



Mangatangi Dam 2024-2025 Annual Report

Final - November 2025

Watercare 

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REVISION HISTORY

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DD/MM/YYYY	Michiel Jonker	Environmental Care Manager	

CONSENT CHANGE AND MONITORING HISTORY

Change type	Description	Effective date	Reference / condition	Reporting / monitoring implications
Monitoring site reinstatement	Site A, downstream of the Mangatangi Dam, was inaccessible for environmental monitoring between April 2021 to November 2024. Safe access was reinstated from December 2024.	December 2024	5	Missing water quality and macroinvertebrate monitoring data between April 2021 to November 2024 for Site A. Analysis between sites must consider this.
Annual report due date	Watercare requested all dam annual reports to be extended from 30 September to 31 October for 2025	15/09/2025	7	Mangatangi Dam report to be submitted by 31 October 2025.

EXECUTIVE SUMMARY

The 2024-2025 annual report for the Mangatangi Dam provides an overview of compliance and monitoring activities conducted over the reporting period from 1 July 2024 to 30 June 2025. The report covers various aspects, including water abstraction, reservoir levels, spillway discharges, compensation flows, environmental monitoring, and pipeline operations, as required under the respective resource consents.

Key findings and highlights from the monitoring activities include:

- **Water usage:** The total volume of water abstracted during the reporting period was 29,715,974 m³ from the Mangatangi Dam, measured accurately with Magflow meters
- **Reservoir levels:** The level was continuously monitored, showing average daily reservoir levels within the expected range. The Mangatangi Dam ranged between 45.5 and 50.2 meters.
- **Compensation flows:** The required minimum flows at the Workman Road hydrological station were met consistently. The annual poukai flows were met on 12 October 2024.
- **Environmental stream monitoring:** Monitoring downstream of the dams highlighted stable water quality and nutrient levels. The macroinvertebrate community index showed stable conditions across sites.
- **Fisheries management:** 459 elvers and 5 galaxiids were transferred above the Mangatangi weir. Six migrating eels were caught in the Mangatangi Dam during the monitoring period.
- **Free discharge valve operations:** A singular free discharge occurred, for the purpose of the annual Poukai.
- **Network Efficiency and Conservation:** Watercare continues its water efficiency efforts, identifying and repairing leaks across the region, reducing non-revenue water, and promoting residential and commercial water conservation initiatives

In conclusion, all resource consent conditions were compliant, and no equipment failures or maintenance activities resulted in adverse environmental effects.

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1 INTRODUCTION

This report contains the monitoring results required annually by the following resource consents for the Mangatangi Dam; 122086, AUTH122087.01.02, AUTH122097.01.02 and AUTH122099.01.02. These consents cover the works in a watercourse, discharge to water, damming and water take respectively.

The conditions of the consents requiring annual reports are listed in Table 1-1.

Table 1-1: Resource consent conditions requiring annual reports.

Reporting information	Consent conditions
Water use	1 (i-iv), 7 (iii)
Reservoir level	2 (i, ii, vi), 7 (iii)
Stream flows	2 (iii, iv, v), 7 (iii)
Fisheries management	4 (ii-x), 7 (iii)
Environmental stream monitoring	5, 7 (iii)
Free discharge valve operations	6 (iii), 7 (iii)

2 WATER USAGE

The daily quantity of water being taken from the Mangatangi Dam is measured by Magflow meters located on the outgoing pipeline. The meters measure to an accuracy of at least $\pm 5\%$, are routinely verified and continually maintained in working condition.

Daily abstraction for the reporting period is shown in Figure 2-1. The full dataset is in Appendix A. Over the 12 months 29,715,974 m³ was abstracted from Mangatangi Dam.

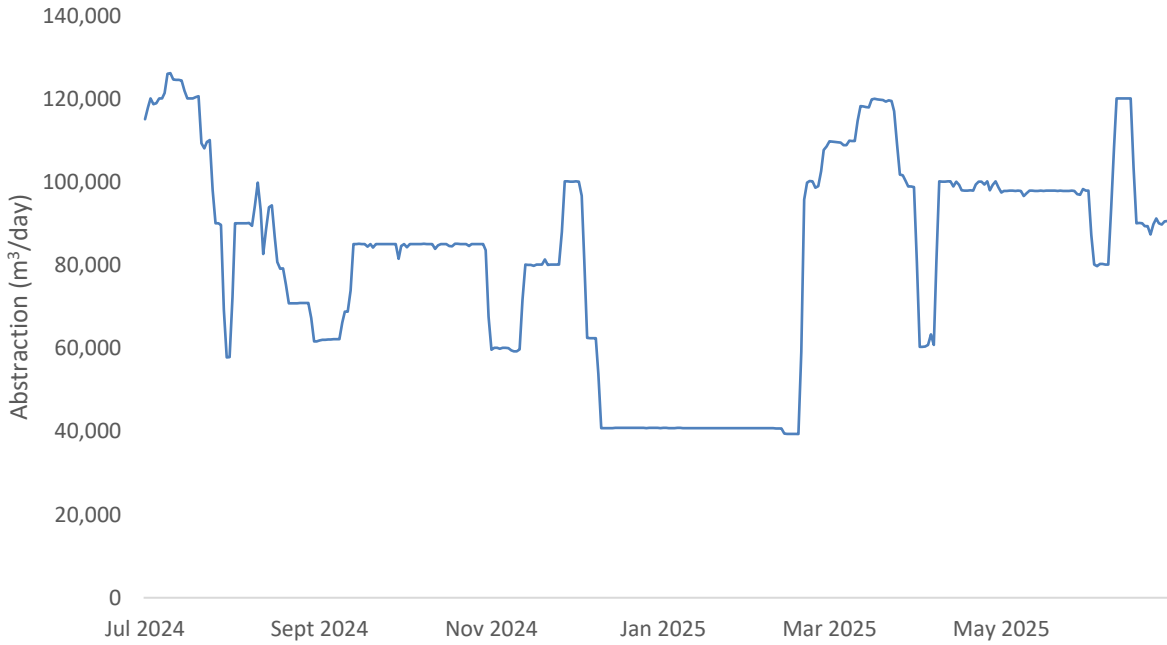


Figure 2-1: Total daily abstraction from Mangatangi Dam for 2024-2025.

3 RESERVOIR LEVEL

The reservoir level is monitored continuously on SCADA by a level transmitter located in the valve tower at Mangatangi Dam.

The daily average reservoir levels for the reporting period are shown in Figure 3-1. The full dataset is in Appendix B. The average daily lake level for Mangatangi Dam ranged between 45.5 – 50.2 m.

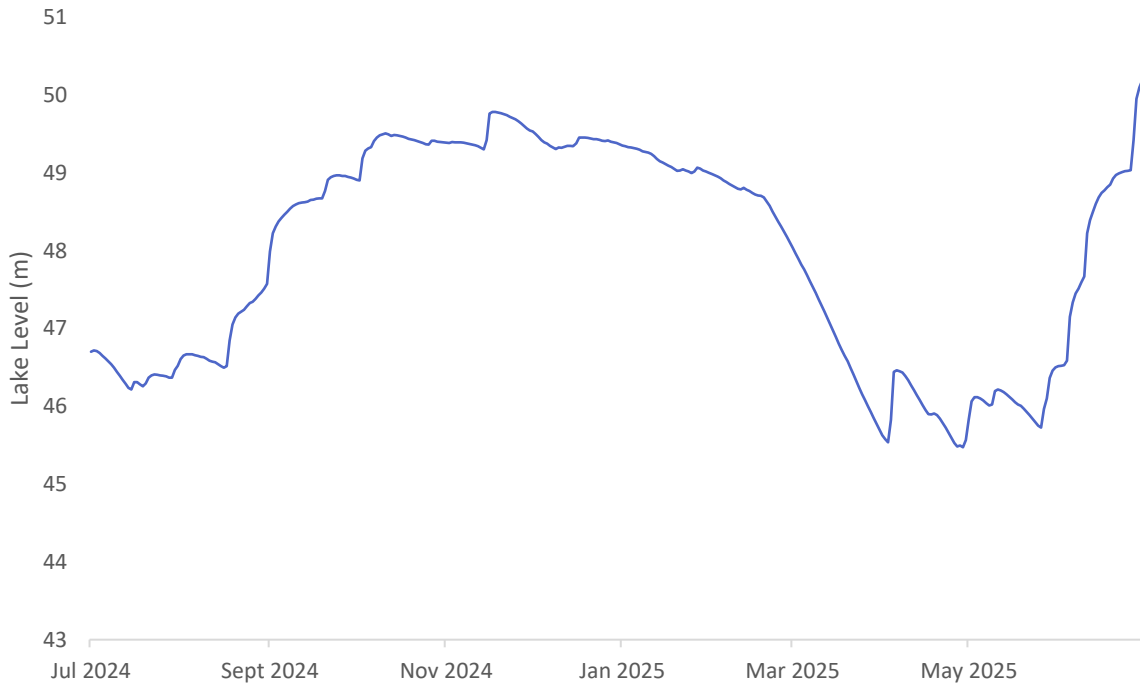


Figure 3-1: Reservoir daily average level for Mangatangi Dam for 2024-2025.

4 COMPENSATION FLOW

As required by special condition 4 of the consents, a minimum residual flow (compensation flow) of 283 L/s for the period 1 December to 30 April, or 200 L/s for the period 1 May to 30 November is required to be maintained in Mangatangi River, measured at the Workman Road hydrological station flume.

The minimum residual flow and daily average stream flow is shown in Figure 4-1. Data was supplied from Watercare’s direct feed from Workman Road hydrological station via the control system network. Compensation flow from Mangatangi Dam is shown in Figure 4-2. The complete dataset is in Appendix C.

Minimum flows were met at the Workman Road hydrological station throughout the reporting period. The lowest recorded flow rate was on 26 May 2025 at 203 L/s, whereas the maximum average daily flow rate was 1,959 L/s on 27 June 2025. Some challenges at the site were faced throughout the year, such as the batteries for the monitoring equipment being stolen on 24 March 2025. Compensation flow compliance was maintained throughout these periods.

The annual Poukai event on 12 October 2024 occurred with an average flow of 1,572 l/s at the hydrological station, with additional discharge from the Dam’s free discharge valve for 10 hours on this date. The flow rate on this date is above the targeted minimum of 1,000 l/s.

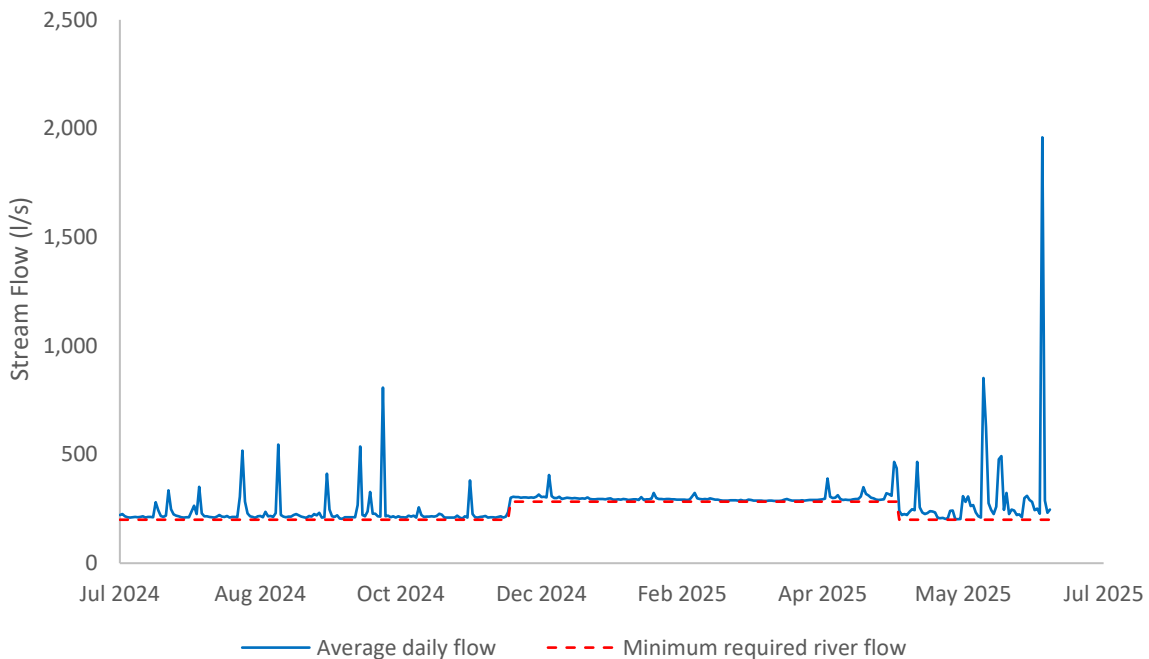


Figure 4-1: Stream flow rate at Workman Road Hydrological Monitoring Station for the reporting period 2024-2025.

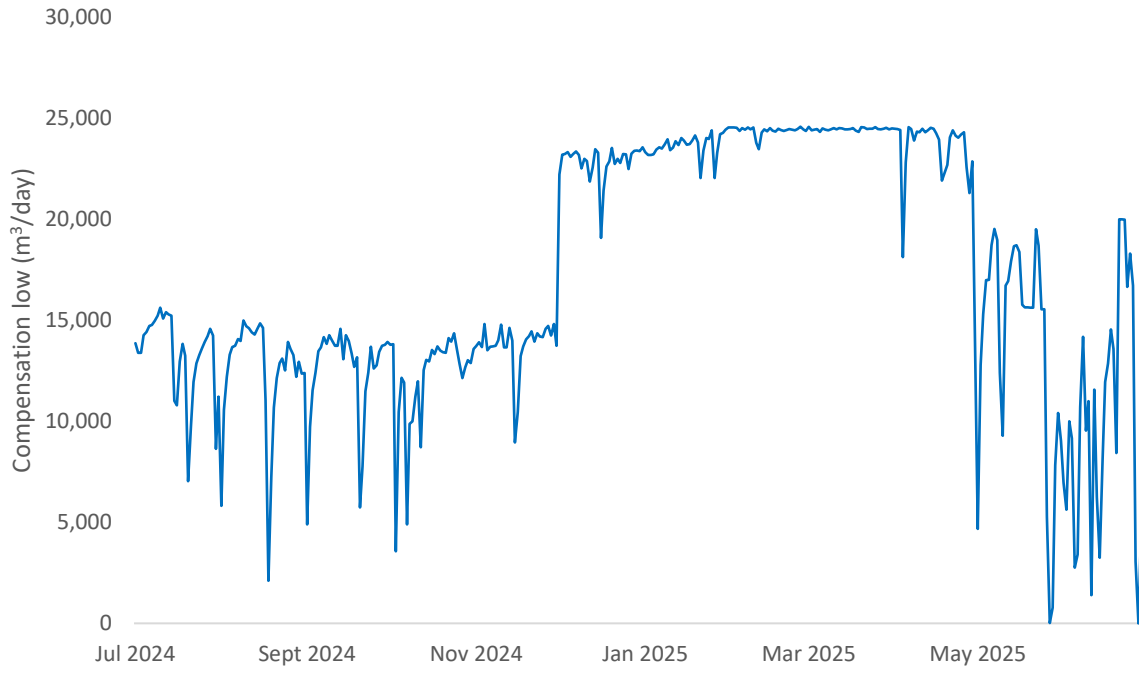


Figure 4-2: Mangatangi compensation flow for the reporting period 2024-2025.

