Project Sheet

Delta Marine Consultants
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Delta Marine Consultants is a trade name of BAM Infraconsult bv

Wheatstone Product Loading Facility, Australia

In late 2011, Chevron Australia began construction of the $29 billion Wheatstone Project, located 12 kilometres west of Onslow on the Pilbara coast of Western Australia. Offshore facilities will gather and partially process gas and associated condensate and deliver it onshore for further processing, from where it is exported through the Product Loading Facility. BAM Clough was awarded the EPC contract for the Product Loading Facility (PLF) by the EPCM contractor, Bechtel. The scope consists of a 1.3 kilometre jetty with Marine Operations Platform, Product Loading Platform incorporating a single LNG and Condensate load-out berth. DMC was responsible for the Detailed Design of the Wheatstone Product Loading Trestle and associated Marine Infrastructure.

Main client
Chevron Australia

Client
Bechtel

Type of contract
EPC

Completion
2016

Location
Onslow, Western Australia

Construction costs
Euro 300 mio

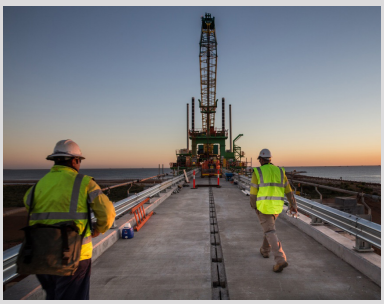
Consultancy Fees
Category 5 (see page 2)

Services
Basic Design
Detailed Design
Construction Support

Scope
Approach Trestle and Pipe Modules
Marine Facilities including Dolphins, Catwalks and Navigations Aids
Substation Platform
Geotechnical Design

Delta Marine Consultants

Wheatstone Product Loading Facility



Scope of Work

The project scope included the design and construction of a 1.3 kilometre jetty with operations platform, a product loading platform with a single LNG and condensate load out berth, and associated piping modules and piping installation.

Construction Methodology

The construction methodology was developed around specific equipment, which was a jack up barge, crane barge and cantilever bridge (CLB). This combination of equipment opened multiple work fronts, created schedule flexibility and maximised land based activities.

BAM Clough has designed and fabricated the CLB and its supporting equipment to be used for the construction of the approach trestle from the abutment to the loading platforms which covers the initial land based portion and over a section of water which is not accessible by conventional marine spread. This innovated design ensures construction efficiencies, safer working environment and has minimal environmental impact.

All marine structures have been specifically designed to suit the equipment and execution methods.

Design Involvement

DMC was responsible for the Detailed Design of the Wheatstone Product Loading Facility and associated Marine Infrastructure, including the Access Trestle, Pipe Modules, Dolphins, Catwalks, and Navigation Aids. DMC was also responsible for all the geotechnical design work and the confirmative dynamic mooring analysis.

Through an in-house design and construct approach and the use of integrated 3D-models, we were able to combine an optimised construction methodology, with a fit for purpose design incorporating the highest level of Safety in Design and Human Factors requirements.

Geotechnical Risk Management

The project carried a significant geotechnical risk for early refusal and potentially socketing of piles. DMC have performed an extensive risk analysis to manage and minimise these risks. This process included identifying the actual risk considered per pile location, based on upper bound, lower bound and expected soil parameters. Each pile was assigned a risk rating defining the most appropriate combination of mitigation/ optimisation measures. By using this approach we have been able to avoid all socketing on site.

Interface Management and 3D Modelling

All design work for this project were done in a 3D environment. The 3D models were integrated with Client's piping models and reviewed on a weekly basis. This allowed for early identification of clashes and optimisation of Safety in Design and Human Factors aspects.

Beyond permanent works, the 3D models also supported temporary works design, site logistics and work methodologies. All aimed at developing an efficient and safe construction method.

Consultancy Fees: 1: 50.000€ 2: 50 - 150.000€ 3: 150 - 300.000€ 4: 300 - 600.000€ 5: > 600.000€

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