AGENDA

Waiāri Kaitiaki Advisory Group meeting

Wednesday, 3 September 2025

I hereby give notice that a Waiāri Kaitiaki Advisory Group meeting will be held on:

Date: **Wednesday, 3 September 2025**

Time: **9.30am**

Location: **Tauranga City Council Chambers**
Level 1 - 90 Devonport Road
Tauranga

Please note that this meeting will be livestreamed and the recording will be publicly available on Tauranga City Council's website: www.tauranga.govt.nz.

Marty Grenfell

Chief Executive

Terms of reference - Waiāri Kaitiaki Advisory Group

Membership

Co-chairs	Two members to be appointed as co-chairs. Council nomination; and Darlene Dinsdale – Mokopuna o Tia me Hei, Co-chair representative of iwi/hapū
Tauranga City Council representatives (2)	Cr Hautapu Baker Cr Steve Morris **Alternate:** Cr Hēmi Rolleston
Western Bay of Plenty District Council representatives (2)	Mayor James Denyer Deputy Mayor John Scrimgeour
Iwi/ hapū representatives (4)	Darlene Dinsdale – Mokopuna o Tia me Hei Manu Pene - Ngāti Whakaue ki Maketu (Te Hononga) Maru Tapsell – Te Kapu o Waitaha Helen Biel – Tapuika Iwi Authority
Iwi/hapū representatives (alternates)	Tapuika Iwi Authority Te Kapu o Waitaha Mokopuna o Tia me Hei Ngāti Whakaue ki Maketu (Te Hononga)
Bay of Plenty Regional Council representative (non-voting)	Consents Manager.
Quorum	Two representatives from the consent holders and two representatives from iwi/hapu, including one of the Co-chairs. However, where a major decision is required, the quorum will be one representative from each entity. The Bay of Plenty Regional Council representative is not counted towards quorum.
Decision-making	By consensus where possible. If consensus cannot be reached, by majority vote. If there is an equal number of votes, the Co-chair who is chairing the meeting has a casting vote.
Meeting frequency	Four times a year or as required by the group. Meetings to alternate between week and weekend days if possible.
Meeting venue	To alternate between marae and council venues; or as appropriate to a meeting agenda and agreed by the Co-chairs.

Advisory staff

Tauranga City Council	Chief Executive General Manager: Infrastructure Director: City Waters Manager: Water Services Manager: Water Infrastructure Outcomes Manager: Strategic Māori Engagement
Western Bay of Plenty District Council	Chief Executive Group Manager: Engineering Utilities Manager
Bay of Plenty Regional Council	Compliance Officer with responsibility for Resource Consent #65637

Ko te wai te ora o ngā mea katoa

Background

- The Waiāri Kaitiaki Advisory Group (WKAG) was established by consent conditions to provide advice to Tauranga City Council (TCC) and Western Bay of Plenty District Council (WBOPDC) as the joint consent holders in relation to matters covered under Resource Consent #65637, which authorises the take and use of water from the Waiāri Stream for municipal supply.
- Resource Consent #65637 was granted in 2010; since then there has been significant consolidation of iwi interests in the region.
- Te Kapu o Waitaha (2013) and Tapuika Iwi Authority (2014) have signed historic Treaty Settlements and Te Runanga o Ngāti Whakaue ki Maketu (Te Hononga) are still in negotiations.
- Tauranga City Council has active protocol agreements with Waitaha, Tapuika and Ngāti Whakaue ki Maketu including addendums that set out items and areas of significance to each entity.
- The treaty settlements, protocols, addendums and any subsequent plans submitted by Waitaha, Tapuika and Ngāti Whakaue ki Maketu shall be considered as background and context to the operations of the WKAG.
- Te Maru o Kaituna River Authority was established by the Tapuika Claims Settlement Act 2014 for the purpose of restoration, protection and enhancement of the environmental, cultural and spiritual health and wellbeing of the geographical area of the Kaituna River Catchment. It is a permanent joint committee under the Local Government Act 2002 and co-governance partnership between local authorities and iwi that share an interest in the Kaituna River. Recommendations will be made to Te Maru o Kaituna River Authority where required.

Role

- To exercise kaitiakitanga in relation to the Waiāri Stream to restore, protect and enhance the awa.
- To provide advice and recommendations to Tauranga City Council and Western Bay of Plenty District Council, as the joint consent holders, in relation to matters covered under Resource Consent #65637 which authorises the taking of water from the Waiāri Stream for municipal supply.

Scope

- Provide advice and recommendations to the consent holders relating to projects, action or research designed to restore, protect or enhance the health and well-being of the Waiāri Stream.
- Consider the monitoring requirements and outcomes under conditions 7.1 and 7.2 of the consent. Discuss the results of other monitoring undertaken by the group, which may include monitoring the adverse effects on environmental, heritage, cultural, economic and recreational aspects.
- Determine the actions to be taken in response to monitoring reports and make recommendations to the consent holders as appropriate.
- Provide advice and make recommendations to the consent holders and the Bay of Plenty Regional Council in relation to Part 2 and, in particular, to sections 6(e) and 7(a) of the Resource Management Act 1991, as they relate to this consent.
- Inform the Bay of Plenty Regional Council of the effects of the water take authorised under the consent on the mauri and mauriora of the Waiāri Stream.
- Review and provide feedback to Tauranga City Council and Western Bay of Plenty District Council on the Water Conservation Strategy required to be submitted as a condition of the consent.
- Discuss any other relevant matters that may be agreed by the group.
- Work together with the Kaitiaki Group established under Resource Consent RM16-0204-DC.04; which authorises the Western Bay of Plenty District Council to discharge treated wastewater from the Te Puke Wastewater Treatment Plant to the Waiāri Stream.
- Provide advice and recommendations to the consent holders on the future governance model of the Waiāri Stream.
- Provide recommendations to Te Maru o Kaituna River Authority where required.

Reporting

- The Waiāri Kaitiaki Advisory Group will report to its member entities key discussion points, outcomes and actions following each formal meeting of the Advisory Group.

Co-chair selection process

- Co-chairs will be appointed every three years in alignment with the local government election cycle. The appointments will take place as soon as is reasonably practical following local government elections.
- The Co-chair representing the consent holder will be appointed by the Tauranga City Council and Western Bay District Councils.
- The Co-chair representing iwi/hapū will be appointed by the iwi/hapū representatives.

NB: Resource consent condition 10.2 defines the membership of the Waiāri Kaitiaki Advisory Group.

Resource consent condition 10.7 notes that the Waiāri Kaitiaki Advisory Group shall cease if all members of the group agree the group is to be disbanded. In such case Tauranga City Council and Western Bay of Plenty District Council (as consent holders)[1] shall give written notice of this to the Chief Executive of the Bay of Plenty Regional Council.

Advice notes from Resource Consent #65637 include:

[1] *Insertion made for clarity*

(10) The Kaitiaki Advisory Group may make recommendations to the Regional Council to review conditions of this consent in accordance with condition 11 and s128 of the Resource Management Act 1991.

For the avoidance of doubt, the Advisory Group is informal in nature and is NOT established as a committee, subcommittee or other subordinate decision-making bodies of Council under clause 30(1) of Schedule 7 of the Local Government Act 2002 and does not have any delegated decision-making powers.

Order of Business

1 OPENING KARAKIA

2 APOLOGIES

3 PUBLIC FORUM

3.1 Te Kapu o Waitaha

ATTACHMENTS

Nil

3.2 Tapuika Iwi Authority

ATTACHMENTS

Nil

4 ACCEPTANCE OF LATE ITEMS

5 CONFIDENTIAL BUSINESS TO BE TRANSFERRED INTO THE OPEN

6 CHANGE TO ORDER OF BUSINESS

7 CONFIRMATION OF MINUTES

7.1 Minutes of the Waiāri Kaitiaki Advisory Group meeting held on 11 June 2025

File Number: **A18735649**

Author: **Anahera Dinsdale, Governance Advisor**

Authoriser: **Anne Payne, Principal Strategic Advisor**

RECOMMENDATIONS

That the Minutes of the Waiāri Kaitiaki Advisory Group meeting held on 11 June 2025 be confirmed as a true and correct record.

ATTACHMENTS

1. **Minutes of the Waiāri Kaitiaki Advisory Group meeting held on 11 June 2025**

MINUTES

Waiāri Kaitiaki Advisory Group meeting

Wednesday, 11 June 2025

Order of Business

MINUTES OF TAURANGA CITY COUNCIL
WAIĀRI KAITIAKI ADVISORY GROUP MEETING
HELD AT THE TAURANGA CITY COUNCIL CHAMBERS, LEVEL 1 - 90 DEVONPORT ROAD, TAURANGA
ON WEDNESDAY, 11 JUNE 2025 AT 9.30AM

MEMBERS PRESENT: Cr Hautapu Baker (Chair), Ms Darlene Dinsdale, Mayor James Denyer (WBoPDC), Mr Maru Tapsell, Deputy Mayor John Scrimgeour (WBoPDC), Ms Helen Biel, Mr Maru Tapsell.

IN ATTENDANCE: Peter Bahrs (Manager: Water Services), Kelvin Hill (Manager: Water Infrastructure Outcomes), Keren Paekau (Team Leader: Takawaenga Māori), Jennifer Pearson (Community Engagement Advisor: Infrastructure Delivery), Clare Sullivan (Team Leader: Governance Services) and Anahera Dinsdale (Governance Advisor).

Timestamps are included beside each of the items and relate to the recording of the meeting held on 11 June 2025 at Waiari Kaitiaki Advisory Group - 11 June 2025.

1 OPENING KARAKIA

Mr Dean Flavell opened the meeting with a karakia.

2 APOLOGIES

APOLOGY

COMMITTEE RESOLUTION WA/25/2/1

Moved: Ms Darlene Dinsdale
Seconded: Mayor James Denyer

That the apology for absence received from Cr Steve Morris, Cr Hēmi Rolleston and Mr Manu Pene be accepted.

CARRIED

3 PUBLIC FORUM

Nil

4 ACCEPTANCE OF LATE ITEMS

Nil

5 CONFIDENTIAL BUSINESS TO BE TRANSFERRED INTO THE OPEN

Nil

6 CHANGE TO ORDER OF BUSINESS

Nil

7 CONFIRMATION OF MINUTES

7.1 Minutes of the Waiāri Kaitiaki Advisory Group meeting held on 12 March 2025

COMMITTEE RESOLUTION WA/25/2/2

Moved: Ms Darlene Dinsdale
Seconded: Ms Helen Biel

That the Minutes of the Waiāri Kaitiaki Advisory Group meeting held on 12 March 2025 be confirmed as a true and correct record.

CARRIED

8 DECLARATION OF CONFLICTS OF INTEREST

Nil

9 BUSINESS

TIMESTAMP: 5:00

9.1 Waiāri Operational Report 11 June 2025

Staff Peter Bahrs, Manager: Water Services

Key Points

- The report was taken as read.

In response to questions

- Stream flows were fed from the underground water aquifers and it took time for rain water to flow through to the water aquifers. The water flows were found to be steady otherwise.
- Tauranga City Council (TCC) undertook monthly checks on water quality and fortnightly on bacterial content.
- The Waiāri Kaitiaki Advisory Group would continue as it was part of the Resource Consents so was believed to not be impacted by Local Waters Done Well.
- The maximum allowable take was 690L a second. The maximum amount Council had been taking was 180L.

Discussion points raised

- The significance of Waiāri; research of social, cultural and environmental impacts.

Action:

- That staff include Ms Helen Biel in water quality updates sent to Mr Kepa Morgan for the Mauri Model
- That staff report back to the Waiāri Kaitiaki Advisory Group on whether there was a direct negative impact on Waiāri from Local Waters Done Well.
- That a Wānanga be held to discuss the Regulatory Standards Bill impact on Waiāri Kaitiaki Advisory Group and writing a submission opposing the bill.

COMMITTEE RESOLUTION WA/25/2/3

Moved: Ms Helen Biel
Seconded: Mayor James Denyer

That the Waiāri Kaitiaki Advisory Group:

(a) Receives the report "Waiāri Operational Report 11 June 2025".

(b) Provides feedback or comment on report, as needed.

CARRIED

TIMESTAMP:33.08

9.2 Project Update - Waiāri Rest Area Restoration

External Jason Crummer, Senior Recreation Planner
Chris Nepia, Manager: (Western Bay of Plenty District Council)
Scott Parker

Key Points

- Since the last Waiāri Kaitiaki Advisory Group hui, Council had installed a fully relocatable hand rail at the swimming hole.
- Staff had secured an additional $30,000 of funding from the Te Puke Community Board to go toward the Waiāri rest area restoration project and noted that this was secure as long as the proposed pedestrian bridge remained a priority. Staff had confirmed it was.
- Staff noted that BTW Company were awarded the contract for the project.
- It was noted the next steps were for the Waiāri Kaitiaki Advisory Groups Operations Group to meet with BTW Company on site.
- It was noted that the design work for the project took a long time as opposed to the actual building of the bridge.

In response to questions

- In response to a question, it was noted that the project was funded and was progressing well. The goal for the project was to obtain the Resource Consent in March 2026 and complete the project for the 2027 Summer season.
- Currently, the pedestrian bridge design was to build an underpass under the highway bridge which also brought an aspect of safety for pedestrians.

Discussion points raised

- Concern was raised by an Iwi member regarding health & safety and the depth of Waiāri around the proposed building of the bridge.

COMMITTEE RESOLUTION WA/25/2/4

Moved: Deputy Mayor John Scrimgeour
Seconded: Ms Darlene Dinsdale

That the Waiāri Kaitiaki Advisory Group:

(a) Receives the report "Project Update - Waiāri Rest Area Restoration".

CARRIED

TIMESTAMP: 52:30

9.3 Waiāri Kaitiaki Advisory Group Cultural Recognition update

Staff Kelvin Hill, Manager: Water Infrastructure Outcomes
Jennifer Pearson, Asset Delivery

External Chris Nepia (Western Bay of Plenty Regional Council)
Dean Flavell (Toi Takapū)

PowerPoint Presentation

Key Points

- Staff spoke to the report and highlighted the following:
  - Budget and funding from Western Bay of Plenty District Council, Tauranga City Council and other sources.
  - That the seven cultural initiatives were not listed by priority as iwi members confirmed they were all a priority.
  - The refresh for reporting to Waiāri Kaitiaki Advisory Group to show more substance for members to understand budget and included an action plan.
- Toi Takapū was a collective of local Tapuika artists that had been working to create cultural presence at the Waiāri.
- The group was working to develop a concept plan for a series of art work to go along length of the Waiāri in celebration of the stream.
- Mr Flavell noted that Toi Takapū would like to be involved in the project before construction started so that the group could advise.
- Mr Flavell also gave a short description of areas of interest for art work to be located along the Waiāri.

Discussion points raised

- Resolution (e) was added to the recommendations to reflect discussion on cultural recognition seven.

Action

- That staff report back to the next hui on progress regarding the supply of water to marae and the cultural recognition seven.

COMMITTEE RESOLUTION WA/25/2/5

Moved: Mayor James Denyer
Seconded: Cr Hautapu Baker

That the Waiāri Kaitiaki Advisory Group:

(a) Receives the report "Waiāri Kaitiaki Advisory Group Cultural Recognition update June 2025".

(b) Accepts the revised priority list for Waiāri cultural recognition actions.

Agrees to appoint Toi Takapū to develop the cultural recognition artworks

(d) Endorses WBOPDC plan for the Waiāri Bridge area improvements

Requests staff progress and facilitate discussion on Waiāri water supply to marae.

CARRIED

Attachments

1 Presentation – Item 9.3 – Waiāri Kaitiaki Advisory Group June 25 Final pdf

10 DISCUSSION OF LATE ITEMS

The Manager: Water Infrastructure Outcomes for TCC, Mr Kelvin Hill, noted his role had been disestablished at TCC and this would be his last time attending Waiāri Kaitiaki Advisory Group hui. He thanked the group and wished them well in the future.

The Chair thanked Kelvin for his mahi over his four years in service.

