

Ports + Marine

Port resilience and adaptive capacity are needed to meet the dynamics of global supply chains, connected logistics and the move to greater automation. Environmental and social issues are also increasingly having an impact on optimal port performance.

Tonkin + Taylor provides customised coastal, geotechnical, pavement and environmental engineering solutions for evolving port and marine infrastructure projects.

The background features a large, stylized green dragon-like creature with a yellow sun and a yellow arrow. The dragon is coiled around the sun, which has a yellow center and yellow rays. The arrow is yellow and points towards the top right. The entire illustration is set against a solid blue background.

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 expertise in the engineering and environmental services underpins infrastructure developments and operations of our port and marine clients. We combine our skills in coastal, geotechnical, pavement and environmental engineering with science and strategy to provide an outstanding offering in coastal and marine engineering and science.

Enabling successful commercial operations in the coastal environment requires a high level of expertise - the environment is ecologically fragile and exposed to destructive natural forces. Our scientists and engineers have a successful international track record in port and marine development, disaster recovery, assessment of effects, and climate change adaptation measures.

We are specialists in coastal, estuarine and riverine processes. To understand the complex physical processes occurring in the coastal zone we undertake data collection, analysis and interpretation by qualified and experienced scientists and engineers. Each project is handled methodically and comprehensively.

Complementary services are provided by our sister company, Chadwick Geotechnics, a leading supplier of field engineering, drilling, instrumentation and laboratory services. We also work closely with local structural engineers in developing robust designs and tailored solutions.

Civil design

- Outfall structures
- Boat ramps and slipways
- Pavements
- Sea walls

Geotechnical

- Foundation systems
- Retaining walls
- Embankments
- Groundwater management
- Reclamation and ground improvement

Coastal engineering

- Seawalls
- Revetments
- Breakwaters
- Beach replenishment
- Artificial reefs
- Nature-positive design

Dredging studies

Coastal impact assessments

Numerical modelling and analysis

- Waves
- Sediment transport
- Hydrodynamic
- Water quality

Noise and vibration

Climate change adaptation and resilience

Stakeholder engagement

Circular Economy Strategies

Human Health Risk

Air quality

- Assessment
- Modelling
- Management plans

Remediation engineering

- Containment solutions
- Geosynthetics expertise

Environmental Geosciences

- Baseline contamination assessment
- Pre-purchase assessments
- PFAS, asbestos, acid sulfate soils, hydrocarbons
- Hydrogeology

Environmental Auditing

Track record

Port of Melbourne - Webb Dock West Redevelopment, VIC

Webb Dock West is undergoing redevelopment to meet its capacity needs. For a roll-on/roll-off operation, the pavements are a critical part of any such upgrade. T+T engaged to undertake geotechnical and environmental investigations and to provide advice for existing and new pavements. Technical challenges were extensive and included a variety of soil types. Investigations and assessments confirmed the existing pavements contained granular or crushed rock material with relatively thin surfacing, inadequate for future loadings and significant truck movements.

Port Botany – Tender Design Review, NSW

Upgrade of Port Botany yard to increase capacity. Construction of five ballasted track rail sidings with 600 m operational capability; rail-mounted gantry beams and foundations to support Automated Rail-Mounted Gantry Cranes (ARMGs) to service the five rail sidings; and heavy-duty pavements. T+T engaged by Fulton Hogan Construction Pty Ltd to perform an independent review of SMEC's tender design for the foundations of the ARMGs. These are heavily loaded structures, proposed to operate over loose to medium dense reclamation/marine sands. The assessment of the independent review was in general accordance with the SMEC design solution with minor suggested alternative options.

Pilbara Ports - Dredge Material Management, Western Australia

Pilbara Ports seek to dispose on shore all dredged materials, which include fine silts/muds (Holocene surficial intertidal mangrove sediments) as well as sand (grits). To support the proposed onshore disposal of dredged material, bund walls are to be raised. The area filled with dredged mud would then need to be improved as part of the rehabilitation to strengthen the ground to provide a 'development ready hardstand' of a suitable ground strength which is able to support future industrial development loads and/or marine service activities associated with the operation of the Port. T+T conducted a detailed review of the available geotechnical information and provided advice on the options that could be used to improve the ground and make the land ready to cater for future development loads. Possible options were discussed and advantages and disadvantages of several ground improvement options provided.

