Kaimai Hydro

January 2026

MANAWA ENERGY

Contact and Manawa Acquisition

About Contact Energy

- Generates up to 25% of NZ's electricity.
- Expected electricity generation in 2026 is 11,800 GWh across hydro, geothermal, solar, thermal and wind PPAs (power purchase agreements) – 95% renewable.
- Acquired Manawa Energy on 11 July 2025.

About Manawa Energy

- Generates approximately 4.5% of NZ's electricity.
- 25 hydro schemes across NZ.
- Strong regional presence and expertise in small-to-medium hydro.

Impact of Acquisition

- Creates NZ's most diversified renewable electricity generator.
- Adds 25 hydro schemes, strengthening regional resilience and renewable energy portfolio.
- Positions Contact Energy to manage dry-year risk and accelerate NZ's energy transition.

Combined Contact / Manawa Portfolio

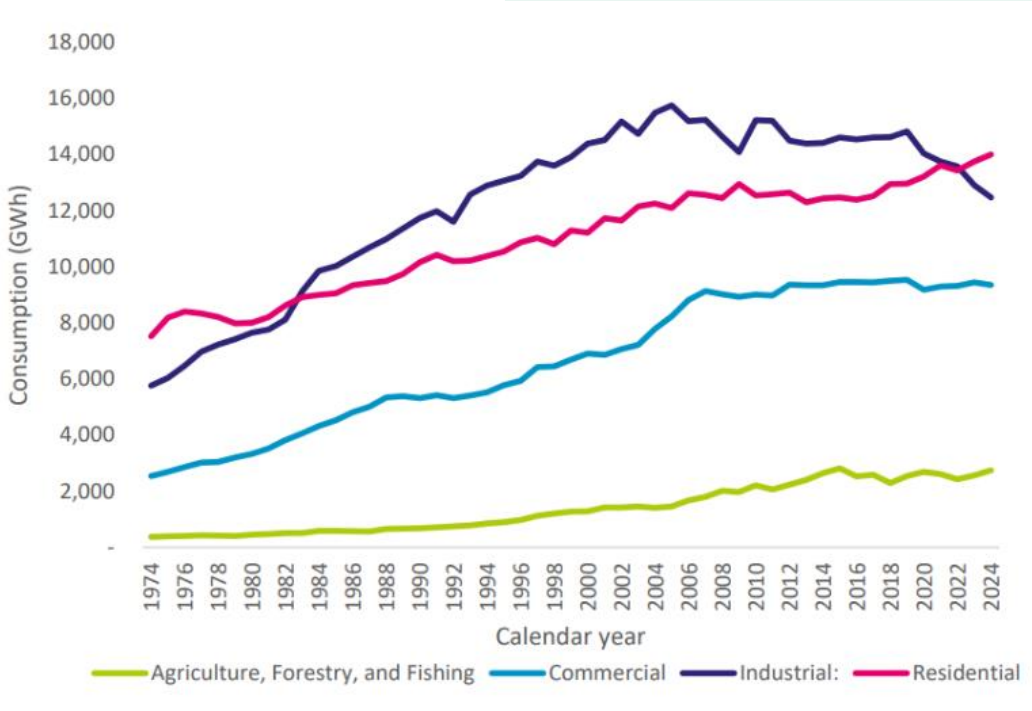
Demand for Renewable Energy Will Grow

Net Zero by 2050

- NZ Government target - Climate Change Response Act 2002.
- NZ needs more renewables and flexibility as NZ energy transition continues.

Demand Growth

- Demand grew rapidly from 1974 to 2007 - nearly triple the rate of population growth.
- Residential demand overtook industrial demand in 2023 / 24.
- Steeper demand rise expected to 2030 – population growth, electrification of transport, and industrial process heating.
- Transpower forecasts Tauranga's annual *peak* electricity demand to rise from around 127 MW in 2025 to up to 180 MW by 2030 (the maximum load the grid must be able to supply at any one time).



Electricity consumption by sector in New Zealand 1974-2024

Kaimai Economic Assessment NZIER 2025

Why Firm, Flexible Hydro Matters

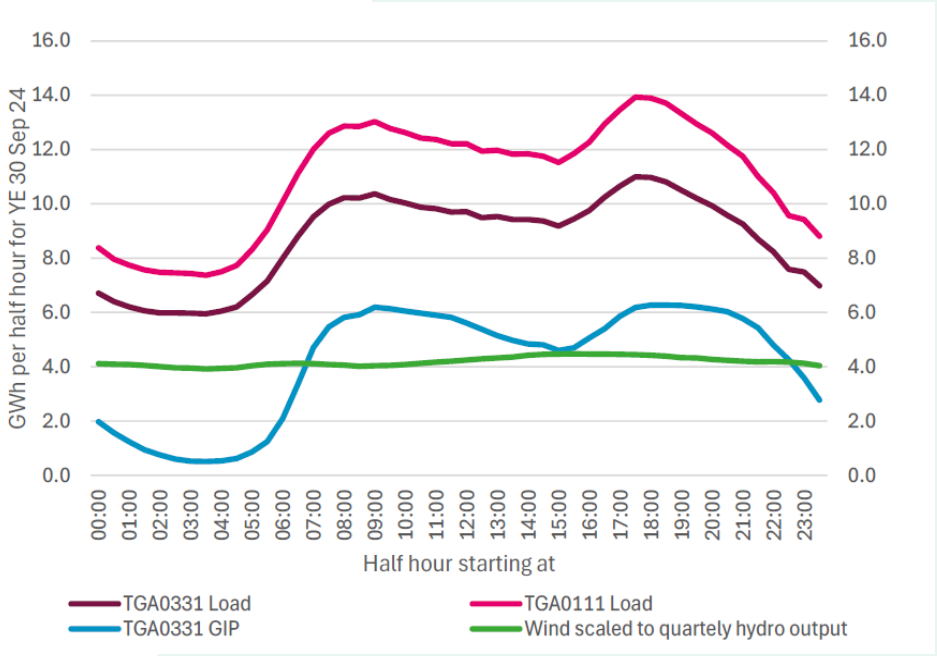
Role of Existing Hydro

- Provides baseload supply**,** firming, and peaking capacity.
- Generation can be controlled and dispatched as needed, ensuring reliable electricity during demand peaks and when wind or solar output is low (firming).
- Supports system reliability during NZ's transition away from fossil fuels.

Why it's Critical

- **Electrification is accelerating** - Transport & industrial heat are shifting to electricity, driving sustained demand growth.
- **Firm, controllable generation is essential** – As wind and solar expand, we need reliable sources that can respond instantly when output drops.
- **Gas is no longer a safety net** – Supply shortages have eroded the reliability of gas-fired generation.
- **Hydro is irreplaceable** – Only hydro or thermal can provide the same firming and flexibility, making existing hydro vital for security of supply.