11 CLOSING KARAKIA

Mr Mokoera Te Amo closed the meeting with a karakia.

The meeting closed at 12:26pm.

The minutes of this meeting were confirmed as a true and correct record at the Waiāri Kaitiaki Advisory Group meeting held on 3 September 2025.

.....
Councillor Hautapu Baker
CHAIR

8 DECLARATION OF CONFLICTS OF INTEREST

9 BUSINESS

9.1 Waiari Operational Report 3 September 2025

File Number: **A18699115**

Author: **Peter Bahrs, Manager: Water Services**

Authoriser: **Wally Potts, Director of City Waters**

PURPOSE OF THE REPORT

1. To update the Waiāri Kaitiaki Advisory Group of Stream Flows and other Operational Activities.

RECOMMENDATIONS

That the Waiāri Kaitiaki Advisory Group:

(a) Receives the report "Waiari Operational Report 3 September 2025".

(b) Provides feedback or comment on report, as needed.

(c) Consider the need to continue with ecological surveys in addition to the consent requirements.

EXECUTIVE SUMMARY

2. Overall, while the Waiāri stream flows have shown a downward trend from December 2023, but the average flows remain at higher levels compared to the longer-term average flows. In general stream flows are again improving with the higher than average rainfall during the period April to July this year.

3. The Waiāri ecological monitoring survey was undertaken in February 2025. The report is separately attached.

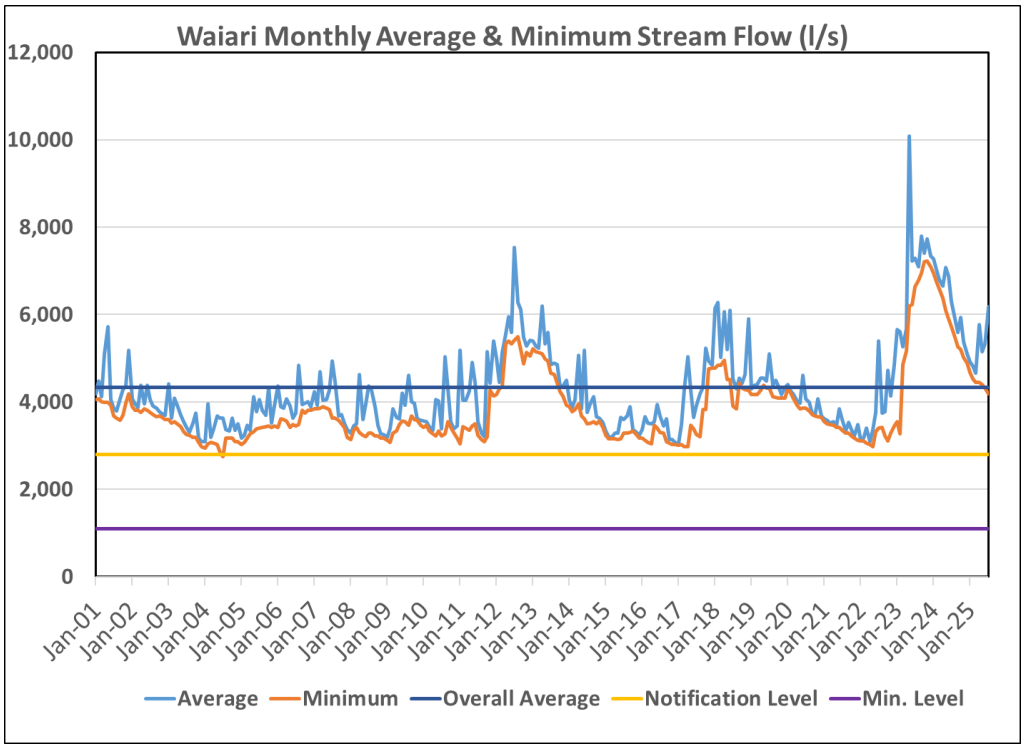
4. Overall, ecological conditions were consistent between upstream and downstream sites, aligning with results from previous years. While some residual effects from the 2023 flood events were observed, the 2025 survey also recorded positive signs, including the presence of torrentfish and giant kōkopu.

5. That the WKAG give consideration to only undertaking surveys as stipulated by the consent conditions, due to council’s financial constraints.

WAIĀRI STREAM FLOW DATA

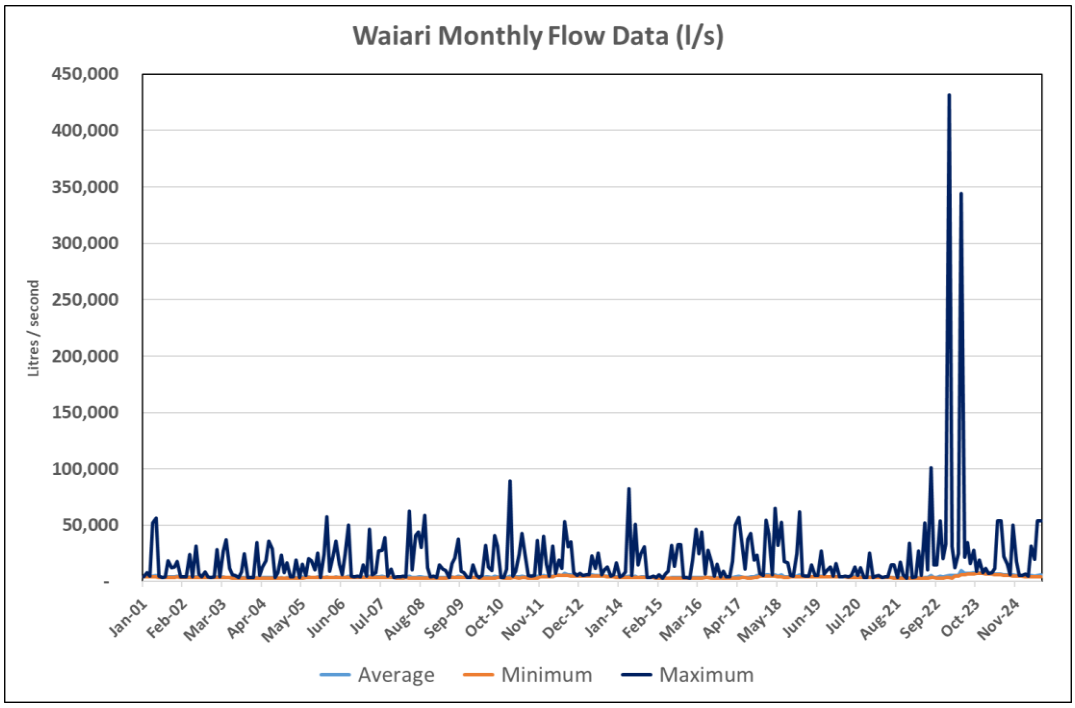
6. The Waiāri stream flow for monthly average and minimum flows from January 2001 to end of July 2025 and is shown in the first graph below. The maximum flows have been omitted to allow better definition of the data.

7. ***Graph of monthly average and minimum Waiāri Flows***



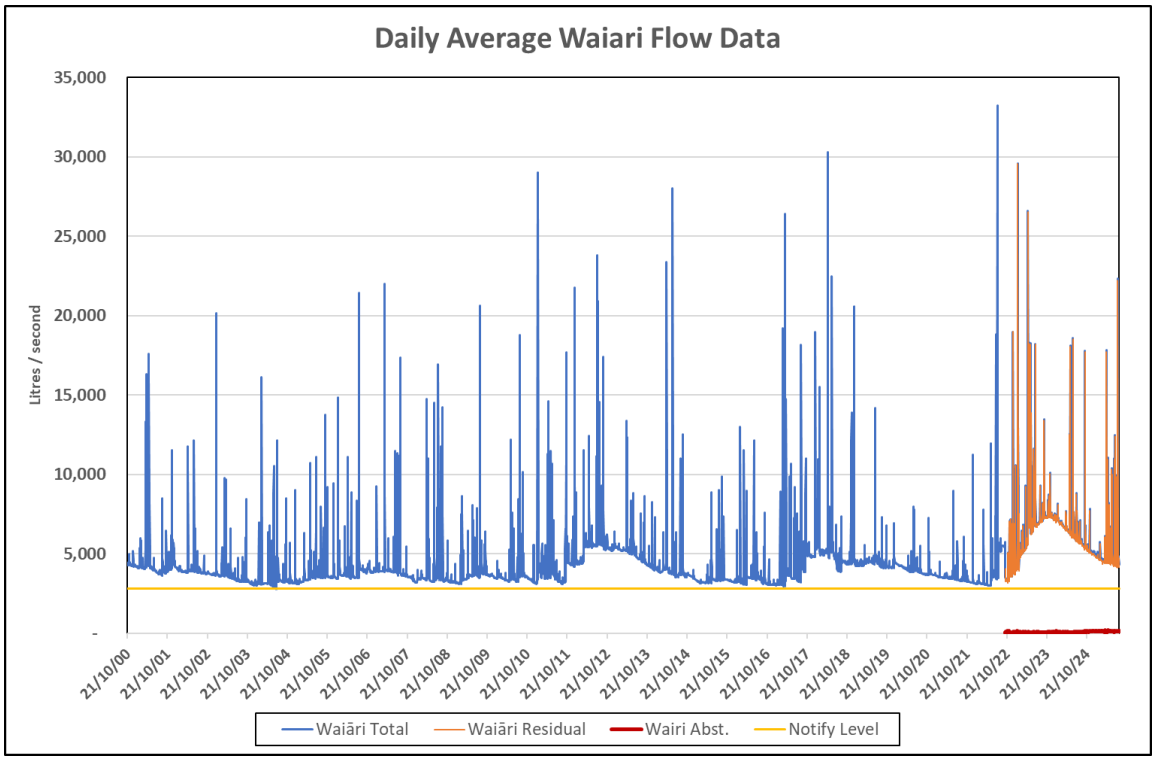
8. The graph shows that overall, the Waiāri flows remain above the longer-term average flows (4,333 l/s), with an average flow of 6,182 l/s in July. Flows have picked up from the low in March 2025, following above average rainfall between April to July with 800mm of rain recorded during this period.

9. ***Graph of monthly maximum, average and minimum Waiāri Flows.***



10. A high flow of 53,976 l/s was recorded on the 30 July 2025. This however remains low compared to the high flow events on 28 January (Auckland Long Weekend) and 9 May 2023 (Cyclone Gabrielle).

11. ***Graph of average daily flows for the Waiāri January 2001 to end July 2025.***



12. The graph shows total daily average flow for the Waiāri from October 2000 to end July 2025 and includes the amounts abstracted and the stream residual flow.

13. The average residual flow for July 2025 was about 6,000 litres per second (l/s). This has dropped slightly compared to July 2024 where flows were at about 6,200 l/s.

14. The average abstraction for July 2025 was 125 l/s with a maximum of 163 l/s. The consent allows for a maximum take of 690 l/s.

WAIĀRI STREAM ECOLOGICAL MONITORING

15. The annual stream ecological monitoring survey was undertaken during the second week of February 2025. The ecological monitoring of the stream is to assess the ongoing impact of water abstraction on stream health and biodiversity. This information integrates into the wider Mauri Model used to assess the life essence of the ecosystem, integrating cultural values with scientific data.

16. The monitoring includes assessment of the following:
    (a) Macroinvertebrate communities
    (b) Fish populations
    (c) Aquatic plant (macrophyte) coverage
    (d) Water quality parameters (e.g., temperature, dissolved oxygen, clarity)

17. The key findings of the report include:

18. **Stream Health**

- Macroinvertebrate indices (MCI and QMCI) indicated good to excellent ecological condition in upper reaches, with slightly lower scores downstream.
- EPT taxa (mayflies, stoneflies, caddisflies), which are pollution sensitive, were present, indicating good water quality.

19. **Fish Communities**

- Native species such as longfin eel, redfin bully, and smelt were recorded.
- Fish QIBI scores ranged from good to excellent, with consistent presence of native species over time.

20. **Water Quality**

- Parameters remained within acceptable ecological thresholds.
- No significant degradation was observed compared to previous years.

21. **Habitat Observations**

- Flooding events had caused some erosion and vegetation loss, particularly in lower stream sites.
- Water clarity was lower in downstream reaches, but not critically impaired.

22. The Waiāri Stream continues to support a healthy aquatic ecosystem. Continued monitoring and collaboration with iwi are essential to ensure long-term sustainability and cultural integrity of the stream.

23. Overall, ecological conditions were consistent between upstream and downstream sites, aligning with results from previous years. While some residual effects from the 2023 flood events were observed, the 2025 survey also recorded positive signs, including the presence of torrentfish and giant kōkopu.

NEXT STEPS

24. That the WKAG receive the report, Waiari Operational Report 3 September 2025 and provides feedback or comment on report, as needed.

25. The ecological report recommends the continued annual ecological monitoring to be continued for several consecutive years as this would be beneficial for the purposes of comparison and trend analysis. These additional surveys are, however, is not required for consent condition requirements.

26. In light of the above, that the WKAG give consideration to only undertaking surveys as stipulated by the consent conditions, due to council's financial constraints.

ATTACHMENTS

1. Waiari Stream Ecological Monitoring Report 2025 - A18698828

Waiāri Water Treatment Plant

Waiāri Stream Annual Ecological Monitoring Report, 2025

Tauranga City Council

21 Devonport Road, Tauranga 3143

Prepared by:

SLR Consulting New Zealand

SLR Project No.: 850.016698.00001

Client Reference No.: TC 3/21

30 July 2025

Revision: 2.0

Making Sustainability Happen

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	21 May 2025	Nicola Pyper	Keren Bennett	Keren Bennett
2.0	30 July 2025	Nicola Pyper	Keren Bennett	Keren Bennett

Basis of Report

This report has been prepared by SLR Consulting New Zealand (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Tauranga City Council (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Executive Summary

Tauranga City Council is authorised under a Bay of Plenty Regional Council resource consent (no. 6537) to abstract water from the Waiāri Stream. Abstracted water is treated at the Waiāri Water Treatment Plant in Te Puke and is used to supply drinking water to the Papamoa coastal strip and Te Tumu growth area, while also providing a backup supply for the Western Bay of Plenty District Council's Te Puke township.

Resource consent conditions required three consecutive years of baseline ecological and water quality monitoring to be undertaken in the Waiāri Stream prior to construction of the water treatment plant commencing. With the plant now operational, ongoing monitoring is also required at the following intervals, as specified by resource consent conditions:

- Three consecutive years after abstraction reaches a rate greater than 30,000 cubic metres per day; and
- Once every five years thereafter.

Therefore, following the commencement of abstraction, annual monitoring was undertaken in 2023 and 2024. In early 2025, Tauranga City Council engaged SLR Consulting New Zealand to repeat the annual water quality and freshwater ecological monitoring at both the Te Puke Waste Water Treatment Plant and the Waiāri Water Treatment Plant intake, in accordance with methodologies employed in previous surveys. Surveys were completed in February 2025 and included a basic water quality assessment, macrophyte monitoring, a quantitative assessment of macroinvertebrate communities, and fish surveys.

Overall, no obvious disparities between upstream and downstream monitoring sites were recorded and, overall, results from the 2025 survey are generally consistent with previous years' surveys, although some lasting impacts of the flood events of 2023 were noted. Some encouraging results (i.e., the capture of torrentfish and giant kōkopu) were also recorded.

Ongoing collection of data for a further several consecutive years would be beneficial for the purposes of comparison and trend analysis, especially if abstraction rates are expected to increase towards the maximum consented amount. However, the surveys could be reduced in scope in years where monitoring is additional to consent requirements. Specifically, macrophyte monitoring and fish surveys could be limited to the survey events required by consent conditions. Ongoing data collection should be carried out in accordance with methods that have been consistently repeated over several years until now, as this will allow trend analyses to be undertaken and the effects of weather events and natural temporal variation to be discerned from any impacts caused by abstraction. This will also enable the detection of any impacts on aquatic ecology that may occur as a result of abstraction from the Waiāri Stream.

