

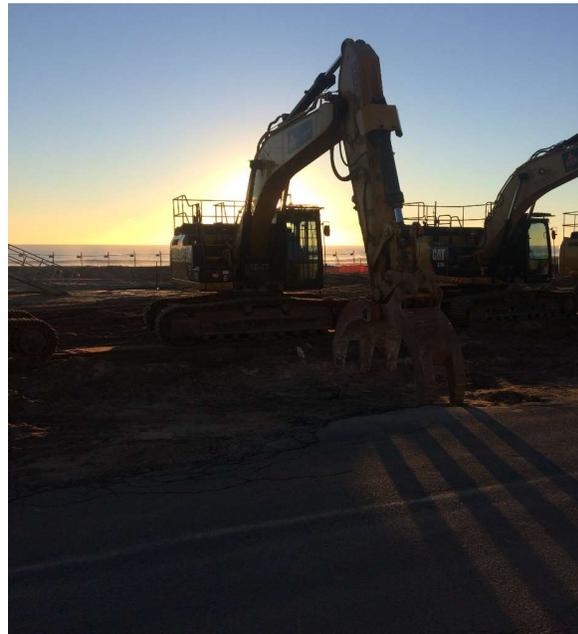
# Kingscliff Seawall

## Construction, Supplementary Works and Design Life

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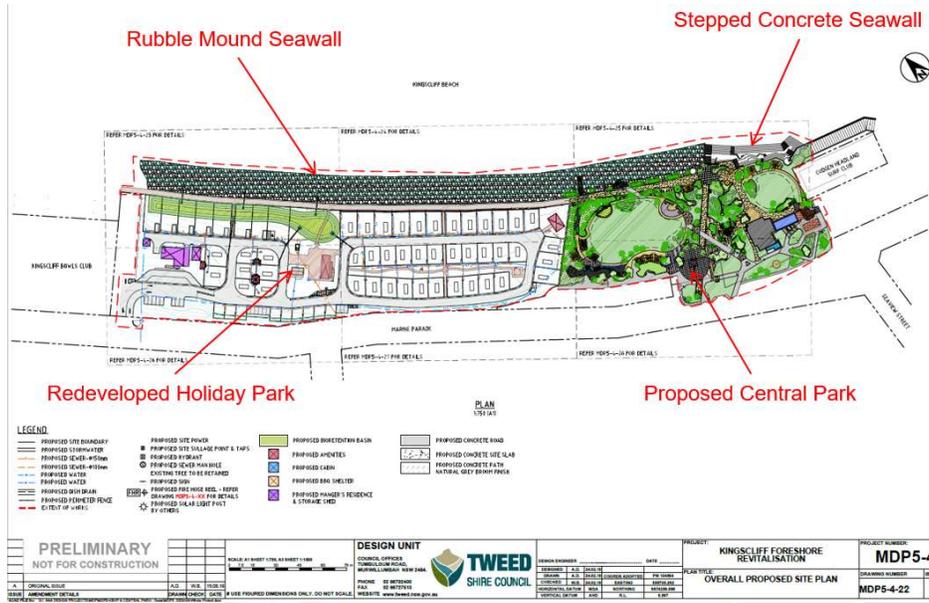
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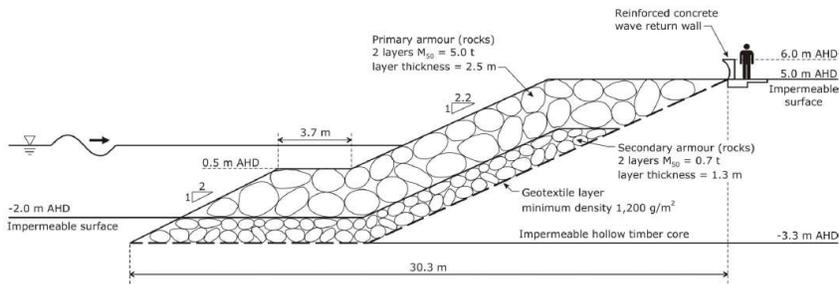


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# Overview of the design process

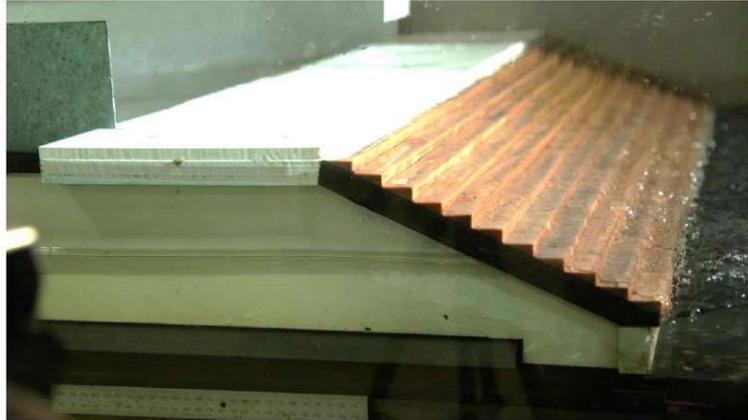
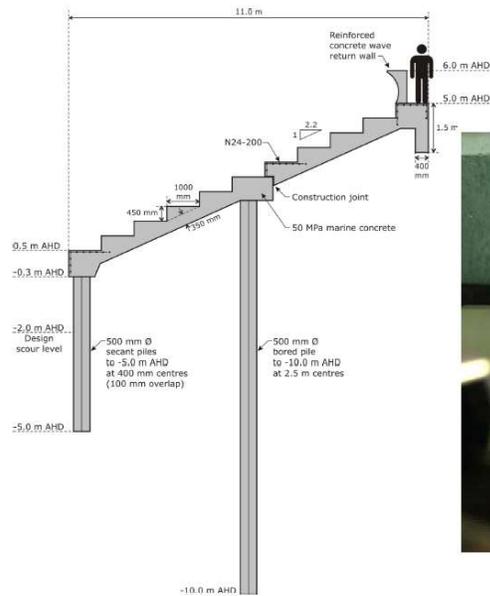


