Bowen Wharf
Refurbishment Study Summary

In June 2023 the Queensland Government allocated $50 million to ensure the 150-year-old Bowen Wharf, which has deteriorated over time, remains safe and accessible for public use.

North Queensland Bulk Ports Corporation (NQBP), which is responsible for the wharf, engaged specialist Queensland engineers Shoreline Civil & Marine Consulting (Shoreline) to undertake a refurbishment study. NQBP also engaged the specialist quantity surveying firm, Rider Levett Bucknall (RLB) to estimate the refurbishment costs.

The scope included assessing the wharf's condition, identifying necessary refurbishment works and comparing refurbishment to rebuilding the structure. The comparison considered a range of criteria from heritage to public amenity, modern safety standards and cost.

NQBP is committed to working closely with Bowen stakeholders, including the Bowen Chamber of Commerce and Save the Jetty Committee, to work through the findings.

The study involved:

- a visual condition assessment;
- exploring feasible refurbishment options;
- development of concept sketches and cost estimates, which were developed by a specialist quantity surveyor (RLB)
- comparison of refurbishment to rebuild; and
- ongoing maintenance requirements.

Key findings included:

- evidence of continual deterioration in the condition of the wharf;
- in the case of refurbishment, whole-of-life repairs will significantly exceed the $50 million allocation and would, over time, result in the replacement or covering of the majority of the historical components; and
- a rebuilt Bowen Wharf could incorporate or reuse existing components while providing modern walkways and inclusive accessibility for wheelchairs, shade and seating elements, fishing platforms and more berths for recreational and commercial boats.

Refer to Comparison of rebuild and refurbishment concepts table on pages 3 and 4 for a full summary of key findings.

For more information:

P 1300 129 255 | E communications@nqbp.com.au

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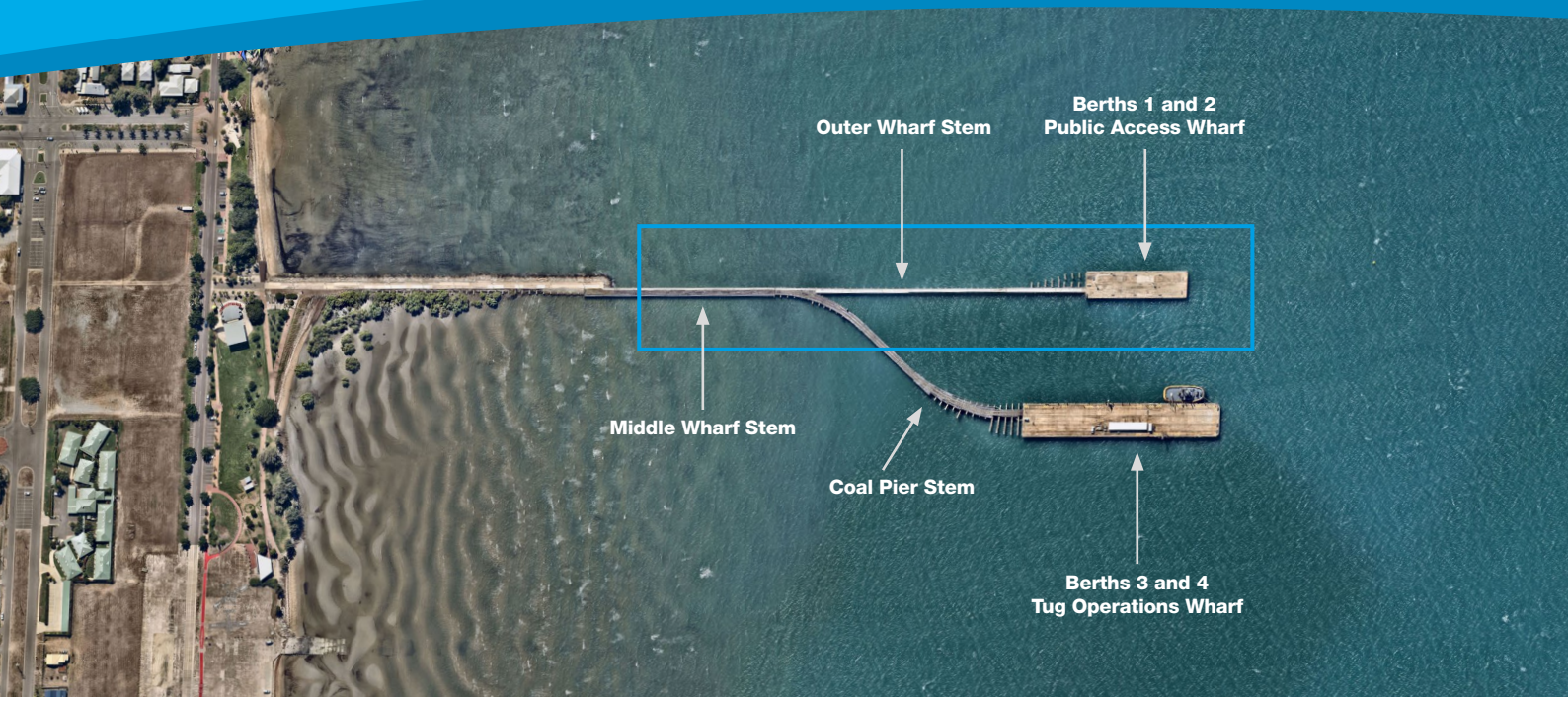
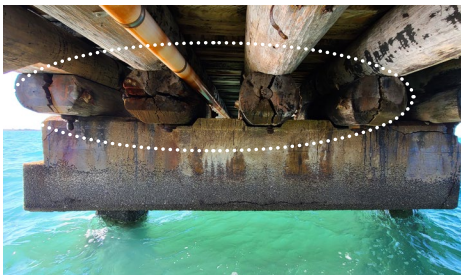


Wharf condition assessment

The inspection by Shoreline covered structural elements of the Middle Wharf Stem, Outer Wharf Stem and Public Access Wharf, with examples shown below.

