

# **STANDING COMMITTEES**

**THURSDAY 18 July 2024**

**commencing at 1.30 pm**

**In the Council Chambers**

**1 Rosebank Terrace**

**Balclutha**

# CLUTHA DISTRICT COUNCIL

Notice is hereby given that a Meeting of the Infrastructure Strategy & Operations Committee will be held in the Council Chambers, 1 Rosebank Terrace, Balclutha on Thursday 18 July 2024, commencing at 1.30pm.

Steve Hill  
**CHIEF EXECUTIVE OFFICER**

## Committee Members

Councillor Bruce Graham (Chairman)  
Councillor Kevin Barron  
Councillor Dane Catherwood  
Councillor Wayne Felts  
Councillor Gaynor Finch  
Councillor John Herbert  
Councillor Michele Kennedy  
Councillor Alison Ludemann

Mayor Bryan Cadogan  
Councillor Simon McAtamney  
Councillor Dean McCrostie  
Councillor Brent Mackie  
Councillor Jock Martin  
Councillor Ken Payne  
Councillor Bruce Vollweiler

# INFRASTRUCTURE STRATEGY & OPERATIONS COMMITTEE 18 July 2024

---

## **APOLOGIES**

*None advised at the time of printing this agenda.*

## **DECLARATIONS OF INTEREST**

*No declarations of interest advised at the time of printing this agenda.*

<b>Item</b>	<b>Page #</b>	<b>Title</b>
<b>1.</b>	<b>4</b>	<b>Operations Update – Transportation</b> <i>(For the Committee’s Information)</i> Reports progress on transportation items within the department.
<b>2.</b>	<b>7</b>	<b>Operations Update – Greenspace and Waste</b> <i>(For the Committee’s Information)</i> Reports progress on greenspace and waste matters within the department.
<b>3.</b>	<b>14</b>	<b>Operations Update – Three Waters</b> <i>(For the Committee’s Information)</i> Reports progress on Three Waters matters within the department.
<b>4.</b>	<b>20</b>	<b>Infrastructure Strategy &amp; Delivery Update</b> <i>(For the Committee’s Information)</i> The report provides information on various Projects/Contracts that are in progress at this time.
<b>5.</b>	<b>46</b>	<b>Compliance Update Report</b> <i>(For the Committee’s Information)</i> The report provides updates on compliance-related issues across the Service Delivery Department.

---

# Infrastructure Strategy & Operations Committee

## Item for INFORMATION

<b>Report</b>	Operations Update – Transportation
<b>Meeting Date</b>	18 July 2024
<b>Item Number</b>	1
<b>Prepared By</b>	James Allison – Transportation Operations Manager
<b>File Reference</b>	902176

---

### REPORT SUMMARY

The report details items from the Operations Transportation Team that are for information only.

### RECOMMENDATIONS

- 1. That the Infrastructure Strategy & Operations Committee receives the ‘Operations Update – Transportation’ report dated 18 July 2024.**

### REPORT

#### 1. Health and Safety

8 Incidents and 17 Near hits reported for May, sunstrike and slippery ground conditions featured in these.

#### 2. Roading

Year 3 of the contract started on 1 July 2024. We finished the financial year having spent 101% of the allocated “Road Maintenance” budget.

This last month the metalling trucks have been working out of the Warnock Rd (Catlins), and Anderson’s (Clinton) quarries. Placing 4,735 tonnes of maintenance metal on the roads and a further 49 tonnes of spot metaling on various roads around the network.

A round of tree trimming started in the North of the district with 11 sites completed in June the remainder that are programmed will be completed in July.

Digger crews completed 1,717 metres of water tabling and installed 2 culverts.

Routine crews placed 32 tonnes of metal into unsealed potholes. 30 potholes were repaired on sealed roads and 69 metres of edge breaks were repaired. These crews continued to focus on improving visibility and safety on the network – cutting back vegetation, sweeping intersections, filling potholes and repairing edge break and cleaning and reinstating signs.

The Culvert Jetting Crew cleared 36 culverts across the network.

The culvert on Dalvey Road has been replaced, the road has been reopened, still under traffic speed control until it can be fully reinstated with seal.



### **3. Streetlight Maintenance Contract**

The floodlight over the pedestrian crossing near the new toilets on Clyde Street, was eventually replaced after a long wait for a replacement light. The infill program will resume in August or September in Lawrence.

---

# Infrastructure Strategy & Operations Committee

## Item for INFORMATION

<b>Report</b>	Operations Update – Greenspace, Waste and Compliance
<b>Meeting Date</b>	18 July 2024
<b>Item Number</b>	2
<b>Prepared By</b>	Jason Foster – Head of Infrastructure Operations
<b>File Reference</b>	902179

---

### REPORT SUMMARY

The report details items from the Operations Greenspace. Waste and Compliance Teams that are for information only.

### RECOMMENDATIONS

- 1. That the Infrastructure Strategy & Operations Committee receives the 'Operations Update – Greenspace & Waste and Compliance report dated 18 July 2024.**

### REPORT

#### 1. Health and Safety

##### **Greenspace: -**

Since the last Infrastructure update, within Greenspace there has been one incident. A contractor was stung on the ear by a wasp while washing their mower. We have also seen an increase to six reported near hits, with a running theme of slippery or soft surfaces, roaming dogs and traffic. All incidents have been reviewed with our contractor.

##### **Waste: -**

No incidents/accidents were reported at the landfill/transfer stations or during kerbside collections in this period.

Demonstrating the proactive nature of Safety Health Quality Environments's new H&S business partner model, the team conducted the first annual contractor safety review under this framework. This resulted in targeted recommendations with specific due dates being shared with the contractor, fostering a partnership approach to risk management.

We continue to work with our contract to improve health and safety at Mt Cooe. From an outdated safety plan, the team has managed to put together a new site-specific safety plan, rectifying any defects identified in our regular audits.

Resulting from a recent ergonomic assessment, the team are now enjoying enhanced comfort thanks to a new monitor, chair, and printer. Additionally, customers can now experience faster transactions with the newly upgraded PayWave-enabled EFTPOS system. This removed the hazard of having to lean out of the window to accept payments.

## 2. Greenspace

### **Service Delivery and Quality Management:**

The greenspace services have maintained a consistent level of performance since the last update report, effectively meeting contract outcomes. In addition, over this period we received the following service request numbers:

**Toilets (6)** - Hygiene concerns, including overflowing and blocked toilets, as well as maintenance issues like broken locks and malfunctioning flushes.

**Cemeteries (1)** - Excavation size.

**Parks and Greenspace (22)** - Requests include fixing signage, painting fences, addressing drainage and flooding issues, repairing dumping stations, and general park upkeep such as filling holes and removing unwanted items.

### **Community Engagement:**

The team met with the following groups

- Milton Promotions - Plan for a dog park in Taylor Park.
- Clinton Community Committee - Upgrades to the Clinton Triangle Park.
- Bushyhill Street Playground - Currently offering practical advice to a group looking to make upgrades.

## 3. Area Updates

### **Clinton:**

Image panels as part of the "Our Place" plan for Clinton, have been installed on the toilet doors.

Temporary repairs have been completed on the edging timber of the triangle playground; permanent repairs will occur with the community led upgrades to the park.

The leaning Cypress of concern should be removed over the next week or two depending on weather conditions.

**Owaka:** We replaced a broken board on the playground tunnel, replaced a missing bolt, and tightened all the remaining bolts. We also re-adjusted the hinges on the toilet doors.



**Pounaweia:** A split where the bronze panel meets the framework has been repaired on the slide.

**Taylor Park:** We have again removed hanging branches from the Leyland Cypress trees at Taylor Park alongside the caravan parking area. As this variety of tree was not bred to be specimen trees, but rather for hedging and forestry, routine regular maintenance, at a budgetary detriment, will be required to manage their growth.

