to limit the operational impact and the exposure."*



## ENGINEERING CHALLENGES

During a boat landing replacement project, different engineering challenges are identified:



Different engineering projects which impact each other



Multi-disciplinary engineering competencies required



Changed Industry guidelines

### SEVERAL INDEPENDENT ENGINEERING PROJECTS

A replacement project is defined by two major engineering exercises that are closely connected. The new boat landing will be engineered, and the replacement method requires engineering. Both projects impact each other.

The design of the new boat landing will need to be assessed on constructability. Can the new boat landing be transported and installed with the operational limitation of the project? Even if a like-for-like replacement is introduced, the installation will probably be different. The existing boat landing is installed together with the jacket. It might have been installed at the quayside, offering different installation options than in a brownfield situation offshore.

The installation methodology is impacted by the design decisions made by the engineer of the new boat landing. The weight and dimensions will change during the design process - these changes will result in changing starting points for the engineering of the installation.

Another engineering challenge to think about, is that the installation plan for the project is often not taken into consideration at the beginning of the initial design phase – but rather at a later stage when the detailed design phase is prioritized. This could lead to the implementation of major design changes at a very late stage of the project. Therefore, a successful boat landing replacement requires close cooperation between the two engineering parties. This collaboration will need to be accommodated by the platform operator. He can decide to award the full scope to one main contractor who manages the interfaces with the engineering and installation subcontractor. Or, the operator can create a collaborative environment, in which both engineering cycles work together.

## MULTI-DISCIPLINARY ENGINEERING COMPETENCIES

Several disciplines are impacted by the project. All these disciplines must provide input at the right time. To name a few disciplines:



Structural  
Engineering



Installation  
Engineering



Marine  
Engineering



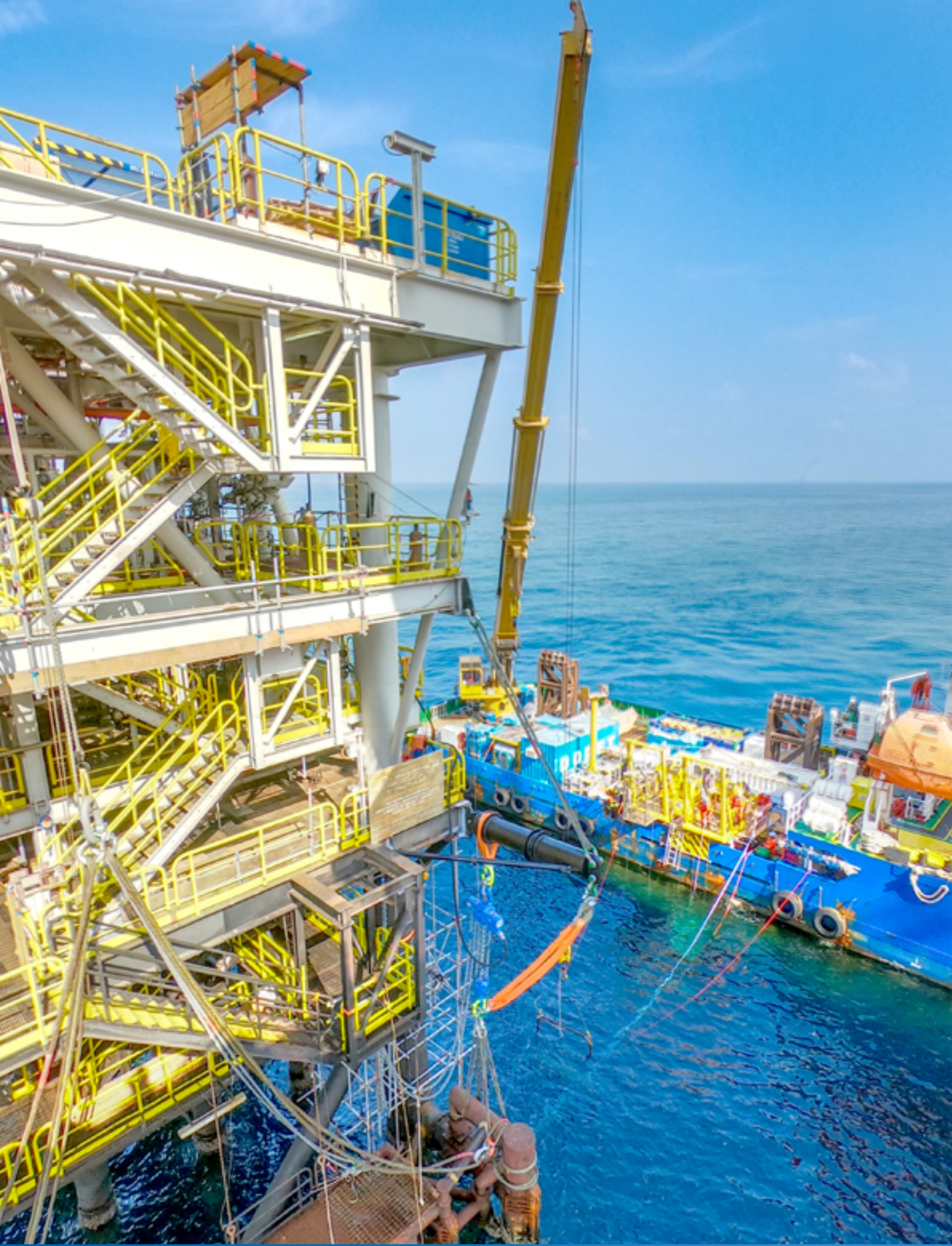
Subsea  
Engineering

Within those disciplines, there should be sufficient welding expertise. The team should have experience with the engineering challenges of boat landings, which are affected by weather conditions, the sea, and the impact of boats.

The integration between the boat landing and the platform is a crucial aspect to consider during the design, along with noting that boat landings often have an escape route function. Therefore, you will need to get HSE or safety engineers to provide their input as well.

Finding one subcontractor to cover all disciplines will be challenging. The management of all these disciplines is equally challenging.





### CHANGED INDUSTRY GUIDELINES

Boat landings are installed during the construction of the offshore asset. When the boat landing is due to be replaced many years have passed by, which may have led to many industry standards and regulations changing.

Some asset certification and insurance companies allow operators to perform like-for-like replacements using the same guidelines that were used in the original design. However, usually this is not economical because of the changed installation method.

Often, the design of the new boat landing will be different than the existing one. This means that new industry guidelines will be used, including changed or adjusted safety factors, taking new vessels into account, and having other parameters changed or new ones introduced.

The new guidelines will change the design of the boat landing. The new design results in different loads needing to be accommodated, and this requires structural analysis of the offshore asset. Additionally, the operator might need to request a third-party to re-certify the new platform. The third party will have a need for information, which adds to the engineering challenges.

***Conbit solves complex crane challenges through engineering precision, structural expertise, and innovative solutions tailored for offshore and maritime environments.***



## REPLACEMENT METHODS

Offshore structural components can be installed either pre-assembled or as small parts connected offshore. The industry prefers to pre-assemble larger components because offshore time should be kept to a minimum and connecting many pieces in the splash zone is not realistic.

Installation of pre-assembled boat landings can be done using different installation philosophies, such as:



Lifting directly into place by an external crane



Take over boat landing by rigging from either the external crane or a deck crane



Float-in and retrieve with rigging

This list is not complete but provides an overview of the most-used installation methods. The choice of method depends on project limitations and the layout of the offshore facility.

### EXTERNAL CRANES

If the design of the platform allows, an external crane can be used. A vertical clearance is needed between the COG of the boat landing and the side of the platform. There is a difference in the motions of the external crane and the offshore asset, which will limit the weather window and increase project risk.

The design should allow for a fast initial connection of the boat landing to the offshore asset. The external crane cannot control the load well within the splash zone. Therefore, additional tag lines and a temporary connection are required to secure the boat landing at the right location. Sudden movements of the load on the external crane can cause safety challenges. Consequently, the requirement for personnel near the boat landing should be limited. Divers also cannot be in the vicinity when the temporary connection is being established.

To overcome some of the challenges, the load can be taken over by a rigging configuration.



Watch the boat landing replacement process in action





**RIGGING CONFIGURATION AT OFFSHORE ASSET**

As soon as the boat landing is taken over by a rigging configuration connected to the offshore asset, the boat landing can be controlled better. Lift lines are shorter, and the movement of the platform is similar to the installation location.

The boat landing will be temporarily secured above sea level to await a suitable weather window to create a connection at the final installation location.



## FLOAT-IN AND RETRIEVAL

Less common, but possible, is to float in the new boat landing. Either the buoyancy of the boat landing can be used, or the boat landing can be positioned on a barge.

