Tonkin+Taylor

Irrigation Analysis and Design

Efficient irrigation has the ability to increase food production in areas that lack consistent rainfall, or which have regular low rainfall shortages.

Droughts are common events in New Zealand, particularly along the east coast of the country, and are likely to worsen with climate change in many areas.

With climate change, and intensification of horticulture and agriculture, irrigation is a key component in increasing and maintaining production. Resilient water supply is a game-changer for regional economic development strategies for growth in added-value food and beverage industries.

Expertise

We have a wealth of experience in the study, investigation, design and development of headworks for irrigation in New Zealand, the Pacific and South East Asia.

Our specialist services include:

Concept and scoping studies
- Groundwater and surface water yields
- Water demand modelling and assessments
- Conjunctive use assessment, for example water supply and hydroelectric generation
- Project definition and value engineering
- Headworks engineering – intakes, dams and canals
- Increased production potential
- Environmental scoping and assessments

Feasibility studies and design
- Hydrological modelling for yield and security of supply
- Flood hazard studies
- Geotechnical investigations and assessments including seismic risk and liquefaction potential
- Hydraulic and civil engineering design
- Contract documentation
- Design review during construction.

Consents
- Compliance with environmental legislation
- Resource and building consent applications
- Consultation with potentially affected parties
- Assessment of environmental effects
- Consent renewals.

Construction management
- Site supervision and management
- Commissioning.

Scheme management
- Preparation of operating, maintenance and surveillance manuals
- Emergency action planning
- Surveillance, monitoring and evaluation
- Risk analysis
- Safety reviews
- Asset valuation
- Instrumentation and calibration
- Peer review and expert witness
- Rehabilitation and upgrading

Exceptional thinking together

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Experience

The headworks (dams, intakes and canals) associated with irrigation schemes feature heavily in our experience. We have designed 17 dams in the ICOLD large dams category, along with many smaller dams, intakes and canals built for irrigation, hydro and water supply schemes.

Our reputation for quality work includes:

- The 50m-high Opuha multi-purpose dam built in South Canterbury
- Options prefeasibility studies for mulit-purpose schemes in the Wairarapa
- Options studies for a full feasibility study and large multi-purpose schemes in mid-Canterbury
- Inspection, remedial works design and asset valuation of the 67km-long Rangitata Diversion Race carrying 30 m^3/s
- The Waingaro and Manuwai irrigation storage dams in Northland
- Resource consents for the Mangakahia Irrigation Scheme in Northland
- Ruataniwha Water Storage Scheme, Hawke's Bay, project scoping and options studies; pre-feasibility and feasibility studies; geotechnical site investigations into providing irrigation water and consent support for the scheme
- Waimea Community Dam, Tasman District, concept development through to detailed design for the 53m high concrete faced rockfill dam and appurtenant structures
- Black Point irrigation scheme, North Otago.

Any questions you can email us here:
dams@tonkintaylor.co.nz