MANAGING OUR AGEING MARITIME ASSET BASE

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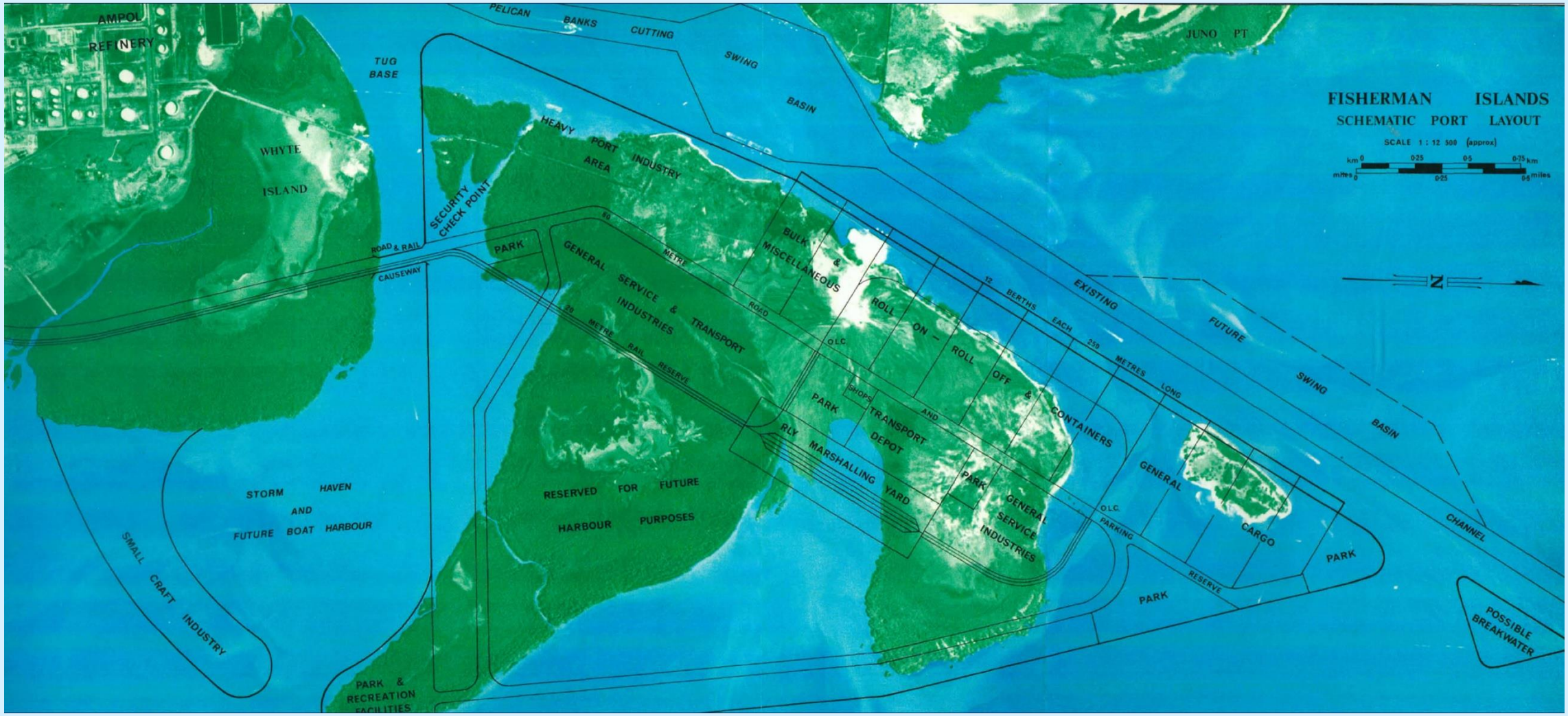
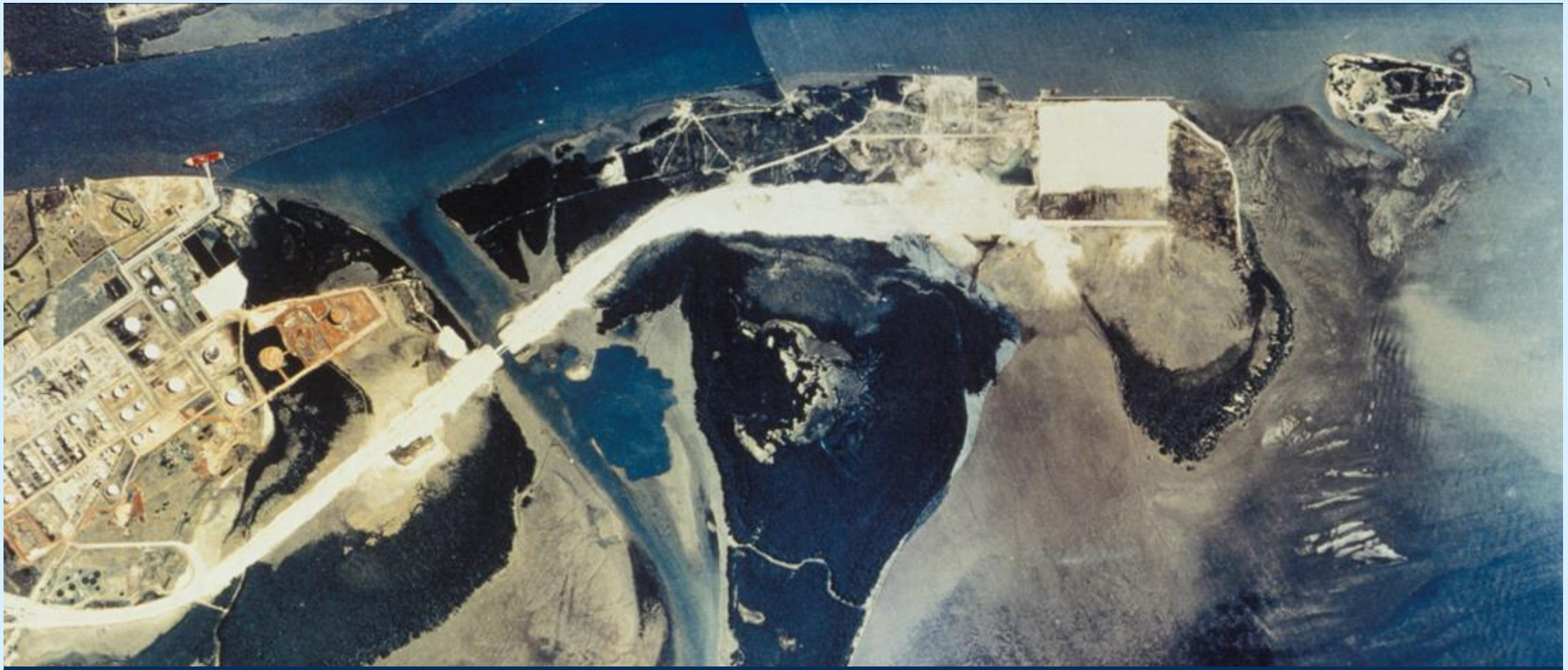
Head of Asset Strategy