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Appendices

Acronyms and Abbreviations

%EPT	The proportional abundance of Ephemeroptera or mayflies; Plecoptera or stoneflies; Trichoptera or caddisflies
EPT	Ephemeroptera or mayflies; Plecoptera or stoneflies; Trichoptera or caddisflies
MCI	Macroinvertebrate Community Index
MCI-sb	Soft-bottomed variant of the Macroinvertebrate Community Index
MfE	Ministry for the Environment
NIWA	National Institute of Water and Atmospheric Research
QIBI	Quantile Index of Biotic Integrity
QMCI	Quantitative Macroinvertebrate Community Index
QMCI-sb	Soft-bottomed variant of the Macroinvertebrate Community Index
SEM	Standard Error of the Mean
TCC	Tauranga City Council
WBOPDC	Western Bay of Plenty District Council
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

1.0 Introduction and Background

The Waiāri Stream is the second largest sub-catchment of the Kaituna River. The stream originates in the Mangorewa Forest and flows to the east of Te Puke in a northerly direction, approximately parallel to the Kaituna River. The surrounding landscape is varied, comprising native forests, exotic forestry, scrublands and agricultural zones. The Waiāri confluences with the Kaituna River just north of Te Puke and immediately upstream of the Kaituna River mouth.

Tauranga City Council (TCC) is authorised under a Bay of Plenty Regional Council (BOPRC) resource consent (no. 6537) to abstract water from the Waiāri Stream. Abstracted water is treated at the Waiāri Water Treatment Plant (WTP) in Te Puke and is used to supply drinking water to the Papamoa coastal strip and Te Tumu growth area, while also providing a backup supply for the Western Bay of Plenty District Council's (WBOPDC) Te Puke township.

Resource consent conditions (Condition 7.1, see Appendix A) required three consecutive years of baseline ecological and water quality monitoring to be undertaken in the Waiāri Stream prior to construction of the WTP commencing.

With the plant now operational, ongoing monitoring is required at the following intervals, as specified by resource consent conditions (Appendix A):

- Three consecutive years after abstraction reaches a rate greater than 30,000 cubic metres per day; and
- Once every five years thereafter.

Additionally, Condition 7.2 of the water take resource consent (Appendix A) outlines specific requirements for the ongoing monitoring. Specifically, quantitative monitoring of macroinvertebrate and fish communities, assessments of macrophyte cover, and basic water quality monitoring are required. Monitoring is to be conducted at designated points upstream and downstream of the Waiāri WTP intake, as well as upstream and downstream of the Te Puke wastewater treatment plant (WWTP), which discharges to Waiāri Stream. Surveys are to be carried out in February of each year of survey and undertaken in accordance with the following resource consent condition requirements:

> *Macroinvertebrate samples are to be collected using quantitative protocols, with macrophytes sampled at all four sites and hard-bottomed samples collected from two sites around the proposed intake site.*
>
> *Fish surveys are to be undertaken using single-pass electric-fishing and baited G-minnow traps at all sites.*
>
> *Water quality (temperature, pH, turbidity and dissolved oxygen) are to be recorded at each site.*

In accordance with these conditions, prior to commissioning of the WTP a series of comprehensive baseline monitoring activities were carried out for three seasons between 2010 – 2012 (Bioresearches, 2010, 2011, 2012). However, commissioning of the water intake project was put on hold due to reduced demand (Bioresearches, 2012). The project was subsequently rescheduled and instream works and construction of the water intake infrastructure commenced in 2018. As an additional five years had passed since the 2012 baseline survey, a repeat of the biological monitoring was undertaken in 2017 (4Sight Consulting, 2017) and supplemented by additional assessments in 2019, 2020, and 2021 (4Sight Consulting, 2019, 2020, 2021), prior to the water take commencing. Construction had begun at the time of the 2019 survey and was ongoing during the 2021 survey. Plant construction also continued during the 2022 survey, although all instream and near-stream

works had been completed. The 2019 through 2021 surveys were additional to the consented requirements and were intended to provide a broader picture of the Waiāri Stream's biological features prior to water abstraction commencing. The 2022 survey was the second five-year survey, in line with the requirements of the resource consent (4Sight Consulting, 2022). Subsequent to the plant's commissioning, post-commissioning monitoring has been conducted to ensure a thorough and ongoing evaluation of the ecological and water quality dynamics in the Waiāri Stream (4Sight Consulting, 2023; Xu, 2024).

TCC engaged SLR Consulting New Zealand (SLR) in early 2025 to undertake annual water quality and freshwater ecological monitoring at both the Te Puke WWTP and the Waiāri WTP intake. The methodologies used aligned with those employed in previous surveys and included a basic water quality assessment, macrophyte monitoring, a quantitative assessment of macroinvertebrate communities, and fish surveys (4Sight Consulting, 2020, 2021, 2022, 2023). This report presents the results of these assessments, which were undertaken over 10 and 11 February 2025 at four sites in the Waiāri Stream. The Tapuika Iwi Authority advised which was the most appropriate time in the Te Arawa Maramataka for freshwater sampling, and the dates of 10 and 11 February were chosen to align with this advice. An iwi representative was present on both sampling days and carried out the fieldwork together with SLR staff.

2.0 Survey Methodology

2.1 Monitoring Locations

Four stream sites were surveyed. The locations of three of these sites aligned with those assessed in the 2010 – 2023 surveys. However, in 2019 and 2020, infrastructure construction works were underway in the vicinity of the WTP intake location, and the original location of Site 2 was not accessible. As such, Site 2 was relocated (Site 2a) to a more accessible location, approximately 650 m downstream of the original sampling site. Limitations to safe access and a lack of suitable habitats for sampling at Site 2a prompted a review of the downstream 'Site 2' location prior to the 2021 survey. Given the streambanks below the intake had become accessible again, Site 2 was relocated in 2021 (Site 2b), closer to the original Site 2 location. This Site 2b was used for surveys undertaken in 2021, 2022, 2023, and 2025. For clarity, Site 2b is referred to as Site 2 within the remainder of the report. We note that in 2024, all survey sites and instream monitoring methods differed from those used on previous occasions (Xu, 2024). Therefore, for the purposes of ongoing comparability, in 2025 survey locations were aligned with those used repeatedly over consecutive sampling years from 2010 to 2023 (4Sight Consulting, 2017, 2019, 2020, 2021, 2022, 2023; Bioresearches, 2010, 2011, 2012).

Monitoring sites 1 and 2 are located approximately 90 m upstream and 120 m downstream, respectively, of the WTP intake (Figure A). These sites were accessed via 315 No. 1 Road, Te Puke. Sites 3 and 4 are located approximately 500 m upstream and 40 m downstream, respectively, of the Te Puke WWTP outfall, in the lower reaches of the stream and approximately five kilometres downstream of the Waiāri WTP (Figure B). These sites were accessed via a public walkway, which has an entrance point at 18 Gordon Street, Te Puke. All survey sites were marked using GPS and photographed for comparison with past and future surveys. An overview of the sampling sites and the WTP and WWTP locations has been shown in Figure C, and NZTM and NZGD coordinates of the monitoring sites have been provided in Table A.


Site 2
WTP Intake
Site 1
0
0.1
0.2
km
Scale: 1:3,437 at A4
Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Date Drawn: 19-May-2025
Project Number: 850.016698.00001
Service Layer Credits:
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Eagle Technology, LINZ, Esri, USGS
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.
LEGEND
WTP Intake
Site Locations
WTP INTAKE SITES 1 AND 2
FIGURE A


Site 4
WWTP Outfall
Site 3
0
0.1
0.2
km
Scale: 1:2,199 at A4
Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Date Drawn: 19-May-2025
Project Number: 850.016698.00001
Service Layer Credits:
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Eagle Technology, LINZ, Esri, USGS
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.
LEGEND
WWTP Outfall
Site Locations
WWTP OUTFALL SITES 3 AND 4
FIGURE B


Site 4
WWTP Outfall
Site 3
Station Rd
Jellicoe St
Dunlop Rd
Te Puke
Cameron Rd
Boucher Ave
No 1 Rd
Te Puke Hwy
Te Matai Rd
Strang Rd
Kenana Rd
Te
Tynan St
John Bird Rd
No 1 Rd
Te Matai Rd
Brown Rd
Site 2
WTP Intake
Site 2
LEGEND
WTP Intake
WWTP Outfall
Site Locations
0
0.5
1
km
Scale: 1:25,000 at A4
Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Date Drawn: 19-May-2025
Project Number: 850.016698.00001
Service Layer Credits:
Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors., Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Eagle Technology, LINZ, Esri, USGS
SLR
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.
OVERVIEW OF SITES
FIGURE C

Table A: Site locations and GPS coordinates (NZGD and NZTM) of Waiāri Stream monitoring sites, February 2025.

Site	Site Description	NZGD (1949)		NZTM (NZGD, 2000)	
		Longitude	Latitude	Easting	Northing
1	Upstream of WTP intake	176.32871812	-37.82238545	1893023	5808866
2	Downstream of WTP intake	176.32980476	-3781902126	1893132	5809236
3	Upstream of WWTP outfall	176.33924955	-37.78492379	1894099	5812991
4	Downstream of WWTP outfall	176.33824937	-37.78262778	1894020	5813249

2.2 Timing of Monitoring

Freshwater monitoring guidelines (for example, Collier *et al.*, 2014) generally advise that monitoring should be avoided in the two weeks following a flood flow or bed-moving high flow. Similarly, macroinvertebrate sampling protocols specify that sampling should not take place within four weeks of a flood (Stark *et al.*, 2001). These measures are implemented to minimise data variability and maximise data reliability. In order to align with these guidelines, rainfall and flow data were used to inform fieldwork scheduling. TCC undertakes rainfall monitoring within the Waiāri Stream catchment, and rainfall data was obtained for the six weeks (1 January to 11 February 2025) prior to the survey. TCC also collects flow data at the intake site. Flow data for the Waiāri Stream for the six-week period prior to the survey was therefore also obtained, to demonstrate the range of flows experienced in the lead-up to the survey.

The survey was also scheduled for the month of February to maximise comparability with previous sampling, which has generally been undertaken in February, with a small number of sampling occasions occurring during March. Moreover, advice was provided by the Tapuika Iwi Authority so that sampling could occur at the most appropriate time in the Te Arawa Maramataka.

Monitoring was undertaken on 10 and 11 February 2025.

2.3 Instream Monitoring

2.3.1 Water Quality Monitoring

Water temperature (°C), dissolved oxygen concentration (mg/L) and saturation (%), specific conductivity (µs/cm), and pH were measured at each site on two occasions using a pre-calibrated EXO2 multiparameter sonde[1]. Measurements were made at each site at the commencement of field surveys on 10 and 11 February 2025.

2.3.2 Macroinvertebrate Monitoring

Macroinvertebrates are good indicators of water quality, as they show a wide range of responses depending on their degree of sensitivity to pollution. The macroinvertebrate community at a given site may be considered a result of the prevailing habitat and water

[1] We note that in previous years, turbidity has been measured and is a required monitoring parameter under consent condition 7.2. Regrettably, there was a fault with the water quality sonde used in 2025 and turbidity wasn't able to be measured. While this is a gap in the 2025 monitoring round, we recommend this be included in ongoing monitoring to inform trend analysis.

quality. Consequently, macroinvertebrates are used widely in New Zealand as indicators of water quality.

Macroinvertebrate samples were collected from each of the four sites. The resource consent condition specifies that:

Invertebrate samples shall be collected using Protocols C3: Hard-bottomed Quantitative and C4: Soft-bottomed Quantitative of the Ministry for the Environment's "Protocols for Sampling Macroinvertebrates in Wadeable Streams". Hard substrates will be sampled above and below the intake and macrophytes will be sampled at four locations.

Consistent with previous monitoring occasions, there was insufficient aquatic plant growth at the upstream sites (sites 1 and 2) to allow sampling of macrophytes (4Sight Consulting, 2017, 2019, 2020, 2021, 2022, 2023; Bioresearches, 2010, 2011, 2012). Additionally, areas of cobble and boulder habitat were generally absent, or outside of the sampling area, with soft sandy substrates dominating wadeable areas. For practicality and safety reasons, this precluded the use of either Protocol C3 or C4 (Stark *et al.,* 2001), specified in the conditions of consent. Within the shallower – and safely accessible – sections of the stream, woody debris constituted the largest form of stable habitat. The Ministry for the Environment (MfE) protocols (Stark *et al.*, 2001) recommend sampling woody debris when macrophytes are absent from soft-bottomed stream habitats. Therefore, macroinvertebrate samples were collected from the woody debris at these two sites. Four replicate macroinvertebrate samples were collected from both sites.

At Site 1 and 2, samples were collected by placing a D-net (aperture 400 mm, mesh 0.5 mm) downstream of a section of wood and gently scrubbing the wood with a soft nylon brush to dislodge invertebrates, allowing the water current to carry individuals into the net. Macroinvertebrates from a total estimated surface area of one square metre were collected for each sample before being transferred into a plastic storage container. Each sample was stored separately and preserved in 70%-80% isopropyl alcohol.

At downstream sites (sites 3 and 4), above and below the WWTP outlet, macrophytes were sampled following macroinvertebrate sampling Protocol C4: Soft-bottomed Quantitative (Stark *et al.*, 2001). Four replicate samples were collected from each of these sites. Samples were collected from the submerged tips of macrophytes. Sampled macrophytes almost entirely comprised Canadian pond weed (an oxygen weed, *Elodea canadensis*), with a small amount of stonewort (*Nitella sp.*), also sampled.

For each replicate sample at sites 3 and 4, approximately 1.0 – 1.5 L of weed was collected in front of the D-net. The weed was transferred to a lidded bucket containing approximately 1.0 L of stream water. The bucket was shaken vigorously twenty times to dislodge individuals and the water contents poured through a 0.5 mm sieve. The shaking process was carried out a further two times for each sample before the contents of the sieve were transferred to a plastic storage container and Each sample was stored separately and preserved in isopropyl alcohol. Macrophytes were retained, transferred to a plastic bag, chilled, and returned to the laboratory to be dried at 70 °C for 24 hours before weighing.

Preserved macroinvertebrate samples were returned to the laboratory and sorted. Macroinvertebrates were identified to the lowest level practicable by an experienced taxonomist (B. Stansfield, EIA Limited) and counted using sample processing Protocol P3 (Stark *et al.*, 2001). The following biotic indices were calculated to assess the ecological condition of the community. Indices calculated included:

- **Taxa richness** refers to the number of distinct types of taxa within a sample.
- Ephemeroptera or mayflies; Plecoptera or stoneflies; Trichoptera or caddisflies (EPT, excluding *Oxyethira* and *Paroxyethira* species) comprise insects generally sensitive

to pollution. The **percentage of EPT taxa** represents the proportion of all taxa collected that that belong to one of these groups.

- **The percentage of EPT individuals** (%EPT) quantifies the proportional abundance of the three generally pollution-sensitive orders of insect out of all individual macroinvertebrates recorded from each sample.
- **The Macroinvertebrate Community Index (MCI)** evaluates the presence of individual macroinvertebrate taxa recorded based on an assigned score that reflects their tolerance or sensitivity to pollution, with scores ranging from one (highly tolerant) to ten (highly sensitive) (Stark, 1998).
- **The Quantitative Macroinvertebrate Community Index (QMCI)** was calculated from each site as quantitative protocols were used. The QMCI is also based on the average pollution sensitivity scores for individual taxa recorded. The QMCI shares similarities with MCI but also considers the number of individuals of each collected taxon in its assessment.

The soft-bottomed MCI variants (MCI-sb and QMCI-sb) were calculated according to equations set out in Stark and Maxted (2007). Scores of >120 and >6.0 (for MCI/MCI-sb and QMCI/QMCI-sb, respectively) are indicative of clean water or 'excellent' habitat quality, 100 – 120 and 5.0 – 6.0 are indicative of 'good' quality or mild organic pollution, 80 – 100 or 4.0 – 5.0 are indicative of 'fair' quality or probable moderate pollution, and scores <80 and <4.0 are indicative of 'poor' quality or probable severe pollution (Stark, 1998; J.D. Stark & J.R. Maxted, 2007). These water quality categories are presented in Table B. Raw macroinvertebrate results are presented in Appendix B.