5 FISHERIES MANAGEMENT

Fisheries management for the upstream and downstream transfer of native fish is ongoing at Mangatangi Dam. Ministry of Primary Industries approval has been granted for this work under Special Permit 737. The records from the 2024-2025 trap and haul season are detailed in the annual report to the Ministry of Primary Industries, which is included in Appendix E.

During upstream migration, 459 elvers and 5 galaxiids were transferred above the Mangatangi weir. Six migrating eels were caught in the Mangatangi Dam during the monitoring period.

The benefits of continuing transfer operations are required by condition 4(vi) to be assessed every five years. This was most recently completed in September 2020 and is next scheduled for December 2025.

6 FREE DISCHARGE VALVE OPERATIONS

During the 2024-2025 reporting period, Watercare did not require free discharge valve operations as part of routine maintenance, with the only discharge occurring for the annual Poukai, listed in Table 6-1. Waikato Regional Council and Auckland Council (in its regional parks role) were notified more than 24 hours in advance for the discharge. Turbidity measurements were taken, however technical issues meant that these were not available for reporting.

Table 6-1: Free discharge valve monitoring for Mangatangi Dams for the reporting period 2024-2025.

Date	Duration of discharge	Turbidity before (NTU)	Turbidity during/after (NTU)
12 October 2025	10 hours	1.03	9.75

7 NETWORK EFFICIENCY AND CONSERVATION

Watercare has published the Auckland Water Efficiency Plan 2021 to 2025¹, which includes a section detailing its water efficiency programmes and achievements. In summary, Watercare's water efficiency strategy has four main pillars:

- **Municipal water efficiency programme:** related to reducing water use by Watercare itself, mainly through reuse at its treatment plants, and by Auckland Council, through initiatives targeted at saving 30% of water use.
- **Residential water efficiency programme:** includes working with schools and sports clubs to raise awareness and water-saving campaigns, and a partnership with EcoMatters to give households the opportunity to have their water use audited and receive a report on the water and dollar savings they can achieve through simple changes.
- **Commercial water efficiency programme:** involves working with key costumers to reduce demand from our largest users, through initiatives such as the digital meter roll-out project across high-use industrial users, schools and sports clubs.
- **Non-revenue water reduction programme:** related to initiatives focused on reducing three aspects of non-revenue water: leakage, under-reading of meters, and unauthorised use.

Watercare continues with its proactive leakage detection programme, which is effectively targeting areas for leakage surveying using its district meter areas and its Leakage Management System. We continue to optimise our water networks performance through our pressure management programme, which is reducing the number of leaks and their recurrence of them.

The average consumption of Aucklanders is 257 l/p/d which is within our target for water consumption.

More details on water efficiency initiatives, performance, challenges, targets, and strategies for the future are available directly in the Auckland Water Efficiency Plan 2021 to 2025.

¹ <https://waterefficiencyplan.watercare.co.nz/>

8 ENVIRONMENTAL MONITORING

8.1 Overview

Condition 5 requires water quality, macroinvertebrate and habitat monitoring of two established sites in the Mangatangi catchment, both located downstream of the Mangatangi Dam. An additional location is being monitored on a tributary of the Mangatangi River as a control site above the Mangatangi Dam. Monitoring is undertaken by Watercare Laboratory Services.

8.2 Monitoring sites

The location of the monitoring sites is shown in Figure 8-4. The control site is located at a ponded area of stream, and Sites A and B are located at riffle habitats.

8.2.1 Control site

37°07'06.9"S 175°12'31.0"E

The Control Site monitoring location shown in Figure 8-1 is located on Sharp Stream, a tributary of the Mangatangi River, near the toe of the Dam. The control site is a small, shaded gully stream, whereas Sites A and B are significantly larger with different characteristics.



Figure 8-1: Control Site, looking upstream (February 2025).

8.2.2 Site A

37°07'34.5"S 175°13'25.1"E

The Site A monitoring site shown in Figure 8-2 is located on the Mangatangi Stream, 2.25 km below the toe of Mangatangi Dam, just upstream of the Workman Road bridge. This location was inaccessible for environmental monitoring between April 2021 to November 2024. Safe access was reinstated from December 2024.



Figure 8-2: Site A, looking upstream (February 2025).

8.2.3 Site B

36°57'15.0"S 174°35'55.7"E

The Site B monitoring site shown in Figure 8-3 is located on the Mangatangi Stream, approximately 18.25 km downstream of Site A and 20.5 km downstream of the Mangatangi Dam. The site is located downstream of Mangatangi village near the Mangatangi Marae.



Figure 8-3: Site B, looking upstream (February 2025).

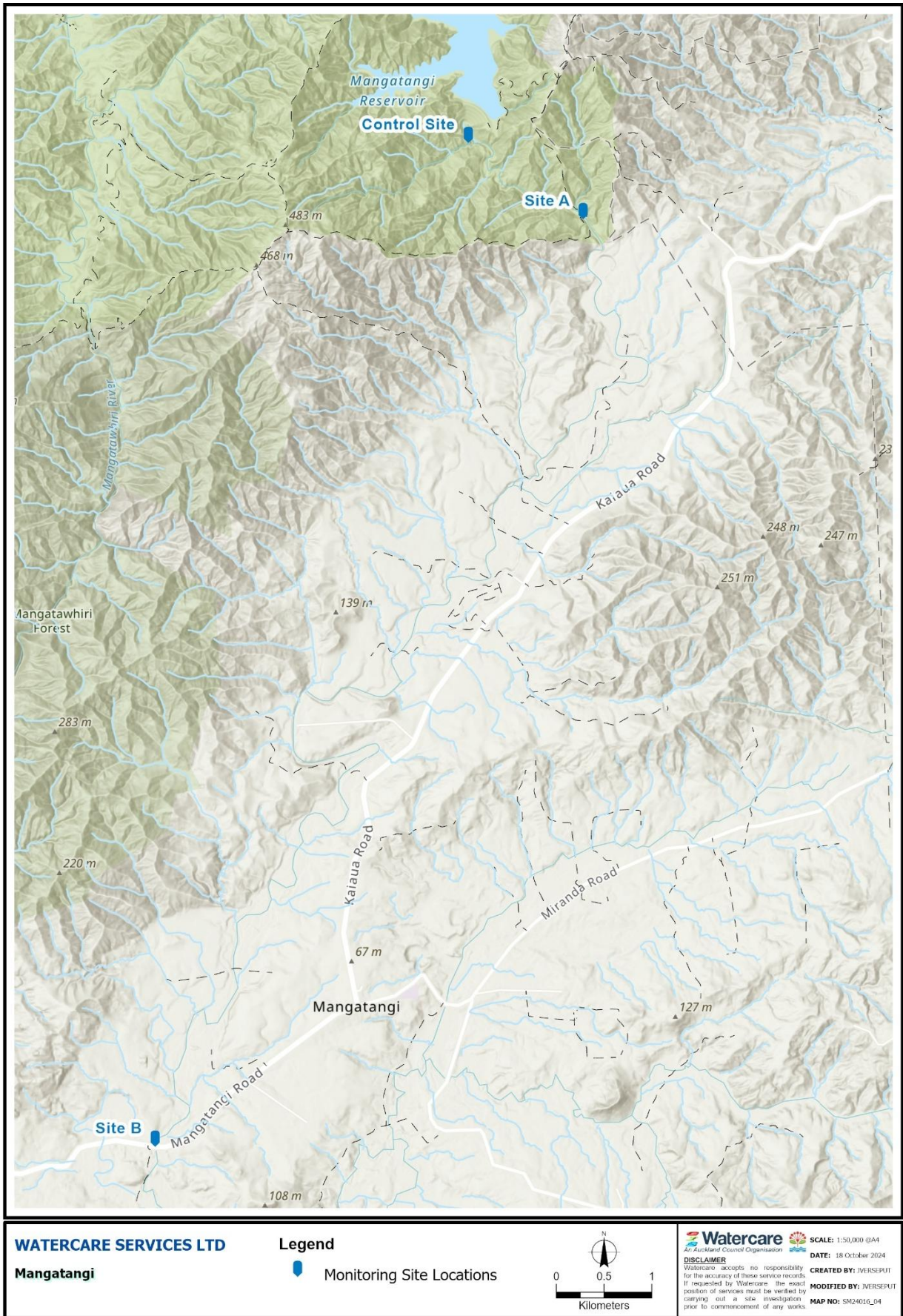


Figure 8-4: Mangatangi catchment monitoring locations.

8.3 Methods

8.3.1 Water quality – discrete monitoring

Discrete water quality samples are collected monthly over summer, between December and May of each year. The parameters analysed at these sites are listed in Table 8-1. Sampling methodology and analysis techniques were carried out in accordance with APHA Standard Methods for the Examination of Water and Wastewater (2011), as per condition 5(vi).

Temperature and dissolved oxygen measurements are taken in situ using a calibrated YSI ProDSS meter. Periphyton composite samples are collected by scraping periphyton from 10 randomly selected rock surfaces².

Table 8-1: Monthly water quality parameters

Parameter	Units
Temperature*	°C
Suspended solids	g/m ³
pH	pH Unit
Conductivity (at 25 °C)*	µS/cm ¹
Turbidity	NTU
Black disc transparency*	m
Dissolved oxygen (DO)*	g/m ³
Dissolved reactive phosphorus (DRP)	gP/m ³
Total phosphorous	gP/m ³
Ammonia nitrogen (NH ₄ -N)	gN/m ³
Nitrate nitrogen (NO ₃ -N)	gN/m ³
Periphyton (<i>Chlorophyll a, b, & c</i>)**	mg/m ²

*Parameters recorded in the field (all others analysed at the laboratory)

**Chlorophyll d is not tested

Best endeavours are made to conduct sampling during periods of flow recession and when there had been rainfall of no greater than 2 mm over the previous 48 hours. When these conditions are unable to be met, sampling is completed before the end of the respective month. For the 2024-2025 monitoring period, the sampling dates and preceding rainfall totals are presented in Table 8-2.

Table 8-2: Discrete water quality sampling dates and rainfall for 2024-2025.

Date	Rainfall 48 hours prior (mm)
20 December 2024	0
21 January 2025	15

² Biggs BJF, Kilroy C, 2000: Stream Periphyton Monitoring Manual. Prepared for Ministry for the Environment, Wellington, New Zealand.

Date	Rainfall 48 hours prior (mm)
20 February 2025	0.5
6 March 2025	10
30 April 2025	34.5

8.3.2 Water quality – continuous monitoring

Condition 5(iv) requires that water temperature is continuously monitored at Site A (control) and Site B between December and May (inclusive) at 5-yearly intervals. Condition 5(iv) requires continuous measurement of dissolved oxygen, pH, temperature and conductivity over a 14-day period between 1 February and 15 April at 5-yearly intervals. Data logs at 10-minute intervals and is manually uploaded once monthly.

The most recent continuous monitoring was completed in 2021-2022. The next monitoring is required in 2026-2027.

8.3.3 Macroinvertebrate and habitat monitoring

Macroinvertebrate samples were collected once in winter (Jun-Jul) and in summer (Jan-Feb) each monitoring period. Five replicate samples were collected using kick-net sampling techniques³. Visual observations of substrate composition and embeddedness were recorded during each macroinvertebrate sampling event. Embeddedness measurements were based on a 50-100 m reach that includes the sampling site. Substrate composition was based on percentage coverage of different substrate sizes, as shown in Table 8-3.

In the 2024-2025 reporting period, macroinvertebrate and habitat monitoring occurred on 13 July 2024 and 6 February 2025.

Table 8-3: Substrate size classes.

Substratum Type	Size
Clay	<0.004 mm
Silt	0.004-0.06 mm
Sand	>0.06-2 mm
Gravel	>2-64 mm
Cobble	>64-256 mm
Boulder	>256 mm
Bedrock	-

8.4 Results

8.5 Water quality – discrete monitoring

The results for the 2024-2025 monitoring period are summarised in Table 8-4.

³ Stark et al. (2001). Protocols for sampling macroinvertebrates in wadeable streams

The control site recorded lower average temperatures (13.9 °C) compared to Site A (17.5 °C) and Site B (18.3 °C), indicating progressive warming downstream, reflecting the differences in site characteristics. pH had slightly more neutral to mildly acidic conditions observed downstream. The control site exhibited the highest dissolved oxygen, gradually declining downstream, consistent with the increases in temperature.

Site B showed higher turbidity and suspended solids compared to the Control Site and Site B likely reflecting the farmland surrounds. Ammoniacal Nitrogen and Nitrate Nitrogen were generally very low across all sites - well within the NPS-FM 2020 A-band thresholds for rivers (< 0.03 mg/L for ammoniacal-N toxicity; < 0.444 mg/L for nitrate toxicity). Dissolved reactive phosphorus ranged 0.006–0.021 mg/L - low concentrations typical of upland reference streams, indicating limited nutrient enrichment.

Chlorophyll *a* levels were highest at Site A (0.5 mg/m²), followed by Site B (0.2 mg/m²), with no measurable chlorophyll at the control site. All results were well below the recommended maximum chlorophyll *a* value (50 mg/m²) for the protection of benthic biodiversity⁴. These results indicate excellent control of algal growth and low risk of periphyton proliferation.

Table 8-4: Summary results (mean ± 95% confidence interval) of macroinvertebrate community metrics for the Mangatangi monitoring sites 2024-2025.

