Tonkin+Taylor

Energy

The energy industry is dominated by a rapidly changing regulatory environment and an increasing emphasis on renewable energy sources to meet future demand.

Tonkin + Taylor's Energy team is passionate about meeting global and local sustainability challenges facing our natural environment and society.

Our services

We are focused on the next generation of renewable energy in Aotearoa New Zealand, and the exploration of methods that are more efficient at producing large amounts of clean energy, while ensuring resource, environmental, and infrastructural sustainability goals are achieved along the way.

We have developed leading expertise in harnessing energy from a range of major infrastructure projects, including wind and solar farms, hydropower schemes, thermal and geothermal energy, and transmission and distribution networks.

Our multidisciplinary team combine their technical capabilities in hydrology, geology, civil and geotechnical engineering, ecology, and hydraulic modelling, with a deep understanding of regulatory requirements to provide customised planning and design solutions that support clients throughout all phases of renewable energy infrastructure development. We understand the need for solutions that help to minimise the cost of construction.

Planning

- Site investigations, testing, sampling
- Project definition and value engineering
- Resource management
- Hydrology and hydro energy modelling
- Computational flow modelling
- Desk study site assessment
- Supply-demand modelling
- Site geology and morphological mapping
- Structural geological mapping
- Geological risk mitigation and management
- Groundwater and hydrogeological evaluation
- Slope stability assessment
- Soil and rock slope design
- Rock and soils materials assessment
- Slope and groundwater instrumentation and monitoring
- Mana whenua and stakeholder consultation
- Preparation of tender documents
- Provision of evidence for resource consent process
- Preparation of applications for resource consents
- Value Engineering

Environmental

- Data collection for environmental and ecological effects assessments
- Integrated water resource management
- Fish passage advice and design
- Re-vegetation plans
- Environmental management systems
- Biodiversity studies
- Mitigation and offsetting advice
- Mitigation, remediation and monitoring
- GIS and vegetation mapping using UAV/drones
- Soil characterisation
- Air quality calculations and modelling
- Regulatory requirements
- Environmental auditing of construction works

Infrastructure Design

- Hydraulic, civil, hydropower, dam, and geothermal engineering
- Dambreak and FMEA assessments
- Tunnelling, windfarm, transmission, and turbine/tower foundation design (incl. 3D modelling)
- Construction, safety, rehabilitation, upgrade, and ancillary infrastructure
- Decommissioning and fit-for-purpose advice
- Climate adaptation, natural hazard risk reduction, emergency planning
- Infrastructure sustainability ratings, commissioning, operational monitoring
- Carbon accounting and repurposing site materials

Track record

Mill Creek and West Wind Farms, Ohariu Valley, Wellington, Meridian Energy
Consenting, design of civil elements, and construction planning and supervision of the Mill Creek development, a 60 MW wind farm with 26 turbines. Environmental management and ancillary civil engineering upgrades for the adjoining West Wind site (143 MW wind farm with 62 turbines), including roading, water supply systems, aggregate options, spoil disposal areas, geotechnical issues, and identifying design changes to reduce construction costs and provide programme savings.

Mahinerangi Wind Farm, Otago, Manawa/TrustPower
A 36 MW wind farm with 12 turbines located near Lake Mahinerangi in Otago. Completed a peer review and presented expert evidence.

Turitea Wind Farm, Tararua Ranges, Palmerston North, Mercury Energy
Development of a baseline monitoring plan, covering water quality, aquatic ecology, and wet weather conditions for a new wind farm comprised of 60 turbines split between two main areas - each zone will include a sub-station, with each linked by overhead transmission lines connecting to National Grid at Linton Substation.

Hauauru Ma Raki, Waikato, Contact Energy
A proposed 504 MW wind farm located on the Waikato coast. Involved in site assessments and provided peer review and expert advice on civil, geotechnical, and environmental aspects to assist the client before the Board of Inquiry.

Slopedown, Wind Prospect CWP NZ/Genesis Energy
A proposed 150 MW wind farm located in Southland. Assisted in feasibility studies, provided information to support an AEE and subsequent consent applications, undertook geotechnical investigations, and completed preliminary earthworks and roading and foundation design for the wind farm and transmission line. Investigations also included assessment aggregate supply options and construction water supply.