Tugboats will be used to bring in the new boat landing. Once close to the offshore asset, the rigging configuration is connected, which retrieves the boat landing from the water. Steps 6 to 8 will be used to connect the boat landing.

The main advantage of this method is that there is hardly any weight limitation for the new boat landing.

The biggest challenge is to create a tug procedure which holds the boat landing in control. It is not possible to tug in four equal directions. Only two tugs can be used, which have to pull hard to maintain the right position. Additional bumpers will be required at the offshore asset to allow for the alignment of the boat landing.

*Float-in and retrieval allows installation via tugboats or buoyancy, avoiding weight limits but requiring precise alignment.*





## RESOURCES

To complete the offshore works, several resources are required, such as equipment and manpower. These resources need to work together to complete the project safely and effectively.

### EQUIPMENT

The main equipment required for boat landing replacements can be found on the table below. The difference between the different installation methods is included.

	External Crane	Rigging	Float-in
<b>Marine &amp; logistics</b>	<ul style="list-style-type: none"> <li>&gt; Jack up barge</li> <li>&gt; Standby vessel</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Jack up barge or construction vessel with crane or supply vessel (if deck crane can be used)</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Tugs and barge</li> <li>&gt; Standby vessel</li> </ul>
<b>Subsea</b>	<ul style="list-style-type: none"> <li>&gt; Diving support vessel</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Diving support vessel</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Diving support vessel</li> </ul>
<b>Lifting &amp; rigging</b>	<ul style="list-style-type: none"> <li>&gt; Lift configuration external crane</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Lift configuration crane</li> <li>&gt; Hand-over lift configuration</li> <li>&gt; Rigging configuration</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Rigging configuration</li> </ul>
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>&gt; Welding &amp; lifting</li> <li>&gt; Bolting</li> <li>&gt; Lashing &amp; other sea fastening material</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Welding &amp; fitting</li> <li>&gt; Bolting</li> <li>&gt; Lashing and other sea fastening material</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Welding and fitting</li> <li>&gt; Bolting</li> <li>&gt; Lashing &amp; other sea fastening material</li> </ul>
<b>Access &amp; egress</b>	<ul style="list-style-type: none"> <li>&gt; Gangway</li> <li>&gt; Scaffolding</li> <li>&gt; Rope access equipment</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Gangway</li> <li>&gt; Scaffolding</li> <li>&gt; Rope access equipment</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Scaffolding</li> <li>&gt; Rope access equipment</li> </ul>

Vessels that are directly involved in the lifting operation (construction vessels) will have DP@ capabilities to hold position.

## MANPOWER

The offshore construction team will include all trades required to perform the scope of work. The team will be led by the offshore construction manager, who reports to the Offshore Installation Manager (OIM). The captains of the marine assets will be in direct communication with the offshore construction manager.

The manpower required for the project is as follows:



Construction manager



Marine crew



Diving crew



Mechanical crew, including scaffolding



Rigging crew, including rope access



HSE Officers

### HOW TO PLAN FOR A BOAT LANDING REPLACEMENT

An integrated project approach is advised. This means that the design of the new boat landing and the replacement of the boat landing will run in parallel. Operators can avoid redoing one of the engineering exercises when the input from the other overlaps. During the start of the project, parameters should be set, and multi-disciplinary discussions should commence. The project definition and concept development phase require communication between all parties.

After the concept has been set, the design of the new boat landing can be drawn. A preliminary conservative estimate of the weight and dimensions will form the basis for the concept installation method. According to the concept installation method, the initial market consultation for major equipment and contractors can begin. The marine spread should be shortlisted and main contractors, such as a diving company and a mechanical contractor, should be approached.

When the plans become more detailed, a fabricator for the new boat landing will be contracted. The fabrication process will take 4 to 8 months, during which the offshore work can be prepared. The offshore work will take between 2 and 12 weeks, depending on the complexity, level of preparation, and the weather conditions.

*A successful project is completed without Lost Time Incidents, within budget, and on time.*









## CONCLUSION

Anyone involved in a boat landing project will face challenges, will obtain many new competencies, learn about other disciplines, and will be a part of a mixed team of professionals. It may seem like a small modification project, but the complexity should not be underestimated.

Conbit has replaced many boat landings. We always work diligently, act as a consultant, and offer a realistic perspective of the potential risks to make the projects successful. We have gained a very good understanding of the factors leading to a successful project and look forward to bringing this experience and expertise to the next boat landing project.