In previous years, a trend analysis has been undertaken to inform a comparison between sites (4Sight Consulting, 2017, 2019, 2020, 2021, 2022; Bioresearches, 2010, 2011, 2012). However, the March 2023 survey represents the first survey undertaken after abstraction commenced. Additionally, in 2023, the instream ecology of the Waiāri was heavily influenced by the atypical flows and weather patterns of the 2022/2023 summer season. Further to this, in 2024, macroinvertebrate monitoring was not undertaken at the Te Puke WWTP[2], and a different sample collection methodology was used at the Waiāri WTP intake sites (semi-quantitative methodology was used and samples from each site were pooled). Therefore, trend analyses would not add insight to our assessment in 2025. However, statistical and trend analyses will be undertaken in future years, after consecutive seasons of abstraction from the Waiāri Stream and after consistent monitoring methodology has been applied over several years.

Table B: Interpretation of MCI and QMCI values based on Stark (1998) and J.D. Stark & J.R. Maxted (2007).

Quality	Descriptors	MCI or MCI-sb	QMCI or QMCI-sb
Excellent	Clean water	≥120	≥6
Good	Doubtful quality / possible mild pollution	100 – 120	5 – 6
Fair	Probable moderate pollution	80 – 100	4 – 5
Poor	Probable severe pollution	<80	<4

[2] The Morphum Environmental report (Xu, 2024) indicated that flow conditions were unsafe for instream sampling.

2.3.3 Macrophyte Monitoring

The macrophyte cover and species composition survey was carried out by visual assessment at each site. Water depth and swift, deep flows in the Waiāri Stream at both the Te Puke WWTP and Waiāri WTP prevented field assessors from wading across the full width of the stream. However, excellent visual clarity (i.e., low turbidity) enabled the visual assessment of five replicate transects across the stream at each site from the streambank. The transects were located at ten metre intervals and were used to identify the macrophyte species present and visually estimate the percentage cover of each identified macrophyte species. Raw macrophyte results are presented in Appendix B.

2.3.4 Fish Surveys

To sample fish communities, three unbaited fyke nets and five Marmite-baited Gee minnow traps were deployed at each site. Water depth, soft sediments, and swift stream flows prevented effective electric fishing at all sites.

All fish captured were identified, counted, and their size estimated before being returned to their habitats. A Quantile Index of Biotic Integrity (QIBI) was calculated for each site based on fish species present, altitude, and distance inland (Joy *et al.*, 2007; Suren, 2016).

3.0 Results

3.1 Stream Flows and Rainfall

Data provided by TCC reveal that the flow in the Waiāri Stream increased to 5.3 m^3/s on 27 January 2025. Flows declined that same day and continued to recede over the following two weeks. Monitoring work commenced on 10 February 2025, 14 days after the peak flow and during a period of relative stability in the hydrograph.

The elevated flow on 27 January was not considered significant and represented a small increase above base flows. Nevertheless, a period of a fortnight was allowed for the stream to stabilise. Therefore, the preceding flow conditions were in accordance with the prerequisites for macrophyte, macroinvertebrate, and fish monitoring protocols. The timing of the surveys also aligned with Te Ngao Hua of the Te Arawa Maramataka, which Tapuika Iwi Authority advised was the optimal time for sampling.

Flow data for the six weeks leading up to the 2025 survey are shown in Figure D along with residual stream flows overtopping the WTP weir. Average daily abstraction for this period was 0.14 m^3/s. Average daily rainfall for 2025 prior to the site visit is also provided in Figure E. Weather conditions were fine on both survey days.

Figure D: Waiāri Stream flow rate data (based on hourly averages) for the six week period leading up to the 2025 field surveys (31 December 2024 to 11 February 2025). The blue line shows flow prior to abstraction and the red line shows residual flows over the weir after abstraction. Data courtesy of TCC.

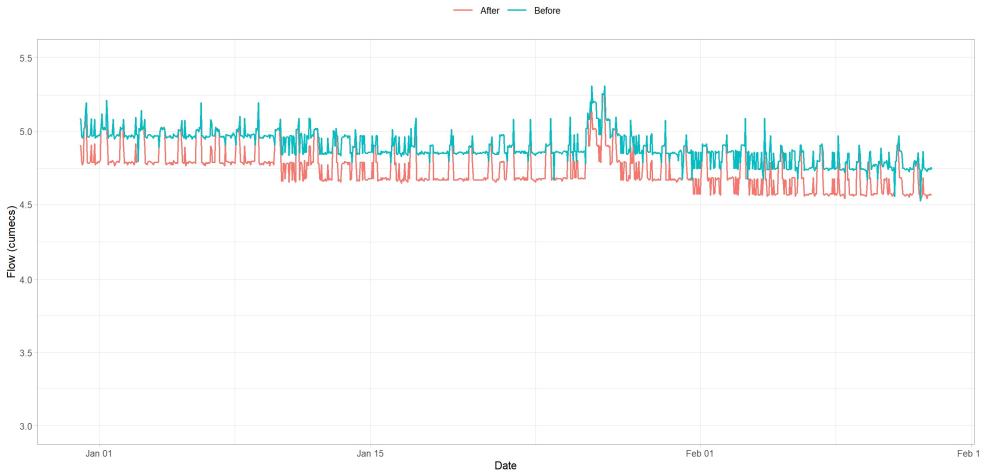
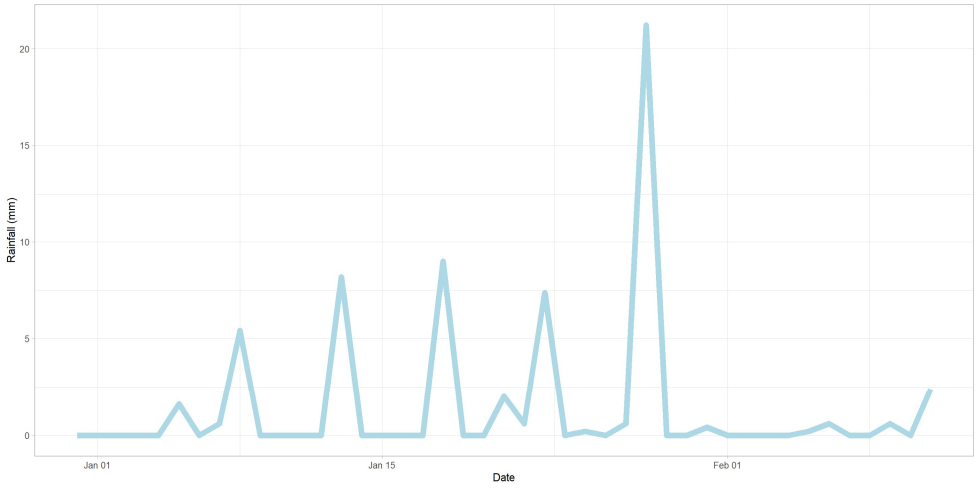


Figure E: Rainfall data (daily) for the six-week period leading up to the 2025 field surveys. Data courtesy of TCC, collected at the Waiāri WTP.



3.2 Site Descriptions, Instream Habitats, and Water Quality

Basic water quality measurements were collected from each site on 10 February 2025 and again on 11 February 2025 (Table C and Table D). The timing of the site visits meant that measurements were made at varying times throughout the day.

3.2.1 Waiāri Stream WTP Intake – Sites 1 and 2

The Waiāri Stream flows steadily through the channel surrounding the water intake, following a slightly sinuous path through the gully floor. The true right bank of the stream near the WTP consists of a steep ten metre riparian margin, vegetated with sparsely planted natives and various herbaceous exotics. A steep corridor with a mixture of native and exotic trees is present, separating the riparian edge from the agricultural land beyond. The true left bank directly adjacent to the intake structure is low, transitioning to a well-connected floodplain of primarily exotic riparian vegetation. Some sections of the channel near the WTP weir feature rock lined banks, although the majority of the riparian margin comprises soft sediments. Access to Site 1 was challenging as the soft banks were steep, unstable, and densely vegetated.

The Waiāri WTP intake structure is located adjacent to the true left bank of the stream and features a low-lying concrete weir structure that divides the channel. The reach directly downstream of the weir has been lined with riprap to mitigate erosion.

Sites 1 (Photo A) and 2 (Photo B) are located upstream and downstream of the WTP intake, respectively. Extensive bank erosion and vegetation disturbance were observed during monitoring in 2023, and were the outcomes of significant flood events. In 2025, erosion scars appeared healed over and exotic weeds, primarily mugwort (*Atemisia sp.*), bindweed (*Calystegia sp.*), montbretia (*Crocosmia sp.*), and lupins (*Lupinis sp.*) were prevalent on streambanks. This vegetative mix is similar to that recorded in previous monitoring cycles. However, near Site 2, replanting of native species had previously occurred on recontoured banks following the completion instream works. However, the 2023 flooding removed and flattened a large amount of this vegetation, especially on the true left bank. It appears that these plantings have not recovered and the area is dominated by exotic weeds (Photo B).

Mesohabitat composition was similar at both sites. Water flow is moderately swift and the hydrological regime at both locations is diverse, featuring runs with shorter sections of riffles over woody debris. The channel at both sites is of similar depth and width, and the dominant substrate type is sand. However, instream boulders and woody debris contribute to habitat complexity throughout the channel. A light cover of filamentous algae was evident on stable rock and large woody debris surfaces at both sites.

Photo A: Representative photos of Site 1 (Waiāri Stream upstream of the Waiāri WTP intake structure) looking upstream (left) and downstream (right) from the true left bank, February 2025.

Photo B: Representative photos of Site 2 (Waiāri Stream downstream of the Waiāri WTP intake structure), looking across the channel (left) and downstream (right) from the sample site, February 2025.


Water quality monitoring at sites 1 and 2 was undertaken in the mornings of 10 and 11 February 2025. Results show that the water was seasonally cool (14.1°C – 14.4°C) and well-oxygenated (101.2% - 105.3%; 10.4 mg/ L- 10.8 mg/L), with a relatively low conductivity (maximum measurement of 75.1), and a pH between 6.7 and 6.9. Visual clarity was also excellent at both sites. No significant differences were noted in water temperature, dissolved oxygen saturation and concentration, or specific conductivity between the two sites. The water quality monitoring assessment results for the Waiāri WTP intake monitoring sites are presented in Table C.

Table C: Water quality parameters of the Waiāri Stream upstream and downstream of the Waiāri WTP intake structure, 10 and 11 February 2025.

Parameter	Waiāri U/S WTP Intake (Site 1)		Waiāri D/S WTP Intake (Site 2)	
Date	10/02/2025	11/02/2025	10/02/2025	11/02/2025
Time (NZDST)	11:10	10:10	10:20	9:15
Temperature (°C)	14.4	14.2	14.3	14.1
Dissolved oxygen saturation (%)	105.3	104.7	102.5	101.2
Dissolved oxygen concentration (mg/L)	10.8	10.8	10.5	10.4
Specific conductivity (µS/cm)	74.9	74.8	75.1	75.0
pH	6.8	6.7	6.9	6.8

3.2.2 Lower Waiāri Stream – Sites 3 and 4

Site 3 (Photo C) and Site 4 (Photo D), located upstream and downstream of the WWTP outfall, respectively, are situated approximately two kilometres upstream of the confluence with the Kaituna River and five kilometres downstream of the WTP intake. This section of the stream flows through low-lying floodplains, dominated by pastural farmland, and is flanked

on both sides by grazed stop banks used for flood protection. Consistent with previous surveys, riparian vegetation was predominantly a mix of exotic pasture grasses, common pasture weeds, tall herbaceous species, and the occasional willow. Exotic vegetation provided a thin buffer of dense vegetation on both sides of the watercourse. Streambanks were moderately steep and there was evidence of past erosion events.

Hydrological diversity is poor in this section of the Waiāri Stream, which predominantly features runs. Instream habitat conditions were largely consistent with previous years' observations, with the streambed substrates throughout each reach characterised by soft sand, with finer silty sediments trapped within the macrophyte beds. In 2023, a reduction in Canadian pondweed (the oxygen weed, *Elodea canadensis*) was observed and was attributed to flood events. Observations in February 2025 suggest the weed beds have not recovered to pre-flood levels. However, previous surveys (4Sight Consulting, 2017, 2019, 2020, 2021, 2022, 2023; Bioresearches, 2010, 2011, 2012) have demonstrated that the extent of Canadian pondweed is somewhat volatile and affected by fluctuating flows, such as flood events and periods of stable flow.

Poor water clarity was observed at these lower Waiāri sites in 2023. It was considered likely that this was a result of recent flooding events in early 2023. Observations in 2025 revealed good visual clarity, and it appears that water quality had returned to a condition similar to pre-flood conditions.

In the lower Waiāri Stream, at Sites 3 and 4 surrounding the WWTP, discrete water sampling was undertaken in the early afternoon of 10 and 11 February 2025. Dissolved oxygen concentrations were at saturation, ranging between 103.4% and 108.1% and 10.2 mg/L and 10.7 mg/L. Conductivity at both lower Waiāri Stream sites was relatively low (76.5 – 86.8 µS) but, consistent with previous surveys, was very marginally elevated when compared to the upper stream sites, Sites 1 and 2. Recorded pH levels ranged between 7.0 and 7.2, and so were very slightly higher than those recorded in the upper Waiāri Stream.

Photo C: Representative photos of Site 3 (Waiāri Stream upstream of the Te Puke WWTP discharge) looking upstream (left) and downstream (right), February 2025. Note the excellent water clarity.

Photo D: Representative photos of Site 4 (Waiāri Stream downstream of the Te Puke WWTP discharge looking) upstream (left), and downstream (right) within the sample area, February 2025. The water clarity within this reach was also excellent.

Table D: Water quality parameters of the Waiāri Stream upstream and downstream of the Waiāri WWTP, 10 and 11 February 2025.

Parameter	Waiāri U/S WWTP Outfall (Site 1)		Waiāri D/S WWTP Outfall (Site 2)	
Date	10/02/2025	11/02/2025	10/02/2025	11/02/2025
Time (NZDST)	14:28	13:35	13:22	12:00
Temperature (°C)	16.0	16.0	16.0	15.8
Dissolved oxygen saturation (%)	108.1	105.4	103.6	103.4
Dissolved oxygen concentration (mg/L)	10.7	10.4	10.2	10.3
Specific conductivity (µS/cm)	76.5	76.6	86.8	86.7
pH	7.1	7.0	7.2	7.1

3.3 Macroinvertebrate Communities

The 2025 macroinvertebrate data is presented in its entirety in Appendix Band summarised (including biological indices) in Table E, Figure F, and Figure G. Relative abundance of each main taxonomic group is presented in Figure H.

3.3.1 Upper Waiāri Stream, WTP intake – Sites 1 and 2

The macroinvertebrate communities at the sites upstream and downstream of the WTP intake were similar and were dominated by true flies (Dipterans), which are generally pollution-tolerant. True flies comprised 34% to 97% of the total abundance of each sample at Site 1, and 63% to 99% of the total abundance at Site 2 (Figure H). In particular, the Chironomid midge larva, Tanytarsini, was abundant. Tanytarsini feed on fine particulate organic matter, including algae. Algae growth was moderately well-established on stable wood substrates at both sites. The dominance of true flies was lower in comparison to the 2023 survey, and caddisflies were proportionally more abundant in 2025. The caddisfly taxa identified comprised a diversity of functional groups, including those that feed on algae, those that feed on leaf litter, and those that predate on invertebrates.

Taxa from the generally sensitive EPT (Ephemeroptera, Plecoptera, Trichoptera; or mayflies, stoneflies, caddisflies) comprised just over half of the taxa richness at the upper Waiāri Stream sites: 9.3 (+/- 5.5 SEM) of the 18 (mean) taxa recorded from Site 1, and 9.5 (+/- 0.95 SEM) of the 17.3 recorded from Site 2 (Figure F). The proportion of taxa represented by EPT was slightly higher at the downstream site. However, as a proportion of the community (i.e., percentage of individuals represented by EPT), EPT comprised between 2.5% and 26.6% of total community abundance at Site 1 (mean 11.7% +/- 5.5 SEM), and from 0.8% to 26.7% at Site 2 (mean 15.9% +/- 5.7 SEM) (Figure F). This indicates that that while the EPT taxa were relatively diverse at these sites, they were typically present in a low to moderate abundance within the community (Figure H).