**Stewart Reserve:** The filling of several large potholes in the carpark has mitigated the amount of dirt transferred into the Destination Toilets, pending the commencement of plaza renovations

**Moore Park:** We completed repairs on both flying fox structures at Moore Park. The larger structure's base footings were secured with new bolts, and we replaced the handle on the smaller flying fox.

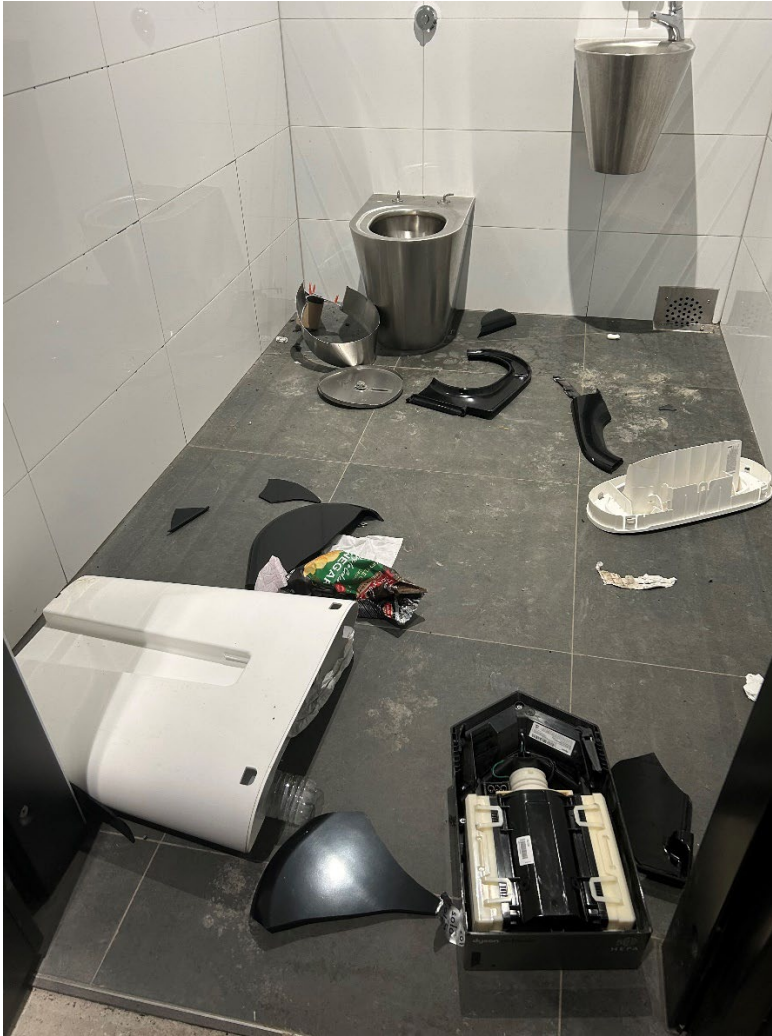
#### **Balclutha:**

Locks were replaced on the Grandstand toilets and changing rooms after vandalism. Additionally, repairs were made to the tyre swing at Yarmouth Street Playground, while the one at Lanark Street Playground was removed for repairs. Edging timber was also installed at the Balclutha Dog Park.

#### **Toilets:**

Across the district there have been several replacements of broken toilet roll holders, as well as small repairs being carried out ranging from blockages, light replacements and plumbing repairs.

Over the Matariki weekend, one of the cubicles at the Balclutha Destination Toilets sustained significant damage to its fittings. Repairs and replacements are underway. This is the most extensive damage these toilets have seen in some time, apart from occasional graffiti and wilful misuse. We are currently getting quotes for CCTV cameras at the new toilets in Balclutha and Milton to discourage and potentially identify perpetrators of this type of damage in the future. The cost of the CCTV cameras will be weighed up against the available budget and the cost of expensive repairs from damage.



#### 4. Waste

##### Landfill/Transfer Station Operations

Recent volumetric surveys of the landfill reveal a significantly reduced remaining capacity compared to original projections. While initial estimates predicted the site would reach its limit by September 2023 (the end date of its resource consent), this new data suggests that we are, at the very end of landfill space. To fully understand the implications of these findings, the team will conduct further modelling. In the interim, it is anticipated that space management will be a significant challenge while we await the outcome of the consent renewal process.

A water pipeline, feeding the office and workshop will also now need to be rerouted. This is to mitigate damage from further landfill operation at the edges of the site.

The new pumpstation project continues and is scheduled to finish by the end of July. A contractor has quoted for the fencing of ponds at Mt Cooe and the plan is to initiate the fencing after the pumpstation project has been completed. Fencing has been identified as a control measure from a recent hazard assessment.

A site visit was conducted to the Milton transfer station during operational hours to assess the data collection and payment methods. Moving forward, opportunities for cashless payments at transfer stations will be delivered.

### **Service Delivery and Quality Management**

The waste and recycling services maintained a consistent level of performance during this period, effectively meeting contract outcomes.

Numerous compliments were received by the council this period, praising the truck drivers for their helpfulness and initiative in assisting our residents. The positive feedback is a testament to the recent changes in the infrastructure operations team enabling us to focus on quality, cost and effectiveness.

46 Customers reported various issues through our Service Request process. These were, issues with their wheelie bins, including damage requiring replacements, missed collections due to late presentation or incorrect items, and bins being stickered for various reasons. Additionally, there were requests for new bin deliveries, collection suspensions, and bin type swaps. One customer reported a potential oil leak from the collection truck, but this turned out not to be our vehicle.

The purchase order for the new collection trucks was approved and the estimated delivery of trucks is between December 2024 and January 2025. The communications team has been approached regarding the designs, graphics or any potential advertisement opportunities for the trucks.

A routine audit was conducted by the ORC for the Clinton Transfer Station and the feedback was positive.

The current recycling markets creates ongoing challenges with our current available end destinations, as these are directly influenced by the remaining volumes following recent changes to Dunedin's waste and recycling services. The team will continue to track the impact overall as well as exploring new options.

### **Community Engagement**

Our public recycling bins at a supermarket were reported as being used by the staff for disposing of store waste products. This has been addressed to the store manager and improvements have been seen since then.

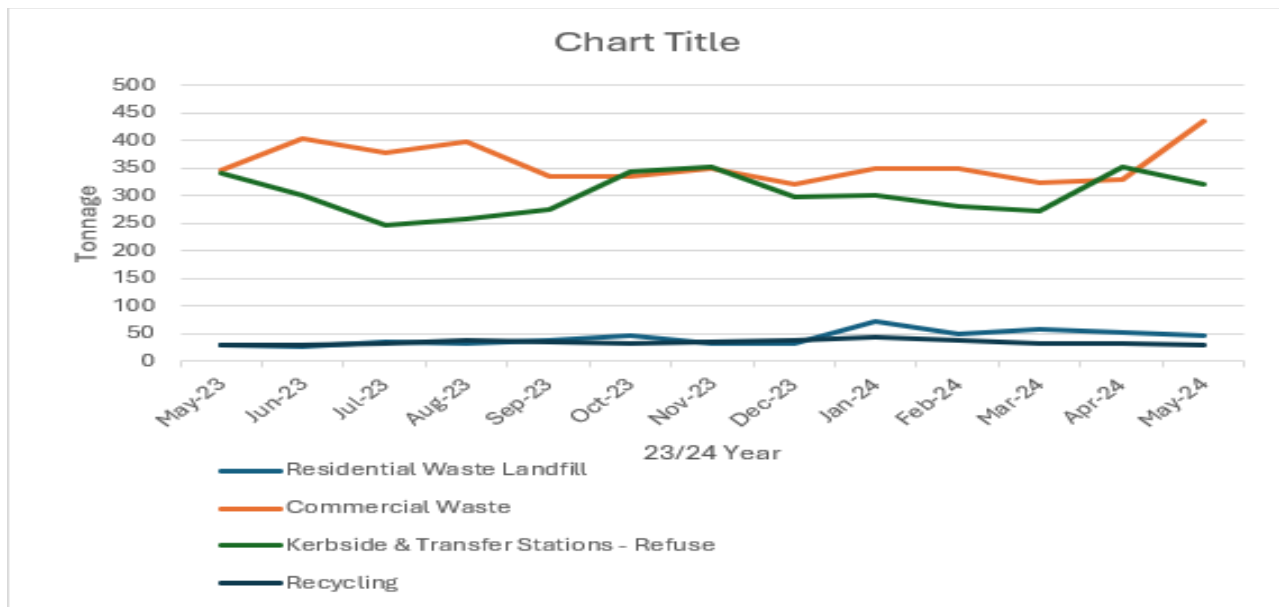
Hot Ash and household waste dumping at the public bins in the boat ramp has been consistent. A sign has been placed informing the public that the site is being monitored. Measures such as temporary removal of bins or surveillance are being discussed.

