



CLIENT : Port Hedland Port Authority
PROJECT MANAGER : Pinc Group
DESIGN : VDM Consulting
PROJECT VALUE : \$305 Million
FIRST EXPORT : September 2010
CONSTRUCTION CONTRACTORS : Brierty, Ertech,
 Goodline EC&M JV,
 Marine & Civil

PORT HEDLAND UTAH POINT

EVERYONE WINS AT UTAH POINT

Port Hedland's Utah Point project has delivered a four-fold win – a win for the booming trade in bulk minerals exports, a win for the Port Hedland Port Authority (PHPA), a win for the Port Hedland community and a win for the environment.

Prior to this much-needed expansion of Port Hedland's bulk commodity export infrastructure, the facilities available for the smaller bulk commodity exporters were limited, and all shipping was tidally constrained. Residents of the town itself also had to live with the constant dust and noise of multiple truck movements through the centre of town.

A two year approval process preceded construction, with particular attention paid to protecting the marine environment around the site, located on Finucane Island. Due to the level of environmental impact associated with this development, the project was referred to the Environmental Protection Authority (EPA) under Part IV of the Environmental Protection Act 1986. The EPA set a Public Environmental Review (PER) level of assessment for the project, and Sinclair Knight Merz was commissioned to assist in the preparation and development of the PER. Following a period of community consultation and review of submissions, environmental approvals were issued in March 2009.

Design measures for environmental protection include the capture of all water sprayed onto the conveyors for dust suppression in retention

ponds, and re-using this water for spraying. To prevent dust from iron ore, chromite or manganese entering the Port's waters, all site storm water systems have been designed to capture water from one in twenty year cyclonic storm events, and a seawall constructed to protect adjoining mangroves and also to protect the facility from storm surges and spring tides. An impervious geotechnical barrier has been installed under the stockyard to prevent groundwater contamination.

Five companies carried out the different aspects to the project, commencing in March 2009. Brierty constructed the 11km long access road which skirts the town of Port Hedland to reach Point Utah. Ertech completed the civil works, including the bulk earthworks and the concrete foundations for the facility.

Marine and Civil constructed the wharf itself, including the pilings, deck, abutments and approaches. The main works of the steelwork, mechanical elements, electrical fitout and ship loader were undertaken in a joint venture by Goodline and EC&M. Because of the unique design requirements of the shiploader, it was designed in Australia by Delta Engineering, erected in Henderson WA at the AMC facility and then transported by sea as an entire unit to Port Hedland for installation.

PINC Group supplied the overall project management, supervising and coordinating engineering and construction tasks. The first

export shipment was loaded at Point Utah in September 2010, with all final works complete by late October.

Before the construction of Utah Point, Port Hedland could handle 5 million tonnes per year of bulk commodities, with the new Point Utah berth operational, this has increased capacity to 17.1 million tonnes of bulk minerals a year – representing a huge boost to exports. When the facility is operating at full capacity, it will have a quad truck (semi and four trailers) of iron ore, manganese or chromite unloading every six minutes into the thirteen individual stockpiles of the stock yard.

“One of the major benefits for the community was getting the mineral away from the town. This reduces the dust generated in town and removes the truck traffic from the town,” explained PHPA Port Development Manager, Warren Farrow.

“The other major benefit for the tidally constrained port is use of smaller 120,000 DWT is complementary to the larger bulk iron ore carriers. These vessels do not need the higher tides to depart more tonnes can be exported through the Port's channel.”

The Port Hedland Port Authority is a statutory authority owned by the Western Australian Government, with a charter to operate along commercial lines. The PHPA's primary purpose is to facilitate trade through the port. The \$300 million Utah Point project, which expands their service capacity, was proponent funded by a multitude of Port users.

Port Hedland is Australia's largest tonnage individual port, and was the first port in the country to exceed 100 million tonnes throughput, with a record breaking 110.6 million tonnes of Pilbara region minerals throughput in 2005-2006 financial year. From the Port's earliest beginnings as a single jetty built in 1896 to service the pastoral industry, the growth of Port Hedland's maritime facilities has been an essential part of the region's economic development.