Parameter	Unit	Control site	Site A	Site B
Ammoniacal Nitrogen	mg/L	0.008 ± 0.038	0.005 ± 0.001	0.007 ± 0.003
Chlorophyll A	mg/L	0 ± 0.1	0.5 ± 1.6	0.2 ± 0.4
DO	mg/L	9.8 ± 1.9	9.3 ± 0.4	8.6 ± 0.8
DRP	mg/L	0.021 ± 0.013	0.006 ± 0.003	0.009 ± 0.007
Nitrate	mg/L	0.034 ± 0.032	0.042 ± 0.053	0.018 ± 0.038
Suspended Solids	mg/L	5.8 ± 46.4	6.3 ± 9.2	15.8 ± 36.3
Temperature	°C	13.9 ± 9.5	17.5 ± 1.4	18.3 ± 1.6
Turbidity	NTU	5.6 ± 15.9	8.8 ± 21.7	8.4 ± 18.5
pH	pH unit	7.1 ± 0.8	6.9 ± 0.3	6.8 ± 0.4

8.6 Macroinvertebrate and habitat monitoring

The control site recorded higher MCI values (147 winter; 120 summer) than downstream sites. The control site falls in the “Excellent–Good” range, while Site B’s summer MCI indicates Poor quality, implying stress or habitat alteration downstream (Stark & Maxted, 2007). QMCI values show similar gradients.

EPT taxa were notably higher in winter at Site A compared to the control and Site B. Taxa Richness follows the same trend: higher at Site A and lower downstream.

Overall, the control site supports a highly diverse, sensitive invertebrate community consistent with near-pristine conditions. Downstream decline in MCI and QMCI suggests mild to moderate ecological

⁴ <https://environment.govt.nz/assets/Publications/Files/nz-periphyton-guide-jun00.pdf>

stress below the dam, likely due to altered flow regime and temperature, rather than poor water chemistry. Seasonal variation is apparent - summer communities are generally less diverse and more tolerant.

Table 8-5: Summary results (mean \pm 95% confidence interval) of macroinvertebrate community metrics for the Mangatangi monitoring sites 2024-2025.

Season	Metric	Control Site	Site A	Site B
Winter	EPT taxa	5.3 \pm 2.9	12 \pm 5	7.7 \pm 5.2
Summer	EPT taxa	4 \pm 2.5	4 \pm 2.5	1 \pm 0
Winter	Individuals	15.7 \pm 43.8	289.3 \pm 420.1	383.3 \pm 651.8
Summer	Individuals	25.3 \pm 27.5	159.7 \pm 215.2	10 \pm 12.4
Winter	MCI	147.3 \pm 28.3	130 \pm 24	108 \pm 5
Summer	MCI	120 \pm 32.3	88.7 \pm 15	71 \pm 6.6
Winter	QMCI	7 \pm 2.5	4.7 \pm 1.4	4.7 \pm 1.4
Summer	QMCI	6 \pm 0	4 \pm 0	3.3 \pm 1.4
Winter	Taxa richness	7 \pm 6.6	15 \pm 6.6	13 \pm 6.6
Summer	Taxa richness	5.3 \pm 2.9	7.7 \pm 7.6	4.3 \pm 2.9

8.7 Trend analysis (2013-2025)

A summary of the historical results collected by the lab between December 2013 and May 2024 are presented in Table 8-6 and displayed in Figure 8-5 for water quality, and Table 8-7 for macroinvertebrates.

Chlorophyll *a* showed a significant decreasing trend at all sites, indicating improving periphyton control and lower productivity over time. Dissolved reactive phosphorus also decreased significantly at Site A, indicating reduced phosphorus availability downstream, however there was no significant trend for the control site or Site B. pH decreased slightly at all sites, though remaining within ecological norms.

Dissolved Oxygen increased at the control site, consistent with reduced periphyton and stable water quality. Nitrate increased at the control site, but decreased downstream at Site B, suggesting differing land-use or hydrological influences. Suspended solids increased significantly at Site B, consistent with higher turbidity readings.

EPT taxa, number of individuals and **taxa richness** increased significantly at **Site A**. **Taxa Richness** decreased at **Site B**, suggesting subtle ecological degradation further downstream attributed to the farmland catchment. **No significant changes** in MCI or QMCI across the sites have occurred, indicating overall stability in biological condition.

Overall, the **control site** remains ecologically robust, exhibiting stable or improving conditions in most parameters, whereas **downstream sites** show **localised sediment increases** and slight biological decline at the farthest site (B). **Nutrient reductions** and **declining periphyton** trends are positive indicators of sustained dam management and effective nutrient limitation. The positive trends for Site A do not account for the period of time when data collection was not accessible, with key weather events such as the Auckland Anniversary floods and Cyclone Gabrielle missing from the

data collection period, whereas the Control Site and Site B continued to have data collected through this period.

Table 8-6: Summary results (mean \pm 95% confidence interval) and Mann-Kendall trend analysis results of water quality parameters for the Mangatangi monitoring sites 2013-2025.

Monitoring site	Parameter	Unit	Mean \pm 95% CI	Tau	p-value	Trend
Control Site	Ammoniacal Nitrogen	mg/L	0.016 \pm 0.019	-0.05	0.66	No significant trend
Site A	Ammoniacal Nitrogen	mg/L	0.007 \pm 0.001	0.03	0.8	No significant trend
Site B	Ammoniacal Nitrogen	mg/L	0.007 \pm 0.002	-0.19	0.06	No significant trend
Control Site	Chlorophyll A	mg/L	0.1 \pm 0.0	-0.42	0	Decreasing
Site A	Chlorophyll A	mg/L	2.8 \pm 1.2	-0.3	0	Decreasing
Site B	Chlorophyll A	mg/L	3.0 \pm 1.0	-0.3	0	Decreasing
Control Site	DO	mg/L	9.7 \pm 0.2	0.19	0.04	Increasing
Site A	DO	mg/L	9.1 \pm 0.3	0.02	0.83	No significant trend
Site B	DO	mg/L	9.0 \pm 0.2	-0.12	0.17	No significant trend
Control Site	DRP	mg/L	0.021 \pm 0.001	-0.12	0.2	No significant trend
Site A	DRP	mg/L	0.010 \pm 0.002	-0.29	0.01	Decreasing
Site B	DRP	mg/L	0.009 \pm 0.001	-0.05	0.58	No significant trend
Control Site	Nitrate	mg/L	0.020 \pm 0.002	0.3	0	Increasing
Site A	Nitrate	mg/L	0.050 \pm 0.014	0.1	0.35	No significant trend
Site B	Nitrate	mg/L	0.036 \pm 0.019	-0.18	0.05	Decreasing
Control Site	pH	pH unit	7.5 \pm 0.1	-0.49	0	Decreasing
Site A	pH	pH unit	7.3 \pm 0.1	-0.54	0	Decreasing
Site B	pH	pH unit	7.3 \pm 0.1	-0.56	0	Decreasing
Control Site	Suspended Solids	mg/L	14.6 \pm 7.3	0.13	0.15	No significant trend
Site A	Suspended Solids	mg/L	8.5 \pm 9.5	0.04	0.73	No significant trend
Site B	Suspended Solids	mg/L	14.0 \pm 17.0	0.23	0.01	Increasing
Control Site	Temperature	$^{\circ}$ C	14.5 \pm 0.4	-0.09	0.32	No significant trend
Site A	Temperature	$^{\circ}$ C	17.7 \pm 0.5	-0.04	0.72	No significant trend
Site B	Temperature	$^{\circ}$ C	18.4 \pm 0.6	-0.06	0.49	No significant trend
Control Site	Turbidity	NTU	9.4 \pm 5.6	0.12	0.18	No significant trend
Site A	Turbidity	NTU	13.3 \pm 18.7	-0.19	0.07	No significant trend

Monitoring site	Parameter	Unit	Mean \pm 95% CI	Tau	p-value	Trend
Site B	Turbidity	NTU	12.6 \pm 15.3	0.09	0.34	No significant trend

Table 8-7: Summary results (mean \pm 95% confidence interval) and Mann-Kendall trend analysis results of macroinvertebrate community metrics for the Mangatangi monitoring sites 2013-2025.

Monitoring site	Metric	Mean \pm 95% CI	Tau	p-value	Trend
Control Site	EPT taxa	7.3 (\pm 0.7)	0.1285	0.1336	No significant trend
Site A	EPT taxa	7.8 (\pm 1.0)	0.4018	0.0001	Increasing
Site B	EPT taxa	6.5 (\pm 0.7)	-0.1436	0.0958	No significant trend
Control Site	Individuals	45.1 (\pm 8.0)	0.0382	0.6484	No significant trend
Site A	Individuals	250.8 (\pm 62.5)	0.2699	0.0053	Increasing
Site B	Individuals	169.8 (\pm 33.7)	-0.1336	0.1061	No significant trend
Control Site	MCI	141.1 (\pm 3.4)	0.0606	0.4681	No significant trend
Site A	MCI	110.7 (\pm 4.1)	0.1789	0.0684	No significant trend
Site B	MCI	104.8 (\pm 3.2)	-0.0099	0.9092	No significant trend
Control Site	QMCI	7.2 (\pm 0.2)	-0.139	0.1378	No significant trend
Site A	QMCI	4.9 (\pm 0.3)	0.0856	0.4252	No significant trend
Site B	QMCI	4.8 (\pm 0.2)	0.0066	0.9475	No significant trend
Control Site	Taxa richness	10.2 (\pm 0.9)	0.0128	0.8841	No significant trend
Site A	Taxa richness	12.9 (\pm 1.3)	0.3249	0.0011	Increasing
Site B	Taxa richness	11.4 (\pm 1.0)	-0.2222	0.0092	Decreasing

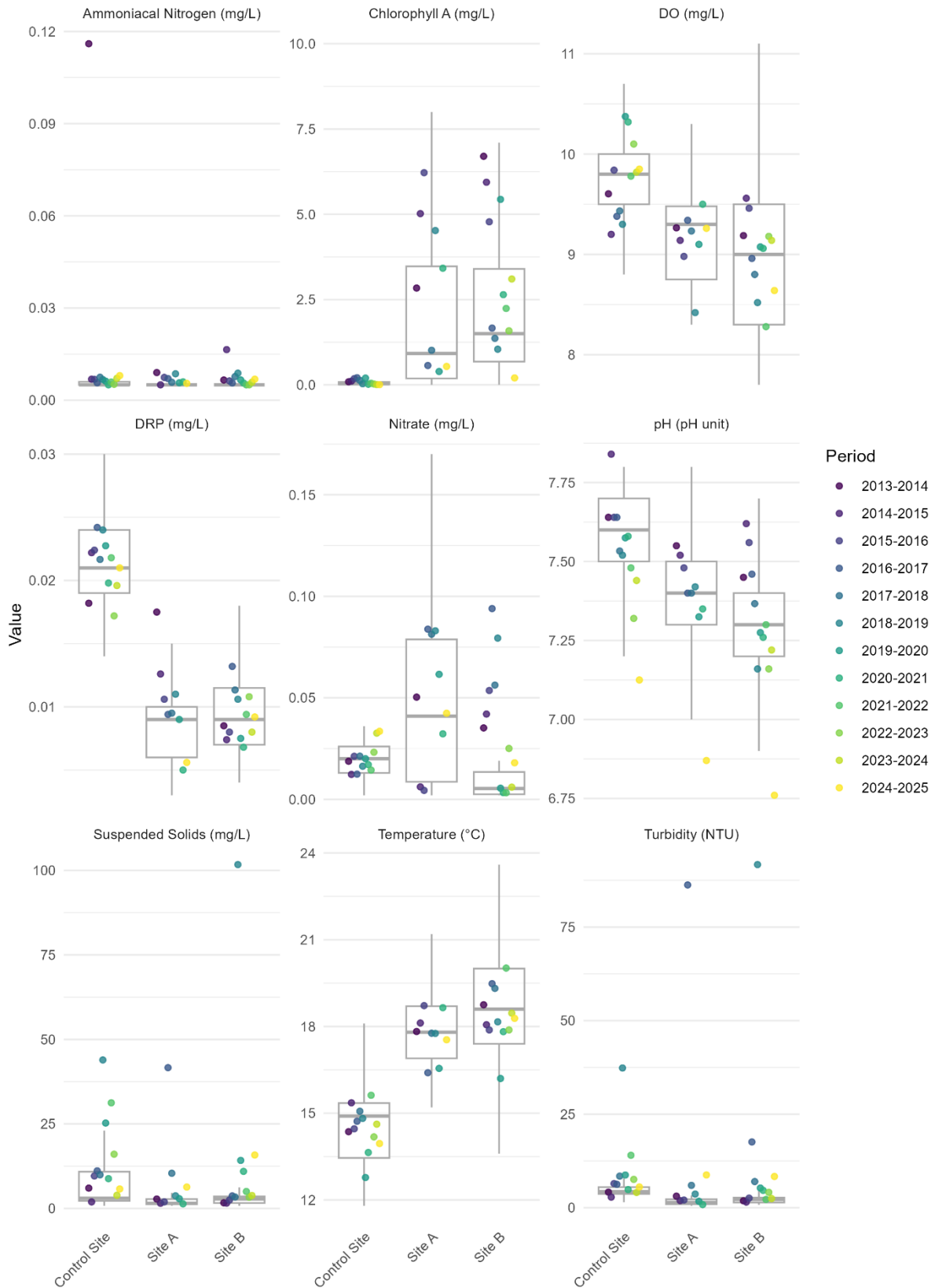


Figure 8-5: Seasonal averages (Dec-Apr) of the Mangatangi water quality monitoring results (2013-2025).

9 CONCLUSION

This report presents the required data for the period of 1 July 2024 to 30 June 2025 for the Mangatangi Dam. All consent conditions were fully compliant throughout the monitoring period.

There were no equipment failures or maintenance activities undertaken in the reporting period that resulted in a discharge that had an observed adverse environmental effect.

The environmental stream monitoring indicates some variability in water quality and macroinvertebrate communities, although this attributed to localised differences in the structure of substrate and cover rather than flow or water quality related changes.