### NEXT STEP

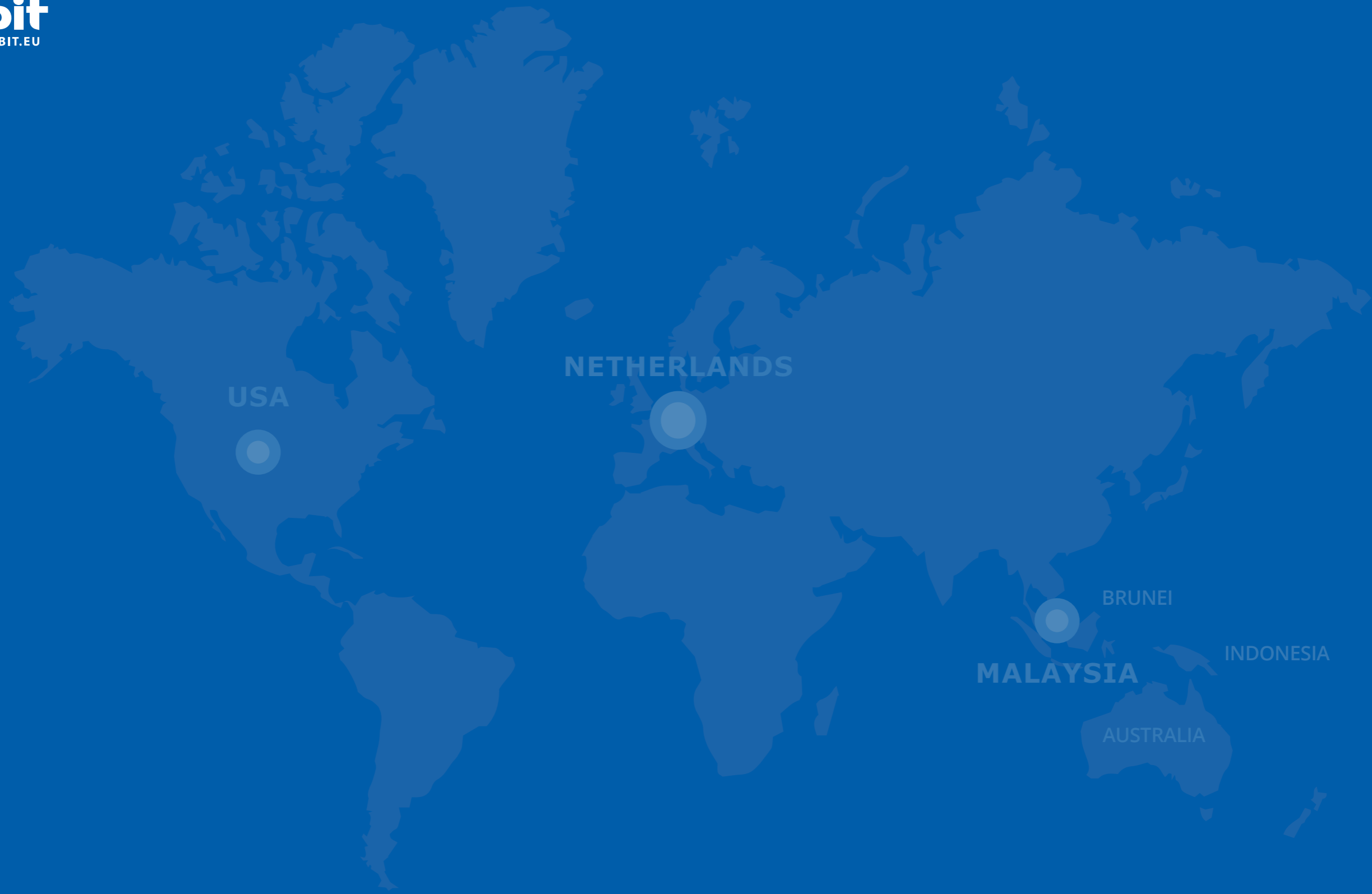
Conbit has a lot of resources available to plan for a boat landing replacement project. Some of the things we can support are:

 <p>A Standard Document Register List</p>	 <p>The typical installation method descriptions</p>	 <p>Typical project schedules</p>	 <p>Explanatory videos</p>
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**Reach out to Conbit's sales team to request the information required.  
You can also request a FREE demo or ask a specific question.**

*Scan to explore the full boat landing case on our website*





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