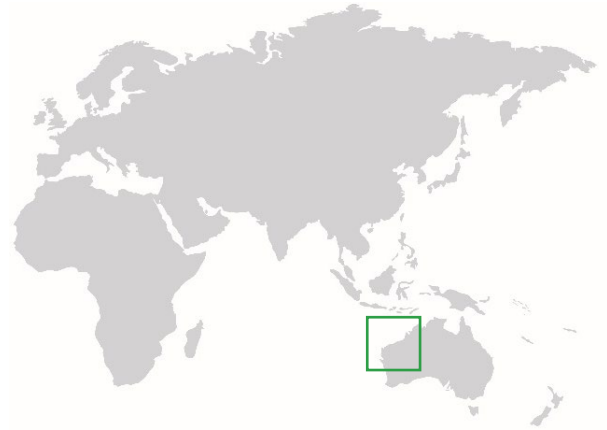


CASE STUDY

Webb Dock- Maritime Infrastructure Works

CLIENT	Port of Melbourne
LOCATION	Melbourne, Victoria
CONTRACT	Construct Only
VALUE	\$400m
START DATE	January 2014
FINISH DATE	December 2016
SOLUTION	Ports & Coastal
SPECIALIST CAPABILITIES	Marine



PROJECT SUMMARY

The Port Capacity Project was a \$1.6 billion upgrade that included the redevelopment of Webb Dock to create a third international container handling facility alongside the development of a dedicated facility servicing Victoria's automotive import-export trade.

McConnell Dowell was the Principal Contractor delivering the Maritime Works Package of the Port Capacity Project. The Package comprised the design and construction of improved waterside infrastructure, including upgraded navigation aids and berth facilities.

The project demonstrated McConnell Dowell's capabilities to resource and deliver a complex design and construct project, which was demonstrated by the following project facts:

- 900 tubular steel piles up to 1500mm diameter and 45m long driven as single length piles
- 40,000m³ of structural concrete
- 10,000 tonnes of reinforcing steel
- 40,000m of sheet pile installation
- 210,000 tonnes of imported quarry product
- 15,000m³ of rehabilitated concrete deck
- The removal of 2.3 million m³ of dredge material.

The project was delivered within an operational port environment concurrently with four adjacent major construction contracts associated with the Port Capacity Project.



QUALITY

A major focus was to ensure that the quality of all aspects of the works was maintained. To this end, a 'live portal' was established so that quality documentation could be viewed by the construction and client teams and monitored on a daily basis. Weekly quality meetings were then reviewed with key actions addressed. One of the key achievements of the project was the achievement of Administrative Completion (AC) as part of Practical Completion (PC). Thoroughly developed Completion Plans and Construction Reports outlined the process for administering this process to success. Quality of works and quality compliance documentation was engrained in the construction processes with engineers accountable for the physical works but also the quality completion element.

FUNCTIONALITY

The creation of five new ship berths for automotive trade and container trade was always going to be a challenge, especially given the new terminal operators were not known at the time of project award to McConnell Dowell. McConnell Dowell and its design consultant developed a fully functional design approach. Durability was a key concern for the Port of Melbourne. A durability management plan was developed early in the design phase to clearly articulate the durability requirements to be addressed in the design of the project. This allowed the design to progress through to detailed design without delay.

FUTURE PROOFING

The client recognised that the provision of a new automotive terminal and a new container terminal would allow for new operators of such facilities thus increasing competitiveness within the market. Our approach to the design was based on future proofing the new terminal facilities for a 50 year life. This was particularly challenging when it came to understanding future ship sizes and capabilities. The works on Webb Dock West were designed for current shipping needs with structural capacity built into the design to allow for future deepening adjacent berth structures.



GEOTECHNICAL

A key aspect of construction involved the establishment of temporary marine reclamation to support piling equipment for the 1km long automotive wharf. The challenge presented by this work involved supporting rock fill over very soft in-situ silts and clays. Golder Associates was engaged to assist with the geotechnical aspects of this solution. Their engineering outcomes took into account site-specific data assessment and specialist knowledge of the history of local sediments, which allowed McConnell Dowell to minimise the amount of imported rock placed into the dock, reduce cost and minimise environmental impacts.

INNOVATION

McConnell Dowell introduced the use of robotic hydro-demolition for breaking back pre-cast piles in confined spaces. This provided safety benefits by eliminating the need for workers to enter confined spaces.

McConnell Dowell designed and purpose-built multiple access platforms for safe working over water. These frames were also designed as multi-use and were also used to install multiple heavy pre-cast beams along the berth alignment. McConnell Dowell's Engineering Team developed cantilevering platforms that sat on the wharf edge and moved along the wharf without the need for cranes or other plant. They are a cost-effective solution for repetitive work that minimises working at heights risks and provides safe access to the works.



MANAGING DESIGNERS AND SUBCONTRACTORS

McConnell Dowell worked hand-in-hand with Jacobs as the lead designer and engaged specialist subcontractors, including Heron Construction for dredging and Golder Associates for geotechnical solutions. From the outset, our team embedded personnel within the design group to keep constructability front and centre. Regular structured meetings allowed us to challenge design assumptions on time; this led to practical improvements such as a land-backed wharf structure and enhanced durability measures.

Subcontractor engagement was critical to success. McConnell Dowell coordinated complex marine activities with dredging and piling specialists, sequencing works to align with port operations and minimise disruption. Temporary reclamation platforms were developed with Golder Associates to support heavy piling rigs over soft silts, which helped reduce imported rock volumes and environmental impact. For offshore pile manufacturing, we made sure we had our own quality team on-site to oversee production and ensure compliance.

This integrated approach under the D&C model meant clear communication, disciplined risk management, and smooth interface control across all parties. The result was a project delivered ahead of schedule, free of disputes, and achieving near-perfect client performance scores.



STAKEHOLDER & COMMUNITY IMPACT

The project attracted significant stakeholder and community interest due to its scale, location and public profile. McConnell Dowell ensured that design and construction methodologies were effectively communicated and that community and stakeholder expectations were recognised and accommodated in areas such as amenity, environment, recreation, open space, safety and security.

A key achievement for the project was the achievement of 100% against project Stakeholder Management Key Performance Indicators. The project team achieved the maximum score possible every month with no unplanned disruptions to traffic and port operations and the timely management of stakeholder issues. Stakeholder management was part of a project performance incentive regime where McConnell Dowell was prepared to put a portion of the project margin at risk. Approximately \$3 million of our margin was placed in a pool to be earned back through achieving certain KRAs, clearly demonstrating our commitment to management of stakeholder issues.