Kaimai Economic Assessment NZIER 2025



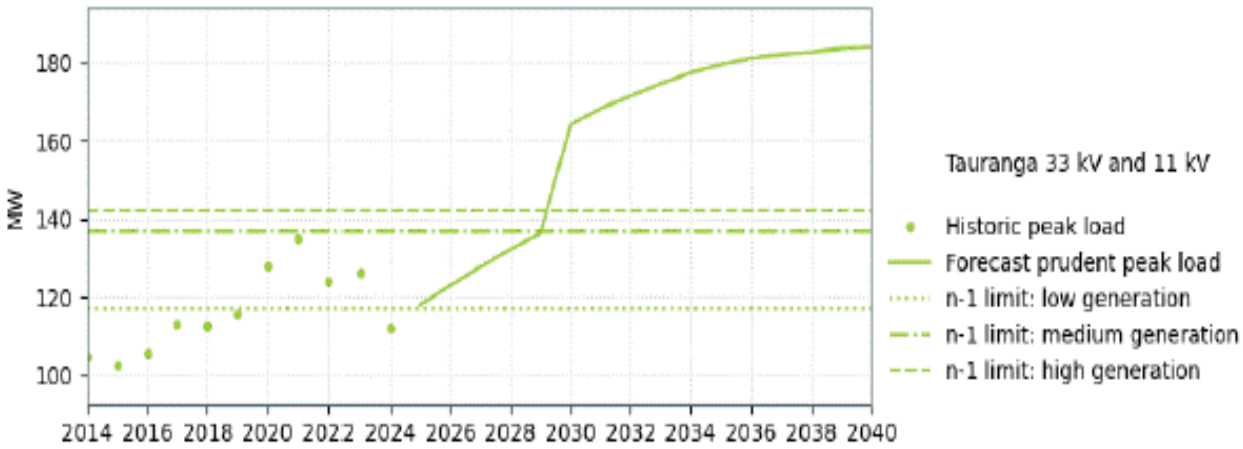
Total electricity volumes (demand and supply) for each half hour period:
Compares Tauranga's two grid demand points (pink and brown), Kaimai Grid Injection point (blue), and wind generation for NZ scaled to Tauranga demand (green).

Importance of Kaimai Hydro Scheme

Current Contribution

- Generates approximately 169 – 200 GWh annually (25 - 29,000 households), connecting directly into Tauranga network.
- Meets approximately 32% of Tauranga's electricity demand per annum (approximately 528 GWh per annum).
- Provides controllable, flexible, consistent and reliable generation that adjusts to Tauranga's daily (morning and evening) demand peaks.
- Tauranga imports ~359 GWh to meet its demand shortfall, but grid constraints limit imports. Kaimai HEPS helps bridge this gap and defers costly transmission upgrades.
- Significant operational changes would increase reliance on imported electricity and reduce regional resilience and security of supply.

Figure 10-5: Kaitemako–Tauranga transmission capacity for low (14 MW), medium (33 MW), and high (40 MW) Kaimai generation levels



Note: Any difference in the supply capacity on the graph (in MW) and the asset rating (in MVA) is due to load power factor and impedance.

Kaimai's contribution fills Tauranga's demand gap and underpins Transpower's planning assumptions

Kaimai Economic Assessment NZIER 2025
Transpower NZ Ltd, 2025 Transmission Planning Report (2025), p. 177.

Kaimai Hydro Scheme Overview

Location

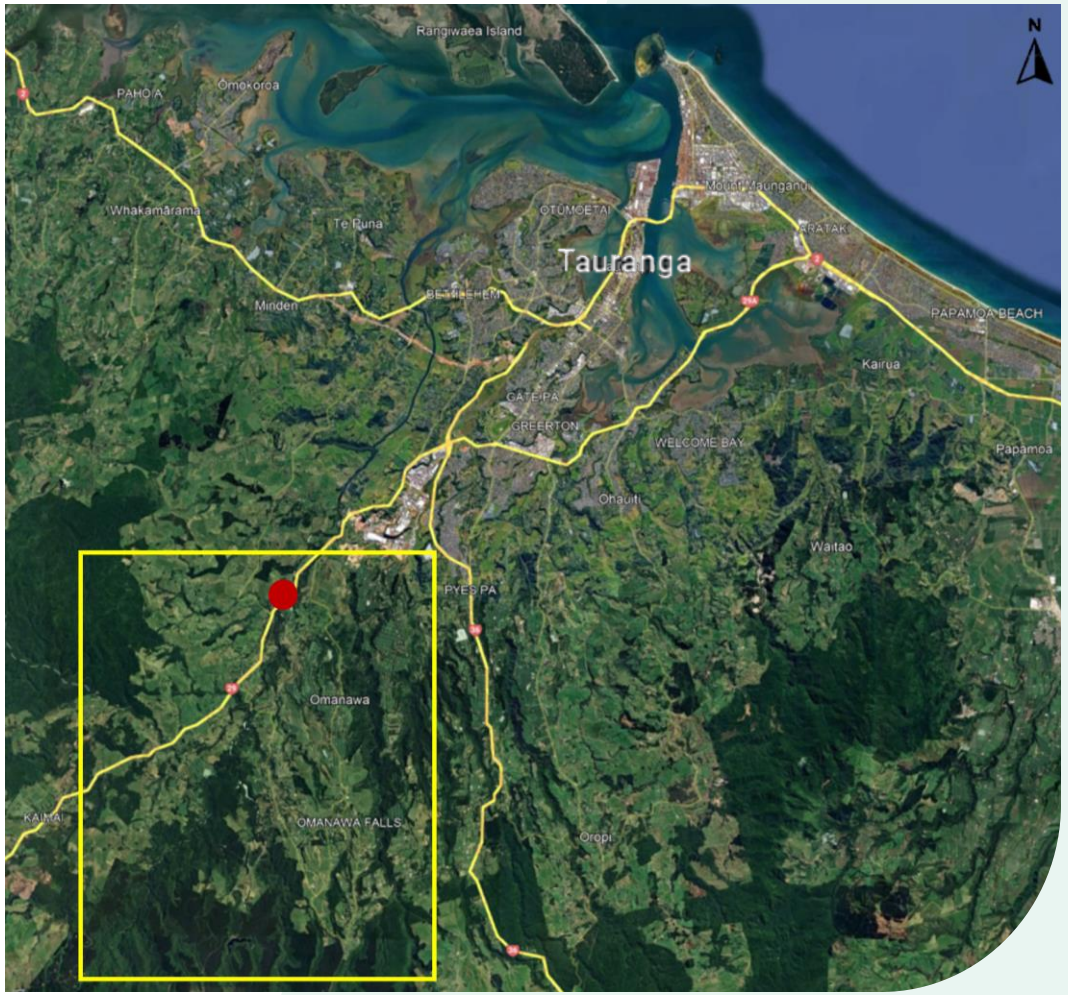
- Wairoa River Catchment.
- Approximately 12 km southwest of Tauranga.

History

- Existing consents granted in 1976 by Bay of Plenty Catchment Commission and Regional Water Board.

Operation

- Kaimai HEPS has been generating renewable electricity for over 50 years.