Appendix A. Daily Water Abstraction Volumes

Date	Abstraction (m ³ /day)	Date (continued)	Abstraction (m ³ /day)
1/07/2024	115,139	1/01/2025	40,838
2/07/2024	117,952	2/01/2025	40,842
3/07/2024	120,114	3/01/2025	40,825
4/07/2024	118,696	4/01/2025	40,825
5/07/2024	118,931	5/01/2025	40,805
6/07/2024	120,121	6/01/2025	40,838
7/07/2024	120,122	7/01/2025	40,836
8/07/2024	121,444	8/01/2025	40,829
9/07/2024	126,073	9/01/2025	40,834
10/07/2024	126,197	10/01/2025	40,834
11/07/2024	124,636	11/01/2025	40,824
12/07/2024	124,567	12/01/2025	40,814
13/07/2024	124,547	13/01/2025	40,809
14/07/2024	124,466	14/01/2025	40,803
15/07/2024	121,956	15/01/2025	40,803
16/07/2024	120,116	16/01/2025	40,801
17/07/2024	120,084	17/01/2025	40,807
18/07/2024	120,092	18/01/2025	40,799
19/07/2024	120,405	19/01/2025	40,791
20/07/2024	120,647	20/01/2025	40,785
21/07/2024	109,362	21/01/2025	40,766
22/07/2024	108,100	22/01/2025	40,769
23/07/2024	109,661	23/01/2025	40,776
24/07/2024	110,117	24/01/2025	40,788
25/07/2024	98,111	25/01/2025	40,777
26/07/2024	90,118	26/01/2025	40,772
27/07/2024	90,096	27/01/2025	40,808
28/07/2024	89,677	28/01/2025	40,826
29/07/2024	69,325	29/01/2025	40,825
30/07/2024	57,845	30/01/2025	40,818
31/07/2024	57,884	31/01/2025	40,820
1/08/2024	72,331	1/02/2025	40,819
2/08/2024	90,103	2/02/2025	40,816
3/08/2024	90,100	3/02/2025	40,808
4/08/2024	90,107	4/02/2025	40,797

Date	Abstraction (m ³ /day)	Date (continued)	Abstraction (m ³ /day)
5/08/2024	90,101	5/02/2025	40,781
6/08/2024	90,107	6/02/2025	40,774
7/08/2024	90,123	7/02/2025	40,766
8/08/2024	89,462	8/02/2025	40,759
9/08/2024	94,285	9/02/2025	40,764
10/08/2024	99,824	10/02/2025	40,752
11/08/2024	93,331	11/02/2025	40,747
12/08/2024	82,671	12/02/2025	40,742
13/08/2024	88,728	13/02/2025	39,504
14/08/2024	93,911	14/02/2025	39,434
15/08/2024	94,406	15/02/2025	39,423
16/08/2024	86,781	16/02/2025	39,406
17/08/2024	80,741	17/02/2025	39,396
18/08/2024	79,128	18/02/2025	39,393
19/08/2024	79,255	19/02/2025	59,161
20/08/2024	75,262	20/02/2025	95,781
21/08/2024	70,820	21/02/2025	99,835
22/08/2024	70,861	22/02/2025	100,234
23/08/2024	70,849	23/02/2025	100,168
24/08/2024	70,865	24/02/2025	98,606
25/08/2024	70,892	25/02/2025	99,029
26/08/2024	70,900	26/02/2025	102,627
27/08/2024	70,897	27/02/2025	107,750
28/08/2024	70,915	28/02/2025	108,595
29/08/2024	67,317	1/03/2025	109,800
30/08/2024	61,637	2/03/2025	109,705
31/08/2024	61,664	3/03/2025	109,633
1/09/2024	61,895	4/03/2025	109,543
2/09/2024	62,042	5/03/2025	109,499
3/09/2024	62,058	6/03/2025	108,847
4/09/2024	62,091	7/03/2025	108,870
5/09/2024	62,142	8/03/2025	109,924
6/09/2024	62,182	9/03/2025	109,887
7/09/2024	62,186	10/03/2025	109,846
8/09/2024	62,186	11/03/2025	114,692

Date	Abstraction (m ³ /day)	Date (continued)	Abstraction (m ³ /day)
9/09/2024	66,233	12/03/2025	118,244
10/09/2024	68,820	13/03/2025	118,159
11/09/2024	68,855	14/03/2025	118,062
12/09/2024	73,917	15/03/2025	117,983
13/09/2024	85,096	16/03/2025	119,911
14/09/2024	85,106	17/03/2025	120,051
15/09/2024	85,126	18/03/2025	119,905
16/09/2024	85,082	19/03/2025	119,798
17/09/2024	85,085	20/03/2025	119,756
18/09/2024	84,478	21/03/2025	119,366
19/09/2024	85,110	22/03/2025	119,663
20/09/2024	84,198	23/03/2025	119,520
21/09/2024	85,090	24/03/2025	117,053
22/09/2024	85,094	25/03/2025	109,171
23/09/2024	85,076	26/03/2025	101,753
24/09/2024	85,067	27/03/2025	101,660
25/09/2024	85,089	28/03/2025	100,221
26/09/2024	85,107	29/03/2025	98,972
27/09/2024	85,103	30/03/2025	98,901
28/09/2024	85,095	31/03/2025	98,819
29/09/2024	81,499	1/04/2025	80,878
30/09/2024	84,605	2/04/2025	60,357
1/10/2024	85,101	3/04/2025	60,332
2/10/2024	84,278	4/04/2025	60,428
3/10/2024	85,089	5/04/2025	60,793
4/10/2024	85,098	6/04/2025	63,336
5/10/2024	85,100	7/04/2025	60,798
6/10/2024	85,113	8/04/2025	80,754
7/10/2024	85,098	9/04/2025	100,142
8/10/2024	85,117	10/04/2025	100,120
9/10/2024	85,108	11/04/2025	100,131
10/10/2024	85,097	12/04/2025	100,136
11/10/2024	85,091	13/04/2025	100,142
12/10/2024	83,901	14/04/2025	98,912
13/10/2024	84,740	15/04/2025	100,120

Date	Abstraction (m ³ /day)	Date (continued)	Abstraction (m ³ /day)
14/10/2024	85,088	16/04/2025	99,300
15/10/2024	85,088	17/04/2025	97,998
16/10/2024	85,085	18/04/2025	97,975
17/10/2024	84,616	19/04/2025	97,970
18/10/2024	84,505	20/04/2025	97,981
19/10/2024	85,122	21/04/2025	97,937
20/10/2024	85,130	22/04/2025	99,400
21/10/2024	85,096	23/04/2025	100,132
22/10/2024	85,103	24/04/2025	100,122
23/10/2024	85,113	25/04/2025	99,392
24/10/2024	84,604	26/04/2025	100,134
25/10/2024	85,110	27/04/2025	98,038
26/10/2024	85,108	28/04/2025	99,316
27/10/2024	85,108	29/04/2025	100,166
28/10/2024	85,094	30/04/2025	98,724
29/10/2024	85,104	1/05/2025	97,466
30/10/2024	83,610	2/05/2025	97,888
31/10/2024	67,614	3/05/2025	97,894
1/11/2024	59,661	4/05/2025	97,919
2/11/2024	60,104	5/05/2025	97,910
3/11/2024	60,098	6/05/2025	97,885
4/11/2024	59,918	7/05/2025	97,928
5/11/2024	60,088	8/05/2025	97,887
6/11/2024	60,089	9/05/2025	96,646
7/11/2024	60,085	10/05/2025	97,316
8/11/2024	59,524	11/05/2025	97,906
9/11/2024	59,301	12/05/2025	97,902
10/11/2024	59,302	13/05/2025	97,886
11/11/2024	59,737	14/05/2025	97,893
12/11/2024	71,675	15/05/2025	97,919
13/11/2024	80,115	16/05/2025	97,897
14/11/2024	80,110	17/05/2025	97,929
15/11/2024	80,098	18/05/2025	97,923
16/11/2024	79,834	19/05/2025	97,908
17/11/2024	80,118	20/05/2025	97,910

Date	Abstraction (m ³ /day)	Date (continued)	Abstraction (m ³ /day)
18/11/2024	80,127	21/05/2025	97,891
19/11/2024	80,123	22/05/2025	97,913
20/11/2024	81,406	23/05/2025	97,897
21/11/2024	80,105	24/05/2025	97,870
22/11/2024	80,129	25/05/2025	97,877
23/11/2024	80,123	26/05/2025	97,907
24/11/2024	80,125	27/05/2025	97,890
25/11/2024	80,139	28/05/2025	97,097
26/11/2024	87,988	29/05/2025	96,923
27/11/2024	100,146	30/05/2025	98,350
28/11/2024	100,137	31/05/2025	97,912
29/11/2024	100,122	1/06/2025	97,911
30/11/2024	100,110	2/06/2025	87,241
1/12/2024	100,133	3/06/2025	80,120
2/12/2024	100,110	4/06/2025	79,742
3/12/2024	96,696	5/06/2025	80,278
4/12/2024	81,131	6/06/2025	80,276
5/12/2024	62,496	7/06/2025	80,114
6/12/2024	62,469	8/06/2025	80,113
7/12/2024	62,472	9/06/2025	93,631
8/12/2024	62,440	10/06/2025	108,358
9/12/2024	53,830	11/06/2025	120,140
10/12/2024	40,807	12/06/2025	120,134
11/12/2024	40,795	13/06/2025	120,138
12/12/2024	40,800	14/06/2025	120,153
13/12/2024	40,804	15/06/2025	120,147
14/12/2024	40,822	16/06/2025	120,147
15/12/2024	40,855	17/06/2025	103,444
16/12/2024	40,881	18/06/2025	90,108
17/12/2024	40,877	19/06/2025	90,126
18/12/2024	40,866	20/06/2025	90,069
19/12/2024	40,862	21/06/2025	89,359
20/12/2024	40,863	22/06/2025	89,382
21/12/2024	40,850	23/06/2025	87,361
22/12/2024	40,858	24/06/2025	89,846

Date	Abstraction (m ³ /day)	Date (continued)	Abstraction (m ³ /day)
23/12/2024	40,854	25/06/2025	91,208
24/12/2024	40,860	26/06/2025	90,103
25/12/2024	40,843	27/06/2025	89,740
26/12/2024	40,824	28/06/2025	90,516
27/12/2024	40,842	29/06/2025	90,628
28/12/2024	40,855	30/06/2025	90,287
29/12/2024	40,855		
30/12/2024	40,851		
31/12/2024	40,832		

Appendix B. Daily average reservoir level

Date	Reservoir level (m)	Date (continued)	Reservoir level (m)
1/07/2024	46.701	1/01/2025	49.353
2/07/2024	46.719	2/01/2025	49.341
3/07/2024	46.710	3/01/2025	49.330
4/07/2024	46.686	4/01/2025	49.325
5/07/2024	46.647	5/01/2025	49.320
6/07/2024	46.613	6/01/2025	49.309
7/07/2024	46.576	7/01/2025	49.296
8/07/2024	46.539	8/01/2025	49.279
9/07/2024	46.494	9/01/2025	49.267
10/07/2024	46.444	10/01/2025	49.259
11/07/2024	46.392	11/01/2025	49.246
12/07/2024	46.341	12/01/2025	49.215
13/07/2024	46.289	13/01/2025	49.180
14/07/2024	46.237	14/01/2025	49.149
15/07/2024	46.217	15/01/2025	49.132
16/07/2024	46.312	16/01/2025	49.113
17/07/2024	46.310	17/01/2025	49.092
18/07/2024	46.280	18/01/2025	49.074
19/07/2024	46.257	19/01/2025	49.049
20/07/2024	46.295	20/01/2025	49.027
21/07/2024	46.366	21/01/2025	49.031
22/07/2024	46.395	22/01/2025	49.048
23/07/2024	46.409	23/01/2025	49.032
24/07/2024	46.407	24/01/2025	49.016
25/07/2024	46.397	25/01/2025	48.996
26/07/2024	46.392	26/01/2025	49.020
27/07/2024	46.383	27/01/2025	49.068
28/07/2024	46.370	28/01/2025	49.053
29/07/2024	46.366	29/01/2025	49.032
30/07/2024	46.466	30/01/2025	49.019
31/07/2024	46.519	31/01/2025	49.003
1/08/2024	46.605	1/02/2025	48.986
2/08/2024	46.652	2/02/2025	48.967
3/08/2024	46.667	3/02/2025	48.952
4/08/2024	46.670	4/02/2025	48.930

Date	Reservoir level (m)	Date (continued)	Reservoir level (m)
5/08/2024	46.668	5/02/2025	48.903
6/08/2024	46.658	6/02/2025	48.883
7/08/2024	46.648	7/02/2025	48.859
8/08/2024	46.637	8/02/2025	48.836
9/08/2024	46.630	9/02/2025	48.818
10/08/2024	46.611	10/02/2025	48.796
11/08/2024	46.588	11/02/2025	48.789
12/08/2024	46.574	12/02/2025	48.807
13/08/2024	46.567	13/02/2025	48.785
14/08/2024	46.541	14/02/2025	48.767
15/08/2024	46.517	15/02/2025	48.742
16/08/2024	46.494	16/02/2025	48.723
17/08/2024	46.515	17/02/2025	48.710
18/08/2024	46.846	18/02/2025	48.705
19/08/2024	47.051	19/02/2025	48.683
20/08/2024	47.141	20/02/2025	48.633
21/08/2024	47.190	21/02/2025	48.576
22/08/2024	47.217	22/02/2025	48.505
23/08/2024	47.239	23/02/2025	48.439
24/08/2024	47.285	24/02/2025	48.373
25/08/2024	47.325	25/02/2025	48.312
26/08/2024	47.345	26/02/2025	48.246
27/08/2024	47.379	27/02/2025	48.179
28/08/2024	47.427	28/02/2025	48.107
29/08/2024	47.464	1/03/2025	48.037
30/08/2024	47.511	2/03/2025	47.966
31/08/2024	47.572	3/03/2025	47.893
1/09/2024	47.988	4/03/2025	47.822
2/09/2024	48.224	5/03/2025	47.760
3/09/2024	48.310	6/03/2025	47.684
4/09/2024	48.375	7/03/2025	47.607
5/09/2024	48.420	8/03/2025	47.532
6/09/2024	48.461	9/03/2025	47.458
7/09/2024	48.500	10/03/2025	47.377
8/09/2024	48.542	11/03/2025	47.300

Date	Reservoir level (m)	Date (continued)	Reservoir level (m)
9/09/2024	48.573	12/03/2025	47.220
10/09/2024	48.593	13/03/2025	47.139
11/09/2024	48.609	14/03/2025	47.057
12/09/2024	48.618	15/03/2025	46.974
13/09/2024	48.624	16/03/2025	46.889
14/09/2024	48.630	17/03/2025	46.806
15/09/2024	48.650	18/03/2025	46.727
16/09/2024	48.654	19/03/2025	46.651
17/09/2024	48.668	20/03/2025	46.577
18/09/2024	48.673	21/03/2025	46.493
19/09/2024	48.672	22/03/2025	46.409
20/09/2024	48.768	23/03/2025	46.323
21/09/2024	48.910	24/03/2025	46.236
22/09/2024	48.944	25/03/2025	46.154
23/09/2024	48.960	26/03/2025	46.078
24/09/2024	48.969	27/03/2025	46.000
25/09/2024	48.967	28/03/2025	45.926
26/09/2024	48.961	29/03/2025	45.851
27/09/2024	48.959	30/03/2025	45.775
28/09/2024	48.949	31/03/2025	45.701
29/09/2024	48.941	1/04/2025	45.628
30/09/2024	48.928	2/04/2025	45.580
1/10/2024	48.910	3/04/2025	45.537
2/10/2024	48.904	4/04/2025	45.825
3/10/2024	49.185	5/04/2025	46.443
4/10/2024	49.287	6/04/2025	46.464
5/10/2024	49.315	7/04/2025	46.450
6/10/2024	49.332	8/04/2025	46.433
7/10/2024	49.410	9/04/2025	46.389
8/10/2024	49.455	10/04/2025	46.334
9/10/2024	49.481	11/04/2025	46.270
10/10/2024	49.497	12/04/2025	46.209
11/10/2024	49.507	13/04/2025	46.142
12/10/2024	49.494	14/04/2025	46.080
13/10/2024	49.476	15/04/2025	46.013