Table E: Summary of macroinvertebrate biological indices for the Waiāri Stream, February 2025.

Site	Sample	Taxa Richness (No. of Taxa)	No. EPT Taxa	%EPT Taxa	%EPT Abundance[3]	MCI-sb	QMCI-sb
1 (Waiāri U/S WTP)	A	16	9	56.3	26.6	111.3	4.3
	B	15	7	46.7	4.5	110.0	3.1
	C	20	10	50.0	2.5	106.6	4.6
	D	21	11	52.4	13.0	105.8	4.7
Mean		**18**	**9.3**	**51.3**	**11.7**	**108.4**	**4.2**
SEM[4]		**1.47**	**0.83**	**2.0**	**5.47**	**1.31**	**0.36**
2 (Waiāri D/S WTP)	A	20	11	55.0	13.6	96.3	4.3
	B	16	8	50.0	22.3	104.3	5.2
	C	17	9	52.9	0.8	112.2	4.5
	D	16	10	62.5	26.7	110.4	4.4
Mean		**17.3**	**9.5**	**55.1**	**15.9**	**105.8**	**4.6**
SEM		**0.95**	**0.65**	**2.7**	**5.71**	**3.6**	**0.21**
3 (Waiāri U/S WWTP)	A	13	7	53.9	27.9	103.2	4.1
	B	12	7	58.3	30	108.2	3.9
	C	16	10	62.5	21.4	100.2	3.4
	D	16	8	50.0	22.6	96.3	4.2
Mean		**14.3**	**8**	**56.2**	**25.5**	**102.0**	**3.9**
SEM		**1.03**	**0.71**	**2.7**	**2.06**	**2.51**	**0.18**
4 (Waiāri D/S WWTP)	A	17	11	64.7	32.6	105.2	3.8
	B	20	9	45.0	21.6	97.7	3.3
	C	16	8	50.0	14.5	104.3	3.3
	D	15	8	53.3	20.3	102.5	3.6
Mean		**17**	**9**	**53.3**	**22.3**	**102.4**	**3.5**
SEM		**1.08**	**0.71**	**4.2**	**3.78**	**1.66**	**0.13**

[3] %EPT (abundance) = the proportion of community abundance made up by EPTs.

[4] SEM = Standard Error of the Mean

Figure F: Macroinvertebrate indices including a) total number of taxa, b) total number of EPT taxa, c) %EPT taxa, d) %EPT (abundance), e) MCI-sb score, and f) QMCI-sb score. Mean site scores (+/-SEM) are illustrated in red.

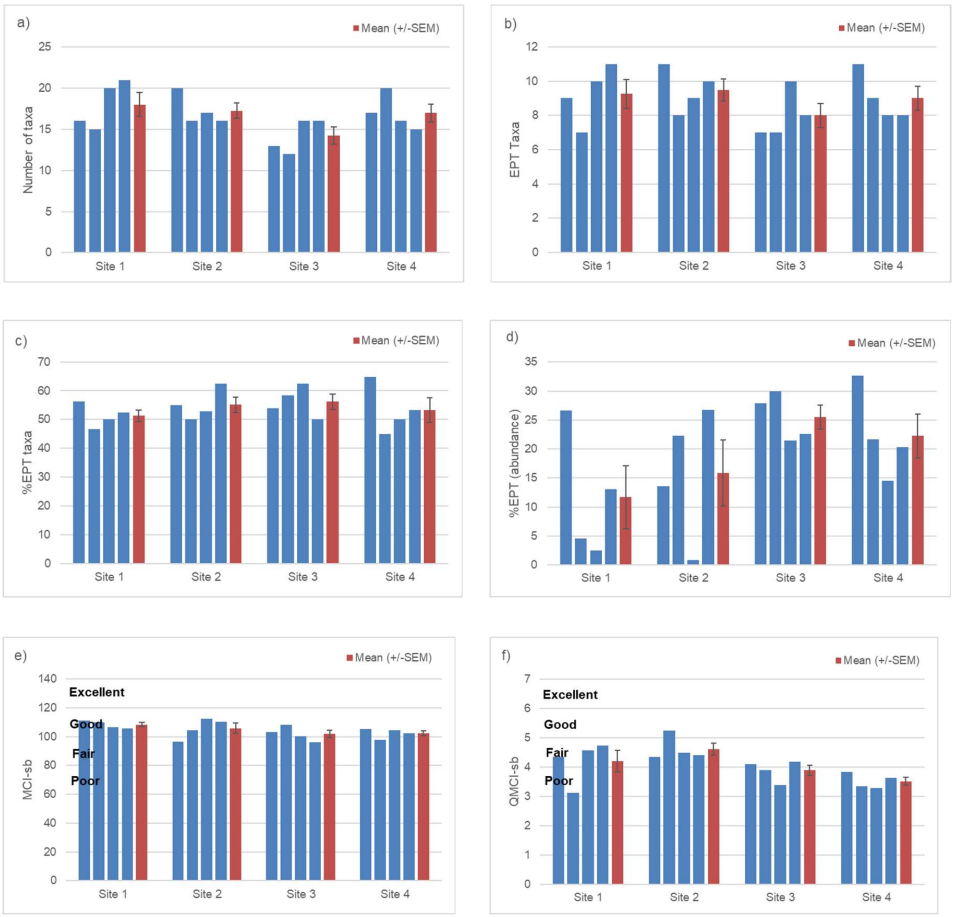
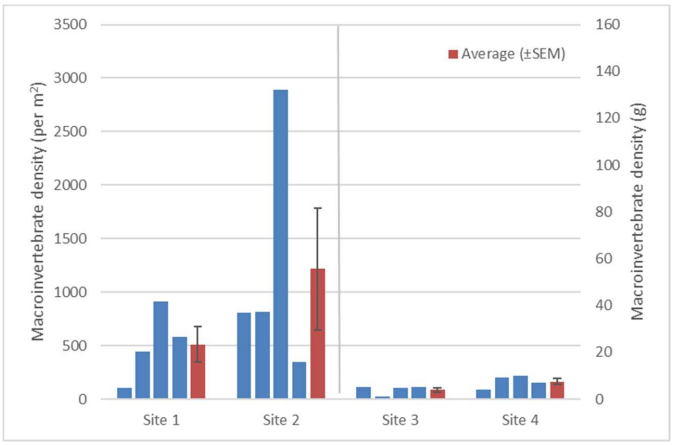


Figure G: Macroinvertebrate density. Mean site scores (+/-SEM) are illustrated in red.



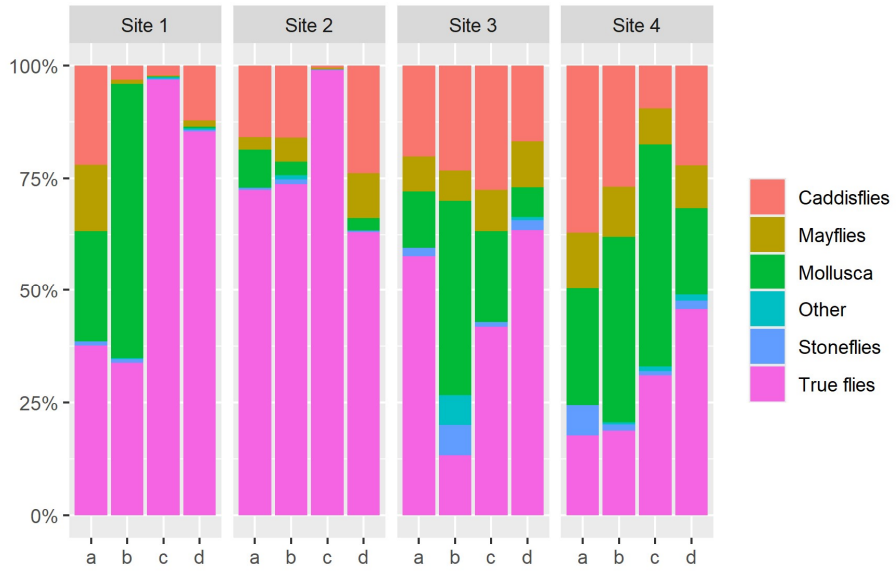
Data indicate that the proportion of the community represented by EPT was higher downstream than upstream of the Waiāri WTP intake. The upstream site (Site 1) also supported a high proportion of molluscs, predominantly the common freshwater snail *Potamopyrgus*, which are generally pollution tolerant. However, overall, pollution tolerant taxa were dominant both upstream and downstream of the Waiāri WTP intake. These findings align with other calculated macroinvertebrate indices (discussed below).

The macroinvertebrate communities at sites 1 and 2 displayed a moderate diversity, with a mean taxa richness of 18 (+/-1.47 SEM) at Site 1 and 17.3 (+/-0.93 SEM) at Site 2 (Figure F). The MCI-sb scores for Site 1 ranged from 105.8 to 111.7 (mean 108.4 +/- 1.3 SEM), indicating 'good' habitat and water quality conditions on this survey occasion (Figure F) (Stark & Maxted, 2007). MCI scores from Site 2 (downstream) were very slightly lower, ranging from 96.3 to 112.2 (mean 105.8 +/- 3.6 SEM), but also predominantly indicating 'good' instream habitat and water quality conditions.

The QMCI-sb score, which considers the abundance of each scoring taxon, ranged from 3.1 to 4.7 (mean 4.2 +/- 0.4 SEM) for Site 1. These scores are indicative of 'poor' to 'fair' habitat and water quality conditions. At Site 2, downstream of the Waiāri intake structure, the QMCI-sb scores were slightly higher, ranging from 4.3 to 5.2 (mean 4.6 +/- SEM 0.2), indicative of 'fair' to 'good' habitat and water quality conditions (Figure F). The disparity between the habitat quality reflected by MCI and QMCI scores is due to the numerical dominance of lower scoring – or more tolerant – taxa within the community, such as midges. A moderate to high number of high-scoring taxa was present at these sites, however they typically only occurred at relatively low abundances. The presence of high-scoring taxa can be a good indication that water quality is generally good, while the predominance of lower-scoring taxa likely reflects the abundance of algae, which supports lower-scoring, grazing species.

Consistent with previous surveys, macroinvertebrate densities (Figure G) were variable between samples at both sites, but, on average, lower at Site 1 (mean 511.8 individuals/m^2 +/- 166.7 SEM) than at Site 2 (mean 1217 individuals/m^2 +/- 568.5 SEM). Mean macroinvertebrate abundance was up by almost half (43%) at Site 1 compared to abundances recorded in 2023. Abundances at Site 2 have increased significantly by 148.9%.

Figure H: Percentage composition (relative abundance) of major macroinvertebrate taxonomic groups at each site in the Waiāri Stream, February 2025.



3.3.2 Lower Waiāri Stream, Te Puke WWTP – Sites 3 and 4

Unlike sites 1 and 2 in the upper Waiāri Stream, the macroinvertebrate communities at both lower Waiāri sites (sites 3 and 4) had a more even spread across taxonomic groups, with good representation by Diptera (true flies), Mollusca, and Trichoptera (caddisflies). In particular, midges from the Orthoclad sub-family, as well as the common freshwater snail, *Potamopyrgus*, were dominant. True flies comprised 13.3% to 63.5% of the total abundance of each sample at Site 3, and 17.8% to 45.8% of the total abundance at Site 4 (Figure H). At Site 3, molluscs comprised 6.6% to 43.3% of sample abundance, and at Site 4 they comprised 19.3% to 41.3% of the total sample abundance (Figure H). *Potamopyrgus* is a common native snail, and sample results prior to 2023 had a comparatively high abundance of this taxon and other molluscs. However, in 2023, following the large flood events, true fly larvae were dominant. In 2022 molluscs comprised 94% to 99% of sample abundance at Site 3 and 26% to 76% of the abundance at Site 4. In contrast, in 2023, at Site 3 molluscs comprised 1.3% to 5.5% of total abundance, and at Site 4 comprised 9.1% to 17.3% of total sample abundance. This marked difference between 2022 and 2023 was attributed to the multiple flood events experienced in January and February 2023. The results from the 2025 surveys suggest the macroinvertebrate community has returned to a composition more similar to that before the floods. However, some observed changes, such as the increased abundance of true fly larvae, may be a semi-permanent change in the community caused by the flood events.

In 2025, a slightly higher taxa diversity was recorded at the downstream site than the upstream site, with a mean taxonomic richness of 14.3 (+/- 1.0 SEM) at Site 3, upstream of the WWTP discharge, and 17 (+/- 1.1 SEM) at the most downstream site, Site 4 (Table E, Figure F). EPT taxa were recorded at a moderate diversity at both sites and comprised, on average, 8 (+/- 0.7 SEM) of the taxa recorded from Site 3, and 9 (+/- 0.7 SEM) of the taxa recorded from Site 4 (Figure F). This equated to 56.2% (+/- 2.7 SEM) and 53.3% (+/- 4.2 SEM) of the taxa richness at each site, respectively. However, overall, EPT taxa made up

25.5% (+/- 2.1 SEM) of the total community abundance at Site 3 and 22.3% (+/- 3.8) of the total community abundance at Site 4 (Figure F). Therefore, while the number of EPT taxa present was around half of the recorded species, EPTs were typically present at relatively lower numbers.

Of interest, the lower Waiāri Stream samples included a moderate abundance of double-gill mayfly genuses, namely *Austronella* and *Zephlebia*. While *Austronella* is somewhat tolerant of pollution (MCI-sb score of 4.7), *Zephlebia* is sensitive to pollution (MCI-sb score of 8.8) and this genus is indicative of good habitat and water quality, especially where other mayflies are common. Both *Austronella* and *Zephlebia* feed on diatom algae or other organic matter[5].

MCI scores ranged from 96 to 108 (mean 102.0 +/- 2.5 SEM) at Site 3, upstream of the WWTP discharge, and from 98 to 105 (mean 102.4 +/- 1.7 SEM) at Site 4, below the discharge (Figure F). This indicates ‘fair’ to ‘good’ instream habitat quality.

QMCI-sb scores at Site 3 ranged between 3.4 and 4.2 (mean 3.9 +/- 0.2 SEM) and between 3.3 and 3.8 (mean 3.5 +/- 0.1 SEM) at Site 4, indicating ‘poor’ to ‘fair’ conditions at Site 3 and ‘poor’ conditions at Site 4 (Figure F).

