

Coastal

The high energy, fragile ecosystems and complex dynamics of the coastal zone requires resilient solutions that complement, rather than compete, with nature.

Tonkin + Taylor's specialist team of coastal engineers and scientists have expertise and a proven track record in management of the coastal zone. This includes understanding coastal processes, geomorphology and geology, assessing coastal hazards, developing management strategies and designing coastal engineering works.

A stylized green dragon-like creature with a yellow sun and a yellow arrow. The dragon is coiled around the text, with its head at the top right and its tail at the bottom left. The sun is a yellow circle with a spiral center and wavy rays. The arrow is yellow and points towards the top right. The background is a solid blue color.

Tonkin + Taylor acknowledges the First Nations peoples of Australia as Traditional Custodians of the land and waterways on which we work and live, and recognise their continuing connection to land, water, and culture.

We pay our respects to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

About us

Tonkin + Taylor is a leading employee-owned environmental and engineering consultancy. With offices across Australia and New Zealand, we service these areas, the Pacific and SE Asia.

In Australia, our diverse team provide specialist services across a range of practice areas, including Coasts + Water, Geotechnical, Geosciences, Pavements and Waste. We are renowned among our diverse range of clients for delivering innovative, sustainable and resilient solutions.

Our reputation for professional excellence, strong collaboration and trusted partnerships is one we continue to be very proud of as we work with our clients and communities to embrace the challenges and opportunities around us as we strive to meet our purpose:

Together, we create and sustain a better world.

Our team are experienced, knowledgeable, and passionate about what they do. We look forward to being your partner of choice in finding sustainable solutions.



Our services

Our coastal specialists work to deliver smart, sustainable solutions to complex coastal and marine challenges. We can help you understand coastal hazards and processes, manage risk, plan for climate change uncertainty, and design robust infrastructure that works with natural processes.

We work with, rather than against nature, and utilise cutting edge data collection and numerical modelling methods to understand the environment we are working in. Our coastal skills are complemented by local expertise in geotechnical and environmental engineering and climate, risk and engagement.

Our team are experts in their field and we collaborate with government, councils, and private clients to deliver solutions that are resilient, technically sound, and environmentally sensitive.

Coastal cliff hazards

- Slope stability assessments, geotechnical risks and treatment options
- Coastal dynamics analysis, assessing toe erosion, and assessing and mapping cliff hazards extents
- Best practice approaches to identify erosion hazard extents including consideration of climate change effects
- Assessments at a range of scales from regional through to local and site-specific
- Design of coastal protection and slope stability solutions grounded in robust engineering analysis

Complex coastal edge design

- Applying proven design principles and world leading modelling to develop site-specific, model-tested solutions for complex coastal environments
- Working collaboratively in multi-disciplinary environments including urban designers, landscape architects, ecologists, other engineering disciplines, and constructors
- Designing coastal works that are cost effective, constructable and balance engineering resilience, public amenity and access, landscape, and ecological outcomes

Management of coastal landfills

- Smart solutions to manage coastal landfill risk
- Contaminated land management
- Climate hazard assessments and adaptation pathways planning

Wave + surf-zone modelling

- Deep understanding of coastal and surf zone processes to ensure modelling is representative of reality
- Installing, analysing and synthesising a wide range of field and remote sensing data that we use to drive, calibrate and validate models
- Establishing, calibrating, and validating fully nonlinear non-hydrostatic wave models for application on coastal hazard and design projects with advanced in-house visualisation tools
- Work closely with physical model facilities, and using flume data for complex wave breaking and wave-structure interactions to calibrate numerical models
- Systems for automating modelling setup, runs and post processing to enable ensemble runs, and look-up tables scenarios

Understanding coastal change

- Deep understanding of coastal processes, oceanography, and geomorphology to ensure modelling is representative of reality
- Installing, analysing and synthesising a wide range of field data, including advanced remote sensing methods into modelling frameworks to calibrate and validate models
- Multiple models are often required to describe processes, and our team specialise in developing tightly coupled multi-model approaches
- Leverage world-leading expertise in a wide range of numerical models including hydrodynamic, wave, sediment transport, and shoreline response models. Our team includes model developers and recognised experts