Date	Reservoir level (m)	Date (continued)	Reservoir level (m)
14/10/2024	49.485	16/04/2025	45.951
15/10/2024	49.482	17/04/2025	45.898
16/10/2024	49.476	18/04/2025	45.896
17/10/2024	49.467	19/04/2025	45.906
18/10/2024	49.455	20/04/2025	45.887
19/10/2024	49.438	21/04/2025	45.840
20/10/2024	49.431	22/04/2025	45.784
21/10/2024	49.422	23/04/2025	45.727
22/10/2024	49.409	24/04/2025	45.660
23/10/2024	49.395	25/04/2025	45.595
24/10/2024	49.383	26/04/2025	45.530
25/10/2024	49.367	27/04/2025	45.483
26/10/2024	49.363	28/04/2025	45.496
27/10/2024	49.413	29/04/2025	45.473
28/10/2024	49.412	30/04/2025	45.567
29/10/2024	49.401	1/05/2025	45.831
30/10/2024	49.398	2/05/2025	46.065
31/10/2024	49.391	3/05/2025	46.115
1/11/2024	49.388	4/05/2025	46.118
2/11/2024	49.386	5/05/2025	46.100
3/11/2024	49.396	6/05/2025	46.076
4/11/2024	49.394	7/05/2025	46.040
5/11/2024	49.393	8/05/2025	46.010
6/11/2024	49.392	9/05/2025	46.023
7/11/2024	49.387	10/05/2025	46.197
8/11/2024	49.381	11/05/2025	46.215
9/11/2024	49.371	12/05/2025	46.204
10/11/2024	49.362	13/05/2025	46.181
11/11/2024	49.355	14/05/2025	46.153
12/11/2024	49.343	15/05/2025	46.121
13/11/2024	49.322	16/05/2025	46.088
14/11/2024	49.301	17/05/2025	46.052
15/11/2024	49.420	18/05/2025	46.022
16/11/2024	49.761	19/05/2025	46.005
17/11/2024	49.785	20/05/2025	45.969

Date	Reservoir level (m)	Date (continued)	Reservoir level (m)
18/11/2024	49.783	21/05/2025	45.929
19/11/2024	49.774	22/05/2025	45.886
20/11/2024	49.765	23/05/2025	45.841
21/11/2024	49.755	24/05/2025	45.795
22/11/2024	49.742	25/05/2025	45.750
23/11/2024	49.723	26/05/2025	45.725
24/11/2024	49.705	27/05/2025	45.966
25/11/2024	49.689	28/05/2025	46.102
26/11/2024	49.663	29/05/2025	46.364
27/11/2024	49.635	30/05/2025	46.458
28/11/2024	49.602	31/05/2025	46.500
29/11/2024	49.569	1/06/2025	46.516
30/11/2024	49.546	2/06/2025	46.522
1/12/2024	49.531	3/06/2025	46.530
2/12/2024	49.498	4/06/2025	46.587
3/12/2024	49.461	5/06/2025	47.148
4/12/2024	49.421	6/06/2025	47.336
5/12/2024	49.394	7/06/2025	47.452
6/12/2024	49.374	8/06/2025	47.513
7/12/2024	49.349	9/06/2025	47.596
8/12/2024	49.325	10/06/2025	47.667
9/12/2024	49.308	11/06/2025	48.225
10/12/2024	49.325	12/06/2025	48.392
11/12/2024	49.321	13/06/2025	48.498
12/12/2024	49.335	14/06/2025	48.601
13/12/2024	49.348	15/06/2025	48.683
14/12/2024	49.346	16/06/2025	48.742
15/12/2024	49.341	17/06/2025	48.777
16/12/2024	49.381	18/06/2025	48.817
17/12/2024	49.456	19/06/2025	48.850
18/12/2024	49.455	20/06/2025	48.929
19/12/2024	49.453	21/06/2025	48.971
20/12/2024	49.449	22/06/2025	48.993
21/12/2024	49.441	23/06/2025	49.011
22/12/2024	49.435	24/06/2025	49.022

Date	Reservoir level (m)	Date (continued)	Reservoir level (m)
23/12/2024	49.432	25/06/2025	49.026
24/12/2024	49.427	26/06/2025	49.034
25/12/2024	49.411	27/06/2025	49.421
26/12/2024	49.409	28/06/2025	49.954
27/12/2024	49.416	29/06/2025	50.096
28/12/2024	49.401	30/06/2025	50.185
29/12/2024	49.393		
30/12/2024	49.383		
31/12/2024	49.367		

Appendix C. Compensation flow

Date	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)	Date (continued)	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)
1/07/2024	13,864.65	221.13	1/01/2025	23,330.84	296.02
2/07/2024	13,390.20	226.68	2/01/2025	23,190.21	294.15
3/07/2024	13,385.53	215.72	3/01/2025	23,184.13	293.55
4/07/2024	14,262.96	211.52	4/01/2025	23,222.25	295.01
5/07/2024	14,425.95	210.32	5/01/2025	23,449.68	295.14
6/07/2024	14,727.52	211.95	6/01/2025	23,570.34	295.45
7/07/2024	14,775.81	212.23	7/01/2025	23,504.77	294.35
8/07/2024	14,979.11	211.02	8/01/2025	23,706.75	296.37
9/07/2024	15,228.35	212.54	9/01/2025	23,962.57	298.73
10/07/2024	15,634.92	216.24	10/01/2025	23,421.21	292.56
11/07/2024	15,086.66	209.93	11/01/2025	23,549.09	292.90
12/07/2024	15,406.50	212.59	12/01/2025	23,870.81	293.71
13/07/2024	15,300.47	212.18	13/01/2025	23,683.34	292.21
14/07/2024	15,236.44	211.31	14/01/2025	24,024.83	294.95
15/07/2024	11,023.28	281.29	15/01/2025	23,900.60	293.70
16/07/2024	10,789.90	244.02	16/01/2025	23,699.12	291.28
17/07/2024	12,970.62	217.29	17/01/2025	23,730.97	291.76
18/07/2024	13,836.93	213.25	18/01/2025	23,901.39	293.21
19/07/2024	13,244.44	218.42	19/01/2025	24,159.05	293.81
20/07/2024	7,035.96	335.44	20/01/2025	23,811.54	291.31
21/07/2024	9,757.47	248.70	21/01/2025	22,050.13	304.41
22/07/2024	11,958.37	224.95	22/01/2025	23,409.08	290.94
23/07/2024	12,870.23	219.41	23/01/2025	24,023.94	294.18
24/07/2024	13,274.31	215.09	24/01/2025	23,983.46	294.13
25/07/2024	13,594.10	212.01	25/01/2025	24,401.40	296.54
26/07/2024	13,936.92	210.22	26/01/2025	22,038.70	323.58
27/07/2024	14,220.04	211.23	27/01/2025	23,297.79	299.12
28/07/2024	14,586.66	212.01	28/01/2025	24,219.16	295.53
29/07/2024	14,244.79	237.39	29/01/2025	24,288.48	294.77
30/07/2024	8,631.04	264.20	30/01/2025	24,433.77	294.45
31/07/2024	11,214.84	225.77	31/01/2025	24,545.91	295.21
1/08/2024	5,814.44	350.83	1/02/2025	24,545.50	295.24
2/08/2024	10,567.57	229.65	2/02/2025	24,550.06	294.37

Date	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)	Date (continued)	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)
3/08/2024	12,210.51	215.15	3/02/2025	24,539.19	294.18
4/08/2024	13,291.30	215.41	4/02/2025	24,374.98	292.45
5/08/2024	13,671.54	212.96	5/02/2025	24,520.24	292.67
6/08/2024	13,740.18	210.76	6/02/2025	24,433.99	291.95
7/08/2024	14,075.93	210.54	7/02/2025	24,550.60	292.19
8/08/2024	13,980.23	214.83	8/02/2025	24,449.55	291.22
9/08/2024	15,000.26	221.99	9/02/2025	24,557.78	292.22
10/08/2024	14,704.22	214.83	10/02/2025	23,787.04	306.80
11/08/2024	14,617.82	212.40	11/02/2025	23,464.81	323.53
12/08/2024	14,410.42	217.05	12/02/2025	24,296.41	298.83
13/08/2024	14,299.28	209.74	13/02/2025	24,453.00	294.65
14/08/2024	14,570.93	212.18	14/02/2025	24,363.68	294.19
15/08/2024	14,853.39	212.98	15/02/2025	24,513.74	295.32
16/08/2024	14,630.65	211.73	16/02/2025	24,398.78	294.25
17/08/2024	11,049.42	305.77	17/02/2025	24,346.82	298.10
18/08/2024	2,114.15	517.41	18/02/2025	24,484.36	295.54
19/08/2024	7,251.14	283.97	19/02/2025	24,424.62	292.31
20/08/2024	10,686.25	228.52	20/02/2025	24,370.28	291.64
21/08/2024	12,145.59	215.30	21/02/2025	24,427.73	289.77
22/08/2024	12,889.33	212.85	22/02/2025	24,474.05	287.95
23/08/2024	13,103.98	209.01	23/02/2025	24,434.69	288.17
24/08/2024	12,514.84	216.10	24/02/2025	24,404.41	288.07
25/08/2024	13,930.38	217.78	25/02/2025	24,465.93	289.44
26/08/2024	13,584.93	211.97	26/02/2025	24,586.89	289.97
27/08/2024	13,276.05	236.17	27/02/2025	24,461.87	288.82
28/08/2024	12,207.29	216.05	28/02/2025	24,379.28	288.34
29/08/2024	12,951.10	217.88	1/03/2025	24,576.15	290.47
30/08/2024	12,364.38	212.47	2/03/2025	24,404.21	288.08
31/08/2024	12,397.95	230.89	3/03/2025	24,444.98	288.27
1/09/2024	4,904.68	545.50	4/03/2025	24,471.64	291.66
2/09/2024	9,726.24	221.55	5/03/2025	24,335.04	291.27
3/09/2024	11,543.39	214.08	6/03/2025	24,506.00	288.58
4/09/2024	12,410.47	211.37	7/03/2025	24,439.47	287.61

Date	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)	Date (continued)	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)
5/09/2024	13,467.69	214.93	8/03/2025	24,399.94	287.47
6/09/2024	13,657.59	214.62	9/03/2025	24,456.18	287.34
7/09/2024	14,170.05	221.04	10/03/2025	24,518.21	287.18
8/09/2024	13,829.87	226.77	11/03/2025	24,457.29	286.86
9/09/2024	14,269.48	220.33	12/03/2025	24,521.96	287.96
10/09/2024	13,996.60	214.52	13/03/2025	24,501.16	287.39
11/09/2024	13,742.19	210.78	14/03/2025	24,455.04	286.91
12/09/2024	13,744.51	209.05	15/03/2025	24,458.52	286.63
13/09/2024	14,582.96	216.77	16/03/2025	24,476.64	287.02
14/09/2024	13,078.70	214.10	17/03/2025	24,513.99	287.30
15/09/2024	14,267.05	226.59	18/03/2025	24,399.45	292.55
16/09/2024	13,978.99	220.88	19/03/2025	24,326.80	294.62
17/09/2024	13,368.40	231.84	20/03/2025	24,569.08	291.11
18/09/2024	12,690.68	209.78	21/03/2025	24,554.76	288.60
19/09/2024	13,172.90	211.25	22/03/2025	24,463.47	288.67
20/09/2024	5,734.85	411.48	23/03/2025	24,488.51	287.72
21/09/2024	7,782.76	247.00	24/03/2025	24,491.70	288.16
22/09/2024	11,488.76	215.31	25/03/2025	24,563.25	289.77
23/09/2024	12,415.61	213.36	26/03/2025	24,470.04	288.32
24/09/2024	13,688.42	220.92	27/03/2025	24,461.38	288.74
25/09/2024	12,612.09	205.54	28/03/2025	24,486.38	290.33
26/09/2024	12,773.91	204.14	29/03/2025	24,528.02	290.45
27/09/2024	13,442.00	210.88	30/03/2025	24,460.35	290.21
28/09/2024	13,744.10	211.43	31/03/2025	24,503.36	290.88
29/09/2024	13,784.02	211.54	1/04/2025	24,493.48	291.98
30/09/2024	13,924.29	211.71	2/04/2025	24,470.44	293.43
1/10/2024	13,794.17	210.78	3/04/2025	24,428.80	297.06
2/10/2024	13,819.02	267.67	4/04/2025	18,125.37	389.38
3/10/2024	3,561.15	536.83	5/04/2025	22,816.70	306.08
4/10/2024	10,459.72	221.45	6/04/2025	24,559.82	299.65
5/10/2024	12,162.47	215.39	7/04/2025	24,472.65	300.99
6/10/2024	11,911.27	238.41	8/04/2025	23,893.33	312.79
7/10/2024	4,893.56	327.70	9/04/2025	24,338.65	295.26