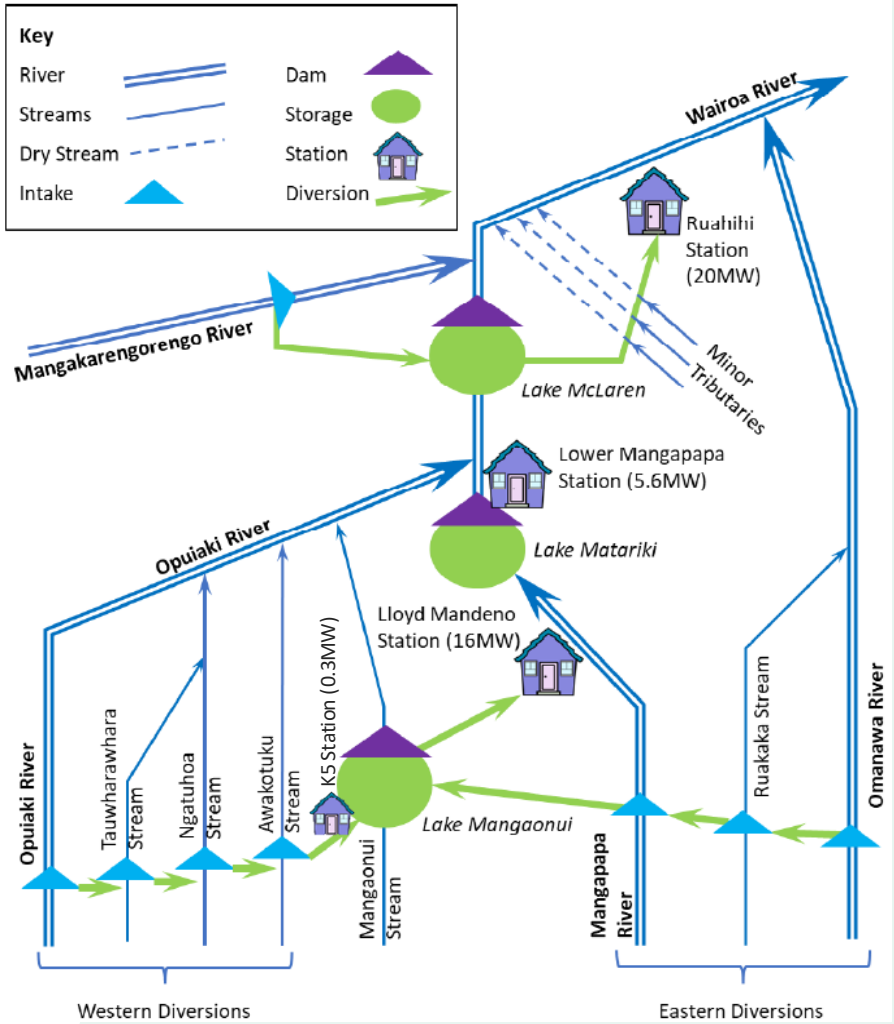
General Scheme Location (yellow box) and Ruahihi PS (red circle) in relation to Tauranga

Kaimai Hydro Scheme Overview

- Kaimai HEPS draws on catchment area of 341 km^2.
- Water is diverted through a network of weirs, drop pipes, canals and tunnels, then conveyed through four power stations before returning to the Wairoa River.

Infrastructure

- Eastern Diversions: Multiple weirs, drop pipes and tunnels (includes Kaimai 5 Power Station).
- Western Diversions: Weirs, drop pipes and tunnels.
- Middle and Lower Scheme: Series of three lakes that provide daily storage, two canals, and three power stations.



MANAWA ENERGY

Existing Resource Consents

Existing consents granted under the Water and Soil Conservation Act 1967.

Key consent conditions relate to:

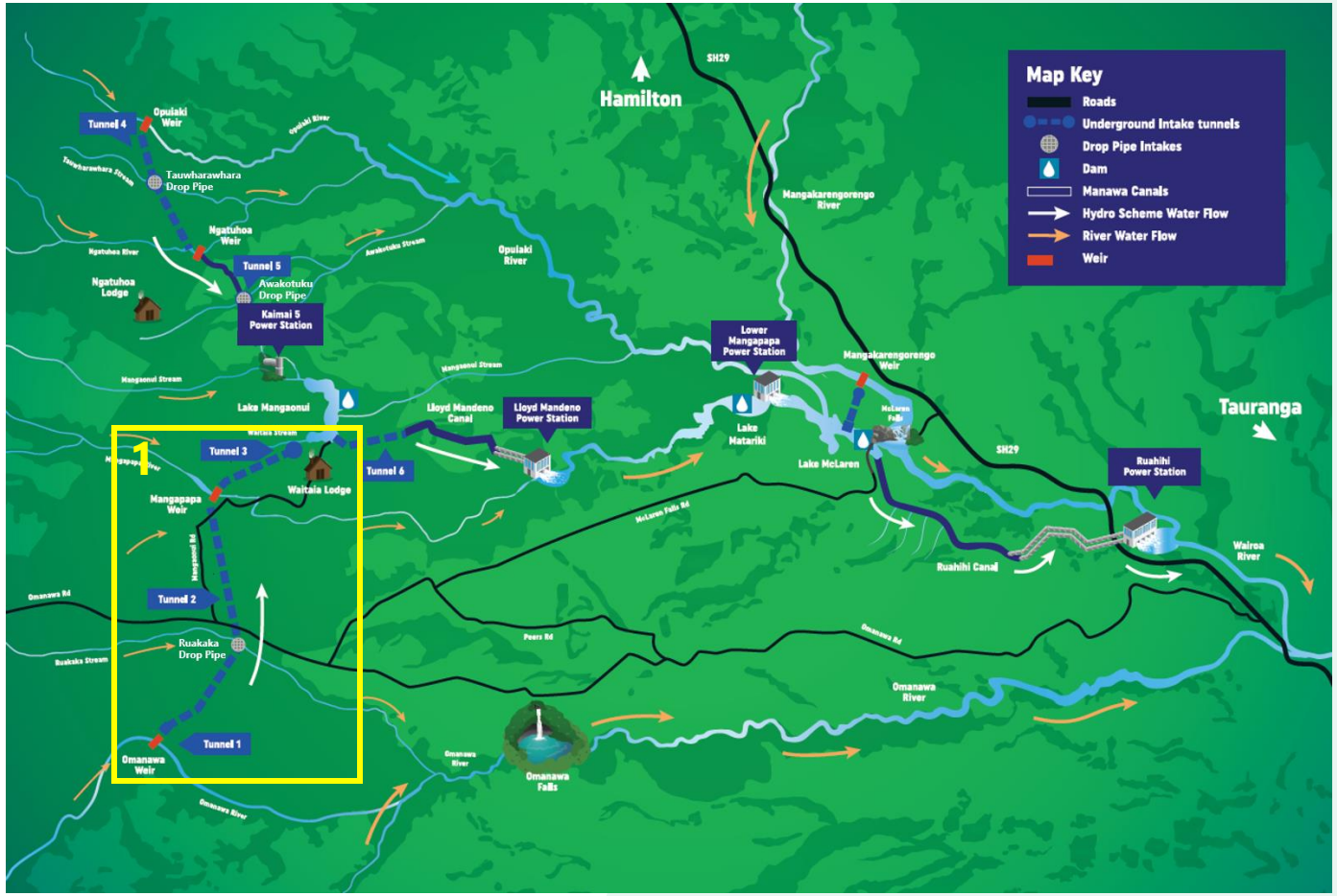
- Maximum diversion, take and discharge rates – include rates of change for discharges.
- Minimum residual flows at some sites.
- Provision of recreational flows downstream of McLaren Falls Dam.
- Structure specifications (e.g. max weir / dam heights and intake screen details).
- Maximum and minimum lake levels.