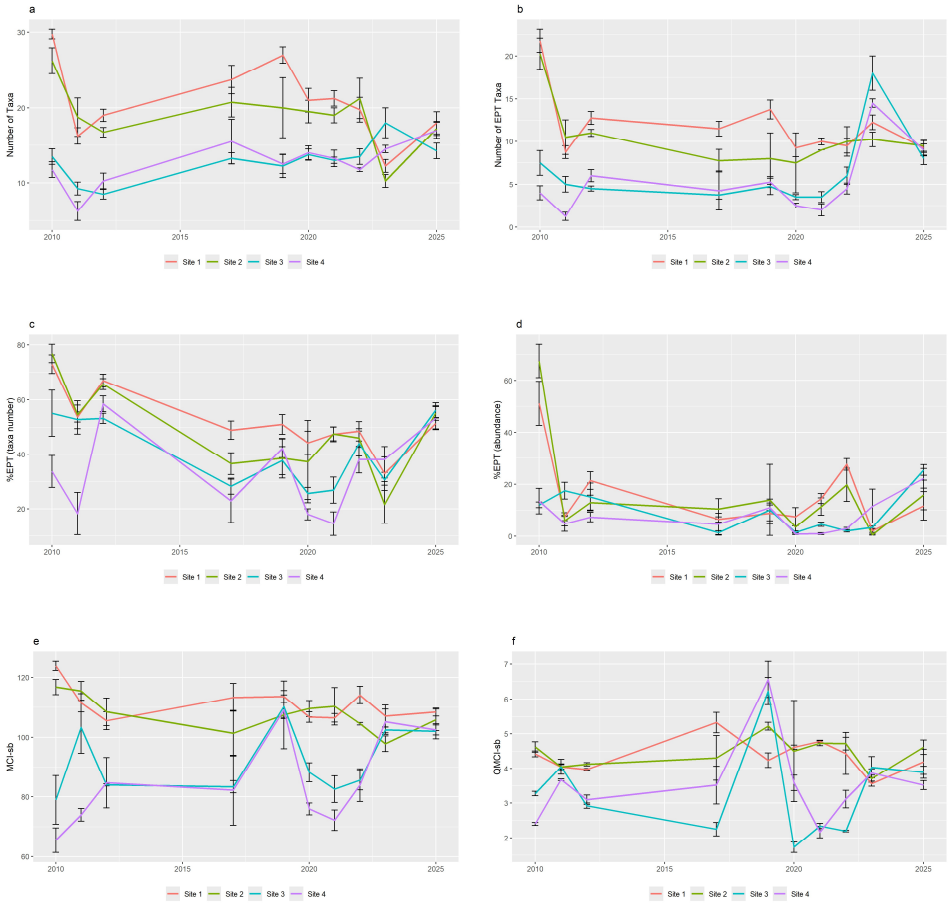
Macroinvertebrate densities, expressed as per gram of dried weight of macrophyte, were slightly lower at Site 3 above the WWTP outfall (mean 4.05 individuals per g +/- 0.93 SEM), compared to Site 4 below the outfall (mean 7.57 individuals per g +/- 1.31 SEM, Figure F).

3.3.3 Comparisons with previous years

Comparison of the 2025 macroinvertebrate community results with data collected from the previous nine surveys, undertaken between 2010 and 2023 (4Sight Consulting, 2017, 2019, 2020, 2021, 2022, 2023; Bioresearches, 2010, 2011, 2012), reiterates the findings of previous years which show there is a high degree of natural variability in community composition and most biological indices (Figure I). Inter-annual variability is a natural feature of stream macroinvertebrate monitoring due to the natural spatial and temporal variability of instream environments.

[5] https://www.landcareresearch.co.nz/tools-and-resources/identification/freshwater-invertebrates-guide/

Figure I: Mean (+/- SEM) macroinvertebrate indices, including a) taxa richness, b) EPT taxa richness, c) %EPT (taxa number), d) % abundance of EPT (individuals), e) MCI-sb score, and f) QMCI-sb score, for each site for all surveys from 2010 – 2023 & 2025.



3.4 Fish Communities

3.4.1 Survey Results

Fish trapping was undertaken at the Waiāri WTP intake and the WWTP. The fish trapping results show that the Waiāri Stream hosts a rich diversity of fish species with a total of nine native fish species recorded during the 2025 fish surveys (Table F). Seven native fish species were recorded downstream of the WTP intake, and five were recorded upstream of the WTP intake. Six native fish species were recorded downstream of the WWTP and four native species recorded upstream of the WWTP.

Consistent with previous years, schooling fish (īnanga (*Galaxias maculatus*) and smelt (*Retropinna retropinna*)) were observed, particularly at the lower Waiāri Stream sites. These

schooling species were also successfully captured during sampling and were recorded in relatively high numbers. Longfin tuna (*Anguilla dieffenbachii*, Photo E) were recorded at all sample sites, with larger numbers recorded at the lower Waiāri Stream sites.

Common bully (*Gobiomorphus cotidianus*) was the most commonly recorded bully species within the stream. However, in 2025, common bullies were only captured downstream of the WTP intake and at the lower Waiāri sites. Two redfin bullies were recorded downstream of the water intake (Site 2) and two individuals were recorded from the lower Waiāri site, both downstream of the WWTP outfall (Site 4). Overall, bullies were common across all sampling sites, excluding the most upstream site (Site 1).

Table F: Fish and large macroinvertebrate species captured during fish sampling in the Waiāri Stream, February 2025. Note that kōura have not been included in the total fish abundance.

Genus	Species	Common Name	WTP Intake		WWTP Outfall	
			Site 1 (Waiāri U/S WTP)	Site 2 (Waiāri D/S WTP)	Site 3 (Te Puke U/S WWTP)	Site 4 (Te Puke D/S WWTP)
Anguilla	*australis*	Shortfin eel	1	-	-	7
Anguilla	*dieffenbachii*	Longfin eel	7	1	9	10
Cheimarrichthys	*fosteri*	Torrentfish	-	2	-	-
Galaxias	*argenteus*	Giant kōkopu	1	-	-	-
Galaxias	*fasciatus*	Banded kōkopu	-	1	-	-
Galaxias	*maculatus*	Īnanga	1	13	2	13
Gobiomorphus	*cotidianus*	Common bully	-	18	57	24
Gobiomorphus	*huttoni*	Redfin bully	-	2	-	2
Retropinna	*retropinna*	Common smelt	1	1	2	60
Paranephrops	*planifrons*	Kōura	-	1	-	-
Total number of fish			**11**	**38**	**70**	**116**

Of note, torrentfish (*Cheimarrichthys fosteri*) were captured for the first time (Photo F). This species has not previously been captured during monitoring in the Waiāri Stream, although its presence was detected by environmental DNA (eDNA) sampling in 2024 (Xu, 2024). The survey conducted in 2024 included eDNA sampling at both the WWTP and the WTP intake. Torrentfish were recorded at both sites. A single giant kōkopu (*Galaxias argenteus*) was also captured at Site 1. This species has not been recorded during monitoring since 2017.

The fish QIBI scores calculated for Sites 1 and 2 were indicative of ‘good’ and ‘excellent’ habitat quality and/or connectivity for fish migration, respectively, while Sites 3 and 4 received scores that are indicative of ‘good’ habitat quality and/or connectivity for fish migration (Table G, Joy *et al*., 2007)).

Table G: Fish QIBI scores for the Waiāri Stream, 2025.

Site		QIBI Score	Rating
Upper Waiāri	Site 1	36	Good
	Site 2	48	Excellent
Lower Waiāri	Site 3	34	Good
	Site 4	42	Good

Photo E: A giant kōkopu (left) and longfin eel (right) captured in fyke nets at Site 1 in the upper Waiāri Stream, February 2025.

Photo F: An example of a torrentfish (left) captured at Site 2 in the upper Waiāri Stream, and an īnanga (right) captured at Site 4 in the lower Waiāri Stream, February 2025.

3.4.2 Comparison with Previous Years

The range of fish species recorded from the Waiāri Stream over the full survey period is provided for the upper stream sites and lower stream sites in Table H and Table I, respectively. These tables include a summary of the fish QIBI scores calculated for each site on each survey occasion.

The results indicate that longfin eel, īnanga, and redfin bully have been recorded at all sites on most survey occasions. In the lower stream (sites 3 and 4, Table I), common bullies and smelt are also recorded on most occasions, and shortfin eels are recorded regularly. Smelt are more commonly recorded from the lower stream than the upper stream sites. Giant bully and mullet have only been recorded from the lower stream near the WWTP, and were not captured in 2025.

Banded kōkopu (*Galaxias fasciatus*) and giant kōkopu (*Galaxias argenteus*) have only been recorded from the upper stream sites, near the WTP intake. As noted above, a single giant kōkopu was captured in 2025 from Site 1, upstream of the WTP intake. This was the first time this species has been recorded since 2017. Giant kōkopu are generally recorded in the lower reaches of streams and rivers, so their presence at the upper stream sites would lead to an expectation that they would also be present in the lower stream, near the WWTP. However, kōkopu make use of habitat features such as trailing vegetation, undercut banks, and large woody debris. The lower Waiāri Stream has little habitat complexity, and these features are almost entirely absent through the lower stream. This therefore may explain their absence from this part of the stream.

As noted above, in 2025 the Waiāri Stream monitoring resulted in the capture of torrentfish in the upper Waiāri Stream. Torrentfish prefer swift waters, and generally anchor to the riverbed amongst stony substrates. The upper Waiāri supports cool, swift water typical of torrentfish habitat. However, the stream substrate largely consists of sands, with woody debris providing some cover that the fish may be using as habitat. The capture of this fish in 2025 (and detection of them in 2024) may be an indication that this species has been existing at low densities in this catchment and is, possibly, increasing in abundance.

Overall, the fish communities in both the upper and lower stream reaches are diverse, with eleven native species and three exotic species being recorded across the surveys to date. On most occasions, the fish QIBI scores have typically indicated excellent habitat quality or connectivity for fish migration at all sites (Table H and Table I).

Table H: Summary of fish species captured in the upper Waiāri Stream during each survey over the full survey period. Fish QIBI scores have been colour coded (green = excellent; yellow = good; orange = fair; and red = poor).

Genus	Species	Common Name	Site 1 – upstream of WTP										Site 2 – downstream of WTP									
			2010	2011	2012	2017	2019	2020	2021	2022	2023	2025	2010	2011	2012	2017	2019	2020	2021	2022	2023	2025
Anguilla	*sp.*	unidentified eel																				
	australis	Shortfin eel																				
	dieffenbachii	Longfin eel																				
Cheimarrichthys	*fosteri*	Torrentfish																				
Galaxias	*fasciatus*	Banded kōkopu																				
	maculatus	Īnanga																				
	argenteus	Giant kōkopu																				
Gobiomorphus	*sp.*	juvenile bully																				
	cotidianus	Common bully																				
	gobioides	Giant bully																				
	huttoni	Redfin bully																				
Retropinna	*retropinna*	Smelt																				
Mugil	*cephalus*	Mullet																				
Oncorhynchus	*mykiss*	Rainbow trout																				
Salmo	*trutta*	Brown trout																				
Gambusia	*affinis*	Gambusia																				
Fish QIBI			**52**	**44**	**48**	**50**	**46**	**40**	**52**	**54**	**52**	**36**	**52**	**50**	**48**	**46**	**52**	**52**	**54**	**52**	**52**	**48**

Table I: Summary of fish species captured in the lower Waiāri Stream during each survey over the full survey period. Fish QIBI scores have been colour coded (green = excellent; yellow = good; orange = fair; and red = poor).

Genus	Species	Common Name	Site 3 – Upstream of WWTW										Site 4 – Downstream of WWTW									
			2010	2011	2012	2017	2019	2020	2021	2022	2023	2025	2010	2011	2012	2017	2019	2020	2021	2022	2023	2025
Anguilla	sp.	unidentified eel																				
	australis	Shortfin eel																				
	dieffenbachii	Longfin eel																				
Galaxias	*fasciatus*	Banded kōkopu																				
	maculatus	Īnanga																				
	argenteus	Giant kōkopu																				
Gobiomorphus	sp.	juvenile bully																				
	cotidianus	Common bully																				
	gobioides	Giant bully																				
	huttoni	Redfin bully																				
Retropinna	*retropinna*	Smelt																				
Mugil	*cephalus*	Mullet																				
Oncorhynchus	*mykiss*	Rainbow trout																				
Salmo	*trutta*	Brown trout																				
Gambusia	*affinis*	Gambusia																				
Fish QIBI			**52**	**58**	**58**	**52**	**52**	**52**	**38**	**56**	**32**	**34**	**54**	**58**	**52**	**52**	**52**	**28**	**48**	**50**	**40**	**42**

3.5 Macrophyte Communities

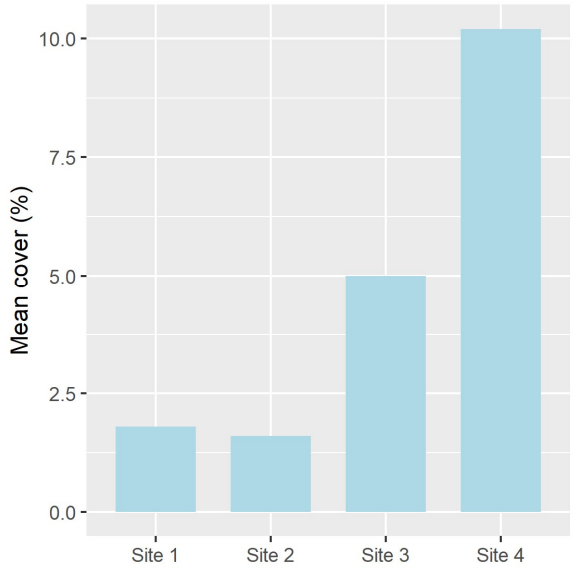
Macrophyte observations were made from the streambanks due to swift flows and deep water. Visual clarity was excellent at all sites at the time of the survey in 2025, which allowed for accurate visual estimation of the macrophyte community (Photo G).

Similar to the results of previous surveys, macrophyte growth was minimal at both sites within the vicinity at the WTP location (sites 1 and 2), with observed macrophytes limited to emergent plants at the stream edge. This plant growth was also limited to small areas, due to the steep, unstable nature of the stream banks and the mobile sand substrates, as previously reported.

At the lower Waiāri Stream sites, and consistent with previous surveys, Canadian pond weed (an oxygen weed, *Elodea canadensis*) was the dominant macrophyte, forming large dense beds, concentrated at the stream margins. Estimated cover of the Canadian pond weed averaged 5% and 10.2% of the streambed at sites 3 and 4, respectively, which is considerably lower than in earlier studies, but similar to that recorded in 2023 (Figure J). This indicates that the macrophyte beds have not recovered following the removal of instream vegetation that occurred during the 2023 floods.

Photo G: Excellent visual clarity allowed for visual estimation of the macrophyte community. The photo shows marginal Canadian pondweed (an oxygen weed, *Elodea canadensis*) beds at Site 4 in the lower Waiāri Stream, February 2025.

Figure J: Macrophyte community composition and average stream bed cover based on visual assessments, Waiāri Stream, February 2025.



4.0 Discussion

This report details the outcomes of the 2025 ecological survey of the Waiāri Stream, consistent with the requirements of conditions 7.1 and 7.2 of resource consent 65637. In accordance with the consent conditions, the survey focusses on the habitats surrounding the WTP intake and the Te Puke WWTP outfall further downstream. Seven years of baseline monitoring were undertaken between 2010 and 2021 prior to the commissioning of the WTP. More recently, but prior to abstraction commencing, annual monitoring was commissioned by TCC between 2018 and 2022, additional to consent requirements. This additional monitoring was intended to provide a broader picture of the features and values of the Waiāri Stream's aquatic community prior to the water take commencing.

Following the commencement of abstraction, annual monitoring was undertaken in 2023 and 2024, although alternative methodology was used for the 2024 survey. The 2025 survey is the eleventh survey of the Waiāri Stream, and the third survey effort undertaken post-commissioning of the WTP.

In 2025, the stream widths and depths at both the upper (sites 1 and 2) and lower (sites 3 and 4) sampling reaches were typically uniform. Substrates at all sites were dominated by coarse sands, with larger substrates, such as boulders, also present, predominantly along the edge of the stream channel at the upper stream sites. A sufficient abundance of woody debris within the marginal areas allowed for sampling of the resident macroinvertebrate communities in the upper stream reaches. With sand prevalent at the lower Waiāri Stream sites, small macrophyte stands are the key stable habitat type for aquatic biota in this part of the stream.

In 2023, observations during the survey and the results of the instream monitoring revealed that the Waiāri Stream had been impacted by the flood events of the 2022/2023 summer season. Notably, bankside vegetation had been flattened or removed at the WTP sites. In

2025, it was noted that bankside vegetation has recovered. However, the community is dominated by weedy, exotic, colonising species. Planted native streamside species on the banks near the WTP intake do not appear to have recovered. Weed control and infill planting is therefore recommended to reinstate planted areas.