### **Operating Budgets**

Our waste management contract was recently extended past its November 2013 end date to avoid service disruptions. The extension came with an unbudgeted cost increase, a factor we are mindful of as we plan for the end of the fiscal year. It's important to note that the contractor hasn't yet submitted a claim for the difference between the new and old contract figures.

For the 2024/2025 Budget, adjustments are considered with the new collection costs, loans for new vehicles and environmental monitoring.

### Waste and Recycling Rates



## 5. Compliance

We welcome Ian Royle to the team, noting that some compliance elements previously undertaken by the Regulatory and Compliance team, now sit in Operations. These include freedom camping, litter, parking, and abandoned vehicles. Ian has already demonstrated the synergies by working closely with the team on network reporting and identifying opportunities for collaboration with existing contractors.

Ian has also played a crucial role in assisting a young homeless couple identified as part of our patrol. Both individuals lived rough for five months before being discovered by Ian in Clutha. Ian brought the couple to the attention of relevant authorities, and through collaboration with "Jobbortunities", they have now secured employment and accommodation.

Noting the successful intervention, it's unfortunate to report that overall, we are seeing a significant increase in homelessness, as well as non-compliant freedom campers. We do however educate them on the rules and issuing fines only when necessary.

The overall numbers are:

- Camper/Vehicle Interactions: 283
- Vehicle Relocations: 31
- Tent Campers Relocated: 2
- Animal Control: 5
- Dumped Rubbish Removed: 4

- Homelessness: 7
- Obstructions Removed from Roads: 2
- Antenna reports: 7
- Other Reports: 6
- Site Visits or Monitoring: 8
- Vehicles on Beaches: 1
- Kilometres Travelled: 7728

---

# Infrastructure Strategy & Operations Committee

## Item for INFORMATION

<b>Report</b>	Operations Update – Water
<b>Meeting Date</b>	18 July 2024
<b>Item Number</b>	3
<b>Prepared By</b>	Linda Till – Head of Three Waters
<b>File Reference</b>	902180

---

### REPORT SUMMARY

The report provides updates from the Operations Water Team that are for information only.

### RECOMMENDATIONS

- 1. That the Infrastructure Strategy & Operations Committee receives the ‘Operations Update – Water’ report dated 18 July 2024.**

### REPORT

#### 1. Water

##### Staffing

One of our Water Treatment Plant operators achieved their New Zealand Certificate in Drinking-Water Treatment, Level 4 qualification in early July having passed the requisite e-learning assessment, off-job block courses and an onsite assessment. Another operator is also very close to achieving his qualification, timing for which relies on the next visitation by the Connexis assessor.

Three water treatment operators met the requirements under our Competency Framework and were signed off as fully competent to operate the plants assigned to them, during the month. The programme is ongoing to ensure that we can demonstrate to Taumata Arowai that staff are trained and competent in the operation of our drinking water supplies – a requirement outlined in the Milton compliance order.

##### Phoenix Dam

The bypass of Phoenix Dam has been fully commissioned, and Phoenix Dam is effectively empty aside from inflows from the catchment and some natural springs that have been uncovered.

Following an application to Otago Regional Council, Port Blakely Limited, the owner of the Phoenix Dam, commenced decommissioning works on 10 June 2024.

The decommissioning works have proven problematic at times, with water being pumped from the dam having little effective sediment control being undertaken. We are working with the onsite engineer and PBL to coordinate pumping at times, with our need for quality water to maintain the supply and the reservoir levels.

Photos below have been supplied by PBL as part of the daily updates. Photo 3 shows the pumps (blue) by the spillway at the mid rear of the photo, which is also where our bypass ends. To demonstrate scale of the works, note the men in hi vis to the left in the same photo.



Photo 1: Upstream face of dam looking west



Photo 2: Reservoir showing coffer dam in middle ground



Photo 3: View along excavation from left abutment



Photo 4: Hand excavations around low-level conduit

During excavations some interesting pipework with wrought iron links has been uncovered which is in excellent condition given it is something close to 160 years old. The archaeologist on site advises that it is intended to leave the pipework in place given its condition and a new channel for the stream will be created to the side of it. The pipe work would then be cleaned up and left to view. Images of the pipe work are shown below.



*Scale is 0.5m long. Pipes are each 1.8m long.*

Remediation of the Bungtown Race is also well-progressed. We anticipate completion of both the final decommissioning of Phoenix Dam and the restoration of Bungtown Race before the end of July 2024, conditions permitting. The bypass is providing sufficient supply for the township's needs, but the Bungtown Race diversion will be critical to deal with peak demand over summer.

### **Lawrence**

The aluminium advisory issued for Lawrence on 17 January 2024 due to elevated levels from a number of samples across the reticulation has been under review since that time with extensive additional flushing and monitoring undertaken across the township reticulation. More recent results have indicated that the levels were back under compliance and the advisory has since been lifted on 24 May.

Following the Taumata Arowai site visit/audit on 8 March we received notification of concerns over the condition of the plant and its ability to meet aspects of the Drinking Water Quality Assurance Rules. As a result, a Boil Water Notice was placed on the township. To try and avoid keeping the boil water notice on until delivery of the new Greenfield Scheme the Operations team has been working with contractors to develop a shorter-term solution involving upgrading the UV disinfection process at the plant which will be undertaken in July. The notice remains in place at the time of writing. In addition, staff are undertaking additional monitoring to understand variable FAC results across the network. An update will be provided to the Committee at its next meeting.

Following some resident complaints about chlorine odour and affects including itchy skin and stinging eyes, an offer has been made to provide testing of chlorine levels for Lawrence residents. Our regular testing within the network is showing us that all results are within the acceptable levels determined by the regulator and the service offered to residents is to help



allay concerns and to help us understand whether high levels have accumulated within the network. Flushing of the network has been undertaken, although the efficacy of this is limited while we are trying to conserve the supply. The testing service for residents will be offered while there is a boil notice in place.

### **Milton**

The new Drinking Water Safety Plan was submitted to Taumata Arowai on June 27th. This satisfies Section A(i) of the Milton Compliance Order issued by Taumata Arowai in November 2023. An updated Source Water Risk Management Plan was also submitted on June 27th.

### **Tapanui**

The Tapanui water supply had a boil water notice issued on June 16th. The treatment plant was unable to meet compliance requirements for supplying safe drinking water to the community after the heavy rainfall in the days leading up to the boil water notice being issued. To help with informing the community, CDC staff door knocked throughout Tapanui on the Sunday to advise consumers of the boil water notice.

A water tanker has been made available at Bushyhill Street Playground for consumers to get safe drinking water from.

At the time of writing, the notice is still in place, as the treatment plant has still not been able to supply consistently compliant water.

### **Taumata Arowai Reviews and Audits**

Taumata Arowai (TA) was provided with an update in June for Clutha District Council's progress with requirements of the Compliance Order for the Milton water supply. An update was also provided to TA on the status of the Lawrence boil water notice. No feedback has been received from the regulator at the time of writing.