Consent Number	Activity
Resource Consent 20195	Opuiaki Weir / Omanawa Weir down to Lloyd Mandeno Power Station
Resource Consent 11	Lake Matariki and Lower Mangapapa Power Station
Resource Consent 02 3297	Mangakarengorengo River to Ruahihi Power Station

Scheme Overview

Key sections of the Kaimai HEPS:

1. **Upper Scheme - Eastern Diversions**
2. Upper Scheme - Western Diversions
3. Middle Scheme
4. Lower-Scheme



Scheme Overview

Upper Scheme, Eastern Diversions

Omanawa Weir

- Diverts water from Omanawa River into Tunnel 1.

- Max diversion: 7.79 m^3/s.
- Mean diversion: 1.93 m^3/s.
- Current required residual flow: None.

Omanawa Weir looking upstream (u/s)

Omanawa Weir/Intake looking downstream (d/s)

Scheme Overview

Upper Scheme, Eastern Diversions

Ruakaka Drop Pipe

- Diverts water from Ruakaka Stream into Tunnel 2.

- Max diversion: 283 l/s.
- Mean diversion: 25 l/s.
- Current required residual flow: None.

Ruakaka Weir

Ruakaka Drop Pipe into Tunnel 2

Scheme Overview

Upper Scheme, Eastern Diversions

Mangapapa Weir

- Diverts water from Mangapapa River and Tunnel 1 & 2 into Tunnel 3.

- Max diversion: 14.2 m^3/s.
- Mean diversion: 4.16 m^3/s.
- Current required residual flow: None.

Mangapapa Weir looking u/s, yellow circle showing outlet from Tunnel 2

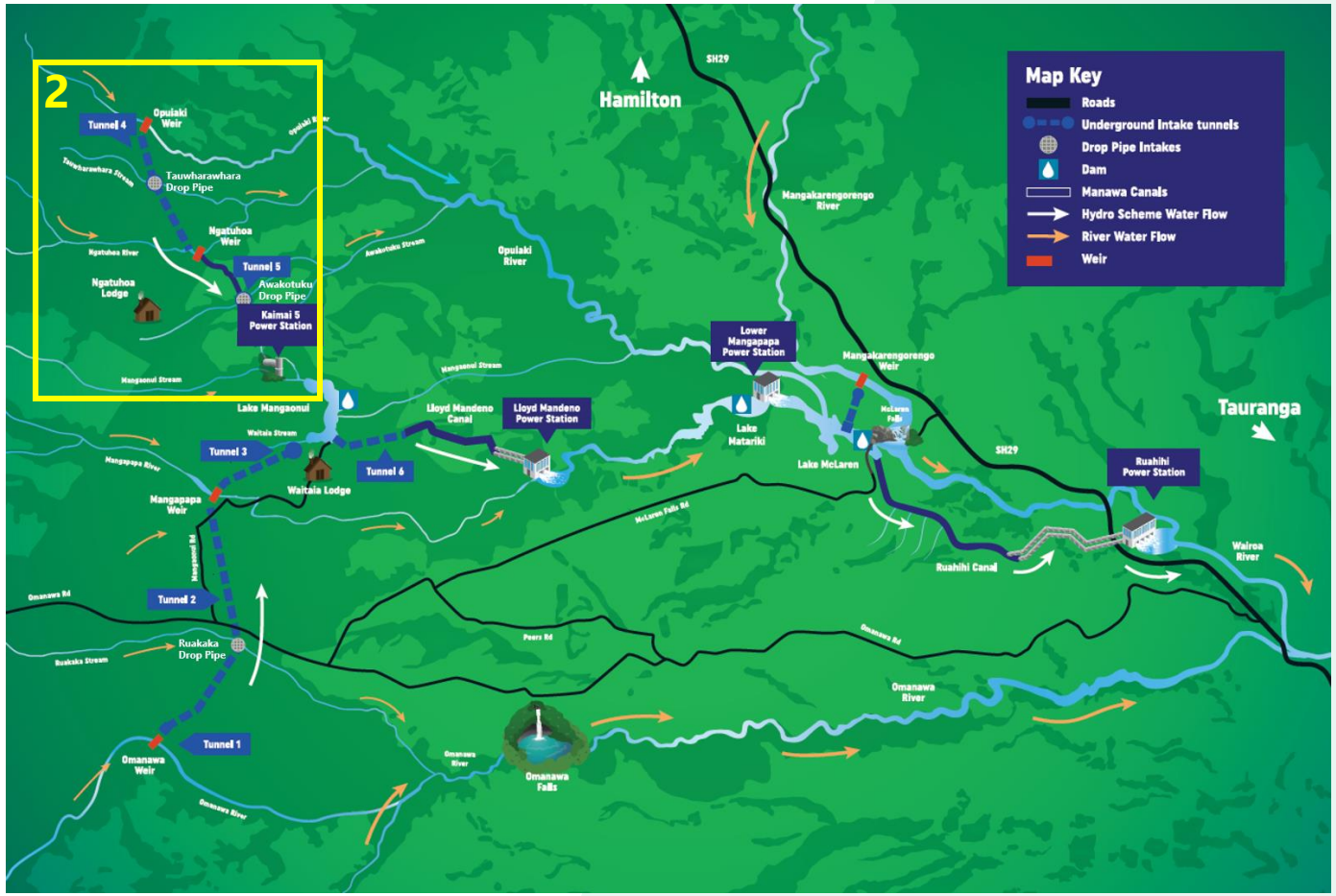
Mangapapa River looking d/s – immediately d/s of weir

Mangapapa Intake into Tunnel 3

Scheme Overview

Key sections of the Kaimai HEPS:

1. Upper Scheme - Eastern Diversions
2. **Upper Scheme - Western Diversions**
3. Middle Scheme
4. Lower Scheme



Scheme Overview

Upper Scheme, Western Diversions

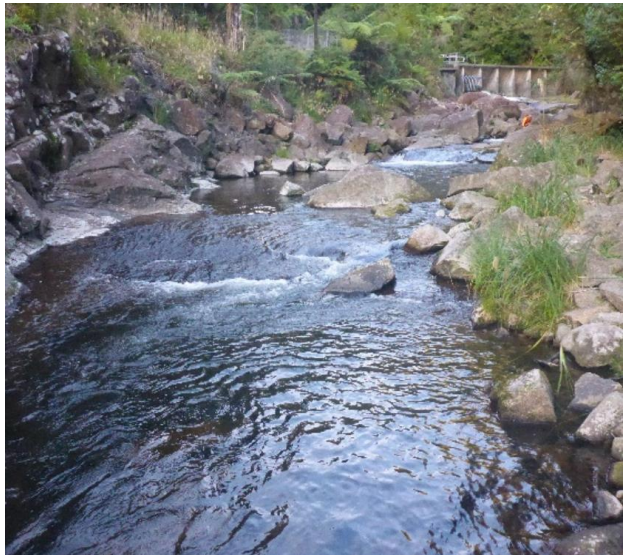
Opuiaki Weir

- Diverts water from Opuiaki River into Tunnel 4.

