

T&T Ref: 29595 05 June 2014

Wellington City Council 101 Wakefield Street Wellington 6011

Attention: Nicci Wood

Dear Nicci

Island Bay Smart Project - Seawall Alternatives Analysis -Additional Option

Purpose

Tonkin & Taylor Ltd. (T&T) were commissioned by Wellington City Council (WCC) to undertake a high level assessment of coastal processes operating within Island Bay, likely future shoreline evolution and effects on the existing infrastructure, and evaluation of potential future management options to improve long-term resilience. Our study outcomes was reported in:

T&T (2014) Island Bay Seawall Alternatives Analysis – Coastal Processes Assessment, Unpublished report for Wellington City Council, May 2014

Council requested an additional sub-option to be prepared based on a road closure of a 200-metre stretch of The Esplanade, from Reef Street to the southern end of Shorland Park. A trial is proposed of this option where through traffic would be re-routed through Reef Street and the southern end of The Parade. The trial closure would let the Council assess traffic impacts, and give the public a taste of how the proposed area could work. This report provides a description of the additional sub-option.

Option C3a - Partially relocate wall and restore coastal dunes

Figure C3A (attached) shows the proposed modification. This option sit between the reported Option 3 and 4.

Description

The straight seawall between the outfalls and intersection of the main road and Reef streetb would be removed. Once the seawall, backing road and park are removed and cleared, sand would be imported and shaped into a dune system, stabilised using wind-fencing and planted. Where the



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existing seawalls are truncated, the wall ends should be turned inland to ensure they are not outflanked.

Technical feasibility

This option would return around half the beach to a natural system capable of adapting to storm events and long-term climate change.

High dunes as exist further to the south are not likely to form (based on historical imagery and topographic relief) but rather low, hummocky dunes RL 3.5 to 5.5 m in height. There remains potential for significant wind-blown sand unless dunes are fully stabilised by planting and protected from damage by fencing. A dune width of 30 to 50 m would therefore be expected to be required to efficiently trap wind-blown sand and allow for storm erosion and future climate change.

Significant areas of Shorland Park would need to be returned to natural dune system for this option, although it is noted that southern parts of Shorland Park are already dune.

Immediate modification to the stormwater outfalls are not envisioned and have not been costed into the present project but modifications may be required during future upgrades to the stormwater system.

This option reduces the risk of future erosion impacting assets and infrastructure by only partial removal of the seawall compared to the full removal option.

Likely capital cost

Likely comparative construction cost orders associated with realignment to the 2065 stable beach planform shown in Figure C3A are between \$1M and \$1.8M as set out below.

Component		Cost estimate (\$,000) ¹
1.	Removal of 250 m of existing wall, roadway, fill material, footpath and utilities	\$80
2.	Construction of a 130 m long seawall, likely of similar construction to the existing wall. Ensure crest levels and foundation sufficient to future-proof.	\$440 – 720
3.	Modification to the wall at western end to ensure they are not outflanked in the future	\$100 - 200
4.	Clearance of 2500 m ² of Council reserve inland of the road	\$70 – 170
5.	Importing sand as necessary to build dune system	\$220 – 360
6.	installation of wind fencing and planting suitable native sand-binding vegetation (pingao, spinifex) over 5000 m ² area	\$60 – 200
7.	Construction of additional walkways behind and through the dune system as required	\$30 – 70
8.	Re-diversion of roadway and utilities	\$ TBA
Total		\$1,000 - 1,800 ²

Costs do not include detailed design, consenting, construction supervision costs or contingency.

Applicability

This report has been prepared for the benefit of Wellington City Council with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Yours sincerely

Richard Reinen-Hamill Senior Coastal Engineer

Attachment: Figure C3A: Option 3a: partially relocate wall and restore coastal dunes

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