Following the cryptosporidium outbreak in Queenstown in 2023, TA reviewed all drinking water suppliers across NZ to identify supplies that lacked a suitable protozoa barrier and outlined expectations for achieving compliance. In our district, the Tuapeka West RWS was identified, and we were given a deadline of 30 June 2024 to provide TA with a confirmed, funded plan to achieve compliance. The multi-year Greenfield Project will enable compliance to be achieved and with Council's recent LTP decision to allocate additional funding for project completion, we have since provided a plan. We have sought an extension of the date to achieve compliance to allow for potential project completion slippage and to enable commissioning of the large and complex distribution network. We await acceptance of our plan and approval of the date extension.

On June 27th, Taumata Arowai released the Drinking Water Regulation Report for 2023. Clutha District Council featured prominently, specifically in reference to aluminium notifications, E. coli notifications for the Waitahuna supply, and the Compliance Order for Milton. From p65 of the report: "Since serving the compliance order, the areas of highest risk have been addressed and improved risk management practices have been put in place across all Clutha supplies."

## **Reticulation Contract**

Contractual negotiations for reticulation maintenance arrangements are reliant on back-to-back contract arrangements being agreed between the lead contractor and the sub-contractors partnering with them. Positive progress has been made over June and we are now waiting to see the proposed overheads and schedule of rates for labour. Once to hand, these will be sent for independent review by our contractor. Staff are now working to finalising contract arrangements subject to a final legal review and any further approvals required.

## **Crown Street Capacity**

Quotes have been received for options to hire or purchase portacombs for use at the Crown Street depot. These are being evaluated, following which foundations will be laid for the preferred option.

## **2. Wastewater and Stormwater**

### **Biofiltro sites**

As reported last month, work is continuing to improve the performance of the five Biofiltro wastewater treatment plants (WWTPs). Replacement PLCs (programmable logic controller – the plant's 'brains') and associated control system have now been installed at all five sites, with final programming and due to be undertaken in July.

A recent rainfall event across the district on 15 and 16 June resulted in operational issues across a number of sites. The main issue for the wastewater network occurred at Tapanui where the oxidation pond overtopped due to increased flows because of heavy rainfall onto the ponds and high levels of infiltration into the wastewater network. The Biofiltro bed itself is the only remaining site requiring replacement (which is scheduled for spring or early summer). At this stage consideration is being given to use of coarser material like that recently installed at Owaka. This mix of material appears to allow for much improved drainage across the bed.

### **Other Wastewater Treatment Plants and General**

A major overhaul of the ultraviolet (UV) light disinfection modules at the Milton WWTP was undertaken on 13 May. This included replacement of most of the consumable parts, including all 12no. UV lamps. As a result, the disinfection efficacy of the modules has increased dramatically, with the routine sample taken in May recording a 'bug' count less than the limit of detection. Dose levels at the plant are continually recorded and have remained high since the upgrade.

Upgrades to the Balclutha, Clinton and Waihola WWTPs, reported last month, are still ongoing. Power connections at Balclutha and Clinton are still to be established. Once commissioned in late July or August, improvements in discharged effluent quality should soon be seen at all three WWTPs.

Several ammonia nitrogen exceedances were received in June for samples taken at the Heriot Wastewater Treatment Plant. This is a concern given that the recent upgrades at the site were intended to address this. Data has been fed back to the contractors who undertook the

upgrade and staff are currently awaiting their response to understand what if any further work is required.

Audits were undertaken by ORC at the Balclutha, Clinton, Milton and Waihola WWTPs on 15 Feb, with the remaining seven WWTP sites audited over two days in early April. Staff are currently awaiting the follow up reports for these audits.

One key issue for ORC is the control of the bypass facility at the Milton WWTP. Although poorly defined in the consent, it is understood that only wet weather flows exceeding 40L/s should be allowed to bypass the full treatment process. This threshold does not appear to have been reached in bypass events, requiring urgent attention. We have recently obtained a copy of the control programme for the WWTP and have engaged a contractor to modify the programme to achieve the required control mechanism.

### 3 I&I Inspection Programme

There has been some progress since the previous report. For this current reporting period a total of 5 households have notified council about the completion of remedial works. It appears that property owners with houses on the market are much more willing to comply than the rest of the community. Another round of awareness campaigns is being initiated by council. Council has developed a draft action plan to resolve the current outstanding issues and move on to the next activity. Further reminder letters have been drafted and will be sent through in due course.

Table1: I&I Inspection Programme

Community	Contacted Council	Total non-compliant (June 2024)	Non-compliant gully trap(s) (initial)	Non-compliant gully trap(s) June 2024)	Stormwater pipe or drain directly connected to the sewerage system. (Initial)	Stormwater pipe or drain directly connected to the sewerage system (June 2024)	Some of the downpipe terminations are still unknown. (initial)	Some of the downpipe terminations are still unknown. (June 2024)
Balclutha	318	38	413	20	160	12	241	12
Stirling	24	4	28	1	18	3	45	1
Tapanui	126	21	164	17	48	10	94	7
Clinton	38	6	39	3	28	6	21	0
Heriot	14	2	21	2	12	2	8	1
Kaitangata	62	13	61	6	67	8	100	4
Kaka	46	11	35	6	28	3	35	2
Lawrence	68	8	62	7	36	2	62	3
Owaka	40	5	66	3	25	4	29	0
Milton	225	44	311	39	67	4	169	10
Waihola	36	3	46	3	7	0	13	0
<b>Grand Total</b>	<b>1000</b>	<b>156</b>	<b>1246</b>	<b>107</b>	<b>496</b>	<b>59</b>	<b>817</b>	<b>41</b>

\*Note - each property could have more than one gully trap(s), down pipes, and unknown downpipe terminations.

---

# Infrastructure Strategy & Operations Committee

## Item for INFORMATION

<b>Report</b>	Infrastructure Strategy & Delivery Update
<b>Meeting Date</b>	18 July 2024
<b>Item Number</b>	4
<b>Prepared By</b>	Donna McArthur – Head of Infrastructure Strategy & Delivery
<b>File Reference</b>	902181

---

### REPORT SUMMARY

The report details items from the Infrastructure Strategy & Delivery Team for information and discussion.

### RECOMMENDATIONS

1. That the Infrastructure Strategy & Operations Committee receives the 'Infrastructure Strategy & Delivery Update' report dated 18 July 2024.

### REPORT

#### Sharing of good news:

I am delighted to advise that due to the hard work of the project management team, who have negotiated discounts for the purchase of the multiple water tanks required for the Rural Water Scheme reservoir projects, that we will be making savings of up to \$180k spread across these projects – great work team!

#### 1 Asset Management - THREE WATERS

##### 1.1 Balclutha Water Treatment Plant Intake Upgrade

In May 2023, the Clutha District Council approached Stantec to request a re-assessment of the structure as part of the health and safety improvement program and renewals program. Considering that the previous assessment took place nearly five years ago and the recommendations have not been implemented, there is a possibility of further deterioration. Therefore, a reassessment of the structure is necessary to identify any issues (existing and new) and provide appropriate recommendations to ensure the safe use of the structure.

Detailed design drawings have been completed with collaboration from the Water Operations team and construction drawings are progressing along with tender documents.

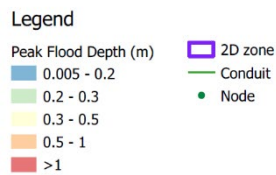
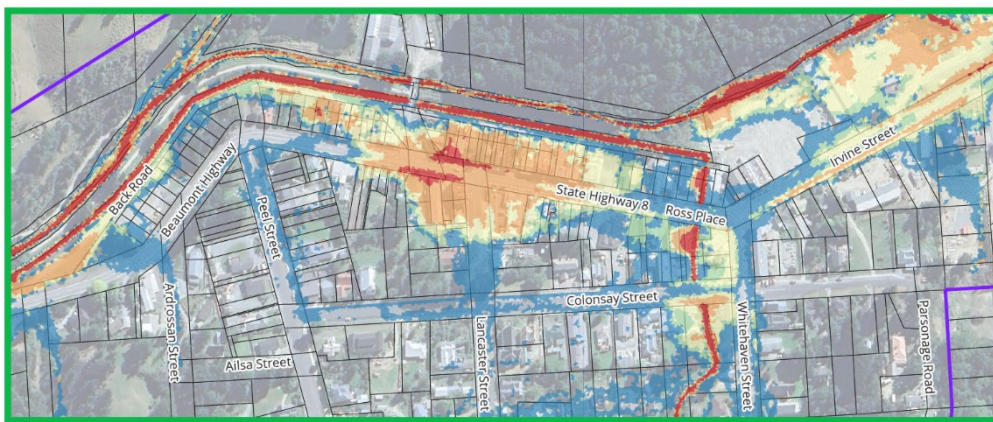
The site is a popular diving spot with locals, and the design team has designed several options to create safe and accessible areas for diving and river activities. Cost estimates have been determined, and a report has been written for council to consider.