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AUSTRALIA'S BUSIEST PORT NEEDS THE BEST IN CONSULTATION

In terms of total bulk tonnage, Port Hedland is the busiest port in Australia. Almost all of its trade is in crushed ore and minerals such as copper, magnetite, manganese and chromite.

A larger and faster bulk ship loading facility was required including a wharf, a stockyard and operational facilities including general infrastructure and access roads.

VDM Consulting won the contract and proposed a single-berth wharf designed to accept Panamax and Small Cape Vessels up to 120,000 tonnes. State-of-the-art mooring systems were incorporated to ensure ships can be docked and released within minutes. The berth's design was the first of its kind in Australia and significant innovation was required to overcome technical constraints.

The 210,000m² stockyard has been built over an area which was largely mangrove forest. VDM's solution was to 'float' high-tensile plastic mesh over marine mud that was up to 2.5 metres deep.

The stockyard was designed for multiple users so there are 13 individual stockpile areas. To eliminate the risk of contaminated water run-off, VDM developed a system which retains all rainwater within the stockyard so it can be recycled or filtered and released.

The load-out facility

The load-out facility has a capacity of 7,500 tonnes per hour and can operate day and night with an in-feed rate of 18 million tonnes per annum.

Unlike most recently commissioned ship load-out facilities which are imported, the Utah version was contracted to a collective of local companies so it could be commissioned, fabricated and erected in Western Australia.

The overall facility is capable of processing a range of minerals from iron ore and heavy metals to particle sludge to gravel.

Operational facilities and infrastructure design

VDM was also responsible for designing office accommodation, mobile and fixed plant workshop, a fuel depot, emergency services centre and other general facilities such as a canteen, kitchen and ablution facilities.

The new bulk loading facility also required a seven kilometre access road, an additional two kilometre perimeter road around the stockyard and an access road from the stockyard to the wharf.

The Utah Point Bulk Loading Facility was completed ahead of schedule and declared open in October 2010. The first trial shipment was made on 17 September, 2010 as part of the commissioning process.

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QUALITY SPECIALIST STEEL FOR DEMANDING CONDITIONS

When deadlines are tight and quality counts, R&R Engineering can meet the needs of a major project like the Port Hedland Utah Point development for fabricated steel handrails, walkways, stanchions and stair treads. R&R supplied Marine and Civil, Delta, Yarnell Contracting and RCR Bunbury with steel products over many months, programming their efforts to mesh with complex works schedules and ensuring all orders were ready in Perth when required for transport to the remote site.

For Marine and Civil, R&R supplied 400 lineal metres of handrail for the berth, which involved the process of fabrication, galvanising and painting. For Delta, R&R fabricated grating for machinery and equipment in accordance with Delta's project schedule.

Yarnell Contracting was supplied with 220 galvanised stanchions. These loose handrail components are a speciality of R&R, and the company has undertaken a complete Finite Element analysis on all stanchions to verify their strength characteristics and compliance with the relevant standards. RCR Bunbury ordered a total of 1280 lineal metres of handrail, 725m² of grating and 220 stair treads over a four month period, with R&R's supply coordinating with the works schedule of the client.

At any given time during this multi-client project, a dedicated team of R&R's experienced staff worked on fabrication and quality assurance, ensuring all handrail and grating met AS 1554.1 and AS 1657-1992.

Producing such large volumes of steel products quickly is made possible by R&R's investment in robotic welding. The robotic welding gives R&R an edge in producing work of consistent quality and accuracy, with reduced OH&S risks.

R&R's team is highly experienced, and have over the decade of company operation developed processes and systems which allow them to deliver both standard and custom designed products efficiently.

The company's drafting team have many years of experience in producing extremely accurate detailed shop drawings for fabrication and site installation. This allows R&R to deliver exactly what clients specify, no matter how challenging. For example, the handrail supplied to Marine and Civil for Utah Point had to be fabricated to a tight tolerance as installation had to match pre-installed fixing points in the pre-cast panels for the berth.

R&R's superior fabrication skills have gained them a client list including Monadelphous, AGC Industries, Pacific Industrial Company and many others who service mining companies such as Argyle Diamond Mine, BHP Billiton, Rio Tinto, ThiessKrupp and Pluto LNG. They have the capacity and flexibility to provide an efficient, competitive and quality-focused service for projects of any size, from major infrastructure projects to small factory fit-outs.



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