

Waste Infrastructure + Resource Recovery

Limited landfill capacity requires greater emphasis on waste facility design and sustainable practices for waste minimisation.

Tonkin + Taylor's Waste Infrastructure and Resource Recovery team of scientists and engineers specialise in the design, consenting, construction and management of landfill facilities, and resource recovery system that meet the latest industry standards and achieve high levels of environment performance.

Our services

We understand that each site presents its own unique set of challenges in terms of waste source and potential hazardous activity; disposal and recovery desirability; and spatial and economic constraints.

We work in collaboration with clients across Aotearoa New Zealand to develop customised solutions for local and regional waste infrastructure projects.

From detailed landfill cell, pond, and cap design; to leachate and landfill gas extraction systems, and the rehabilitation of completed cells; through to risk assessments to measure environmental effects, and long-term monitoring options for closed sites, we offer leading expertise across all areas of landfill operations and management.

Planning and design

- Assessing waste disposal requirements
- Development of waste minimisation strategies
- Site selection studies
- Feasibility studies
- Planning assessments and modelling
- Permit submissions and Works Approval preparation
- Conceptual design for liners and capping
- Independent Environmental Auditor review of design
- Detailed cell, pond, and cap design
- Design for single or dual-purpose leachate and landfill gas extraction sumps
- Landfill rehabilitation design
- Industry and process analysis

Construction services

- Waste minimisation strategies
- Remediation planning, design, and implementation
- Detailed economic analysis of disposal and facility options
- Level 1 Supervision of Earthworks
- Third Party Geosynthetic Verification during installation of liners, caps, and sumps
- Construction compliance assessment reports for audit review
- Specialist technical advice and engineering
- Calculation to support proposed design variations
- Construction project management
- Statutory Environmental Auditing of construction compliance against EPA approved design documents

Rehabilitation and environmental monitoring

- Risk-based landfill monitoring programmes (groundwater, landfill gas, leachate, air quality)
- Assessment of existing cap integrity
- Sampling and analysis of groundwater, surface water, leachate, landfill gas and air quality
- Analysis of monitoring data and reporting on compliance with site specific requirements and license conditions
- Drilling, installation, and leak testing of monitoring wells
- Installation and maintenance of real time monitoring equipment
- Surface water attenuation, control and discharge systems
- Cleaner production and waste minimisation
- Process assessments and waste audits
- Waste reduction strategies and disposal
- Post remedial monitoring and management
- Assessments of operational and closed landfills for upgrading and mitigation of discharges
- Landfill rehabilitation design and aftercare management plans
- Wastewater monitoring and treatment programmes
- Management plan drafting, review and auditing
- Peer review and troubleshooting related to landfill performance and technical issues

Track record

Whitford Landfill: Design and Construction, Auckland
Initial detailed design for new cell development and piggyback lining system over the historic landfill on the site, air discharge consents, full technical support, and construction supervision and quality assurance; through to mapping of the Waikopua fault, investigations, conceptual design, and geotechnical advice for expanding the landfill into the adjacent quarry area, including a complex high wall lining system. The footprint of the landfill covers 48 hectares with a final fill volume of 12 million m³.

Central Landfill: Design and Construction, Taranaki
Existing Colston Road landfill was nearing capacity requiring design, consent and construction of a new landfill facility. Involved site investigation, masterplan design including whole of life landfill layout, detailed design, planning and consenting, liaison with neighbourhood group and iwi, leachate quantity and quality assessment, erosion and sediment control, and construction supervision. T+T's solution optimised the basegrade design, in parallel with the liner design, to maximise airspace, improved constructability and safety and optimised the cost of liner construction.

Paokahu Closed Landfill: Management Planning, Gisbourne
Detailed risk assessment that identified the main environmental effects from the landfill - leachate contamination of surface water drains and landfill gas risks to workers. Followed by conceptual designs, site model, and viable long term management options, through to detailed designs for leachate capture and to reduce groundwater inflow.

Claris Open Landfill: Monitoring Wells, Great Barrier Island
Installation of groundwater and gas monitoring wells to provide more information about landfill gas discharges from Great Barrier's only waste disposal facility that is approaching its capacity. Followed by detailed design to enable capping of the site within the constraints of a remote location.

Rawene Reserve Closed Landfill: Remediation, Auckland
Investigation, design, consenting, and earthworks supervision to stabilise any further contamination to streams and native bush, and remediate waste debris in the wake of a major landslide that affected a closed landfill and inundated the gully with landfill material.

Rosedale Closed Landfill: Gas Monitoring, Auckland
Ongoing landfill gas monitoring to identify potential gas migration, including an initial landfill gas risk assessment of existing extraction and flaring system, development of a conceptual site model, and installation of additional landfill gas monitoring wells; through to investigations in the south-eastern part of the site to fill in gaps identified in the landfill gas conceptual site model. The results of monitoring have, thus far, confirmed that there is a limited driving force for landfill gas migration beyond the south-eastern waste boundary.

Closed Landfill Risk Assessment and Erosion Prevention on Redundant Landfills, New Plymouth
Risk assessment and management options of ten closed landfills and one farm dump in the New Plymouth

region to determine the level of potential hazardous exposure from either fluvial or coastal erosion, including visual inspections to establish the extent of the landfills, identifying the type of refuse being used, and testing the condition of the landfill cap and for leachate leakage.

Seaside Park Closed Landfill: Coastal Resilience, Auckland
Assessments and conceptual design for resource consent to improve coastal protection for the closed coastal landfill at Seaside Park. The core objective was to provide resilience to climate change effects of inundation and erosion in line with current guidelines and regulations.

Closed Landfill Redevelopment, Western Springs College
The College is located on Motions Road Closed Landfill which operated as a basalt quarry before landfilling began. Provided contaminated land, landfill gas and geotechnical advice. As part of the construction works, prepared a ground contamination Site Management Plan and undertook construction monitoring covering geotechnical, ground contamination, landfill gas and building protection measure construction.

National Tool to Assess Climate Change Risk to Landfills
Establishment of the framework for a tool to assess the impacts of climate change on landfills, through to developing and piloting the tool on testing sites in Canterbury, Southland and the West Coast.

Contact us



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