Date	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)	Date (continued)	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)
8/10/2024	9,878.85	228.16	10/04/2025	24,314.62	291.62
9/10/2024	10,001.42	228.19	11/04/2025	24,479.12	292.60
10/10/2024	11,224.19	215.80	12/04/2025	24,308.49	290.80
11/10/2024	11,978.84	213.67	13/04/2025	24,400.94	291.52
12/10/2024	8,720.36	807.37	14/04/2025	24,534.81	294.19
13/10/2024	12,532.22	216.08	15/04/2025	24,485.65	295.32
14/10/2024	13,050.27	219.25	16/04/2025	24,271.15	294.61
15/10/2024	12,959.78	211.53	17/04/2025	23,943.41	307.58
16/10/2024	13,536.38	215.18	18/04/2025	21,923.77	349.22
17/10/2024	13,325.67	210.47	19/04/2025	22,276.97	318.51
18/10/2024	13,714.33	216.35	20/04/2025	22,688.80	312.13
19/10/2024	13,498.42	211.55	21/04/2025	24,053.78	300.83
20/10/2024	13,420.44	211.15	22/04/2025	24,413.37	298.62
21/10/2024	13,396.15	210.50	23/04/2025	24,137.83	293.07
22/10/2024	14,116.95	218.88	24/04/2025	24,050.98	290.16
23/10/2024	13,943.04	214.52	25/04/2025	24,204.20	291.65
24/10/2024	14,366.88	219.12	26/04/2025	24,316.86	293.45
25/10/2024	13,549.40	210.22	27/04/2025	22,590.02	322.41
26/10/2024	12,859.01	256.88	28/04/2025	21,308.54	317.06
27/10/2024	12,141.97	222.22	29/04/2025	22,866.03	310.68
28/10/2024	12,672.79	213.18	30/04/2025	14,345.22	466.20
29/10/2024	13,034.84	214.99	1/05/2025	4,675.57	436.90
30/10/2024	12,884.39	214.09	2/05/2025	12,796.87	240.76
31/10/2024	13,587.64	215.25	3/05/2025	15,317.05	222.00
1/11/2024	13,722.30	214.13	4/05/2025	16,996.15	226.41
2/11/2024	13,919.00	216.73	5/05/2025	17,003.64	222.32
3/11/2024	13,673.98	228.20	6/05/2025	18,716.28	236.53
4/11/2024	14,824.58	222.88	7/05/2025	19,522.93	247.81
5/11/2024	13,523.86	209.50	8/05/2025	18,971.97	243.19
6/11/2024	13,693.77	210.52	9/05/2025	12,388.65	466.19
7/11/2024	13,714.73	210.31	10/05/2025	9,293.75	256.73
8/11/2024	13,741.32	209.31	11/05/2025	16,715.17	233.25
9/11/2024	14,004.64	209.48	12/05/2025	16,936.13	225.81

Date	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)	Date (continued)	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)
10/11/2024	14,791.10	218.78	13/05/2025	17,932.18	231.08
11/11/2024	13,667.41	210.29	14/05/2025	18,663.14	239.72
12/11/2024	13,665.86	205.78	15/05/2025	18,713.70	237.92
13/11/2024	14,622.35	216.28	16/05/2025	18,390.79	234.03
14/11/2024	13,998.51	210.33	17/05/2025	15,773.66	207.84
15/11/2024	8,958.51	380.14	18/05/2025	15,638.80	207.21
16/11/2024	10,466.51	225.53	19/05/2025	15,642.64	208.60
17/11/2024	13,229.17	212.02	20/05/2025	15,634.00	204.44
18/11/2024	13,709.74	210.06	21/05/2025	15,621.80	204.30
19/11/2024	14,063.27	212.45	22/05/2025	19,508.75	240.57
20/11/2024	14,214.16	213.96	23/05/2025	18,704.48	242.06
21/11/2024	14,447.79	217.06	24/05/2025	15,555.25	203.20
22/11/2024	13,953.66	209.48	25/05/2025	15,554.24	203.20
23/11/2024	14,359.11	211.05	26/05/2025	5,277.33	203.15
24/11/2024	14,203.24	211.42	27/05/2025	9.91	308.96
25/11/2024	14,175.12	210.14	28/05/2025	776.16	281.56
26/11/2024	14,575.07	213.26	29/05/2025	7,836.75	307.28
27/11/2024	14,722.69	215.69	30/05/2025	10,418.47	262.89
28/11/2024	14,254.43	209.42	31/05/2025	9,029.87	267.22
29/11/2024	14,822.96	214.11	1/06/2025	6,966.40	233.68
30/11/2024	13,748.51	234.35	2/06/2025	5,623.66	216.02
1/12/2024	22,219.89	301.35	3/06/2025	9,999.89	210.58
2/12/2024	23,206.80	305.26	4/06/2025	9,168.23	852.13
3/12/2024	23,230.84	303.84	5/06/2025	2,764.17	627.11
4/12/2024	23,327.51	303.53	6/06/2025	3,404.37	276.00
5/12/2024	23,093.46	301.25	7/06/2025	10,691.67	244.56
6/12/2024	23,239.84	302.33	8/06/2025	14,192.97	226.07
7/12/2024	23,360.58	302.71	9/06/2025	9,538.13	259.47
8/12/2024	23,184.40	301.03	10/06/2025	10,994.22	478.26
9/12/2024	22,513.83	302.87	11/06/2025	1,389.44	493.20
10/12/2024	23,004.26	301.89	12/06/2025	11,576.68	244.69
11/12/2024	22,886.65	305.01	13/06/2025	6,241.69	323.98
12/12/2024	21,865.47	316.47	14/06/2025	3,245.28	226.60

Date	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)	Date (continued)	Mangatangi Dam Compensation Flow (m ³ /day)	Mangatangi Weir Daily Average Flow (L/s)
13/12/2024	22,561.83	304.13	15/06/2025	8,118.73	246.37
14/12/2024	23,466.01	305.76	16/06/2025	11,956.82	241.86
15/12/2024	23,298.01	302.53	17/06/2025	12,877.10	221.27
16/12/2024	19,088.44	405.19	18/06/2025	14,550.30	224.39
17/12/2024	21,422.66	308.49	19/06/2025	13,580.84	211.10
18/12/2024	22,623.97	300.37	20/06/2025	8,434.08	299.32
19/12/2024	22,869.40	299.81	21/06/2025	20,000.00	310.62
20/12/2024	23,530.06	305.12	22/06/2025	20,001.98	291.40
21/12/2024	22,746.05	295.83	23/06/2025	19,993.56	282.69
22/12/2024	23,004.78	298.92	24/06/2025	16,651.15	244.46
23/12/2024	22,797.97	300.68	25/06/2025	18,313.57	251.68
24/12/2024	23,242.41	300.30	26/06/2025	16,716.61	227.62
25/12/2024	23,211.72	298.98	27/06/2025	3,056.10	1959.33
26/12/2024	22,497.06	299.30	28/06/2025	0.00	288.18
27/12/2024	23,243.18	298.86	29/06/2025	5,107.57	231.96
28/12/2024	23,392.02	297.49	30/06/2025	12,016.49	246.00
29/12/2024	23,402.70	298.19			
30/12/2024	23,385.25	297.27			
31/12/2024	23,561.37	301.98			

Appendix D. Native fisheries MPI report



Auckland Water Supply Dams 2024-2025 Native Fisheries Annual Report

Final - August 2025

Watercare 

QUALITY INFORMATION

Document	Annual Report
Date	8 August 2025
Name and position of originator	Emma Baker, Environmental Scientist
Report directory	\\water.internal\ORG\Ops\Water Supply\Headworks\SDGEN\00 - Site General\Compliance\Trap and Haul\Ministry of Fisheries Reports

REVISION HISTORY

Rev	Revision Date	Name	Position	Signature
1	24/07/2025	Michiel Jonker	Environmental Care Manager	
2	05/08/2025	AJ Grobler	Operations Controller	
3	08/08/2025	Brendon Dockary	Operations Controller	

APPROVED


Date	Name	Position	Signature
08/08/2025	Michiel Jonker	Environmental Care Manager	

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1 INTRODUCTION

Watercare Services Limited (Watercare) currently undertakes a Native Fisheries Management Programme utilising ‘trap and haul’ methods at eight of the water supply dams. Ministry of Primary Industries approval has been granted for this work under Special Permit 737 (expires on 1 October 2025; Appendix A) and Fish Transfer Authorisation NFT325. The permit covers the upstream and downstream trap and haul activities for dams in the Auckland and Waikato regions:

- Hunua Ranges:
 - Hays Creek Dam
 - Cosseys Dam
 - Wairoa Dam
 - Upper Mangatawhiri Dam
 - Mangatangi Weir
- Waitākere Ranges:
 - Lower Nihotupu Dam
 - Lower Huia Dam
 - Waitākere Dam

New permits will be applied for to continue trap and haul from the 2025-2026 season onwards.

This report provides details of the programme for the period 1 July 2024 to 30 June 2025, in fulfilment of conditions 27, 28 and 29 of Special Permit 737.

2 UPSTREAM TRANSFER

Trapping for elver and other freshwater fish was conducted at the following sites for the purpose of upstream transfer:

- Lower Nihotupu Dam
- Waitākere Dam
- Hays Creek Dam
- Cosseys Dam
- Mangatangi weir

Trapping (upstream transfer) at Lower Huia Dam has proven unsuccessful in the past and is no longer undertaken.

2.1 Collection methods

During the 2024-2025 trap and haul season, two traps were deployed in the Waitākere Ranges and three in the Hunua Ranges. The design and methodology of each trap followed those outlined in Watercare's Native Fisheries Program – Operations Manual for Undertaking Trap and Haul.

During rainfall events, traps were taken out of service as part of standard operations. Additionally, over the Christmas holiday period, the Hunua dams' traps were not in service due to low staff availability.

2.2 Fish species, elvers and approximate total weight

The estimated weight of each catch is based on the number of individuals caught, the expected weight for each species (1 g per elver and 0.5 g per juvenile galaxiid) and the measured size of the individuals. The data provided in Table 2-1 to Table 2-5 fulfil conditions 28a, 28b and 28f.

All elvers and galaxiids were released directly into the respective dams upstream of the trapping sites or above the Mangatangi weir.

Table 2-1: Approximate total weight of each species collected at Lower Nihotupu Dam during the 2024-2025 upstream trap and haul season.

Date	Elver (g)	Galaxiids (g)
20/10/2024	5	100.0
24/10/2024	-	10.0
30/10/2024	6	3.5
3/11/2024	40	1.0
7/11/2024	38	-
13/11/2024	12	-
18/11/2024	14	9.0
25/11/2024	80	30.0
28/11/2024	50	2.0
3/12/2024	200	-
6/12/2024	250	6.0
9/12/2024	300	2.5
10/12/2024	50	0.5

Date	Elver (g)	Galaxiids (g)
15/12/2024	40	1.5
22/12/2024	100	-
22/12/2024	50	-
2/01/2025	480	-
5/01/2025	107	3.0
9/01/2025	100	-
14/01/2025	60	-
16/01/2025	100	0.5
23/01/2025	120	2.0
28/01/2025	230	-
3/02/2025	200	16.0
6/02/2025	85	-
11/02/2025	48	-
17/02/2025	30	-
7/03/2025	28	-
10/04/2025	14	-
Total	2,837	178.0

Table 2-2: Approximate total weight of each species collected at Waitākere Dam during the 2024-2025 upstream trap and haul season.

Date	Elver (g)	Galaxiids (g)
10/11/2024	5	-
18/11/2024	7	-
2/12/2024	23	1.0
11/12/2024	22	2.0
19/12/2024	12	1.0
27/12/2024	3	1.5
29/12/2024	3	1.0
29/12/2024	35	-
3/01/2025	170	-
6/01/2025	12	-
7/01/2025	100	-
9/01/2025	50	-
13/01/2025	110	-
14/01/2025	5	7.5
16/01/2025	200	-
20/01/2025	24	-
21/01/2025	104	-

Date	Elver (g)	Galaxiids (g)
2/02/2025	35	-
7/02/2025	300	-
10/02/2025	140	-
17/02/2025	350	-
27/02/2025	200	-
4/03/2025	64	-
10/03/2025	184	-
12/03/2025	11	-
18/03/2025	64	-
26/03/2025	38	-
30/03/2025	44	-
16/04/2025	15	-
Total	2,330	14.0

Table 2-3: Approximate total weight of each species collected at Hays Creek Dam during the 2024-2025 upstream trap and haul season.

Date	Elver (g)	Galaxiids (g)
21/10/2024	-	1.0
28/10/2024	-	1.5
31/10/2024	-	0.5
1/11/2024	-	1.0
2/11/2024	-	2.0
4/11/2024	-	1.0
4/11/2024	-	0.5
5/11/2024	-	2
22/12/2024	52	-
27/12/2024	49	-
30/12/2024	69	-
31/12/2024	16	-
7/01/2025	17	-
13/01/2025	15	-
13/01/2025	200	0.5
15/01/2025	14	-
6/02/2025	84	-
19/02/2025	46	-
20/02/2025	25	-
24/02/2025	12	-
3/03/2025	3	-

Date	Elver (g)	Galaxiids (g)
4/03/2025	6	-
9/03/2025	6	-
Total	614	10.0

Table 2-4: Approximate total weight of each species collected at Cosseys Dam during the 2024-2025 upstream trap and haul season.

Date	Elver (g)	Galaxiids (g)
29/10/2024	3	-
7/11/2024	2	-
14/11/2024	2	-
2/12/2024	16	-
3/12/2024	5	-
3/12/2024	16	-
16/12/2024	12	-
26/12/2024	10	-
29/12/2024	26	-
31/12/2024	18	-
5/01/2025	16	-
7/01/2025	12	-
14/01/2025	12	-
27/01/2025	66	-
4/02/2025	24	-
12/02/2025	5	-
18/02/2025	11	-
19/02/2025	11	-
21/02/2025	15	-
10/03/2025	34	-
14/03/2025	3	-
18/03/2025	4	-
Total	323	0.0

Table 2-5: Approximate total weight of each species collected at Mangatangi weir during the 2024-2025 upstream trap and haul season.

Date	Elver (g)	Galaxiids (g)
8/10/2024	1	-
30/10/2024	1	-
13/11/2024	1	-
17/11/2024	2	-
20/11/2024	4	-

Date	Elver (g)	Galaxiids (g)
25/11/2024	4	-
26/11/2024	4	-
29/11/2024	6	-
1/12/2024	50	-
9/12/2024	1	-
11/12/2024	23	0.5
13/12/2024	24	-
16/12/2024	19	-
23/12/2024	3	-
24/12/2024	4	-
30/12/2024	11	1.0
31/12/2024	13	-
2/01/2025	7	-
3/01/2025	11	-
5/01/2025	13	0.5
8/01/2025	14	-
10/01/2025	5	-
20/01/2025	55	5.5
27/01/2025	78	1.5
28/01/2025	13	-
29/01/2025	35	-
30/01/2025	3	-
3/02/2025	15	0.5
7/02/2025	24	-
16/02/2025	4	-
21/02/2025	7	0.5
28/02/2025	3	-
10/03/2025	1	-
Total	459	10

2.3 Juvenile eel length

Condition 28c requires the weight of juvenile eels (i.e., greater than 20 g in weight) collected for transfer to be measured. The length was measured instead of weight, consistent with previous years' practices. The data is provided in Table 2-6.

Table 2-6: Length of juvenile eels reported during the 2024-2025 upstream trap and haul season

Location	Date	Length of juvenile eel (mm)
Waitākere	23/10/2024	250

2.4 Bycatch species and weight

The most caught bycatch species were the Kōura (*Paranephrops planifrons*) and bullies (*Gobiomorphus spp*). All bycatch species were caught in the permanent fish trap structures located at the base of the dams. On average, the bullies are estimated to weigh 2.5 g, and smelt (*Retropinna retropinna*) approximately 0.5 g, though no smelt were caught during this trap and haul season. When the bully species could not be identified, they were assumed to be common bullies. The results of the bycatch are presented in Table 2-7.