Similarly, in the lower stream, at sites 3 and 4, the marginal beds of aquatic weeds (predominantly Canadian pondweed, an oxygen weed (*Elodea canadensis*)) appear not to have recovered after the flood events of 2023, and are notably reduced compared to years prior to 2023. At these sites, the macrophyte community in 2025 was dominated by Canadian pondweed, an oxygen weed (*Elodea canadensis*). This is consistent with previous surveys, although the density of the macrophyte growth has considerably reduced since monitoring efforts in 2022. However, the lack of hard substrates means this aquatic weed continues to provide the most significant stable substrate for macroinvertebrate communities, as well as shelter for small-bodied fish. Of note, the native macrophyte, a stonewort (*Nitella sp.*) was also observed amongst the Canadian pondweed beds in 2025. This species has also been recorded occasionally during previous rounds of sampling. It is possible that the impacts of the floods on exotic macrophyte growth has enabled native aquatic plants to recolonise the streambed and increase in abundance.

Macrophyte growth was largely absent at the upper stream sites (sites 1 and 2), with only a small amount of emergent growth (i.e., the exotic starwort (*Callitriche stagnalis*) and watercress (*Nasturtium officinale*)) evident on the stream margins. A fine cover of filamentous green and brown algae was also present on woody and rocky substrates.

A total of nine native fish species were captured across the four sites, indicating the Waiāri Stream supports a diverse range of fish species. Of note, torrentfish were captured at Site 2. This migratory native species has not been recorded in any previous surveys (Table H and Table I). Four of the recorded species, giant kōkopu, īnanga, longfin eel, and torrentfish are classified as ‘at risk – declining’ in the most recent threat classification list, with the remaining recorded species classified as ‘not threatened’ (Dunn *et al.*, 2018). The fish QIBI for all sites, excluding Site 2, indicated ‘good’ habitat quality and/or connectivity for fish migration, while Site 2 (upper Waiāri) was rated ‘excellent’ (Joy *et al.*, 2007; Suren, 2016). The QIBI scores for sites 3 and 4 decreased in 2023, following the floods, predominantly as a result of the small-bodied species being mostly absent from these sites. In 2025, the QIBI scores for these sites were higher, but remain lower than in sampling years prior to 2023. This may reflect a stream system that is continuing to recover following the impacts of the 2023 flood events. The decrease in QIBI at Site 1 in 2025 reflects the lack of small-bodied bully species in the catch in 2025. Lower QIBIs have been recorded at this site occasionally in the past, and this may simply be a reflection of the variability associated with the sampling method. Ongoing data collection will reveal any ongoing decline, if it occurs. We also note that smelt (*Retropinna retropinna*), a weak-swimming species, was captured at the most upstream site (Site 1, upstream of the WTP intake structure). This provides good evidence that there is excellent connectivity down to the coast and that the intake structure does not provide a barrier to fish passage.

Water quality within the sampled reaches was largely consistent with previous surveys. Swift stream flows at all sites, coupled with cool, well oxygenated water and a low conductivity with a normal pH indicates excellent basic water quality throughout the Waiāri Stream. Water quality parameters showed no obvious disparities between upstream and downstream monitoring sites. We note that in 2023 water clarity was significantly reduced at sites 3 and 4 within the lower Waiāri Stream. While turbidity wasn’t measured in 2025, observed visual clarity was excellent at all sites, and the bed was visible from the streambank across the width of the channel, with depth estimated at >1.5 m in the thalweg. Therefore, the reduced clarity observed in 2023 is likely attributable to the floods that occurred that season, and no further investigation is warranted.

A moderate amount of within-site variability was recorded in macroinvertebrate communities (Figure F), consistent with previous years. The diversity of macroinvertebrates and EPT taxa was similar across all sites, which contrasts to the 2023 survey – when diversity was higher in the lower Waiāri – and previous studies, when diversity was generally higher at the upper Waiāri sites.

MCI-sb scores overall indicated 'good' instream conditions at sites 1 and 2 (upper Waiāri), whereas samples from sites 3 and 4 (lower Waiāri) indicated 'fair' to 'good' instream conditions on this survey occasion. The QMCI-sb scores indicated 'fair' to 'good' instream conditions at sites 1 (upstream of the WTP intake) and 2 (downstream of the WTP intake), whereas the scores for Site 3 (upstream of the WWTP outfall) indicated 'poor' to 'fair' instream' conditions, and the scores for Site 4 (downstream of the WWTP outfall) were indicative of 'poor' conditions. A 'poor' QMCI-sb is an outcome of the numerical dominance of lower scoring taxa. True fly taxa (midge larvae) were the most dominant groups both upstream and downstream of the Waiāri WTP intake structure. Generally, true fly taxa are considered pollution tolerant. However, more pollution sensitive caddisflies and mayflies were also common across the two sites. At the lower stream sites, midge larvae and the common snail, *Potamopyrgus*, dominated community abundance. Prior to the floods, *Potamopyrgus* snails strongly dominated the communities surrounding the WWTP, while immediately after the floods in 2023, midge larvae were most prevalent. A similar proportion of both taxa in 2025 may reflect ongoing recovery of the communities within the vicinity of the WWTP outfall following the 2023 flood events.

Overall, no obvious disparities between upstream and downstream monitoring sites were recorded. The monitoring programme for the four sites in the Waiāri Stream has been designed so that any effects of the WTP abstraction – should they occur – can be detected overtime. Overall, results from the 2025 survey are generally consistent with previous years' surveys, although some lasting impacts of the flood events of 2023 were noted. Some encouraging results (i.e., the capture of torrentfish and giant kōkopu) were also recorded. Trend analysis has not been undertaken as the sampling results from 2023 were heavily affected by the weather events of that season, and the 2024 survey followed alternative survey protocols, meaning the results could not be compared with those of other years. Further data collection following the commencement of abstraction in 2022 is necessary to support a meaningful trend analysis.

4.1 Ongoing Monitoring

As previously noted, the 2025 round of aquatic ecological data collection documented in this report is additional to the requirements of the abstraction consent (consent no. 6537). Consent conditions require monitoring to occur three consecutive years after abstraction reaches a rate greater than 30,000 m^3/day, and once every five years thereafter, or between these two survey periods if there is more than five years between them (see Appendix A). TCC is considering carrying out ongoing monitoring of the Waiāri Stream additional to consent requirements, perhaps with modifications to the parameters measured and/or frequency of data collection.

As a first step in formulating a monitoring programme for the Waiāri Stream, the objectives of the monitoring should be established, as this will inform the type of data collected. At a minimum, it is recommended that macroinvertebrate community monitoring continue annually to augment existing information. If the intention is to detect effects of the abstraction activity, it is important that the monitoring protocols and methods are not altered from those used until now, as any change made to methodology prevents a robust comparison between sampling events and/or trend analysis. Similarly, changes to monitoring locations should preferentially be avoided. However, if monitoring sites must be moved (for example, for

health and safety reasons), the habitat characteristics of the new sites should align as much as possible to existing monitoring sites.

As noted above, the sampling results from 2023 were affected by severe weather events and the 2024 survey followed alternative survey protocols. As such, the dataset from monitoring undertaken following the commencement of abstraction is limited. Therefore, continued collection of macroinvertebrate data for several additional consecutive years would be beneficial for the purposes of comparison and trend analysis, especially if abstraction rates are expected to increase towards the full consented amount. Larnard and Snelder (2012) and Stark and Maxted (2007b) recommend that trend analysis be conducted on sites with at least 10 years of data.

However, we consider that some modifications to the protocols could be implemented. Firstly, the frequency of the fish surveys could be reduced to the regularity required by consent conditions (three to five years), as monitoring results suggest that a range of native fish species, including those with weaker swimming abilities, are able to pass the weir and abstraction site and, therefore, monitoring results suggest there has been no impact on fish passage. Secondly, the aquatic macrophyte surveys could be removed from the monitoring programme or reduced in regularity to that specifically required by the consent, as the stream reaches in the vicinity of the WTP support a very sparse community of macrophytes (both prior to and post implementation of the abstraction consent) and macrophyte monitoring at this site provides little meaningful ecological information.

5.0 Summary and Closure

The 2025 survey of the Waiāri Stream determined that the stream provides habitat for a diverse range of native fish species, and a relatively diverse range of macroinvertebrate taxa, as has been recorded in the past. Some measured metrics (i.e., fish, macroinvertebrate, and macrophyte) and on-site observations indicate that the stream ecosystem may still be recovering from the impact of the significant flood events of the summer of 2023.

Results from the 2025 survey are generally consistent with previous years' surveys. Abstraction of water from the Waiāri Stream commenced in 2022, however, in 2023 the impacts of large flood events influenced survey results and any effects of the abstraction could not be discerned from effects of the flood events. The results of the 2025 survey indicate that the stream ecosystem may still be recovering from the severe events of 2023. Ongoing data collection, focusing on macroinvertebrate community monitoring, in line with methods that have been consistently repeated prior to abstraction commencing will allow trend analyses to be undertaken and the effects of weather events and natural temporal variation to be discerned from any impacts caused by abstraction. This will allow the detection of any adverse effects on aquatic ecology due to abstraction from the Waiāri Stream, and confirm whether any impacts are at a level that is less than minor.

Sincerely,

SLR Consulting New Zealand

Nicola Pyper, MSc, CEnvP
Principal Ecologist

Keren Bennett (Reviewer)
Technical Director (Freshwater Ecology)

6.0 References

4Sight Consulting. (2017). *Waiari Water Treatment Plant, Waiari Stream Baseline Monitoring Report 2017*. Prepared by 4Sight Consulting for Tauranga City Council.

4Sight Consulting. (2019). *Wairi Water Treatment Plant: Waiari Stream Monitoring Report 2019*. Prepared by 4Sight Consulting for Tauranga City Council. 28 p.

4Sight Consulting. (2020). *Waiari Water Treatment Plant: Wairi Stream Monitoring Report 2020*. Prepared by 4Sight Consulting for Tauranga City Council. 31 p.

4Sight Consulting. (2021). *Waiari Water Treatment Plant: Waiari Stream Monitoring Report 2021*. Prepared by 4Sight Consulting for Tauranga City Council. 35 p.

4Sight Consulting. (2022). *Waiari Water Treatment Plant: Waiari Stream Monitoring Report 2022*. Prepared by 4Sight Consulting for Tauranga City Council. 35 p.

4Sight Consulting. (2023). *Waiari Water Treatment Plant: Waiari Stream Monitoring Report 2023*. Prepared by 4Sight Consulting for Tauranga City Council. 34 p.

Bioresearches. (2010). *Waiari Water Treatment Plant, Waiari Stream Baseline Monitoring 2010.* (0989). Prepared by Bioresearches for Tauranga City Council. 38 p.

Bioresearches. (2011). *Waiari Water Treatment Plant, Waiari Stream Baseline Monitoring 2011* (1101). Prepared by Bioresearches for Tauranga City Council. 37 p.

Bioresearches. (2012). *Waiari Water Treament Plant, Waiari Stream Baseline Monitoring 2012*. Prepared by Bioresearches for Tauranga City Council. 40 p.

Collier, K. J., Hamer, M., Champion, P. D., & Waikato . Regional Council, i. b. (2014). *Regional guidelines for ecological assessments of freshwater environments. Aquatic plant cover in wadeable streams* (Version 2. ed.). Waikato Regional Council. 43 p. https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/TR201403.pdf

Dunn, N. R., Allibone, R. M., Closs, G. P., Crow, S. K., David, B. O., Goodman, J. M., Griffiths, M., Jack, D. C., Ling, N., Waters, J. M., & Rolfe, J. R. (2018). *Conservation status of New Zealand freshwater fishes, 2017* (New Zealand Threat Classification Series, Issue 24). 15 p. https://www.doc.govt.nz/Documents/science-and-technical/nztcs24entire.pdf

Larnard S.T. & Snelder T. (2012) National environmental monitoring and reporting (NEMAR). Network design principlesfor national freshwater monitoring. NIWA Client Report, CHC2012-027, 61 p.

Joy, M., Henderson, I. M., & Waikato . Environment, W. (2007). *A new fish index of biotic integrity using quantile regressions : the fish QIBI for the Waikato Region* (Environment Waikato technical report, 2007/23. 18 p. https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/tr07-23.pdf

Stark, J. D. (1998). SQMCI: A biotic index for freshwater macroinvertebrate coded-abundance data. *New Zealand journal of marine and freshwater research*, *32*(1), 55-66. https://doi.org/10.1080/00288330.1998.9516805

Stark, J. D., Boothroyd, I. K. G., Harding, J. S., Maxted, J. R., & Scarsbrook, M. R. (2001). *Protocols for sampling macroinvertebrates in wadeable streams*. 57 p. https://docs.niwa.co.nz/library/public/ProtocolsManual.pdf

Stark, J. D., & Maxted, J. R. (2007). A biotic index for New Zealand's soft-bottomed streams. *New Zealand journal of marine and freshwater research*, *41*(1), 43-61. https://doi.org/10.1080/00288330709509895

Stark, J. D., & Maxted, J. R. (2007b). *A user guide for the Macroinvertebrate Community index*. 58 p. https://environment.govt.nz/assets/Publications/Files/mci-user-guide-may07.pdf

Suren, A. (2016). *Development of a Fish Index of Biotic Integrity for the Bay of Plenty*. 33 p. https://atlas.boprc.govt.nz/api/v1/edms/document/A2544626/content

Xu, J. (2024). *Waiari Water Treatment Plant Ecological Monitoring 2024*. Prepared by Morphum Environmental Limited for Tauranga City Council. 28 p.

Appendix A Conditions 7.1 and 7.2 of Resource Consent 65637-AP

Waiāri Water Treatment Plant

Waiāri Stream Annual Ecological Monitoring Report, 2025

Tauranga City Council

SLR Project No.: 850.016698.00001

30 July 2025

A.1 Condition 7 Monitoring and Reporting

7.1 The consent holder shall undertake a survey in the Waiari Stream during February in each of the years listed below. This survey shall be undertaken on both hard substrates and macrophytes in the Waiari Stream and shall be undertaken:

- Three consecutive years prior to construction of the water supply scheme commencing; and
- Three consecutive years after abstraction reaches a rate greater than 30,000 cubic metres per day; and
- Once every five years thereafter and between the two survey periods specified above if there is more than 5 years between them for the duration of this consent.

7.2 The survey required by condition 7.1 shall be undertaken by a suitably qualified professional at the following four locations along the Waiari Stream

- Above and below the water intake site; and
- Above and below the Te Puke wastewater treatment plant discharge point.

and using the following methods:

- Invertebrate samples shall be collected using Protocols C3: Hard-bottomed Quantitative and C4: Soft-bottomed Quantitative of the Ministry for the Environment's "Protocols for Sampling Macroinvertebrates in Wadeable Streams". Hard substrates will be sampled above and below the intake and macrophytes will be sampled at four locations. Samples shall be sorted, identified to the lowest practicable level, and counted and biotic indices calculated, namely taxa richness, % EPT, MCI (Macroinvertebrate Community Index) and SQMCI (Semi-Quantitative Macroinvertebrate Community Index); and
- Fish surveys shall be carried out by single-pass electric-fishing of run/riffle areas above and below the intake and by baited G-minnow traps set over night at all four locations. The number of each fish species caught shall be recorded, along with the area fished and/or number of traps. The same locations should be surveyed on each occasion, if practicable.

and shall be provided in a report format including the following information:

- The temperature at each of the four survey locations;
- The pH at each of the four survey locations;
- The turbidity at each of the four survey locations;
- The dissolved oxygen (DO) at each of the four survey locations;
- Invertebrate composition on both hard substrates and macrophytes including taxa richness, macroinvertebrate indices and the relative abundance of the species present; and
- Fish composition including taxa richness and the relevant abundance of the species present.