Piles: underwater cracking observed on almost all piles.



Headstocks: localised defects were identified.

Cross beams: widespread major defects.

Edge beams: extensive major defects observed.

Deck soffit: widespread major defects.

Topping slab: extensive cracking and delamination.

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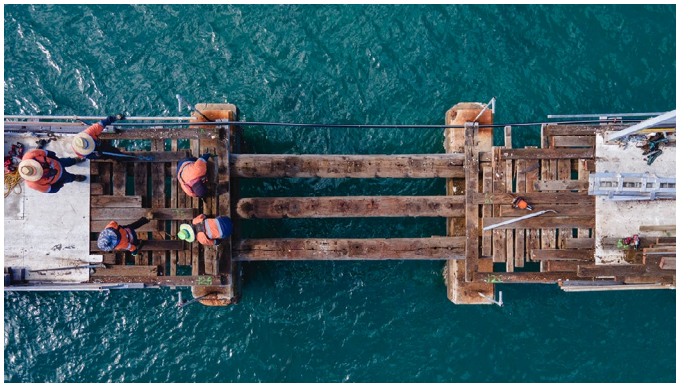
Refurbishment challenges

Shoreline found that, based on inspections and the estimated rate of deterioration, refurbishment would require all current concrete piles to be permanently encapsulated.

The original form of the structure would remain, but the original elements were estimated to be repaired or replaced 1.5 times over the life of the refurbishment's 100-year design.

While initial refurbishment could be achieved within the $50 million budget allocated by the State Government, future major refurbishment costs would significantly exceed this budget over time. Major repairs and refurbishment would be needed at 25, 50 and 75 years, however, "the exact amount of repair over the life of the structure is impossible to predict with accuracy".



Maintenance costs would significantly exceed the current budget over time.

Comparison of rebuild and refurbishment concepts

Shoreline conducted a high-level comparison of the rebuild and refurbishment concepts through assessment of nine criteria from cost and constructability to public amenity and accessibility, reflected in the table below. The report found that a rebuild was preferred in seven criteria, refurbishment in one and there was no clear preference in another.

Criteria assessed	Key findings	Recommendation

Cost	• Refurbishment would likely have higher capital costs over time including:
	  • Initial refurbishment costs of $49.4 million
	  • 50-year operating expenditure (OPEX)[1] of $50.1 million[2]
	  • 100-year OPEX of $348.9 million[3]
	• Costs for a new structure could be limited by avoiding demolition and leaving the existing structure in place for historical purposes only (ie, no public access) next to a new wharf.
		New structure

Constructability	• Access and working conditions below the public wharf deck would be difficult under the refurbishment option. • A new structure would include pre-cast construction, improving concrete quality.	New structure
Durability/maintenance	• Maintenance costs for the refurbishment concept are expected to be greater than for a rebuild, with an increase in the rate of deterioration anticipated. • A new structure would be inherently more durable, with reduced ongoing maintenance, particularly in the first 50 years.	New structure

[1] OPEX estimates include significant capital replacement works and costs associated with maintaining existing structures that are reaching the end of their life.
[2] The cost estimates provided in the report are in today's money and do not include adjustments for inflation.
[3] OPEX includes escalation.

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Criteria assessed	Key findings	Recommendation
Resilience	• Under the refurbishment option, the original parts of the existing wharf are estimated to be repaired ~1.5 times during the 100-year design life. • During extreme weather events, a refurbished structure would likely be submerged/overtopped and would need to be closed for safety. • The new structure deck levels would be raised 1 metre, providing resilience against overtopping due to extreme weather.	New structure
Commercial functionality	• Extreme weather would put commercial activities at a refurbished wharf at risk for a period of time. • Construction of a new wharf would have a greater impact on commercial operations in the short term. This could be mitigated by avoiding demolition and leaving the existing structure in place for historical purposes only.	New structure
Public amenity	• Increased maintenance and repairs for the refurbishment option could impact on public amenity, both visually and physically. • A new structure would include additional functionality.	New structure
Heritage	• Refurbishment would result in a minority of the original structure remaining visible because of, eg, covering of concrete piles with protective materials. • Demolition of the existing structure may result in total loss of its heritage value. This could be mitigated by retaining the existing wharf components where possible. • A new structure could incorporate or reuse existing heritage components.	Refurbishment
Environment /sustainability	• The refurbishment option would minimise use of construction materials by extending the life of the asset. However, this option would require an expected high level of ongoing maintenance construction works and, therefore, materials. • New materials and construction practices used in the new structure would provide longer-term durability and reduced ongoing maintenance and repair works.	No clear preference
Accessibility	• Refurbishment may not ensure Disability Discrimination Act compliance with timber decking. • A new structure would include rest areas and could be designed to incorporate improved accessibility, ie, wheelchair passing zones.	New structure

Next steps

NQBP will finalise the procurement process to engage a qualified consultant to undertake community-led design, community consultation and deliver a final concept design.

Shoreline's complete Bowen Wharf Refurbishment Study Design Report, summarised in this document, is available on our website at: https://nqbp.com.au/our-ports/abbot-point/bowen-wharf-project.