- Max diversion: 8.5 m^3/s.
- Mean diversion: 2.06 m^3/s.
- Current required residual flow: 280 l/s.

Opuiaki Weir and residual flow looking u/s

Opuiaki Weir and Intake



Opuiaki River looking u/s towards weir

Scheme Overview

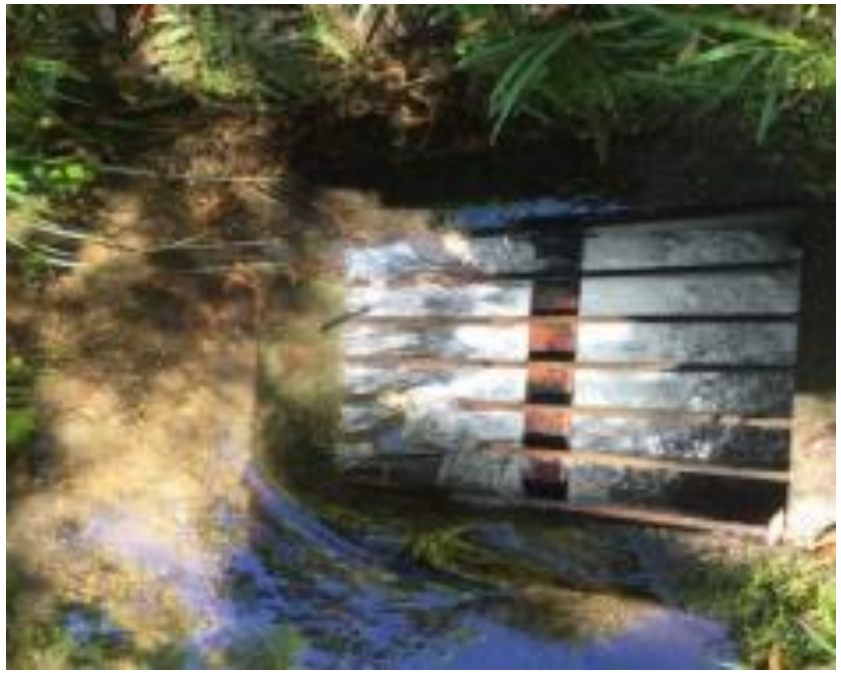
Upper Scheme, Western Diversions

Tauwharawhara Drop Pipe

- Diverts water from Tauwharawhara Stream into Tunnel 4.

- Max diversion: 283 l/s.
- Mean diversion: 40 l/s.
- Current required residual flow: None.

Tauwharawhara Weir



Tauwharawhara Drop Pipe into Tunnel 4

Scheme Overview

Upper Scheme, Western Diversions

Ngatuhoa Weir

- Diverts water from Ngatuhoa River and Tunnel 4, into Ngatuhoa Canal.

- Max diversion (into canal and then tunnel): 14.2 m^3/s.
- Mean diversion: 2.72 m^3/s.
- Current required residual flow: 60 l/s.

Ngatuhoa Weir and residual flow looking u/s

Ngatuhoa Weir and Intake u/s of weir, yellow circle shows outlet from Tunnel 4

Ngatuhoa River d/s of weir

Scheme Overview

Upper Scheme, Western Diversions

Awakotuku Drop Pipe

- Diverts water from Awakotuku Stream into Tunnel 5.

- Max diversion: 425 l/s.
- Mean diversion: 43 l/s.
- Current required residual flow: None.

Awakotuku Weir looking u/s

Awakotuku Drop Pipe into Tunnel 5

Scheme Overview

Upper Scheme, Western Diversions

Kaimai 5 Power Station

- Discharges water from Tunnel 5 into upper Mangaonui stream upstream of Lake Mangaonui.

- Installed Capacity: 0.3 MW.

K5 Power Station

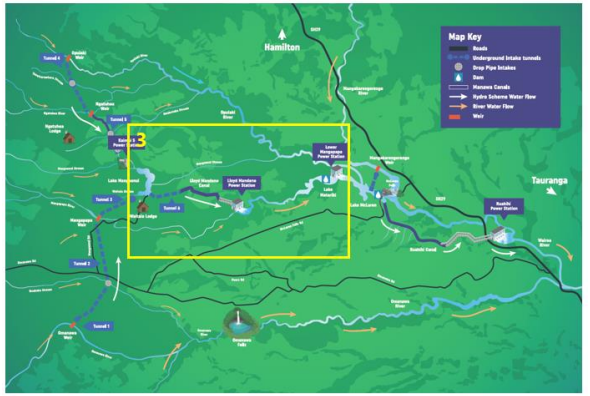
Scheme Overview

Key sections of the Kaimai HEPS:

1. Upper Scheme - Eastern Diversions
2. Upper Scheme - Western Diversions
3. **Middle Scheme**
4. Lower Scheme

Scheme Overview

Middle Scheme



Lake Mangaonui / Lake Mangaonui Dam and Spillway

- Lake holds water from eastern / western diversions & diverts water through Tunnel 6 into Lloyd Mandeno Canal.
- Dam spills infrequently (only 9 spills since gates installed in 2011).

- Max diversion (from lake into canal via T6): 14.2 m^3/s.
- Max dam spill flow rate of change: 1 m^3/s per minute.
- Mean diversion (from lake into canal): 7.18 m^3/s.
- Lake level range 281.3 m – 277.8 m (except weekends, public holidays & Dec-Feb = min 278.5 m).
- Max rate of water level change: 500mm per hour.
- Current required residual flow below Mangaonui Dam: None.

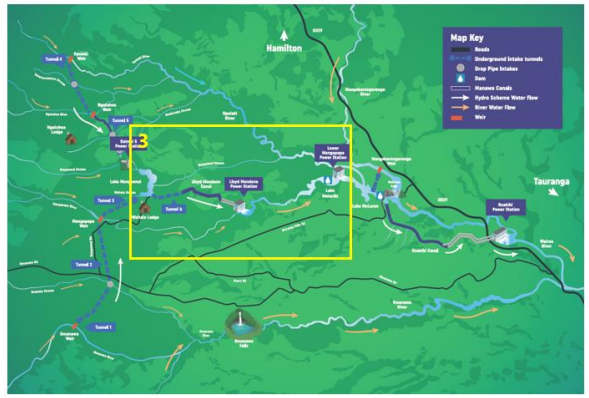
Lake Mangaonui Dam Spillway Gates

Lake Mangaonui

Lake Mangaonui Spillway

Scheme Overview

Middle Scheme



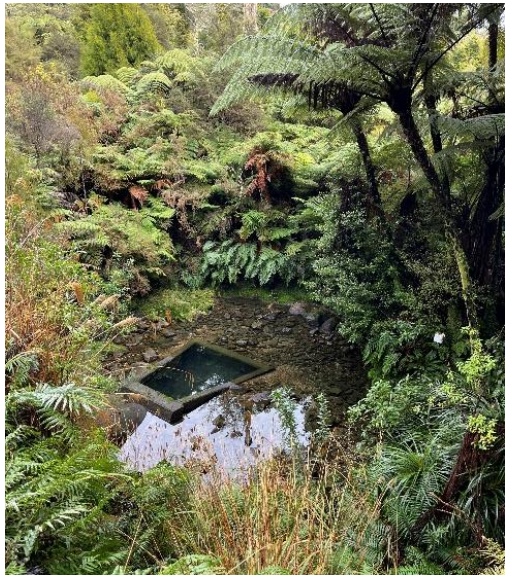
Scott's Dry Gully/Lloyd Mandeno Canal

- Canal diverts water from Lake Mangaonui to Lloyd Mandeno Power Station.
- Canal is able to discharge into Scott's Dry Gully.