Appendix B Raw Macroinvertebrate Data

Waiāri Water Treatment Plant

Waiāri Stream Annual Ecological Monitoring Report, 2025

Tauranga City Council

SLR Project No.: 850.016698.00001

30 July 2025

Taxa	MCI-sb	Site 1 – above WTP intake				Site 2 – below WTP intake				Site 3 – above WWTP outfall				Site 4 – below WWTP outfall			
		A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Mayfly Austroclima	6.5	2			5	20	44	2	32		1		2		1		4
Mayfly Austronella	4.7	1								3		7	1	1	17	12	7
Mayfly Coloburiscus	8.1	1			1			1									
Mayfly Deleatidium	5.6					1			1								
Mayfly Mauiulus	4.1			1	1			6		1		1		5	1		
Mayfly Nesameletus	8.6	11	1		1												
Mayfly Zephlebia	8.8	1	3	1		1		1	2	4	1	1	11	11	4	4	9
Stonefly Megaleptoperla	7.3			1	1	1	8					1					
Stonefly Zelandobius	7.4	1	4	2	1	2			1	2	2		3	9	3	2	4
Caddisfly Aoteapsyche	6.0				54	1	68	1	6			1		1			
Caddisfly Diplectrona	0.0					1											
Caddisfly Hudsonema	6.5			1					1		1	2		2		1	
Caddisfly Hydrobiosis	6.7		3	5	2	2	12	1	13	1		1	3	5	1	1	1
Caddisfly Neurochorema	6.0	4	3	3	1	1	1	5	6					1			
Caddisfly Oxyethira	1.2	12	2	2	5	44			26	2	2	16	9	32	37	8	28
Caddisfly Psilochorema	7.8										1						
Caddisfly Pycnocentrella	0.0						1										

Caddisfly Pycnocentria	6.8	7		7	8	60	40	5		12	2	5	7	6	13	4	13
Caddisfly Pycnocentrodes	3.8	1	1	1	1	20	8	1	19		1	1	2	2	2	1	3
Caddisfly Rakiura	0.0								13								
Caddisfly Triplectides	5.7		5	1						6		1	2	1	3	4	2
Dragonfly Antipodochlora	6.3			1													
Beetle Elmidae	7.2		1		2												
Beetle Staphylinidae	6.2			2													
True Fly Aphrophila	5.6							1									
True Fly Austrosimulium	3.9	2	1	4	1					3	3	8	3	6	1	3	8
True Fly Empididae	5.4	2	3														
True Fly Ephydridae	1.4					1											
True Fly Harrisius	4.7				6												
True Fly Limonia	6.3						1										
True Fly Maoridiamesa	4.9				83	1	48	32				1			1		
True Fly Muscidae	1.6			1	2	1	12										
True Fly Orthocladiinae	3.2	7	7	42	4	24	40	144	58	51		24	72	3	17	36	77
True Fly Polypedilum	8.0	4	2	21			12	16	10	1			6	1	12	7	6
True Fly Tanypodinae	6.5			5	3	16		16	3		1				1	1	
True Fly Tanytarsini	4.5	26	136	811	400	544		2656	151	5		8	6	14	7	15	6

True Fly Tanytarsus	0.0						488										
Crustacea Paratya	3.6										2		1		1	2	3
MITES (Acari)	5.2														1		
Mollusc Lymnaeidae	1.2					1											
Mollusc Physella (Physa)	0.1												1		1		
Mollusc Potamopyrgus	2.1	27	269	1	2	68	24	1	10	13	13	20	8	35	84	99	41
Oligochaetes	3.8						8	2									
Number of Taxa		**16**	**15**	**20**	**21**	**20**	**16**	**17**	**16**	**13**	**12**	**16**	**16**	**17**	**20**	**16**	**15**
EPT Value		**9**	**7**	**10**	**11**	**11**	**8**	**9**	**10**	**7**	**7**	**10**	**8**	**11**	**9**	**8**	**8**
% EPT		**26.61**	**4.54**	**2.52**	**13.01**	**13.58**	**22.33**	**0.80**	**26.70**	**27.88**	**30.00**	**21.43**	**22.63**	**32.59**	**21.63**	**14.50**	**20.28**
% EPT Taxa		**56.25**	**46.67**	**50.00**	**52.38**	**55.00**	**50.00**	**52.94**	**62.50**	**53.85**	**58.33**	**62.50**	**50.00**	**64.71**	**45.00**	**50.00**	**53.33**
MCI-sb		**111.25**	**110.00**	**106.60**	**105.81**	**96.32**	**104.29**	**112.24**	**110.40**	**103.23**	**108.17**	**100.25**	**96.25**	**105.18**	**97.70**	**104.25**	**102.53**
QMCI-sb Value		**4.34**	**3.13**	**4.57**	**4.74**	**4.34**	**5.24**	**4.48**	**4.40**	**4.09**	**3.90**	**3.39**	**4.17**	**3.83**	**3.34**	**3.28**	**3.63**

Appendix C Raw Aquatic Plant Data

Waiāri Water Treatment Plant

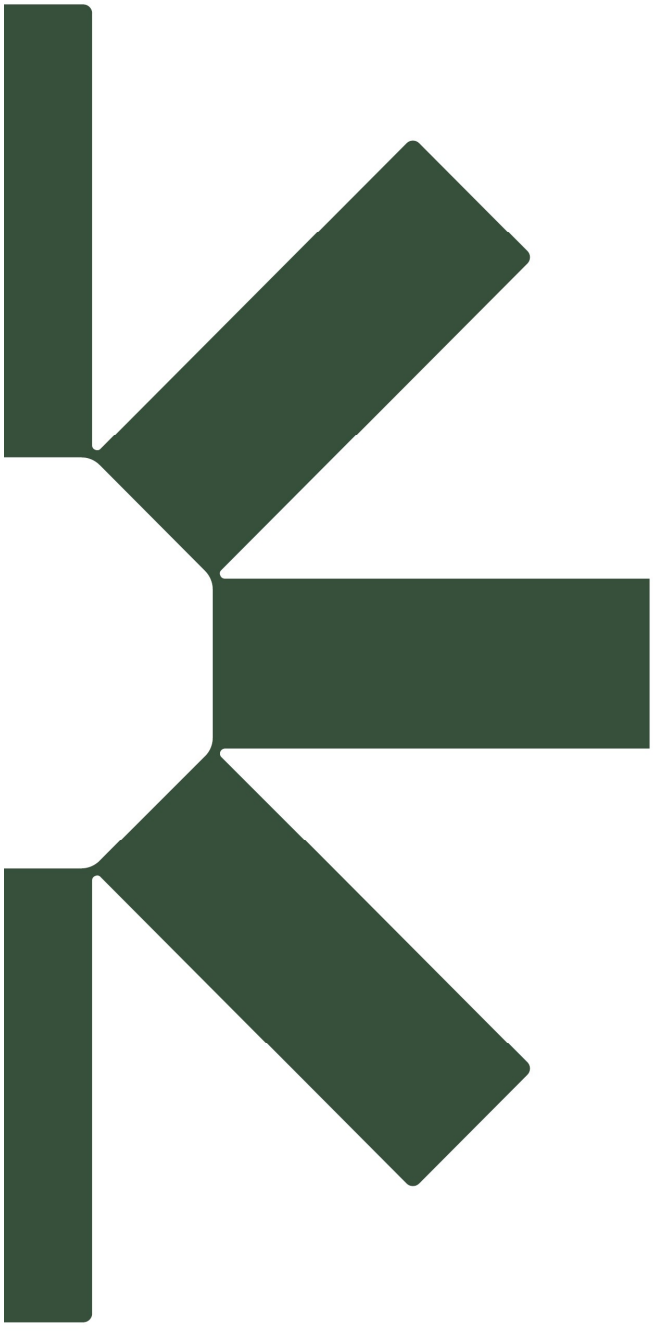
Waiāri Stream Annual Ecological Monitoring Report, 2025

Tauranga City Council

SLR Project No.: 850.016698.00001

30 July 2025

Site	Transect	Stream width (m)	Willow weed (*Persicaria sp.*)	Starwort (*Callitriche stagnalis*)	Watercress (*Nasturtium officinale*)	Canadian pondweed / oxygen weed (*Elodea canadensis*)
Site 1	a	15	1	0.5	0	0
	b	20	1	1	0	0
	c	20	1	0	0	0
	d	16	2	0.5	0	0
	e	17	2	0	0	0
	Mean	**17.6**	**1.4**	**0.4**	**0**	**0**
Site 2	a	10.5	0.5	0	0	0
	b	12	0.5	2	0	0
	c	11	0.5	0	0	0
	d	11	2	0	1	0
	e	12	1	0	0.5	0
	Mean	**11.3**	**0.9**	**0.4**	**0.3**	**0**
Site 3	a	8	0	0	0	5
	b	6	0	0	0	2
	c	8	0	0	0	2
	d	6	0	0	0	10
	e	9	0	0	0	6
	Mean	**7.4**	**0**	**0**	**0**	**5**
Site 4	a	12	0	0	0	10
	b	14	0	0	0	9
	c	10	0	0	0	8
	d	15	0	0	0	9
	e	14	0	0	0	15
	Mean	**13**	**0**	**0**	**0**	**10.2**



Making Sustainability Happen

9.2 Waiāri Kaitiaki Advisory Group Cultural Recognition Update September 2025

File Number: **A18733572**

Author: **Jennifer Pearson, Community Engagement Advisor: Infrastructure Delivery**
Wally Potts, Head of City Waters
Anne Payne, Principal Strategic Advisor

Authoriser: **Nic Johansson, Acting GM Transport & Water's divisions**

PURPOSE OF THE REPORT

1. To provide an update on the status of the seven cultural recognition actions since the last Waiāri Kaitiaki Advisory Group (WKAG) meeting of 11 June 2025 at Makahae Marae.

RECOMMENDATIONS

That the Waiāri Kaitiaki Advisory Group:

(a) Receives the report "Waiāri Kaitiaki Advisory Group Cultural Recognition Update September 2025".

EXECUTIVE SUMMARY

2. The Waiāri Ops Group have only been able to meet once since the last WKAG meeting in June, due to other commitments.

3. Budget

WBOPDC	$1.07M funding through the 2024-34 Long Term Plan for the Waiāri Bridge Area Restoration Project.
TCC	$250,000 2024/25 budget $250,000 2025/2026 budget $250,000 2026/2027 budget

Other sources of funding (externally) will also be investigated for specific projects, eg. Regenerative Programmes.

It should be noted that while the current budgets allow for development of the seven cultural initiatives over the short term, further support funding will be required over the longer-term period.

4. The seven cultural recognition initiatives agreed by the WKAG:

Tohu Māori – Storytelling	In progress
Waiāri Bridge Restoration	In progress
Regeneration Programmes	Planning underway
Education and Employment Pathways	Longer term activity
Mauri Model	In progress
Access to Water	In progress
River access points	Lower priority

UPDATE ON INITIATIVES

Action	Who	When
Tohu Māori Storytelling WKAG Ops Group working with Adrenalin Group who have worked with WBOPDC previously on developing video stories for iwi and Council websites to tell the local stories around the history of the Waiāri and its importance to the area. WKAG Ops Group also working with Toi Takapūu, artist collaboration with Tapuika artists Jo'el Komene, Dean Flavell and Noel McAllister re cultural recognition artwork development.		
Short Term Actions: - Agree process with Toi Takapūu to develop cultural art with iwi and sign contract with TCC for delivery - Agree agreement with Adrenalin Group for video interviews with kaumatua	WKAG members Toi Takapūu TCC WKAG members Adrenalin Group WBOPDC	September 2025 September 2025
Medium Term Actions: - Develop full video content for both iwi and community audiences - Develop cultural recognition artwork programme and sign off by WKAG for first artwork feature - First cultural recognition artwork complete	WKAG members Adrenalin Group Toi Takapūu WKAG Toi Takapūu	Early 2026 November 2025 March 2026
Long Term Actions: - Develop opportunities for further cultural recognition at other sites along the awa	Toi Takapūu WBOPDC/TCC	March 2026
Budget	**Forecast spend 2025**	**Future Plan**
- Toi Takapūu Art Collective to deliver first cultural art feature - Video content for Council websites (awaiting quotation)	$60,000 (TCC) $20,000 (TCC)	$125,000 (TCC)
Waiāri Bridge Restoration (led by WBOPDC) WBOPDC are leading a programme of work to develop a pedestrian bridge across the Stream at the Waiāri Bridge and to improve the area.	**Who**	**When**
Short Term Actions: - Install interim stream access solution from the Waiāri Landing Reserve; and - Clean up the site and control pest plants	WBOPDC	September 2025

Medium Term Actions: - Complete the technical design for stream access, erosion mitigation, and an accessible bridge crossing - Complete the landscape design for the Waiāri Bridge Area, which will include: o Location of cultural and historical elements; o Flood-resilient stream access improvements; o Safe pedestrian connections; o Location of an accessible bridge crossing; o Options for recreation and amenities for visitors to enjoy; o Future long-term developments: ▪ Potential shared path linkages to Te Puke township, Waitangi, and the Kaituna River; ▪ Options for safe stream access at the rail bridge; and ▪ Potential for car parking near the stream. - Complete the detailed design with consents and approvals obtained	Scott Parker PM WBOPDC WKAG/WBOPDC/ TCC	July 2025 – April 2026
Long Term Actions: - Preparation of detail design specifications. - Lodgement of building consent application. - Tender administration; and - Commence construction	WBOPDC	May 2026 – June 2027
Budget	**Forecast spend 2025**	**Future Plan**
- Short term 2024/25 - Medium term - Long term	$40,000 WBOPDC	$260,000 WBOPDC $772,090 WBOPDC
Regeneration and Riparian Management Programmes WKAG Ops Group members are keen to develop regeneration programmes for the Waiāri Stream to continue to improve the quality of the awa and streambank management.	**Who**	**When**

Short Term Actions: - Meeting held with BOPRC re potential input - Develop riparian management and funding plan - Identify Phase 1 riparian strip - Identify other partners, including BOPRC	Iwi/TCC/WBOPDC /BOPRC WKAG	September 2025
Medium Term Actions: - Riparian management Phase 1 implementation - Monitoring Plan complete and monitoring underway	Iwi/TCC/WBOPDC/ Other partners	December 2025
Long Term Actions: - Riparian management Phase 2 implementation	Iwi/TCC/WBOPDC/ Other partners	2026
Budget	**Forecast spend 2025**	**Future Plan**
Development of Regeneration and Riparian Management Plan Environmental Programme Agreements with landowners on the Stream	$10,000 (TCC) $20,000 (TCC)	Other funding/ funders to be identified
Education and Employment Pathways This action has been identified as a priority by the WKAG Ops Group, but at this stage time and energy has been associated with other priority actions. We expect to be able to report further on this action at the December WKAG meeting.	**Who**	**When**
Short Term Actions: -		
Medium Term Actions: -		
Long Term Actions: -		
Budget	**Forecast spend 2025**	**Future Plan**
TBA		
Mauri Model Next steps to identify key indicators for Tapuika and Waitaha and to develop an Iwi Monitoring Programme	**Who**	**When**
Short Term Actions: - Set up working group with iwi reps to review the current attribute/indicator list and meet to agree priority attributes/indicators and any	Iwi/TCC/BOPRC/ WBOPDC	September 2025

changes required to current model - Set up SFA with iwi to develop indicator list - Working group report back to WKAG on updated list of attributes/indicators	Iwi/TCC Iwi/TCC/BOPRC/ WBOPDC	September 2025 December 2025
Medium Term Actions: - Work with Kepa Morgan to update		
Long Term Actions:		
Budget	**Forecast spend 2025**	**Future Plan**
To be determined		
Access to Waiāri Water for Iwi and Marae	**Who**	**When**
Short Term Actions: - Co-Chairs meeting with TCC/WBOPDC Mayors and CEOs re access to water for maraes in Tauranga/WBOPDC area - Agreed both councils need to provide reports on water usage for all maraes in the rohe - Key action from previous meeting with TCC Infrastructure GM and WBOPDC CEO was that WBOPDC to source dedicated Project Manager for the cultural initiatives programme.	Co-Chair WKAG WBOPDC/TCC Mayors and CEOs	August 2025 May 2025
Medium Term Actions:		
Long Term Actions:		
Budget	**Forecast spend 2025**	**Future Plan**
To be determined		

KEY MEETINGS HELD

5. Meeting with WKAG Co Chairs and Mayors and CEOs of TCC and WBOPDC regarding access to Waiāri water for marae in the rohe. From this meeting TCC and WBOPDC staff agreed to provide the WKAG with reports on water usage for all maraes in the rohe.

ATTACHMENTS

Nil

10 DISCUSSION OF LATE ITEMS

11 CLOSING KARAKIA