1976 Master Plan



Where our story began



Fisherman Islands 1978

Where we are today...

Fisherman Islands 2025

Where we are today...

2023/24 at a snapshot

A record

1.61m

containers

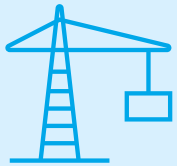
32.24m

tonnes of **cargo throughput**

Approx.

50%

of Queensland's **agriculture exports**



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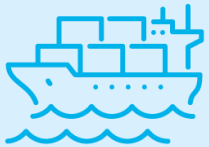
Wharf structures



Approx.

5.3 km

of total wharf **quay line**

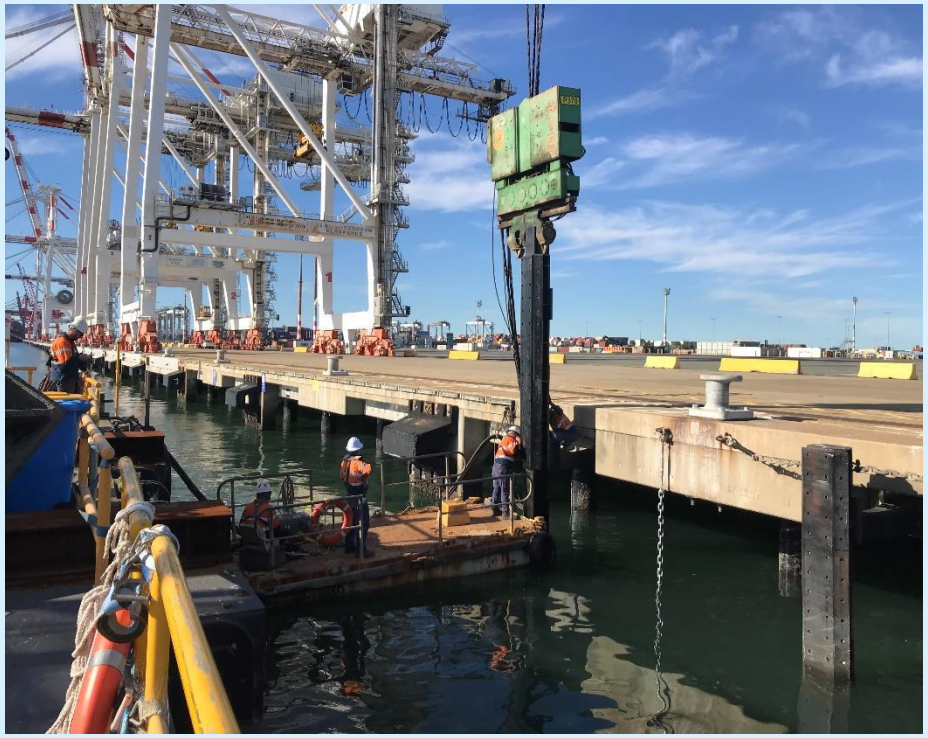
2,375

Vessel calls

Durability design through the years

1970-1990

- General Purpose (GP) cement concrete
- Higher diffusion rates
- High cement content (thermal issues)
- Bottom cover – min. 65mm
- Compressive strengths 30-40MPa
- Constructed lower to the water



Challenges with our older wharves

Pre-90's wharves

- Durability – time to corrosion initiation
- Cracking – higher serviceability crack widths
- Maintainability – wharf height
- Detailing – continuity, cover
- Historical records…

Durability design through the years

1996 -Now

- General Purpose / Fly Ash Binary blends
- Higher compressive strengths – 50MPa
- Increased design clear cover – 70mm min
- Increasing deck height above tidal zone – 2m
- Calcium nitrite (DCI) corrosion inhibitor
- Steel continuity**