- Max diversion (into canal): 14.2 m^3/s.
- Max discharge spill (from canal into Mangaonui stream): 17 m^3/s.
- Mean discharge spill (from canal): 31 l/s.
- Mean diversion (from canal to Lloyd Station): 6.89 m^3/s.

Scott's Dry Gully

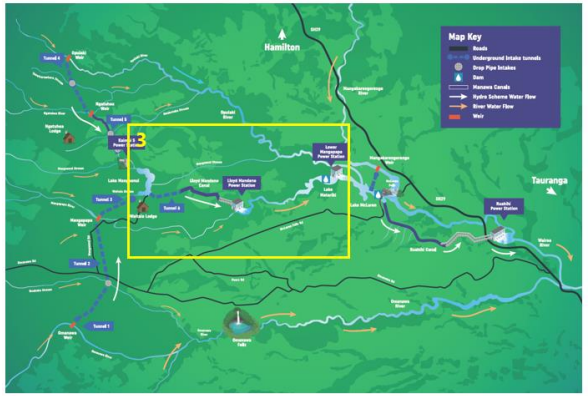
Coffin Spillway, Lloyd Mandeno Canal



Outlet of Coffin Spillway

Scheme Overview

Middle Scheme



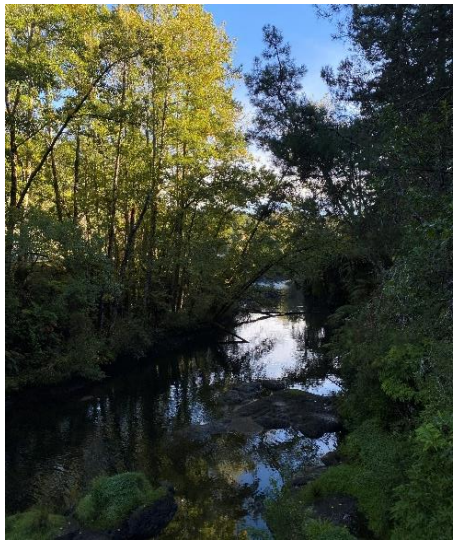
Lloyd Mandeno Power Station - Installed Capacity: 16MW

- Water conveyed from Lloyd Mandeno Canal to Lloyd Mandeno Power Station.
- Discharge to Mangapapa River.

- Max discharge: 14.2 m^3/s.
- Mean discharge: 6.89 m^3/s.
- Max rate of change: 2m^3/s per minute.

Lloyd Mandeno Penstocks

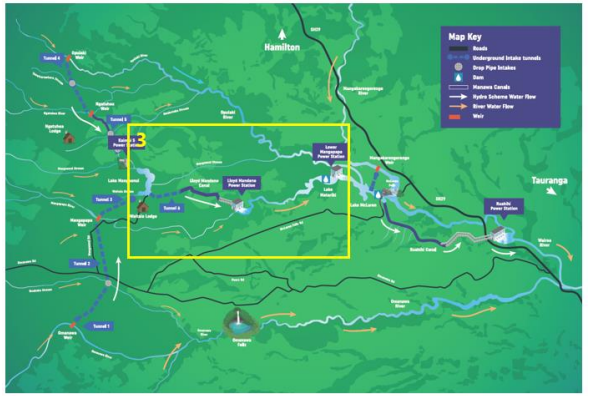
Lloyd Mandeno Power Station



Mangapapa River u/s of PS, approx. 5km d/s of weir

Scheme Overview

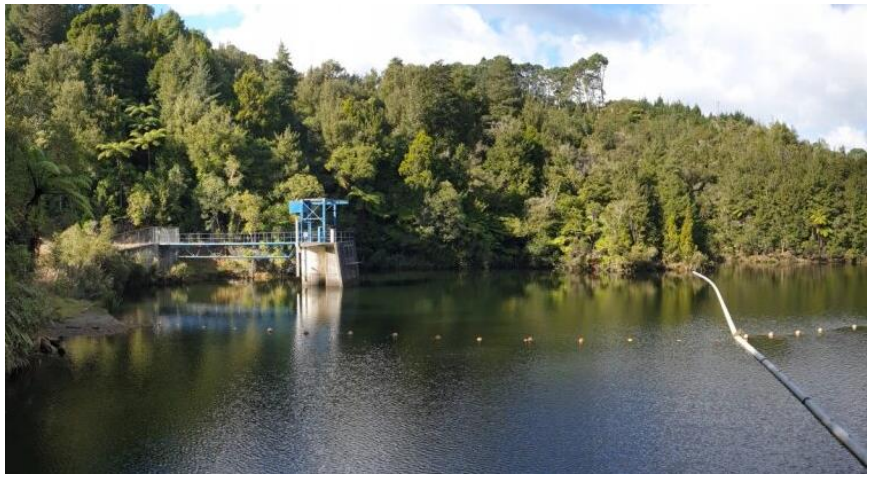
Middle Scheme



Lower Mangapapa Power Station/Lake Matariki Dam - Installed Capacity: 5.6MW

- Matariki Dam dams Mangapapa River to create Lake Matariki.
- Lower Mangapapa Power Station discharges to Lake McLaren.

- Max take/use & discharge (from power station): 23 m^3/s.
- Mean discharge (from power station): 7.57 m^3/s.
- Max rate of change of discharge: 15 m^3/s per minute.
- Lake level range 123.5 m – 120 m (min 115.5 m in emergencies).
- Max flood spill: 396 m^3/s.
- Current residual flow below Matariki Dam: None.