### 1.2 Lawrence Stormwater Model Build and Optioneering

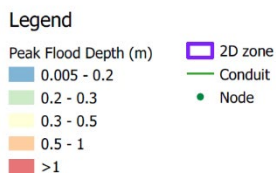
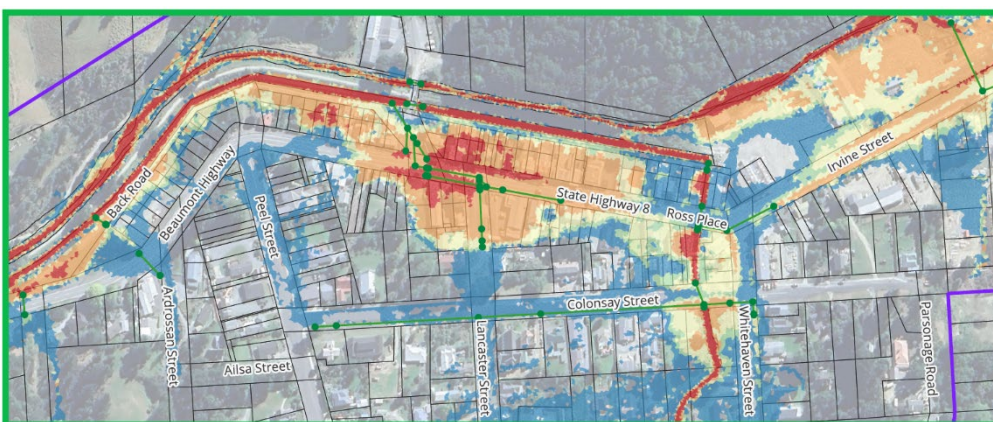
Recent storms, including a 1 in 40-year event in February 2020, resulted in flooding to areas in Lawrence and underscored the need for action.

The project's main objectives are to identify flood-prone areas and investigate infrastructure solutions. This involved modelling different storm events/scenarios, assessing what the existing infrastructure can handle and what improvements can be made to protect properties and ensure better stormwater management.

#### Model Results

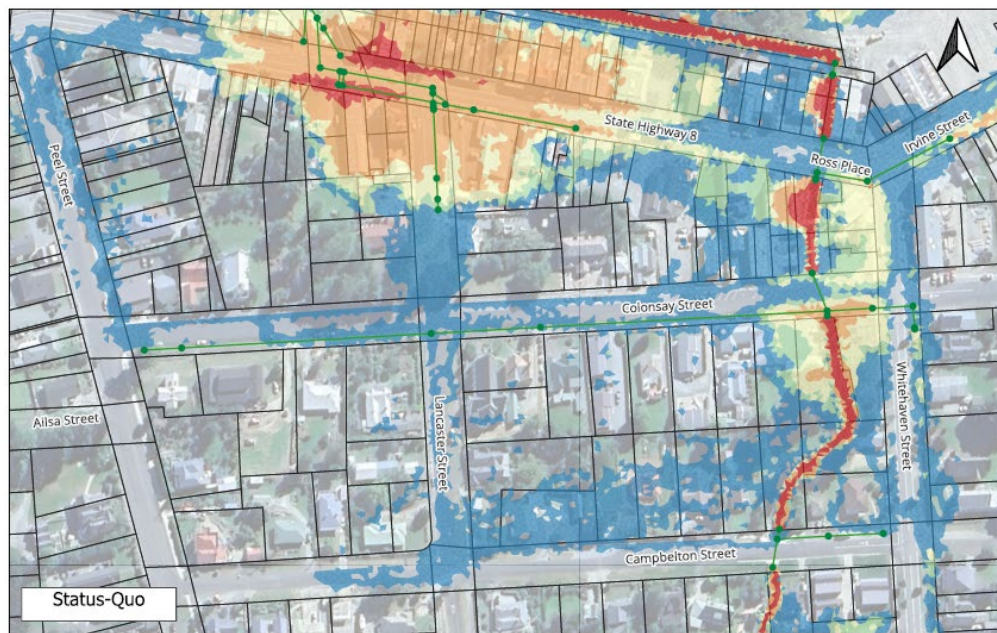


**FIGURE A-1**  
Peak Flood Depths  
10 year + CC, Existing Development



**FIGURE A-4**  
Peak Flood Depths  
100 year + CC, Existing Development

- **Stage 1:** Improve drainage capacity at the intersection of Colonsay Street/Lancaster Street and down towards Whitehaven Street.
- **Stage 2:** New kerb and channel to efficiently direct catchment runoff into the upgraded piped system along Colonsay Street.
- **Stage 3:** Installation of a new pipeline down Lancaster Street and an extension of the stormwater line at the top of Colonsay Street.



**Legend**

- Node
- Conduit
- Nodes - Upgrades
- Proposed Kerb and Channel
- Pipes - Upgrade - Diameter (mm)
  - 300
  - 375
  - 450
  - 525

**FIGURE C-1**  
Colonsay Upgrade  
10 year + CC Peak Flood Depths

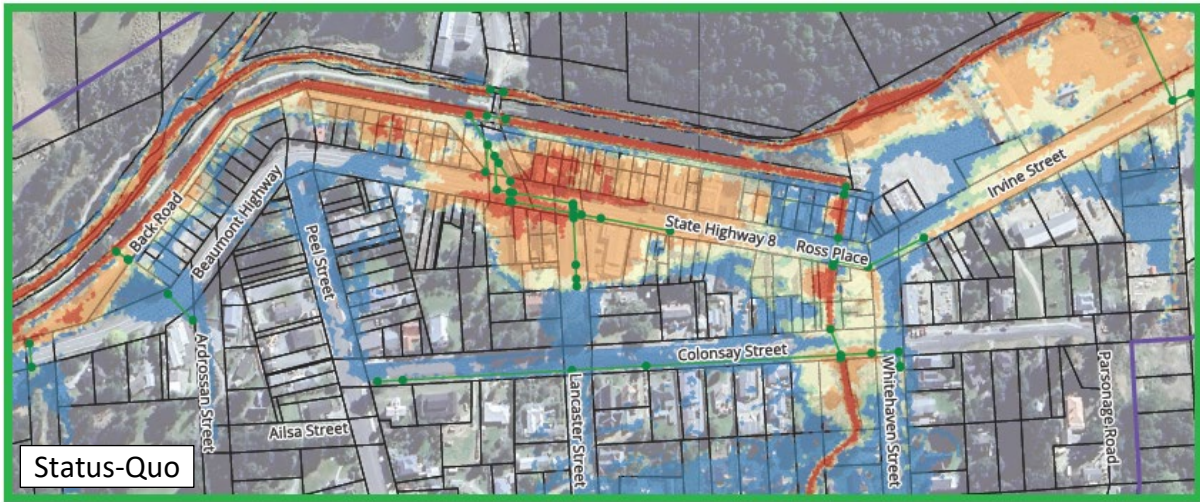
### **Mitigations – Ross Place**

Council requested that GHD determine works required to eliminate flooding in Ross Place in a 1:100 year event, providing a long-term goal for council to work towards. The target level of service is to reduce ponding to less than 300mm on private property, with greater depths acceptable on public property. Mitigations can be implemented in stages over time until the desired level of service is achieved.