Port of Brisbane - Peer Review, QLD

Review of the proposed pavement designs for heavy-duty pavements at multiple berthing sites, including rigid and flexible pavement options. Pavements were subject to varying and repetitive loadings, such as highway and long-haul vehicles, heavy forklifts, and straddle carriers used to transport a mix of 20-foot and 40-foot containers. T+T provided detailed peer review of designs, design solutions, and identified deficiencies in the calculated traffic loadings and proposed pavements.



Corio Quay Geelong Upgrade, VIC

Construction and upgrade works for new Spirit of Tasmania Terminal at Corio Quay Geelong including DoT intersection upgrade works, heavy and light vehicle staging areas, and internal roadways to cater for light vehicles, buses, freight vehicles and terminal tractors. Involved geotechnical and pavement investigations, environmental investigations and advice, new pavement design and pavement rehabilitation, geotechnical design and construction support.

‘Northport Vision for Growth’, Northland, NZ

Expansion of port’s capacity at Marsden Point by reclaiming land, dredging, building additional berths and deepening entrance and realignment to enable Suezmax ships to carry greater loads. Engaged as technical expert to advise on coastal process effects of the developments, including presentation of evidence at Environment Court.

CentrePort - Channel Deepening and Reclamation Damage Assessment, NZ

Technical review of hydrodynamic studies for the proposed channel deepening and marine disposal of dredged material and technical specialist completing the coastal process assessment. Also specialist advisors on damage sustained by coastal protection works from earthquakes, design of temporary and permanent protection works.

Eastland Port - Breakwater upgrade, Gisborne, NZ

Options assessment and concept design for upgrade and extension of existing breakwater. This included review of suitable armour units considering seismic sensitive area.

KiwiRail - Inter-Island Resilience Connection, NZ

Provided the design leadership to develop concepts for both Wellington and Picton terminals. The design included all new departure buildings, wharves, seawalls / ground improvement, reclamation with associated coastal protection, scour protection, and significant landside infrastructure to accommodate rail and vehicular traffic.

Harbour Development, Opotiki, NZ

Engaged under a design/build contract for tender design, value engineering and detailed design of the river training walls to improve maritime access by stabilising the Waioeka River mouth.

Waitangi - Wharf Upgrade, Chatham Islands, NZ

Business case through to concept, model testing, consenting and detailed design for the reclamation of 9,500m² of land for a new port, including construction of new commercial and fishing wharves. Key design components included coastal numerical modelling and physical modelling of the breakwater.

Interisland Shipping Support Project, Vanuatu

Construction of five new wharves for the outer Islands of Vanuatu, and development of a new terminal wharf at South Paray Bay in Port Vila. Works involved new pile supported deck structures with retained fill works. T+T provided detailed geotechnical investigations for the five sites, including marine boring work; through to geotechnical modelling, interpretation, and assessment of foundation design parameters; detailed foundation design for the wharf structures; investigations and detailed coastal modelling for a dredged channel option at South Paray Bay; social/community consultation for the channel option; and structural design services for the value engineering option for South Paray Bay.

Noro/Honiara International Ports Earthquake Upgrade, Solomon Islands

Upgrading and seismic strengthening of the Ports; 7 new wharves at various outer Island locations; upgrading and rehabilitation of 80 km of rural/urban roading on Guadalcanal; Climate Change Adaptation (CCA), Disaster Risk Reduction (DRR), and natural hazard assessments for all projects. Included concept design, geology/geotechnical engineering issues, and materials assessments; detailed geotechnical engineering investigations, lab testing, material source studies, factual and interpretive reporting; soil-structure foundation modelling; CCA/DRR assessments, and detailed coastal design for vulnerable section of the rural road works.

Contact us



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