Lake Matariki, Lower Mangapapa Intake

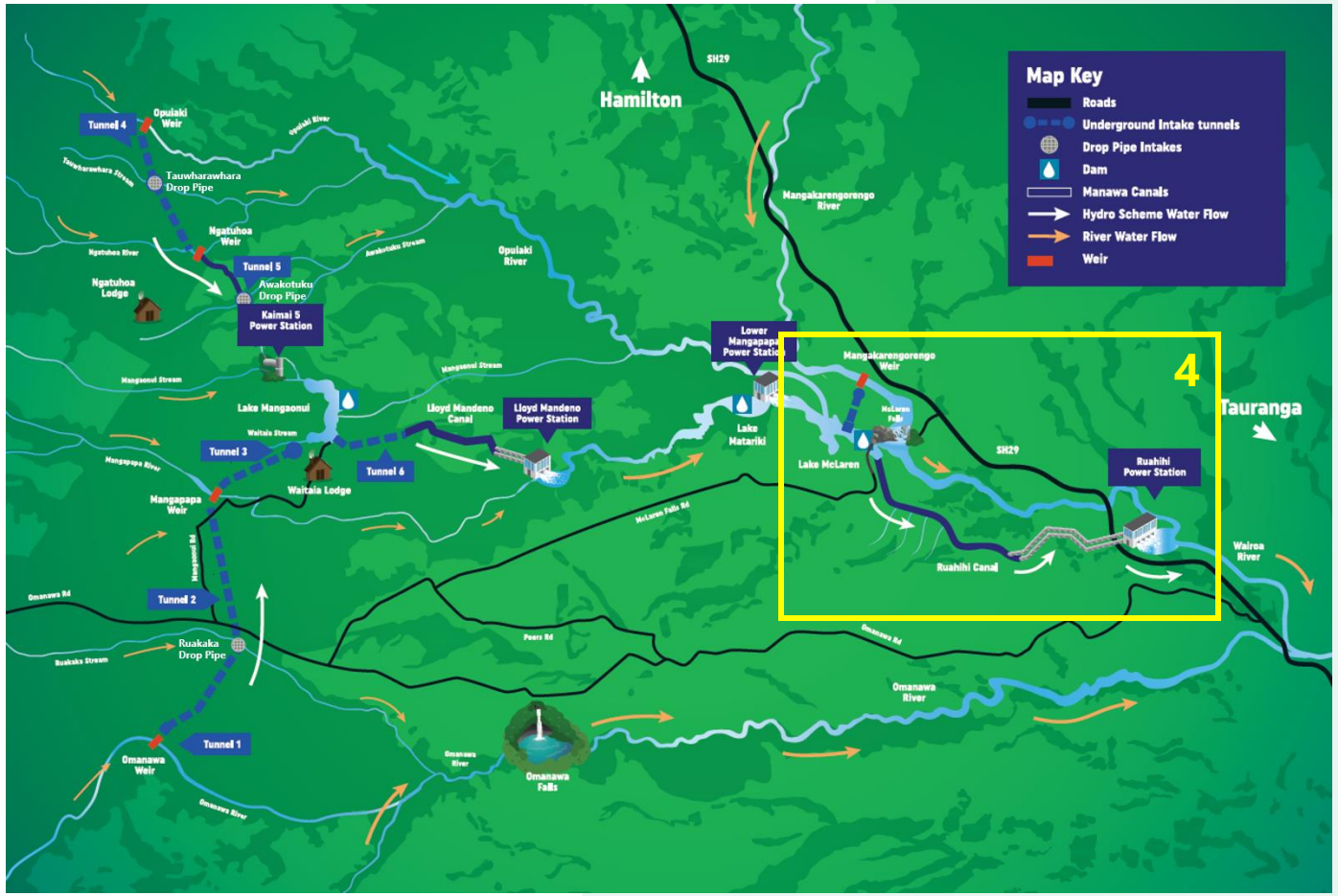
Lake Matariki Dam, looking u/s

Lower Mangapapa Power Station

Scheme Overview

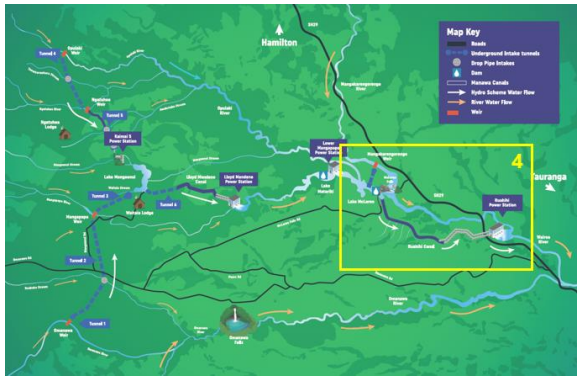
Key sections of the Kaimai HEPS:

1. Upper Scheme - Eastern Diversions
2. Upper Scheme - Western Diversions
3. Middle Scheme
4. **Lower Scheme**



Scheme Overview

Lower Scheme



Mangakarengorengo Weir

- Diverts water from Mangakarengorengo River into Lake McLaren via two diversion tunnels.
- Spilled on average 103 days per year (2016 - 2023).

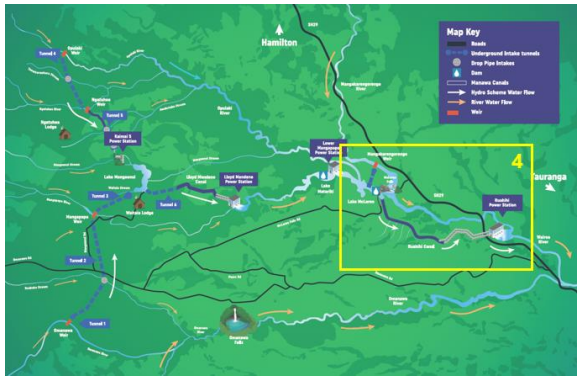
- Max diversion (into Lake McLaren): 7 m^3/s.
- Mean diversion: 3.5 m^3/s.
- Current required residual flow: 40 l/s.

Mangakarengorengo Weir looking u/s, arrows show flow in spill

Mangakarengorengo River residual flow d/s of Weir

Scheme Overview

Lower Scheme



McLaren Lake/Falls/Dam/Spillway

- McLaren Dam holds water to create Lake McLaren, diverts water into Ruahihi Canal.
- Spill approx. 24 days per year evenly across months.

- Max diversion (from Lake McLaren into canal): 31.2 m^3/s.
- Mean diversion (from Lake McLaren to canal): 13.1 m^3/s.
- Recreational Releases:
  - Max discharge (from Lake McLaren): 25 m^3/s & max rate of change: 2 m^3/s per minute.
  - Min of 14 m^3/s released 26 times per year, for a max of 6 hours per event.
- Lake level range 88.65 m – 87.45 m.
- Current required residual flow below McLaren Dam: None.

McLaren Dam during spill

Recreational Release

Scheme Overview

Lower Scheme

Ruahihi Canal

- Conveys water from Lake McLaren to Ruahihi Power Station.
- Captures water from three small tributaries – full flow diverted into canal.
- Emergency spillway flows into original course of Mairoa Stream (Tributary One).

- Max discharge (from canal into spillway): 52.8 m^3/s.
- Max diversion (from Trib One/Mairoa): 38.5 m^3/s.
- Mean diversion (from Trib One/Mairoa): 238 l/s.
- Max diversion (from Trib Two/Otawhiti): 13.0 m^3/s.
- Mean diversion (from Trib Two/Otawhiti): 52 l/s.
- Max diversion (from Trib Three): 1.27 m^3/s.
- Mean diversion (from Trib Three): 6 l/s.

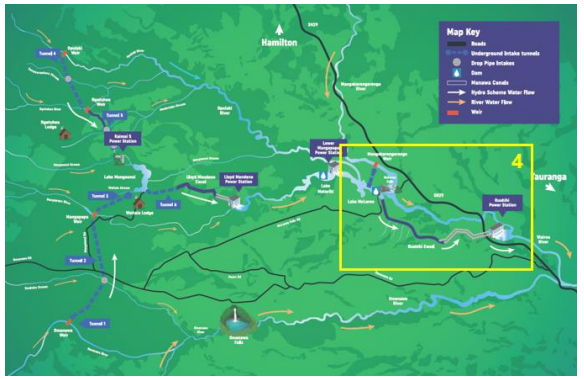
Tributaries entering Ruahihi Canal

Spillway apron towards Mairoa Stream

Ruahihi Canal

Scheme Overview

Lower Scheme



Ruahihi Power Station

- Discharges water from Ruahihi Canal into Wairoa River.