Hurunui Wind Farm, Omihi–Greta Valley, Canterbury, Meridian Energy
Environmental management plans for consenting and construction, expert evidence at the Environment Court hearing for the proposed 76 MW, 31-turbine wind farm; through to civil design team support to minimise earthworks volumes, identify spoil disposal areas, and locate sources of water for concrete production, dust suppression, and road construction.

Waitahora Wind Farm, Hawke's Bay, Contact Energy
A proposed 156 MW wind farm with 58 turbines located on the Puketoi Range in Hawke's Bay. Provided peer review and presented expert evidence on geotechnical, civil, and construction management aspects of the project.

Pouto Forest, Northland, Meridian Energy
A proposed wind farm located on Pouto Peninsula in Northland. At time of investigation, the site had 120 turbines. Carried out detailed geotechnical site investigations of the site and investigated proposed wharf sites, river crossings, aggregate sources, and the grid connection point.

Transmission Tower Upgrades, Transpower
Consenting, soil characterisations, and asbestos management plan for tower foundation and replacement works across several transmission corridors; through to the development of a traffic light system for prioritising the foundation works, and a 'best practice guide' for managing contaminants in soil and stormwater.

Arnold Hydroelectric, Greymouth, Manawa/TrustPower
Civil engineering evidence, investigations and consents support for 40 MW hydroelectric scheme adjacent to the Arnold River. Construction of a diversion of up to 80 cumecs of flow through a 40 MW power station and 12 km of earth lined canal to outlet back into the river. Advised on project scoping and options studies, prefeasibility studies, site investigation works, preliminary design and feasibility studies, and consents evidence for civil engineering.

Hydroelectric Power, Opuha Dam, Opuha Water
All civil, water resources, and geotechnical work, including scoping and feasibility, evidence for resource consent hearings, detailed design, construction observation, remedial works, and ongoing surveillance for a 50m high earth and rockfill dam on Opuha River that stores 95 million m3 of water for hydroelectric power generation.

Hydroelectric Power, Lake Rochfort, Kawatiri Energy
Geological and geotechnical, infrastructure design, dam safety, and construction monitoring for the scheme that features additional capacity for stream diversion into the lake, a new 2.2km long penstock from the lake to the base of Mt Rochfort, and a new powerhouse with a single pelton wheel turbine.

Aniwhenua Hydropower Scheme Headpond Remediation, Bay of Plenty, Nova Energy
Forensic investigations, consents, and rehabilitation design to keep the headpond of the 18.5m high sloping earth core rockfill dam operational; construction monitoring to ensure the complex and challenging project was completed on time and to budget. Included removal of rip rap on headpond embankment face and base, construction of temporary EPDM lined coffer dams, temporary stream diversion to enable repair works, and construction of liner underdrain system and collector pipe.

Geothermal Expansion, Ngawha Springs, Top Energy
Civil design works for the 32 MW expansion of the Power Station, including a network of open swales, trenched and directionally drilled stormwater lines, and a cascading system of 11 detention ponds (total volume 70,000m3) to hold the stormwater until it can be reinjected into the geothermal aquifer; through to a water supply weir in a local stream, a 6,000 m3 raw water supply storage pond with valving and distribution lines for fire-fighting, and all earthworks and site roading network.

Contact us

Glen Nicholson

Sector Director – Energy

Environmental and Regulatory Interface

+64 7 834 7309

GNicholson@tonkintaylor.com

Nick Peters

Sector Lead - Wind Energy

Windfarm Specialist

+64 4 381 8561

NPeters@tonkintaylor.com

Scott Thomas

Sector Lead - Solar Energy

Solar Specialist

+64 3 361 0342

SThomas@tonkintaylor.com

Sarah Schiess

Environmental Expert

Contaminated Land Specialist

+64 4 806 4969

SSchiess@tonkintaylor.com

David Leong

Hydrology + Hydraulics Expert

Hydropower Specialist

+64 9 355 6070

DLeong@tonkintaylor.com

Shannon Richardson

Planner

Transmission Specialist

+64 9 359 2728

SRichardson@tonkintaylor.com

Jan Noering
Civil Engineer
Windfarm Specialist
+64 4 806 4943
JNoering@tonkintaylor.com

Bruce Symmans
Design Manager
Windfarm Specialist
+64 4 381 8562
BSymmans@tonkintaylor.com

Daniel Murray
Planner
Hydro + Windfarm Specialist
+64 3 361 0338
DMurray@tonkintaylor.com

Dean Miller
Ecologist
Freshwater + Ecology Integration
+64 7 834 7316
DCMiller@tonkintaylor.com