Table 2-7: Approximate total weight of bycatch reported during the 2024-2025 upstream trap and haul season.

Location	Date	Species (number if weight unknown)	Weight (g)
Lower Nihotupu	20/10/2024	Common bully	2.5
	24/10/2024	Common bully	2.5
	3/11/2024	Common bully	65.0
	7/11/2024	Common bully	17.5
	13/11/2024	Common bully	12.5
	25/11/2024	Common bully	27.5
	3/12/2024	Common bully	7.5
	3/12/2024	Common bully	15
	9/12/2024	Common bully	7.5
	10/12/2024	Common bully	17.5
	15/12/2024	Common bully	2.5
	22/12/2024	Common bully	2.5
	22/12/2024	Common bully	12.5
	14/01/2025	Common bully	2.5
	16/01/2025	Common bully	2.5
	7/03/2025	Common bully	2.5
10/04/2025	Common bully	25.0	
Waitākere	18/11/2024	Common bully	2.5
	29/12/2024	Common bully	10.0
	3/01/2025	Common bully	5.0
	10/02/2025	Common bully	7.5
Hays Creek	1/12/2024	Common bully	2.5
	7/01/2025	Common bully	2.5
Mangatangi	8/10/2025	Common bully	15.0
		Kōura (1)	n/a
	11/10/2025	Common bully	5.0
	14/10/2025	Common bully	2.5
	18/10/2024	Common bully	2.5
	22/10/2024	Kōura (1)	n/a

Location	Date	Species (number if weight unknown)	Weight (g)
	22/10/2024	Common bully	2.5
	22/10/2024	Redfin bully (1)	2.5
	24/10/2024	Kōura (1)	n/a
	29/10/2024	Kōura (1)	n/a
	29/10/2024	Common bully	7.5
	1/11/2024	Redfin bully	2.5
	4/11/2024	Common bully	2.5
	6/11/2024	Common bully	2.5
	8/11/2024	Common bully	5.0
	11/11/2024	Common bully	15.0
	13/11/2024	Common bully	15.0
	18/11/2024	Common bully	7.5
	20/11/2024	Common bully	7.5
	21/11/2024	Kōura (1)	n/a
	25/11/2024	Common bully	7.5
	26/11/2024	Kōura (1)	n/a
	26/11/2024	Common bully	17.5
	1/12/2024	Kōura (10)	n/a
	1/12/2024	Common bully	30.0
	1/12/2024	Common bully	22.5
	6/12/2024	Kōura (1)	n/a
	9/12/2024	Common bully	37.5
	11/12/2024	Common bully	42.5
	13/12/2024	Kōura (2)	n/a
	13/12/2024	Common bully	32.5
	16/12/2024	Common bully	40.0
	18/12/2024	Common bully	15.0
	23/12/2024	Common bully	12.5
	24/12/2024	Kōura (1)	n/a
	24/12/2024	Common bully	105.0
	27/12/2024	Common bully	117.5
	30/12/2024	Common bully	170.0
	31/12/2024	Common bully	27.5
	3/01/2025	Common bully	45.0
	6/01/2025	Common bully	75.0
	8/01/2025	Common bully	32.5
	10/01/2025	Common bully	12.5
	21/01/2025	Common bully	27.5

Location	Date	Species (number if weight unknown)	Weight (g)
	27/01/2025	Kōura (1)	n/a
	27/01/2025	Common bully	45.0
	29/01/2025	Common bully	37.5
	3/02/2025	Common bully	12.5
	7/02/2025	Common bully	120.0
	10/02/2025	Common bully	25.0
	16/02/2025	Common bully	42.5
	18/02/2025	Common bully	25.0
	21/02/2025	Common bully	175.0
	24/02/2025	Common bully	20.0
	28/02/2025	Kōura (1)	n/a
	28/02/2025	Common bully	10.0
	3/03/2025	Common bully	12.5
	6/03/2025	Kōura (1)	n/a
	10/03/2025	Kōura (1)	n/a
	10/03/2025	Common bully	7.5
	21/03/2025	Kōura (2)	n/a
	24/03/2025	Common bully	15.0
	24/03/2025	Kōura (2)	n/a
	26/03/2025	Kōura (4)	n/a
	31/03/2025	Kōura (3)	n/a
Total			1,767.5

2.5 Fish deaths

Fish deaths were observed on a number of occasions during the upstream trapping season, detailed in Table 2-8. When the bully species could not be identified, they were assumed to be common bullies. Fish deaths primarily occurred inside the permanent fish trap structures, however, deceased juvenile brown trout (*Salmo trutta*) were located on the netted ramp leading to the tank at the Mangatangi weir, and some elvers were found in the trap's outlet structure at Waitākere Dam.

Table 2-8: Fish deaths during the 2024-2025 upstream trap and haul.

Location	Date	Species	Number
Lower Nihotupu	30/10/2024	Galaxiid	5
	3/11/2024	Common bully	5
Waitākere	7/01/2025	Elver	1
	7/02/2025	Elver	2
	10/03/2025	Elver	12
	16/04/2025	Elver	4
Hays Creek	29/10/2024	Galaxiids	3
	31/10/2024	Galaxiids	1

Location	Date	Species	Number
	2/11/2024	Galaxiids	1
Cosseys	30/12/2024	Elver	1
Mangatangi	20/11/2024	Brown trout	1
	21/11/2024	Brown trout	6
	25/11/2024	Brown trout	1
	26/11/2024	Brown trout	10
	29/11/2024	Brown trout	9
	2/12/2024	Brown trout	4
	2/12/2024	Elver	3

3 DOWNSTREAM TRANSFER

3.1 Collection methods

Net setting for eels was conducted at the following eight sites for the purpose of downstream transfer:

- Lower Nihotupu Dam
- Lower Huia Dam
- Waitākere Dam
- Hays Creek Dam
- Cosseys Dam
- Wairoa Dam
- Upper Mangatāwhiri Dam
- Mangatangi Dam

Fyke nets are used as the downstream eel trapping method. They are long cylindrical netting bags with netting cones, designed for easy entry but a difficult exit. Two fyke nets were deployed near the dam face in all permitted water supply dams overnight, collected on the dates listed in Table 3-1 during the eel migration season. Migrating eels exhibit distinctive morphological features and can therefore be identified from non-migrating eels during the trapping process.

3.2 Migrating eel

Condition 28h requires reporting on several aspects of the downstream eel transfer process, including the total weight, approximate number, and species of adult migrating eels collected for transfer. It also requires the date of collection, comments on the prevailing flow conditions (e.g., normal, flood), the site of release, and the percentage of eels caught that were successfully transferred and released.

Table 3-1 provides most of the data required by this condition. There were 19 migrating eels caught in the 2024-2025 trap and haul season, this is an increase compared to the 11 eels caught in 2023-2024. Any migrant eels caught were transferred downstream on the day of capture and the remainder of the catch was released back into dams. Flow conditions were normal on the days trapping occurred.

Table 3-1: Total weight per day, eel species and approximate numbers caught for transfer, and the number and percentage of adult migrating eels transferred.

Location	Date	Total Eels	Species		Weight (g)		Length (mm)		Migrators	
			Longfin	Shortfin	Average	Largest	Average	Largest	Count	(%)
Lower Nihotupu	4/03/2025	3	0	3	340	510	550	600	0	0
	25/03/2025	6	3	3	400	600	550	750	2	33.3
	15/04/2025	0	0	0	0	0	0	0	0	0
	6/05/2025	4	1	3	1162.5	2,900	712.5	950	2	50
	27/05/2025	3	2	1	4066.7	7,700	1000	1,400	2	66.7
Lower Huia	2/04/2025	0	0	0	0	0	0	0	0	0
	23/04/2025	0	0	0	0	0	0	0	0	0
	13/05/2025	0	0	0	0	0	0	0	0	0

Location	Date	Total	Species			Weight (g)		Length (mm)		Migrators	
			Eels	Longfin	Shortfin	Average	Largest	Average	Largest	Count	(%)
	22/05/2025	0	0	0	0	0	0	0	0	0	0
	27/06/2025	0	0	0	0	0	0	0	0	0	0
Waitākere	20/03/2025	1	0	1	750	750	700	700	0	0	0
	5/06/2025	0	0	0	0	0	0	0	0	0	0
Hays Creek	19/03/2025	0	0	0	0	0	0	0	0	0	0
	24/04/2025	7	4	3	1000	2,900	671.4	1,100	1	14.3	
	28/05/2025	4	4	0	1,780	3,555	1,000	1,500	0	0	
	30/05/2025	4	4	0	3,650	6,850	912.5	1,300	1	25	
Cosseys	12/03/2025	2	2	0	2,025	3,000	750	900	0	-	
	14/03/2025	5	5	0	3,253	9,000	780	950	1	20	
	15/04/2025	0	0	0	0	0	0	0	0	-	
	18/04/2025	1	1	0	1,634	1,634	800	800	0	-	
	20/05/2025	1	1	0	400	400	400	400	0	-	
	21/05/2025	2	2	0	1142.5	1,600	825	900	0	-	
	26/06/2025	3	3	0	569.7	956	500	800	0	-	
Wairoa	5/03/2025	1	1	0	5,900	5,900	1,270	1,270	1	100	
	7/03/2025	1	1	0	1,525	1,525	570	570	1	100	
	9/04/2025	4	4	0	4,050.5	6,702	1,026.25	1,205	0	-	
	11/04/2025	0	0	0	0	0	0	0	0	-	
	14/05/2025	1	1	0	3,000	3,000	950	950	0	-	
	16/05/2025	1	1	0	3,674	3,674	1,200	1,200	1	100	
Mangatāwhiri	7/05/2025	3	3	0	2,803	5,675	916.7	1,200	1	33.3	
	9/05/2025	6	6	0	617	985	520	600	0	-	
	11/06/2025	0	0	0	0	0	0	0	0	-	
	13/06/2025	0	0	0	0	0	0	0	0	-	
Mangatangi	26/03/2025	1	1	0	1,950	1,950	960	960	0	-	
	27/03/2025	0	0	0	0	0	0	0	0	-	
	2/05/2025	7	7	0	1,205	2,390	714.3	900	6	85.7	

3.3 Bycatch species and weight

Perch (*Perca fluviatilis*), rudd (*Scardinius erythrophthalmus*) and carp (*Cyprinus rubrofuscus*) were caught in the dams as part of the downstream transfer and weighed onsite.

Table 3-2: Approximate total weight of the bycatch reported during the 2024-2025 downstream trap and haul season.

Location	Date	Species	Weight (g)
Lower Nihotupu	25/03/2025	Perch	50
		Rudd	100
Hays Creek	30/05/2025	Carp	150
Cosseys	26/06/2025	Perch	300

Location	Date	Species	Weight (g)
Upper Mangatāwhiri	2/04/2025	Common bully	34

3.4 Fish deaths

Fish deaths occurred on two occasions as part of the downstream transfer operations. One deceased rudd was found at Cosseys Dam on 21 May 2025, and two carp were found on 30 May 2025 at Hays Creek Dam.

4 SUMMARY

Upstream transfer of migrating species occurred at five Watercare dams for the 2024-2025 season: Lower Nihotupu Dam, Waitākere Dam, Hays Creek Dam, Cosseys Dam and at the Mangatangi weir. All transferred both galaxiids and elvers, with Lower Nihotupu having the greatest catch rates, consistent with previous years. Notably, a significant number of bullies were also caught at the Mangatangi weir.

The downstream transfer of migrating species was undertaken at eight Watercare dams for the season: Lower Nihotupu Dam, Lower Huia Dam and Waitākere Dam in the Waitākere Ranges and Hays Creek dam, Cosseys Dam, Wairoa Dam, Upper Mangatawhiri Dam and at the Mangatangi weir in the Hunua Ranges. Eels (migratory and non-migratory) were caught on at least one occasion at most dams, with the exception of Lower Huia Dam. Migrating eels were caught at all five Hunua Ranges dams, and only at Lower Nihotupu Dam in the Waitākere Ranges.

**Appendix A. Ministry of Primary Industries Special Permit
737**

**Fisheries New Zealand**

Tini a Tangaroa

**SPECIAL PERMIT
(737)**

The Director-General of the Ministry for Primary Industries (MPI) acting through his delegated officer (Director-General) and pursuant to section 97(1) of the *Fisheries Act 1996* (the Act), hereby issues a special permit to:

Watercare Services Limited
Private Bag 92521
Wellesley Street
Auckland 1141

Client Number: 9720100

and agents, representatives and employees of, as part of their association with Watercare Services Limited (the permit holder), subject to the following conditions specified below.

Purpose

1. This special permit is issued for the following purpose specified in section 97(1)(c) of the Act:
 - a) to allow persons or agencies to take aquatic life and relocate it to a suitable habitat where this is necessary or required to mitigate adverse effects of habitat modification on the aquatic life.
2. The permit holder is permitted to take, transfer, and release native fish of the following species: shortfin and longfin eels (*Anguilla* spp.), *Galaxias* spp., *Gobiomorphus* spp., and torrentfish (*Cheimarrichthys fosteri*), irrespective of size for the above purpose.

Term of Permit

3. This special permit revokes and replaces special permit 610 and any previous amendments.
4. This special permit is valid from the date of signature until 1 October 2025, unless sooner varied or revoked.