Managing these assets

Routine visual inspection

Detailed condition investigations

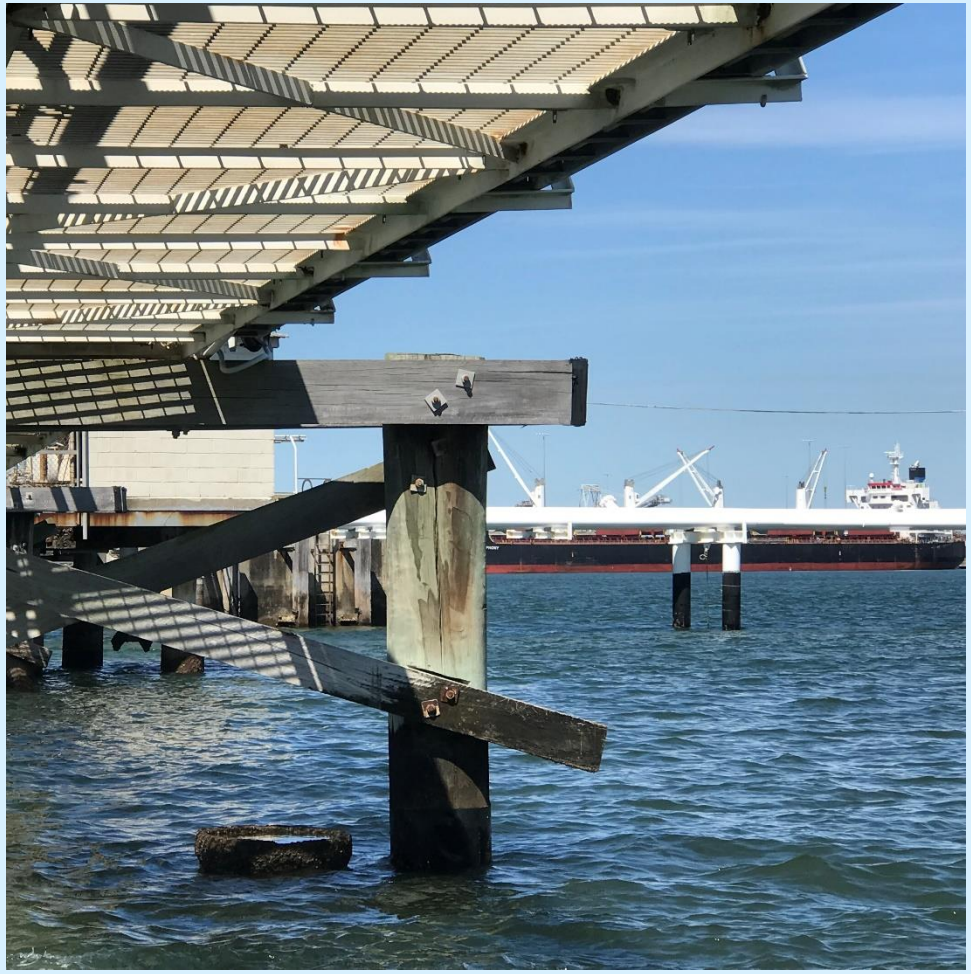
Asset Management Planning

Just-in-time intervention

Our approach

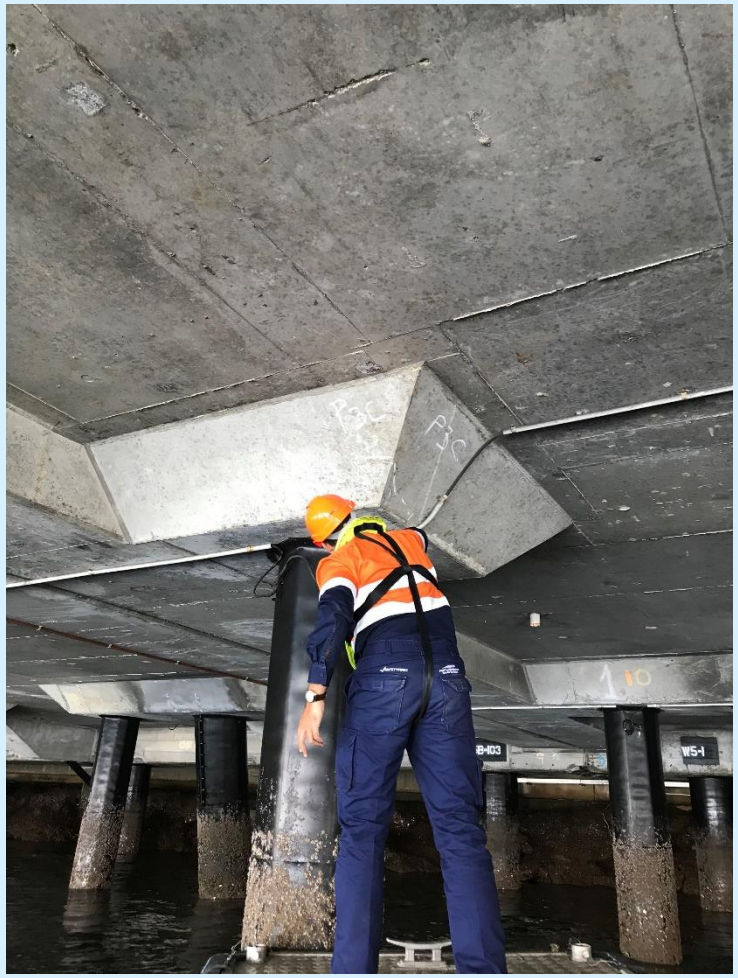
Routine visual inspection

- Annual
- Identify defects and condition
- Defect triage → Corrective maintenance (OPEX)
- Planned maintenance



Our approach

Detailed condition investigations