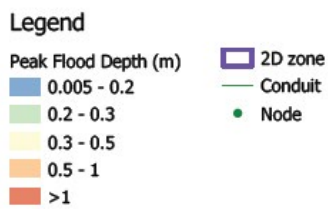
Several iterations using various combinations of approaches were simulated and investigated. Downstream channel upgrades (e.g., merging Hospital and Tuapeka Creeks) and increasing drainage capacity (through pumps or pipe upgrades) only reduced peak flood volume by up to 30%. Upstream attenuation alone was insufficient, and completely cutting off large upstream rural catchments did not meet the target service level. Combining upstream attenuation with downstream channel upgrades also failed to achieve the desired results. Additionally, stop banks in certain areas of Hospital Creek increased local flood depths. However, channel upgrades in Hospital Creek upstream of Ross Place, including lowering the channel and enlarging bridges/culverts, were found to be necessary components of a comprehensive solution.

The recommended measures include:

- Increasing channel capacity downstream by breaching and merging Tuapeka Creek and Hospital Creek channels.
- Deepening Hospital Creek and upgrading bridges/culverts.
- Widening and/or deepening Tuapeka Creek.
- Implementing upstream attenuation in Tuapeka and Hospital Creek catchments to reduce flows.
- Adding stop banks on Hospital Creek and Tuapeka Creek.
- Enhancing Ross Place drainage capacity with pipe upgrades and potentially adding a pump station.



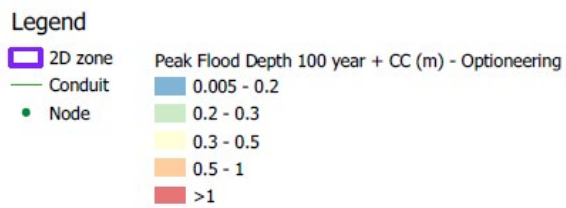
Status-Quo



**FIGURE A-4**  
Peak Flood Depths  
100 year + CC, Existing Development



Upgrades



**FIGURE C-3**  
Ross Place Upgrades  
100 year + CC Peak Flood Depths



### **1.3 Wastewater – Initial Land Treatment Investigations**

Driven by evolving regulations, rising costs, and a growing focus on environmental protection, the Clutha District Council (CDC) is reviewing its wastewater management practices for various communities. One potential option being explored is land-based discharge.

To evaluate this option, an environmental engineering consultant was engaged in early December 2022 to develop a report on potential disposal options. Building on this initial work, further investigations in 2023 focused on identifying suitable land treatment areas within a 10 km radius of all 11 existing CDC wastewater treatment plants.

This comprehensive report has now been presented to the council and the local Runanga.

Following initial discussions with the council and Runanga, the next steps involve comprehensive community engagement. This includes:

- **Iwi and Hapu Engagement:** Collaborative planning workshops will be held after an initial technical briefing, ensuring cultural considerations are integrated throughout the process.
- **Detailed Investigations:** Working with consultants, potential land treatment zones will be further refined, with engineering studies and cost estimates developed.
- **Community Outreach:** Public information sessions will be held alongside collaboration opportunities to ensure transparency and community input.

### **1.4 CDC Development Engineering Code of Practice**

To promote efficiency and consistency across the Clutha District, we're proposing a collaborative effort with neighbouring councils to develop an engineering code of practice. This approach will benefit CDC, service providers and contractors.

Working together, we can avoid duplicating efforts and ensure a single, consistent code. Ultimately, a code will foster a more efficient and effective management and construction environment for everyone involved.

An initial kick-off meeting with CDC staff was held in March, and we are now in further discussions with Dunedin City Council.

### **1.5 Clutha District Water Supply Schemes Strategy**

This Strategy is being developed to investigate connecting several rural water supply schemes operated by Council. The goal is to improve overall water system resilience, potentially postpone costly upgrades at individual treatment plants and amalgamation which could possibly reduce the number of plants and consents needed.

The proposal focuses on four potential connections:

- Richardson South and North: Connecting these schemes to either the Whitelea Rd WTP (with a capacity upgrade) or the Balclutha plant, allowing the Puerua WTP to be decommissioned or operate at a reduced capacity.
- Kaitangata: Connecting Kaitangata to either the Stirling plant (with an upgrade) or routing water through Stirling and then Balclutha (with a Balclutha plant upgrade). This would eliminate the need for a separate, recently tendered \$3 million upgrade to the Kaitangata intake and improve network resilience.

The next steps outlined in the report involve using existing water network models to determine necessary pipeline upgrades for each connection scenario. Additionally, the report proposes estimating the capacity increase required at the water treatment plants to handle the additional demand. Finally, high-level cost estimates will be developed based on recent CDC water treatment plant upgrade projects.

### **1.6 Milton WTP – Capacity Increase and Iron and Manganese Removal Options Assessment**

This assessment has been requested from Beca Limited to assess options for upgrading the Milton Water Treatment Plant. The project has three main goals:

1. Increase Treatment Capacity: Demand for treated water has grown due to the new pipeline connection to Waihola and population growth. The current capacity of 3 million litres per day (ML/day) needs to be increased to 5 ML/day.
2. Improve Water Quality: Residents have reported taste and aesthetic issues with the water, likely due to elevated iron and manganese levels. The proposal includes investigating treatment options to reduce these contaminants to acceptable levels as defined by the New Zealand Drinking Water Standards (NZDWS).
3. Wastewater Discharge: Current method using the old clarifier is malfunctioning. Consider new options like ponds with river discharge, treatment for wastewater network discharge, or land application.

#### **BECA's Proposal Highlighted below:**

- Identified treatment options for iron and manganese removal and report on the most viable options. These will likely include:
  - Biological treatment
  - Greensand filtration
  - Pre-oxidation and ultra filtration

Note: Before moving forward, we are also gathering the latest information from Eurofins ELS Limited on the levels of manganese and iron in the source/raw water, as well as at various reticulation points across the scheme, including the water treatment plant outlet.

➤ Options for increasing the WTP capacity from 3ML/day to 5ML/day. These will likely include:

- Adding a new Memcor Membrane skid and associated process equipment
- Installing a new pressurised membrane system.

Note: Currently we are exploring best options suits to Milton Water Treatment plant.

➤ Upgrading of the waste disposal method is to be investigated. BECA suggested following most likely options are:

- Backwash ponds with a river discharge
- Neutralisation and discharge into the wastewater network
- Backwash ponds with a discharge to land.

Note: Any waste disposal method is likely to require a consent.

Ultimately, the goal is to ensure the Milton WTP can meet future water needs while delivering high-quality drinking water that complies with DWSNZ regulations.

### **1.7 Criticality and condition Dashboards**

The 3-Waters Asset Management Team is currently developing criticality and condition dashboards. These dashboards will provide comprehensive insights into the condition and criticality of our assets, allowing us to identify the lengths of pipe that need replacement within specific time periods and to consider appropriate budgets. This information will be a valuable tool in developing our renewal program, ensuring that we can proactively address infrastructure needs. Additionally, the dashboards will enable us to map our critical assets, facilitating better decision-making and resource allocation for maintaining and upgrading our water infrastructure.

### **1.8 Asset Management Information System (AMIS)**

The 3-Waters Asset Management Team is currently exploring options for an alternative AMIS that can provide better value and tools for managing our assets. At present, we are using Univerus Assets (previously AssetFinda).

One potential option is adopting Thinkproject Asset & Work Manager (previously RAMM) as our base AMIS, in alignment with the Roading department, which already uses this system, as well as the facilities and waste teams. This approach could standardize processes within the department, eliminate data silos, and improve accessibility for staff organization-wide and contractors.

## 1.9 Forestry catchment protection Policy/Strategy

The 3-Waters Asset Management Team is developing a comprehensive Forestry Catchment Protection Strategy/Policy. Currently, our protections are limited to those stated in the bylaw and the district plan, which are not actively enforced. Increased forestry activities can negatively impact the quality of source water, making it more challenging to treat for drinking. This new strategy aims to establish clear and enforceable guidelines to restrict forestry conversion near source water supplies. The policy will be based on specific criteria to ensure the protection and sustainability of our water sources, improving our ability to manage and safeguard these areas effectively. By implementing this strategy, we will proactively address potential risks to our water catchments and promote long-term environmental stewardship.

