

# Te Kura Kairūri School of Surveying Lunchtime Seminar Series



## Nearshore coastal processes and management of rock coasts and sandy beaches

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Kaunihera a-rohe o Ōtepoti



### Part 1: The effect of planform morphology on wave transformation over near horizontal shore platforms

Intertidal shore platforms act as natural buffers dissipating wave energy in rocky shore environments. In the context of sea level rise and increasing storminess, cliff erosion and overwash hazards are rising issues in rocky shore environments. The understanding of wave transformation represents a first step toward the characterisation of rock coast erosion mechanisms in response to a changing climate. Unlike sandy beaches, characterised by a seasonal or inter-annual erosion/accretion cycle, cliff erosion is an irreversible process threatening rock coasts, representing 80% of the world's coastline and 23% of New Zealand's coastline.

Understanding cliff erosion rates and mechanisms has substantial implications in coastal management plans not only in urban regions facing ongoing cliff erosion issues (coal mine bay, Auckland) but also in rural regions where sites of high cultural importance are threatened (urupa in Mahia Peninsula, Hawke's Bay).



### Part 2: Managing Dunedin's coastline

Dunedin's coastline is shaped by south-westerly high-energy winter swell, and north-easterly cyclone swells generated in spring to autumn. Under these wave conditions, Dunedin's coastline is subject to ongoing erosion issues impacting dunes, seacliffs and beaches. Each of these landforms constitutes critical coastal defences for coastal communities. In the context of climate change, increasing storminess and sea level rise put coastal communities at risk, notably in the low-lying areas of South Dunedin.

The Dunedin City Council is committed to developing a vision for the coastline between St Clair and St Kilda and to being more proactive in managing coastal hazard risk, amenities, and natural capital. In that regard, a 10 -Year Coastal Management Plan (CMP) was developed and accepted on 22 February 2022. The CMP aims to transition from the current reactive and 'holding the line' management approach to an adaptative proactive approach facilitating a managed retreat. This seminar will discuss the phases leading to implementing the coastal plan. We will also describe the coastal science and surveying information needed to bridge the gap between environmental changes and coastal planning.

Thursday 9<sup>th</sup> March 2023 (12pm – 1pm)

L1 Lecture Theatre | School of Surveying, 310 Castle Street

OR Join remotely: <https://zoom.us/join> (ID: 329 427 2033, P/W: 310310)