Permitted Activities

5. This special permit allows the taking (as defined in section 2 of the Act) of aquatic life, for the purposes of relocating aquatic life, to mitigate adverse effects of habitat modification, carried out by the permit holder.
6. Fishing under the authority of this special permit for upstream migration may only be taken from the following waterways:
 - a) Hūnua area:

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- i) Cosseys Stream or its tributaries downstream of the Cosseys Dam;
 - ii) Hays Creek or its tributaries downstream of the Hays Creek Dam;
 - iii) Mangatangi stream or its tributaries downstream of the Mangatangi Weir.
 - b) Waitākere area:
 - i) Huia Stream, downstream of the lower Huia Dam;
 - ii) Nihotupu Stream, downstream of the lower Nihotupu Dam, near the spillway;
 - iii) Waitākere River, downstream of the Waitākere Dam.
7. Fishing under the authority of this special permit may be undertaken for downstream migrant eels from the following waterways:
- a) Hūnua area:
 - i) Cosseys Reservoir upstream of the Cosseys Dam;
 - ii) Hays Creek Reservoir upstream of the Hays Creek Dam;
 - iii) Wairoa Reservoir upstream of the Wairoa Dam;
 - iv) Mangatangi Reservoir upstream of the Mangatangi Dam;
 - v) Mangatawhiri Reservoir upstream of the Upper Mangatawhiri Dam.
 - b) Waitakere area:
 - i) Lower Huia Reservoir, upstream of the Huia Dam;
 - ii) Lower Nihotupu Reservoir, upstream of the Nihotupu Dam;
 - iii) Waitākere Reservoir, upstream of the Waitakere Dam.
8. New sites or species may only be added under the authority of this special permit through an amendment to the special permit. An application for inclusion of new site or species must be lodged with the Customary Fisheries and Spatial Allocations Manager (see Schedule One for contact details).
9. The permit holder is to obtain written approval from the taiāpure management committee or Tangata Kaitiaki/Tiaki prior to fishing in any taiāpure–local fisheries or mātaítai area. The permit holder should contact the relevant Fisheries Compliance Team Manager (see contact details in Schedule One) for current details of taiāpure–local fisheries or mātaítai reserves in the area where collection is proposed.
10. The permit holder is to consult with Waikato-Tainui before fishing in Waikato Tainui’s rohe (illustrated as area A on the Iwi map attached in Schedule Two). The permit holder should avoid fishing in wāhi tapu areas within area A. To determine areas of significance to Iwi, the permit holder is advised to contact local marae in areas where fishing is to take place. Local marae details can be obtained from Waikato Raupatu River Trust [ph. (07) 858 0400].
11. Any transfer of native fish may only be undertaken with an appropriate approval pursuant to section 26ZM(2) of the *Conservation Act 1987*, or any statutory re-enactment or amendment of that provision.

Fishing Conditions

12. No fish, aquatic life, or seaweed may be taken for personal use or collection, to provide for broodstock for commercial production, or for sale, bait or berley, while fishing under the authority of this special permit.
13. For the purpose of fishing pursuant to this special permit, the permit holder is authorised to use:
 - a) Fyke nets irrespective of mesh size (escapement tubes blocked if required);
 - b) A floating pontoon set trap with wings and holding pen;
 - c) Dip nets irrespective of mesh size;
 - d) Mesh liners may be used on fyke nets to meet the desired net mesh size;
 - e) A fish trap with a ramp, shaded holding tank and using a fish attractant;
 - f) Any other catching device as approved by the Customary Fisheries and Spatial Allocations Manager;
 - g) Any suitable vessel.
14. Any fishing equipment left unattended must be clearly labelled with the permit holder's name and the words: "Fisheries New Zealand Special Permit No. 737".
15. Explosive or toxic gas, or toxic, poisonous, or narcotic substance must not be used to take native fish under the authority of this special permit unless prior written approval is obtained from the Customary Fisheries and Spatial Allocations Manager, Fisheries New Zealand.
16. Any vessel(s) nominated to fish under the authority of this special permit must not engage in commercial fishing for any species under the authority of a fishing permit, issued under section 91 of the Act, while fishing under the authority of this special permit. Unless written approval is obtained from a Regional Fisheries Compliance Team Manager prior to fishing. For the purposes of interpretation, 'commercial fishing' is defined as the taking of fish, aquatic life, or seaweed within New Zealand fisheries waters for the purpose of sale.

Disposal Conditions

17. Any bycatch species caught while fishing under the authority of this special permit shall be released at the point of capture with the exception of dead, diseased or unwanted aquatic life¹. The permit holder shall take measures as appropriate to minimise the capture of non-target species (eg. trout). These may include appropriate placement of fishing gear and using grills or coarse mesh.
18. The permit holder must not use any fish or aquatic life taken under this permit for personal use or collection, to stock a fish farm or use as food on a fish farm, for consumption, or for bait.
19. Native fish that cannot be returned alive to the environment (including dead, diseased or contaminated eels), must be humanely killed and disposed of in a biosecure manner, after relevant data has been collected, as per appendices.

¹ Unwanted aquatic life as defined in section 2 of the *Fisheries Act 1996*.

Upstream migrants

20. Fish taken under this special permit may be held in a 'holding pen' at the point of capture for a period of no more than 7 days. Fishing equipment should be inspected more frequently during peak migration or following floods. Releases of fish may not be made beyond any natural barrier (as natural recruitment processes should determine passage beyond these points).

Downstream migrants

21. Eels taken under this special permit as adult downstream migrants may be held at the specific capture sites for a maximum of 72 hours from the time of capture and are to be released as follows:
- a) Eels taken from the lower Nihotupu Reservoir: either below the Nihotupu Dam or in the Huia Stream below the lower Huia Dam;
 - b) Eels taken from all other reservoirs: at a point in the river catchment from which they were taken where their subsequent migration is unhindered by any manmade barrier.
22. All non-migrant eels collected shall be released upstream of the collection point.

Biosecurity Conditions

23. In order to eliminate the risk of transferring species declared as noxious or unwanted organisms within the aquatic environment, the permit holder must screen catch for signs of disease or morbidity and any unwanted aquatic life before transportation.
24. During the collection fish, aquatic life, or seaweed the permit holder shall ensure that no aquatic plant, noxious fish, or unwanted organism, including eggs and larvae of noxious fish or unwanted organisms, is introduced into any other waterway, either from the water holding the collected fish, aquatic life, or seaweed, or enmeshed in fishing gear.
25. To prevent the spread of unwanted aquatic plants and animals, all equipment used in the collection and removal of fish, aquatic life or seaweed must be thoroughly checked, cleaned and dried before and after being used for fishing under this special permit:
- a) all equipment used in the transport, holding and release of aquatic life should be treated, as outlined below, before being used again:
 - i. all non-fibrous (metal and plastic) smooth surfaced equipment is to be thoroughly cleaned using freshwater (chlorinated town supply water, bore water or collected rain water); and
 - ii. any non-fibrous smooth surfaced equipment that can retain water such as under seals and hollows within handles etc. must be dismantled in such a way that all surfaces can be thoroughly cleaned using freshwater (chlorinated town supply water, bore water or collected rain water); and
 - b) all other equipment must be:
 - i. immersed for a minimum of 30 seconds, in a water bath heated to at least 50° C; or

- ii. immersed in water, for a minimum of 5 minutes containing at least 35 g of sodium chloride per litre.
26. The permit holder must notify Biosecurity New Zealand's emergency hotline (0800 809 966) as soon as practicable should it observe unwanted or unusual organisms, including any distressed, diseased, or moribund aquatic life during any of its operations. None of the above organisms or contaminated water, should be released into any waterway and samples should be kept for Biosecurity New Zealand investigation. Samples should be chilled not frozen, or as advised after contacting Biosecurity New Zealand.

Reporting Requirements

27. The permit holder shall supply an annual report of all work undertaken under the authority of this special permit to the Customary Fisheries and Spatial Allocations Manager, Fisheries New Zealand (see contact details in Schedule One). This report shall be supplied no later than the 31st of August of each year. A nil return shall be made if no collection activities are undertaken by the 31st August of each year.
28. The report should contain the following information:

Upstream transfers

- a) the species and approximate total weight of each species collected for transfer, and the date of collection;
- b) the total weight of elvers (ie, less than 20 g in weight) collected for transfer, and the date of collection;
- c) the total weight of juvenile eels (ie, greater than 20 g in weight) collected for transfer, and the date of collection;
- d) the species and total weight of each bycatch species caught, and which method or specific trap resulted in their capture;
- e) numbers of each species that die before release of the fish can occur;
- f) the total weight of each species released at each respective release site, the location of the site, and date of respective releases;
- g) the number and type of collection mechanisms employed, and any factors that reduced collection efficiency.

Downstream transfers

- h) the total weight, approximate number and species of adult migrating eels collected for transfer, and the date of collection, including comment on the flow conditions that prevailed on that date (eg, normal, flood), the site of release, and the percentage caught that were transferred and released;
- i) the species and total weight of each bycatch species caught, and which method or specific trap resulted in their capture;

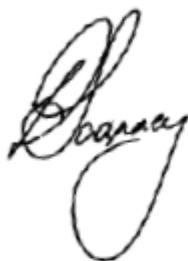
- j) numbers of each species that die before release of the fish can occur;
 - k) the number and type of collection mechanisms employed, and a brief description of how they work.
29. To obtain useful data for the management of native eel fisheries, the permit holder is also required to:
- a) record the number and total weight of shortfin and longfin elvers in a representative sample of the catch (100 elvers) at 15 day intervals, when catch allows. For the purpose of this data collection elvers are those up to 20 g in weight;
 - b) supply electronic records (in Excel or txt format) on fish caught for entry into the New Zealand Freshwater Fish or eel recruitment database (currently maintained by NIWA) to Fisheries New Zealand with the annual report required by condition 27.
30. For any projects, or part projects that are carried out in Waikato-Tainui's rohe (area A in Schedule Two) a summary report of those projects must be submitted to Waikato Raupatu River Trust annually (see contact details in Schedule One).
31. For the purpose of this permit, the permit holder is not required to meet the requirements of the *Fisheries (Reporting) Regulations 2017* and the *Fisheries (Geospatial Position Reporting) Regulations 2017*.

General Conditions

32. Except as otherwise expressly provided, the provisions of the Act or any regulation, notice, direction, restriction, requirement, or condition under the Act will apply to any fishing, or any person engaged in fishing, under this special permit.
33. The permit holder must ensure that all personnel, read, understand and are fully conversant with the conditions of the special permit before the taking aquatic life commences under this special permit.
34. This special permit must be held at the permit holder's premises. The permit holder or their employees or agents at the location, must have a copy of this special permit in their possession while collecting aquatic life under the authority of this special permit. In all cases, copies of this special permit must be produced for sighting on request by a Fishery Officer.
35. The Director-General (or his delegate) may amend, add or revoke any conditions to this special permit, or revoke this special permit by notice in writing to the permit holder.
36. This special permit does not preclude the permit holder from complying with any other statutory requirement from any other governing agency.
37. No fishing undertaken, or catch taken or otherwise possessed under this special permit shall give rise to any right, privilege, or expectation or preference in regard to the granting of any future permit, license, authorisation, quota, catch history, individual catch entitlement or other right whatsoever under the Act.

38. Failure to comply with the conditions of this special permit can, at the discretion of the delegated officer, result in the revocation of the permit. Every person commits an offence who contravenes any term or condition placed on this special permit and is liable to a fine not exceeding \$100 000.

DATED at Nelson on the 9th of June 2020.



David Scranney

Manager Customary Fisheries and Spatial Allocations

Acting pursuant to a delegation issued under Section 41 of the State Sector Act 1988.

**SCHEDULE ONE:
Contact Details**

Fisheries New Zealand Manager Customary Fisheries and Spatial Allocations can be contacted by the following:

Nelson David Scranney
Tel (03) 548 1069
Email: David.Scranney@mpi.govt.nz
cc. Christine.Bowden@mpi.govt.nz

Fisheries Compliance Regional Manager can be contacted by the following:

Upper North Island Stephen Rudsdale
Tel (09) 470 0580
Email Stephen.Rudsdale@mpi.govt.nz
cc. Charlene.Sutton@mpi.govt.nz

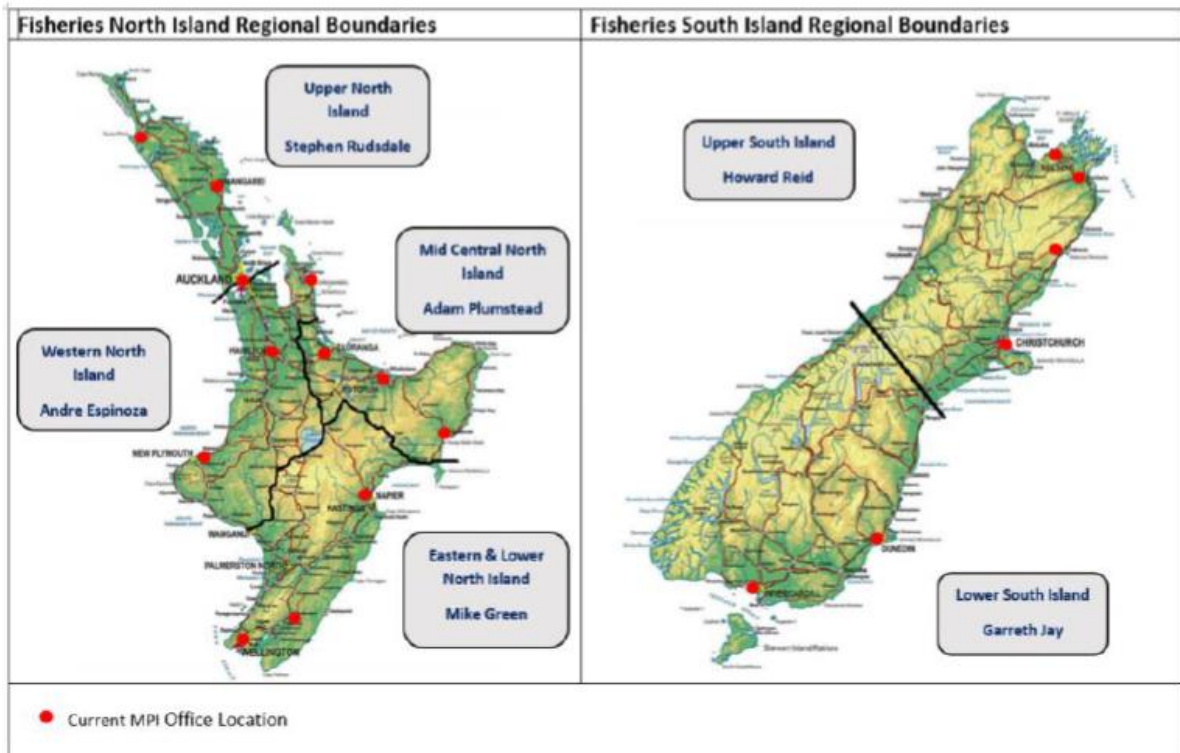
Western North Island Andre Espinoza
Tel (09) 820 7742
Email: Andre.Espinoza@mpi.govt.nz
cc. Louise.Kay@mpi.govt.nz

Waikato-Tainui River Iwi can be contacted on the following:

Hamilton Taroi Rawiri
Waikato-Tainui Environmental Manager
Waikato Raupatu River Trust
Private Bag 3344 Hamilton
Tel: (07) 858 0400
Email: taroi.rawiri@tainui.co.nz

NIWA agent for otolith submissions can be contacted by the following:

Christchurch Dr Shannan Crow
NIWA
10 Kyle Street
Riccarton
Tel: 027 291 9119
Email: shannan.crow@niwa.co.nz



SCHEDULE TWO
Map of Waikato co-governance areas;
Waikato-Tainui's rohe is area A