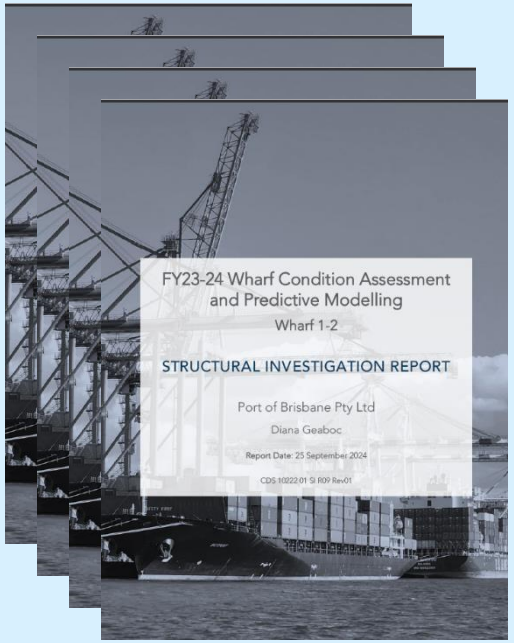


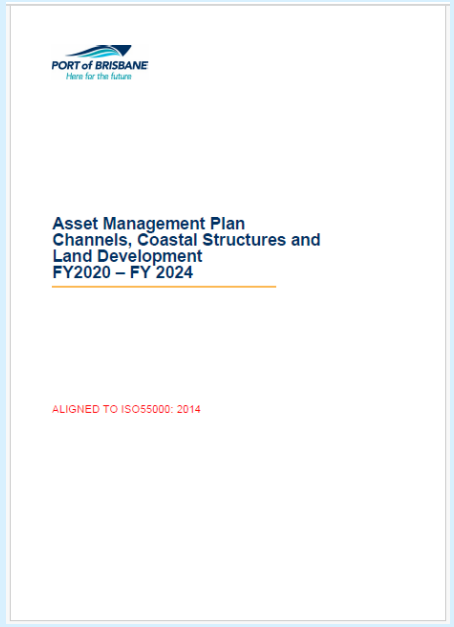
- Periodic – 5 year
- Destructive and non-destructive testing
- Predictive deterioration modelling
- Renewal forecast in line with asset management strategy

Our approach

Asset Management Planning

- Condition investigations translated into AMPs
- Informed decision making - integrated planning
- Long term forecast tracked through to delivery