## 2 Asset Management – ROADING

### 2.1 Kelso Settlement Road - Bridge 390

The team prepared and presented a report to council on the subject and council agreed to the option of closing access to the current bridge and erecting a new wash over culvert downstream, within the existing legal road reserve.

The project commenced on the 27<sup>th</sup> of June 2024 and is progressing well. Currently the projected completion date is 14 July 2024.





## 2.2 Safer Speeds Past Schools – Road to Zero

A total of 80 static 30km/h signs with time limit supplementary signs for Category 1 Schools and a total of 5 pairs of electronic variable signs for Category 2 Schools have been ordered. Once the Land Transport Rule Setting of Speed Limits have been finalised, Speed Limits for Clutha will be finalised and the signs installed accordingly.

## 2.3 Ministry of Transport – Land Transport Rule, Setting of Speed Limits 2024 Consultation

Ministry of Transportation is seeking feedback on the draft Land Transport Rule, Setting of Speed Limits 2024 with submissions due by 11 July 2024.

At the Otago/Southland Regional Transport Committee meeting of 24 June 2024, it was agreed that a regional submission be forwarded and it is not envisaged that there will be a separate Clutha District Council submission. The draft combined Otago Southland Regional Transport Committee submission is as follows.

3 July 2024

Te ~~Manatū~~ Waka Ministry of Transport  
PO Box 3175  
Wellington 6011  
By email to: [speedrule@transport.govt.nz](mailto:speedrule@transport.govt.nz)

### Otago Southland Combined Regional Transport Committees submission on Land Transport Rule – Setting of Speed Limits Rule 2024.

1. The Otago Southland Regional Transport Committees (RTCs) thank the Ministry for the opportunity to make a submission on the Setting of Speed Limits Rule 2024.

#### Background and context

2. The RTCs comprise the authorised organisations who plan transport activities in the Otago and Southland regions. The members are representatives of the five territorial local authorities in Otago, three territorial authorities in Southland, the Otago Regional Council, Southland Regional Council (Environment Southland), and the New Zealand Transport Agency (NZTA). The purpose of the committee is to set the direction for transport investment in the regions in a combined Regional Land Transport Plan and monitor the implementation of the Plan to meet the needs of Otago and Southland communities.
3. All members actively participate in the committee: Queenstown Lakes, Central Otago, Clutha, Waitaki Southland, and Gore District Councils, Dunedin and Invercargill City Councils, [Otago](#) and Southland Regional Councils and NZTA.
4. We note that member organisations may also make individual submissions, but no attempt has been made to reflect individual member organisations responses.

#### General Comment

5. The use of speed management is a well acknowledged component of road safety responses around the world. When speed management is aligned with other safety interventions and acceptance by the surrounding communities the highest safety outcomes can be achieved. There are components of the draft rule as proposed that do not fit with the safe system approach that is likely to ensure these safety outcomes will be delivered.
6. The major impediment to a successful outcome for this rule change is to ensure that the speed limits implemented are done with the agreement of the communities that the speed limits most directly effect. They must not be imposed or appear to be unreasonable to achieve community acceptance. The current proposal will require Road Controlling Authorities particularly in the local road sector to undo proposed or implemented speed limit changes that have been consulted on and have substantial community support. This undermines the credibility of both the RCA and the likely support for any proposed future changes.

7. The need for a uniform and easily understandable speed setting rule that will allow community desires and outcomes to be achieved and deliver significant safety benefits is acknowledged. However, the current proposal is too prescriptive in some areas.
8. The use of the term RCA and Council in the draft rule appears to be inconsistent. The term RCA should apply when referring to Road Controlling Authorities and the term Council where the term refers to a Regional Council.

## Specific Comment

### Proposal 1 – require cost benefit analysis for speed limit changes.

9. The requirement for cost benefit analysis is acknowledged but not supported.
  - The proposed methodology is inconsistent with the CBA using the Monetised Cost Benefit Manual used for all other transport funding projects. The methodology proposed appears to significantly disadvantage low-cost speed interventions at the expense of travel time savings that are very unlikely to be achieved or are negligible. It is important to understand that time savings are only significant over long distances, in urban areas savings from higher speed limits are hard to achieve due to stop start nature of the journey. Arterial roads within urban environments, reduced speed limits would have no appreciable effect during times of congestion, in this case, safer speeds for the environment are prioritised.

**We recommend the CMA used in the rule be consistent with the current NZTA CBA process.**

- The proposed CBA process and requirement for proposals to be on a road-by-road basis will result in significant costs to the local Roads sector where speed changes are proposed.

**We recommend specific funding be made available to assist the sector in accessing or re-accessing their speed management plans to conform with the new rule particularly in the coming NLTP period where funding is already restricted and Long-Term Plans have been confirmed with this cost implication unknown to them.**

### Proposal 2 – Strengthen Consultation Requirements.

10. All RCAs should be required to follow the same consultation requirements and both state highway and local road speed change consultation should have the same requirements. The additional consultation requirements of the proposed rule and the requirements for each individual road to be consulted on presents particular challenges for the TA sector and will make consultation on state highway local road interaction points more complex. The additional requirements will add significantly to the costs of any speed limit change proposal and may lead the RCA to just abandon what would be high safety outcome changes due to cost.

**We recommend the consultation requirements be reviewed and the requirement for consultation on each individual road proposal be removed.**

### **Proposal 3 – Require Variable Speed Limits Outside School Gates.**

11. The proposal is supported in principle. We do question whether the views of the schools or the education sector have been taken into account in developing the rule. What ever the final outcome the need for clear signals to road users on the speed limit applying and the reasoning as part of an education plan need to be in place for the speed limits to be effective.

We believe that the rule including prescriptive implementation requirements around the type and extent of speed limit reductions may lead to unintended consequences. Schools are all located on differing road types with differing traffic patterns and densities with the roads serving different purposes so adopting a single prescriptive approach is sure to result in unintended consequences and lack of community support.

**We recommend the single prescriptive approach be changed to allow the RCA to assess the school environment, road type and use and implement an appropriate intervention for the site.**

### **Proposal 4 – Introduce a Ministerial Speed Objective.**

12. The need for a uniform and easily understandable speed setting rule that will allow community desires and outcomes to be achieved and deliver significant safety benefits is acknowledged. However, the current proposal is too prescriptive in some areas. Having a Ministerial Objective sets a precedent that at best could be seen as introducing the perception of political interference the was an RCA interacts and responds to their community. If such an objective is required, then the Government Policy Statement on land transport or the expected Road Safety Strategy is where the Governments views should be reflected.

**We recommend removal of the ministerial speed objective and the inclusion of such a statement in either the Government Policy Statement on Land Transport or the Road Safety Strategy.**

### **Proposal 5 – Changes to Speed Limits Classifications**

13. We encourage where possible, corridors be considered in their entirety when addressing speed limits to reduce situations where there are fluctuations in speed due to fragmented decision making. This will ensure a consistent approach for road users across the region and limit inconsistencies within and between districts. Road definitions should all be referenced to the One Network Framework (ONF) that has been adopted across the country by both state highway and local road authorities.

### **Proposal 6 – Reverse Recent Speed Limit Reductions**

14. We do not support the requirement to reverse recent speed limit reductions and particularly the differentiation between state highway and local road requirements. Where speed limit reductions have been implemented or proposed with community support the RCA should be given the opportunity to retain the status quo. That is leave the speed limit as change or



continue with the implementation of the new proposed limits that have been consulted on and have community support.

The risks in requiring reversal of these speed limits include,

- The significant costs associated with these reversals, this does not align with the value for money or efficiency values set out in the GPS 2024.
- loss of community and public confidence as speed limits change after public acceptance has already been gained and community desires have been heard.