Track record

Coastal cliff hazards

- **Victoria's Coastal Cliffs Hazard and Risk Assessment**, DEECA, Completed: 2023
- **Peterborough Coastal Cliff Hazard and Risk Assessment**, GORCAPA, Completed: 2024
- **Ballina Coastal Cliff Hazard Assessment**, Bluecoast for Ballina Shire Council, Completed: 2025
- **Auckland Regional Erosion Study and Shoreline Adaptation**, Auckland Council. Completed: 2020

Complex coastal edge design

- **Te Ara Tupua**: Design of Coastal Protection for 4km Shared Path, NZ Transport Agency, Completed: 2023
- **Republic of Marshall Islands Coastal Resilience Designs**, The World Bank Design, Completed: 2025
- **Te Wānanga Auckland Downtown Waterfront Development**, Auckland Council, Completed: 2023
- **Taumanu Reserve, Onehunga Foreshore Reclamation**, Auckland Council, Completed: 2016

Management of coastal landfills

- **Port Fairy Coastal Landfills Management**, Moyne Shire Council, Completed: 2018
- **Contaminated Land Process Mapping and Development**, City of Ballarat, Completed: 2025

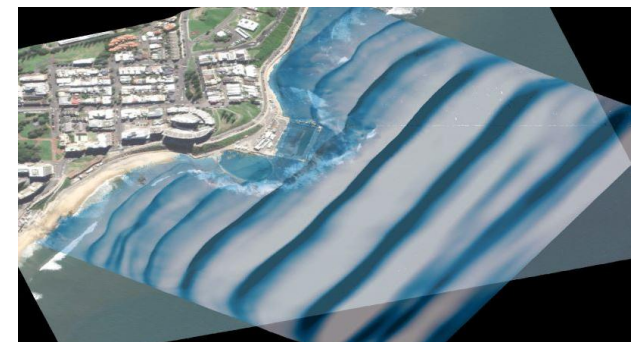
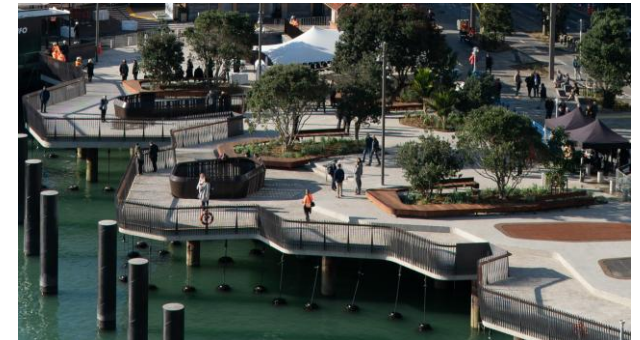
- **Auckland Region Closed landfill climate hazard risk assessment**, Auckland Council, Completed: 2025
- **Tahunanui Beach Contaminated Material Removal**, Nelson City Council, Completed: 2024

Wave + surf-zone modelling

- **Te Ara Tupua**: Design of Coastal Protection for 4km Shared Path, NZ Transport Agency, Completed: 2023
- **Newcastle Ocean Baths Coastal Inundation**, Bluecoast for City of Newcastle, Completed: 2023
- **Opotiki Harbour Breakwater Construction**, Opotiki District Council, Completed: 2022
- **Republic of Marshall Islands Coastal Resilience Designs**, World Bank, In progress: 2024-2025

Understanding coastal change

- **Sandringham Beach Shoreline Modelling**, University of Melbourne + Victoria State Government, Completed: 2023
- **Gold Coast Coastal Resilience Scheme**, Bluecoast for Gold Coast City Council, Completed: 2024
- **Kingston Coastal Climate Change Hazard and Risk Assessment**, City of Kingston, Victoria, Completed: 2025



Contact us



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