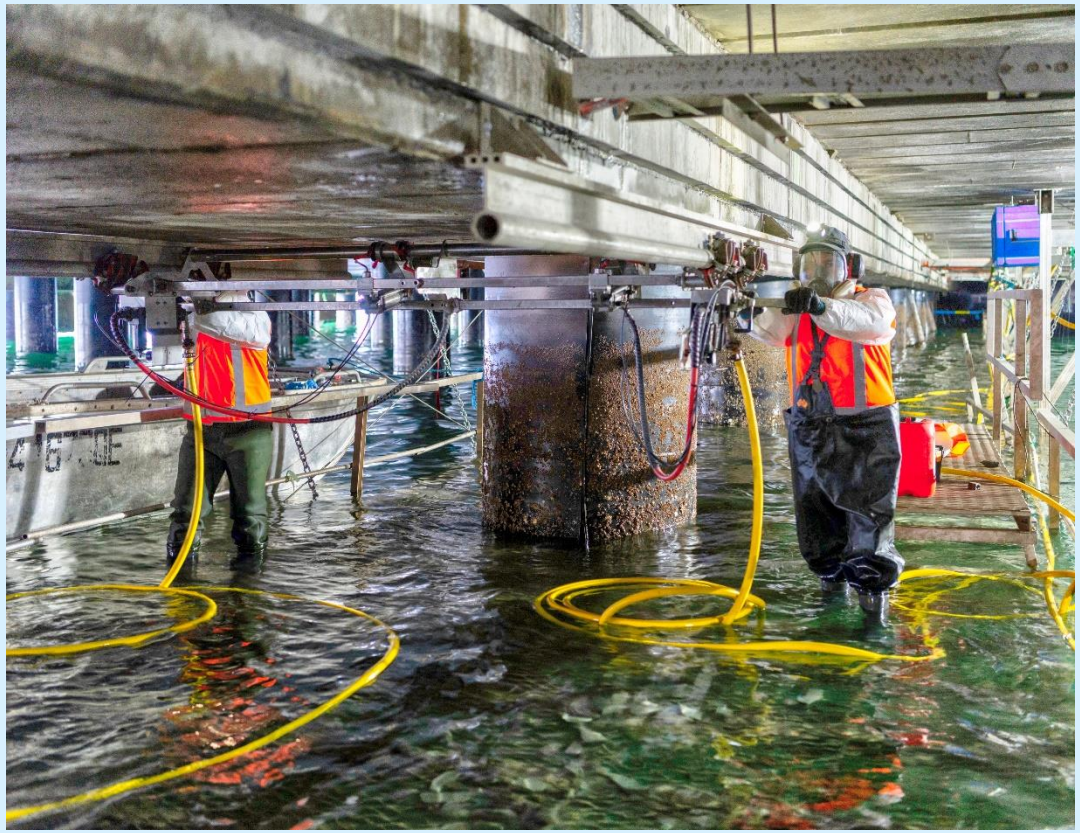




Our approach

Just-in-time intervention and life extension

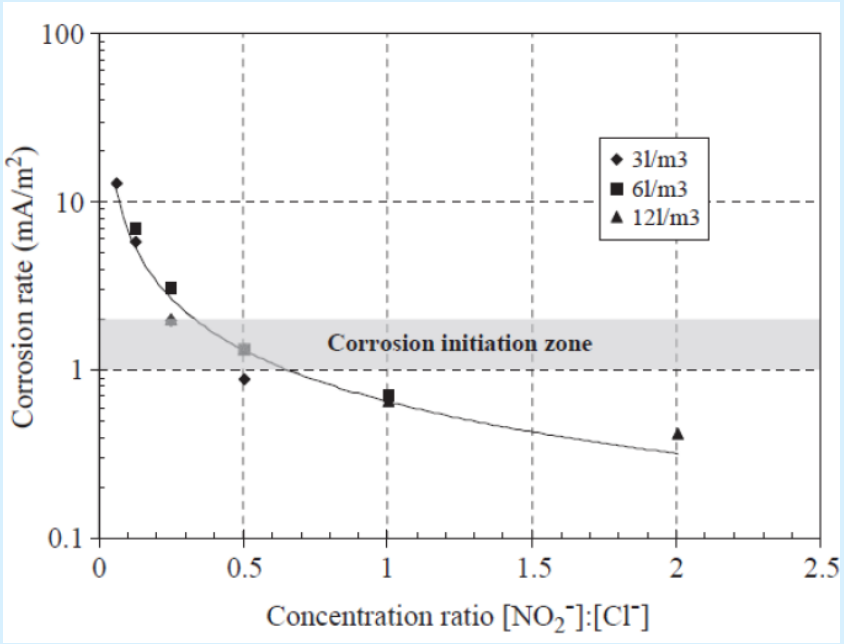
- At point of corrosion initiation
- Verification modelling
- State-of-the art review
- In-concrete ICCP



