

Project Profile

Frances Bay Concrete Wharf Structure Repairs and Maintenance



Client	Department of Infrastructure, Planning and Logistics
Location	Darwin, Northern Territory
Duration	May 2018 to September 2018
Contract	Lump Sum Construct Only
Cost	\$1.1 million

Project Overview

The Frances Bay Mooring Basin, commonly called the Duck Pond, is a marina mostly used for fishing and commercial vessels. The basin is tide-free and accessed through a 36m by 15m lock and has 85 berths for vessels up to 30m long. Fishermans Wharf is a 200m wharf for fishing, commercial and recreational vessels.

The operators of the wharfs, the Northern Territory Government, identified that both structures had deteriorated significantly due to salt water contamination to the reinforced concrete and required significant remediation works. McMahon Services were engaged by the Department of Infrastructure, Planning and Logistics to undertake these works.

Scope of Work

McMahon Services

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Remediation works included the removal of cancerous concrete, repairing reinforcement and reinstating concrete using Sika structural repair products.

Prior to the commencement of works, the project team worked closely with the client's managing structural engineer, Irwin Consult, to identify key risk areas that required further investigation. Pre-commencement works included structural propping and bracing design to enable safe access for work crews under the wharf structure, and appropriate anti-corrosion treatment for both the existing and newly installed reinforcement.

Other pre-planned works included the application of a suspended scaffolding system that included safe working platforms, and implementing stringent environmental controls to ensure no waste or contamination entered the Harbour or the Duck Pond.

Works were carried out over water and were witnessed and inspected by the managing structural engineer. Seven metre tides required detailed planning to maximise low tide remediation works.

The wharf facilities were fully operational at all times therefore requiring full time liaison and coordination with the Northern Territory Government as wharf operator. Works also ensured operational and loading capacity of the Duck Pond area to ensure commercial fishing contractors' day to day operations were not obstructed.

The Frances Bay Mooring Basin consists of three concrete finger structures with precast support piers partially submerged in sea water and a concrete deck over the piers. The soffits of the piers' upper sections had suffered from concrete spalling associated with the severe corrosion of the embedded reinforcement.

Remediation works involved the removal of all deteriorated and spalling concrete, as well as the cleaning and replacement of the corroded embedded reinforcement. Concrete soffits were then reinstated back to their original dimensions. Works were staged so two of the three fingers were available at all times to wharf users.

Fishermans Wharf had suffered from similar spalling deterioration of the concrete support beams due to corrosion of the embedded steel reinforcement. Remediation works involved the removal of the deteriorated and loose concrete at the joints of the precast support beams followed by the reinstatement and cleaning of the corroded steel reinforcement. The concrete sections were then reinstated to their original dimensions.

All demolished materials were removed from site and disposed of at licenced recycling stations. The project team managed both vessel and ground traffic at all times during the works. Stringent environmental controls were in place at all times and no environmental incidents were recorded against the project.