# Overview of the design process



Rubble Mound Seawall: Section and Testing (WRL, 2016)

## Overview of the design process



Stepped Concrete Seawall: Section and Testing (WRL, 2016)

## The Construction Works



Laydown and staging area following the demolition of the Kingscliff Beach Holiday Park

## The Construction Works



Installation of cofferdam for construction of seawall toe

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## The Construction Works



Placement of first rocks associated with the rubble mound structure

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## The Construction Works



Work continues in the dry with the placement of geotextile and filter rock

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## The Construction Works



Excavated material used to backfill to existing beach level, second cofferdam being prepared in the background

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## The Construction Works



Cofferdam to facilitate construction of the entirety of the stepped concrete seawall

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## The Construction Works



Installation of the pile which will support the upper extents of the lower structure

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## The Construction Works



Extent of piling for stepped concrete seawall to abut the existing SLSC structure

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## The Construction Works



Lower secant wall and upper piles with blinding layer installed

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## The Construction Works



Placement of reinforcing steel and pouring of the lower portion of the structure

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## The Construction Works



Shaping and blinding of the upper concrete structure

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## The Finished Product



The rubble mound seawall



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## The Finished Product



The rubble mound seawall



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## The Finished Product



The stepped concrete seawall

## Post Construction Observations



Early cracking of the concrete seawall structure, specifically the upper portion

## Post Construction Observations



Early cracking of the concrete seawall structure, specifically the upper portion

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## Potential Implications



Cracking and reinforcement corrosion on unrelated concrete piles

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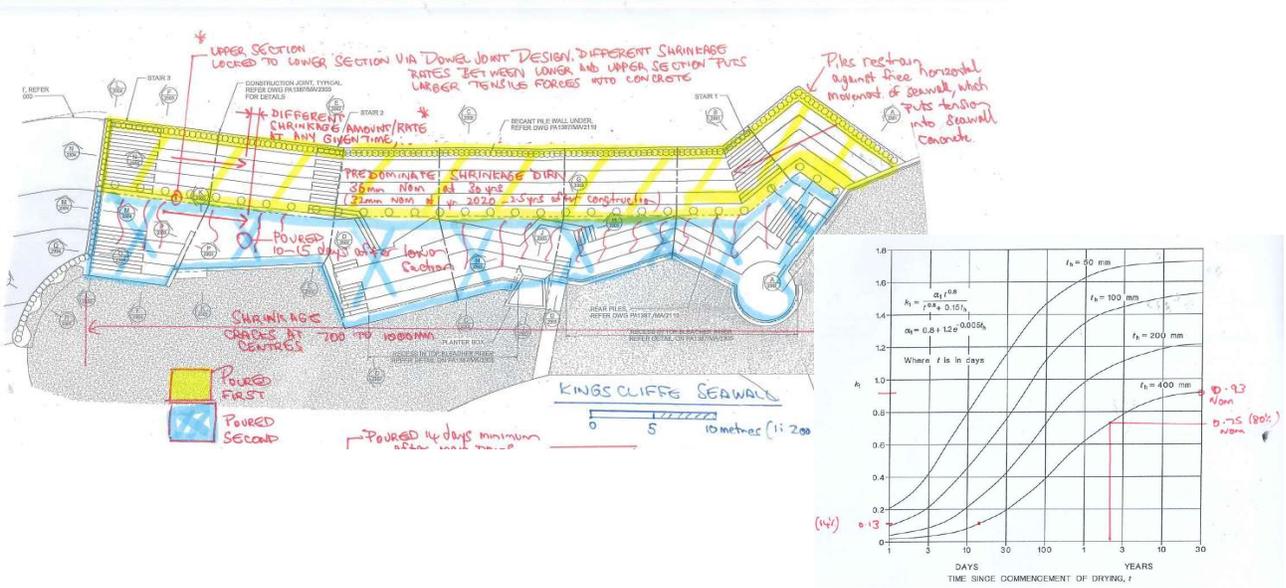
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## Potential Implications



Cracking and reinforcement corrosion leading to spalling on unrelated concrete piles

## The Investigation



## Proposed Remedial Works and Long Term Ramifications

1. Immediate additional coating of Silane product of entirety of the affected structure.
2. Extract core samples at the location of the larger cracks to determine depth and seal cored hole with appropriate grout.
3. Analysis extracted cores to determine crack depth and chloride ingress at 10mm intervals along the depth of the core, confirming assumption that ingress is less than specified threshold
4. Application of low viscosity silane, allowing for silane to soak into the crack, repeating to a total of three treatments per crack in initial application. Repeat of total treatment in 2027.
5. These treatments are likely to ensure that the 50 year design life specified for the structure is met