What we have learnt

By changing our design

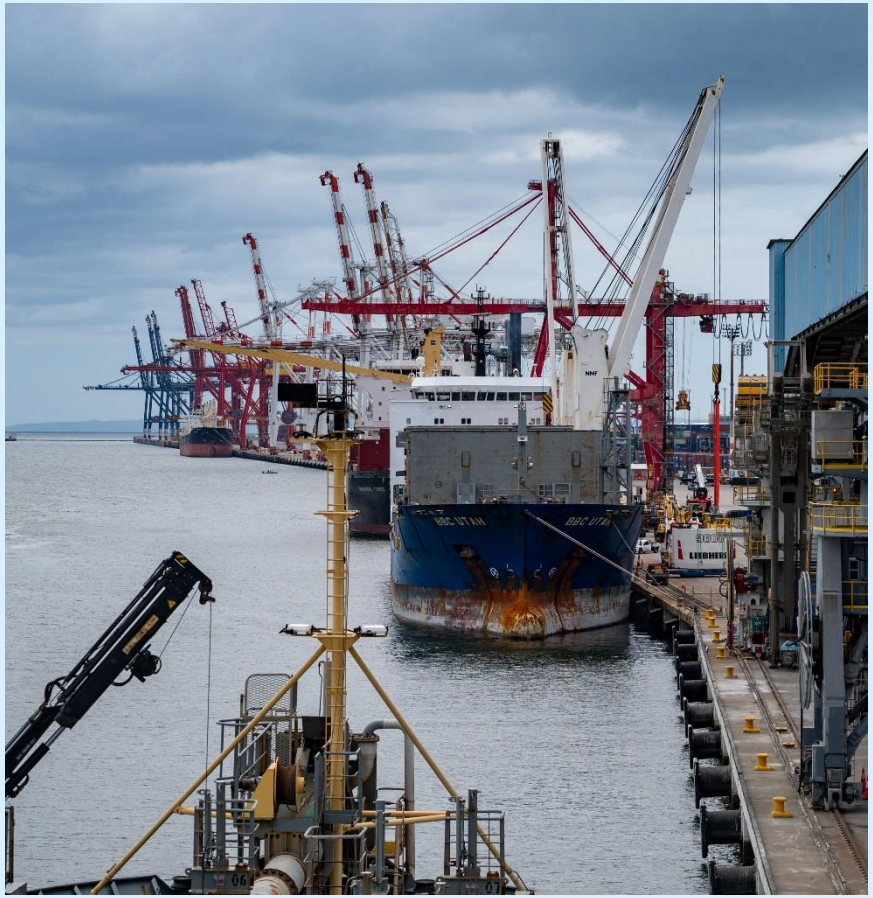
- Corrosion inhibitor
  - Time to corrosion increase >20yrs
  - Higher dosage = longer life
- Raising wharves
  - 40% reduction in surface chlorides
  - 80% reduction in chloride at cover depth



What we have learnt

The long-term view

- Less surprises = happier shareholders
- The battle of operations vs. maintenance
- Concrete coatings vs. impregnations
- ‘Fine-tuning’ ICCP design
- The simplicity in consistency



Thank you

Interested in hearing more about where to next?