Installed Capacity: 20MW.

- Max use/discharge (from Power Station): 28 m^3/s.
- Ramping rate: 5 m^3/s per minute.

Ruahihi Power Station

Resource Consent Requirements

- Controlled activity under the Bay of Plenty Regional Natural Resources Plan.
- Matters of control:
  - Measures to provide for the passage of fish, both upstream and downstream;
  - Upstream and downstream water levels, residual flows and water quality;
  - Screening of intake and diversion structures;
  - Intake velocities;
  - Measures to manage erosion effects (including destabilisation of bed and banks of river);
  - Measures to identify and manage the risk of dam failure;
  - Stability of the land bordering the dam;
  - Measures to manage discharges to water from the use or alteration of the dam structure;
  - Measures to avoid, remedy or mitigate any adverse effect on aquatic ecosystems, areas of significant indigenous vegetation or significant habitats of indigenous fauna;
  - The quantity and flow rate, outstanding natural features and natural character;
  - Measures to avoid, remedy or mitigate any effects on other lawfully established users of the river or stream of water released from the dam;
  - Volume and rate of any take or diversion;
  - Techniques for ensuring the same passage of flood water;
  - Effects on the relationship of tangata whenua and their culture and traditions with the site and any wāhi tapu or other taonga affected by the activity;
  - Effects on the ability of tangata whenua to exercise their kaitiaki role in respect of any wāhi tapu or other taonga affected by the activity;
  - Measures to avoid, remedy or mitigate adverse effects on the operation of the downstream sediment transport processes;
  - Measures to avoid, remedy or mitigate adverse effects on lawfully established downstream infrastructure;
  - The range, or rate of change of levels or flows of water;
  - The structural integrity and maintenance of the structure;
  - Measures to avoid, remedy or mitigate adverse effects on amenity values (including recreation), and existing public access to and along the margins and rivers and lakes;
  - Information and monitoring requirements; and
  - Administration charges under section 36 of the Act.
- No consents required under the Freshwater NES.

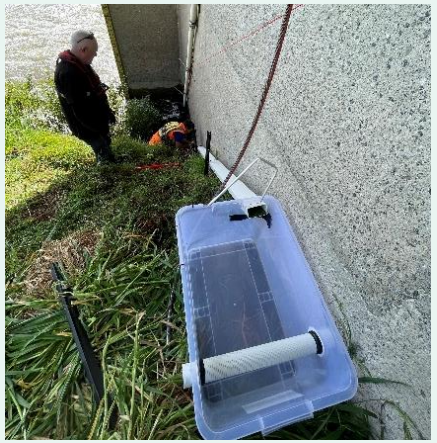
Proposal – Changes to Existing Regime

Manawa is seeking new consents to replace those that expire in October 2026.

- **Key changes include:**
  - Provision of residual flows in three additional rivers.
  - Native Fish Management Plan.
  - Provision for Mana Whenua Kaitiaki Rōpu.
  - Sediment Monitoring.

- No other changes, enhancements or new takes/discharges proposed.

- No changes to recreational releases (continue up to 26 releases per year).



trialling elver traps at Mangakarengorengo weir (left) and Ruahihi PS (right) - 2021

Location of trial passive elver pass – Opuiaki Weir 2024

Permanent elver trap at Ruahihi PS 2024

Residual Flows

Location	Consented Residual Flows	Proposed Min Residual Flow
Eastern Diversions		
Omanawa River / Omanawa Weir	None	150 l/s
Ruakaka Stream / Ruakaka Drop Pipe	None	None
Mangapapa River / Mangapapa Weir	None	100 l/s
Western Diversions		
Opuiaki River / Opuiaki Weir	280 l/s	280 l/s
Tauwharawhara Stream / Tauwharawhara Drop Pipe	None	None
Ngatuhoa Stream / Ngatuhoa Weir	60 l/s	60 l/s
Awakōtuku Stream / Awakōtuku Drop Pipe	None	None
Middle / Lower Scheme		
Mangakarengorengo River / Weir	40 l/s	40 l/s
Wairoa River / McLaren Falls Dam	None	150 l/s

Existing and new residual flow quantities based on:

- River connectivity;
- Fish passage;
- Waterfall function;
- Fish habitat; and
- Water quality.

Native Fish Passage

Objectives of Native Fish Management Plan

- Ensure that the Kaimai Hydro-Electric Power Scheme provides for the passive passage, where practicable, of native fish species upstream and downstream of the structures associated with the Kaimai Hydro-Electric Power Scheme;
- Provide for the salvage of tuna entrained within the Ruahihi Canal and other areas identified through the Native Fish Management Plan;
- Establish a framework for monitoring the success of any passage or salvage measures that are implemented; and
- Establish the respective roles of the consent holder, [insert hapū entities] in the implementation of the Native Fish Management Plan.

Current and past fish passage works include

- Implementation and trialling of passive upstream passage structure at Opuiaki Weir.
- Built permanent elver trap at Ruahihi Power Station to help recruitment.
- Working with kaitiaki on downstream passage and trap and transfer since 2020.
- Provided holding tank at Ruahihi intake for migrating tuna.
- Modified Ruahihi screen cleaner to reduce mortality / injuries to tuna.
- Scoping unimpeded elver ladder and downstream options at McLaren Dam and Ngatuhoa Weir.

Mana Whenua Kaitiaki Rōpu

Purpose

To facilitate engagement between the consent holder and [insert hapū entities] in respect of the activities authorised by these resource consents, and in relation to enabling mana whenua to:

a) Maintain their relationship with the Wairoa River Catchment;

b) Be kept informed on any additional environmental monitoring undertaken by the consent holder as part of the exercise of these resource consents; and

c) Provide recommendations to, and request responses from, the consent holder in respect of the matters listed above or other matters that the Mana Whenua Kaitiaki Rōpū may raise from time to time.

Sediment Monitoring

Key Objectives

To monitor any long-term changes in sediment continuity in the Omanawa and Wairoa River that may be a result of the continued operation of the Kaimai HEPS.

Sediment Monitoring will address

- Summary of baseline geomorphic conditions;
- Monitoring methodology;
- Reporting requirements; and
- Recommendations.

Wairoa River, d/s of PS looking u/s

Proposed Conditions

Structure/content of proposed conditions:

- General conditions (Section 1).
  - Certification (Sections 1.5 – 1.6).
  - Flow Monitoring (Sections 1.7 – 1.12).
  - Review of Consent Conditions (Section 1.13).
- Operational Conditions (Sections 2 – 11) separated into:
  - Eastern Diversions;
  - Western Diversions;
  - Power Stations and Lakes;
  - Mangakarengorengo River; and
  - Ruahihi Canal.
- Sediment Monitoring (Section 12).
- Native Fish Management Plan (Section 13).
- Water Temperature Monitoring (Section 14).
- Mana Whenua Kaitiaki Rōpu (Section 15).
- Appendix B: Water Measurement Sites / Systems for the Kaimai Hydro-Electric Power Scheme.