

INVESTIGATION

Hay Point Berthing Caissons

CLIENT: BMA HAY POINT SERVICES

Project Highlights

- Actively corroding and chloride contaminated concrete
- Confined space entry
- Electrochemical testing of deteriorated concrete

STANDING THE TEST OF TIME

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The port of Hay Point is regarded as a historically significant advance of Australian engineering. At the time of its construction, this project represented a world-first solution to the task of implementing a major ship berth in the open sea. BMA Hay Point Services (BMA) now operates this Coal Terminal in Mackay, Queensland, known for its export of mined product. Commissioned in 1975, the two main ship loading facilities at this terminal, Berth 1 and 2, have serviced the industry for over 40 years. More than 500 million tonnes of coal has been exported through Berth 2 since its inception.



SIGNIFICANT RUT STAINING OF THE INTERNAL CAISSON WALLS DUE TO CORROSION



HAY POINT CAISSON SHOWING DELAMINATION MARKS



SEVERELY CORRODED BONDEK WITHIN CAISSON

CHALLENGES

Berthing Caissons, Berth 1 and 2 began to show signs of continual corrosion and concrete contaminated by chloride, Infracorr was invited to investigate the Hay Point site. With motives to assess the concrete structure and ascertain the strength of the existing caissons, our team engaged with BMA. This project surfaced three key challenges:

- The extent of continual corrosion and contaminated concrete from chloride ingress affected by the marine environment.
- The historical, social and economic relevance of the largest loading facility of the region, which pressed us further to ensure its ongoing and future operations continued smoothly.
- An urgent need for a repair design that actively addressed the long term durability of the structure and while ensuring our client's business continued smoothly.

SOLUTION

Our aim was to ensure that the strategy implemented not only benefited the client, but was also in compliance of all the stringent needs of such a critical terminal.

- **Investigation** carried out entailed visual and diagnostic testing, equipotential mapping, corrosion rate analysis as well as chloride and cement content testing, compiled in a condition assessment report to reveal the full extent of damages.
- **Repair options** proposed continual concrete patch repairs, surface based Cathodic Protection (CP), water/soil based CP system and a combination of the options to ensure there were minimal disruptions.
- **Design for Durability** provided to BMA addressed two main agendas – Durability; protecting the structure for over 50 years and Serviceability; ensuring that periodic repairs optimised convenience and expenditure on the project on the project.

RESULTS

While widespread repairs were deemed necessary in order to remediate the condition of the structure and ensure its long-term integrity, Infracorr was able to ensure nominated options addressed the client and the structure.

- Infracorr has now been engaged to undertake full design and documentation of the Berth 2 Caisson and perform site supervision for the works on behalf of the client.