The requirement for reductions to meet a specified time frame will be difficult for many RCAs to achieve. Some of these speed limit changes have been made under the old Bylaw process and the rule does not take this into account.

**We recommend the requirement to reverse speed limit reductions since 2020 be reviewed to take into account the risks and comments in this submission.**

## Conclusion

The combined Otago Southland Regional Transport Committees request that due consideration be given to the matters raised in this submission. We welcome any feedback the Ministry can provide and look forward to a substantially redrafted rule being implemented.

Thank you once again for the opportunity to make a submission on the draft rule. Should you require any further information please contact Russell Hawkes Lead Transport Planner Environment Southland on 021 970 997 or [russell.hawkes@es.govt.nz](mailto:russell.hawkes@es.govt.nz).

Yours faithfully

Cr Jeremy McPhail,  
Chair,  
Southland Regional Transport Committee

Cr Kate Wilson,  
Chair,  
Otago Regional Transport Committee

## 2.4 Regional Land Transport Plan 2024-27

The combined Otago Southland Regional Land Transport Plan 2024-27 was recommended by the combined Regional Transport Committee on 24 June 2024 for submission to Environment Southland and Otago Regional Council respectively for adoption and submission to NZTA Waka Kotahi.

In order for NZTA Waka Kotahi to consider funding Clutha District Council's Land Transport Programme, it has to be reflected in the Regional Land Transport Plan. The Regional Transport Committee cannot change the Operations, Maintenance and Renewals programme, but do have the authority to prioritise Improvement projects.

## 3 Asset Management – FACILITIES & WASTE

### 3.1 Facilities Asset Management

#### 3.1.1 Community Housing Asset Management

In line with the "Clutha is a great place to live and work" outcome of council vision, Council provides 98 housing units across the district as affordable, secure and safe housing options for the elderly and vulnerable in our communities. To continue providing community housing at a desired level of service, the facilities asset management team is employing best practices in life cycle management.

The team has managed to visit and assess most of the Community housing units and is currently seized with drawing up the asset register, reviewing reports and developing a comprehensive life cycle management plan.



Figure 1. Clinton Community Housing Units



Figure 2 Owaka Community Housing Units

### 3.1.2 Community Halls Asset Management

A review of the condition and utilization of community halls was conducted in consultation with the Community and Facilities team. In line with council policy, we have begun engagement with the community regarding the possibility of the communities taking over ownership of community halls. The process, which is still in its early stages, starts with an enquiry with each community hall committee if they are willing to take up more responsibilities around their community hall. If they are willing, further discussions will be conducted around the details of the contract of sale and future support from Council. If the negotiations succeed the hall will be sold to the community. The community will have the opportunity to sell the hall back to the council if circumstances change. Options for the future of community halls that remain unsold will be presented Council for decision.

## 3.2 Solid Waste Asset Management

### 3.2.1 Mt Cooee Consent Application

The team is now tracking the Mt Cooee Resource Consent Application as a project. A successful meeting was held with WSP that laid a strong foundation for collaboration going forward. A project status report is being developed which will show status in terms of cost, schedule and deliverables to date and identify any work still required. A risk assessment and recommendations will also be provided in the report.

### 3.2.2 Transfer Stations Research

Council has approved work to gather more information to optimize the operation of the transfer stations. The team is engaged in collecting and reviewing information to produce a report that can provide council with options to optimize transfer station operation with view to support WMMP goals in a cost-effective manner.

### **3.3 Fleet Asset Management**

The Team has completed draft updates of the Fleet Management Policy, Use of Council Vehicles Policy and Use of Council Vehicles Procedures. The draft documents are now going through consultation with key departments before being presented for adoption.

## **4 Roading**

### **4.1 Contract 860 – Rehabilitation 2022/24 - Catlins**

Contractor has completed all sections with Chip sealing taking place late June. All these sections are ready for final walk over and to see if they are ready for Practical Completion. Roads completed are north and south sections of Mount Stuart Road, Sawmill Road and Riverside Road, Taieri Mouth. Wetherstons Road, Lawrence and School Road Romahapa.

### **4.2 Contract 825 – Box Culverts – Catlins/Heriot**

The three box culverts in the contract works have now been completed and have been handed back to operations for their ongoing maintenance programs.

### **4.3 Contract 827 – Bridge Repairs 2021/22 – Waitahuna Bridges Remain**

Bridge 482, Roberts Road deck replacement has been completed and is open for vehicular traffic. The abutment crack discovered at the TR abutment is being repaired under our Structural Engineers supervision. Suspension Bridge 476, Ashton Road is being strengthened and work is programmed to be completed by June 30.

### **4.4 Contract 807 – Renewal of Bridge Abutments - Bridge 451 Waipori Road**

All the works on the bridge are completed and it's open to the public. It's now in the defect's liability period.

### **4.5 Contract 829 – Bridge Repairs 2022/24 – District Wide**

The contractor has completed all work within the waterway and progressing other items to complete all Contract works by 30 June.

### **4.6 Contract 858 – Reseal & Pre-Seal Repairs**

The contract was awarded to Fulton Hogan, Two Streets are left to re-seal which is scheduled to be completed this week weather dependent for year 1. The year 2 re-seal list is with Fulton Hogan for the actual pricing of the pre-seal repair work.

#### 4.7 Contract 791 – Bridge Renewals 106 & 112 – West Otago

The Contractor has completed both Bridges 112, Ross Road, and Bridge 106 Benny Road. Remaining items of road signs, line marking and Sealing of approached is programmed to be completed by 30 June.

#### 4.8 Contract 862 – The Nuggets Road Slip Remediation

Work on this project has been completed now, **this project was delivered 2 months ahead of time and under budget**. A practical completion certificate has been issued, now this project work is in the defects liability period.



#### 4.9 Contract 843 – Footpath Kerb and Channel Renewals

All physical works are completed now, final walkover to check defects is scheduled for 8 July 2024, following this there will be practical completion provided to the contractor.

## 5 3 Waters

### 5.1 Contract 842 – Hub Pump Station

- The Hub RMU installation is completed with the underground cabling.
- The Streetlights have been delivered and in NES storage. NES will install the streetlight at the state highway, waiting on the traffic management plan.
- The Isolation cabinet have been installed and the old switchboards have been removed.



### 5.2 Contract 841 - Hospital Creek Floodbank

Stage: Completed

Certificate of Final Completion was issued in November 2023. Contract 841 is completed and handed over to Three Waters Operations. NEWA has just approved the funding (60%) of the works. We will receive the fund in August 2024.

### 5.3 Contract 846 – Sewerage Treatment Plant Upgrade (Balclutha, Clinton, Waihola, Heriot & Kaitangata) – Contractor: Marshall Projects Ltd

Heriot/Kaitangata WWTP: The project is completed and is under the defect's liability period. There are some minor defects waiting to be remediated by the contractor.

Clinton WWTP: UV unit arrived on 10th June into Bluff. It is at contractor's workshop Invercargill now. It will be part of a building shed for Clinton site. It is scheduled for installation on the 2<sup>nd</sup> week of July.



Waihola WWTP: Main switch board was successfully completed on 10th June. Bioshells and aerator are switched from temporary power to main power supply. The next stage is working on the screening backwater supply.



Balclutha WWTP: Bioshells and aerators are operating on temporary power supply until the main switch board is manufactured. The next stage is the installation of the main switch board.



#### **5.4 Contract 849 - Milton to Waihola Pipeline**

All of the pipeline has now been installed. The crossing over of the newly installed underpass by Waihola has also been completed. A final defects walkover was conducted on May 28, 2024, and defects are being fixed at the moment. It is planned to be completed by 12 July 2024.

We are now commencing the commissioning plan for trialing the pressure of pipes and final connection to the Waihola community, this component is currently on track for completion by 15 July 2024.

#### **5.5 Contract 850 - Greenfield Rural Water Scheme**

Southern Trenching Limited is making good progress on the pipeline installation and laying the pipeline. All the testing was completed by the end of May 2024 except for the Lawerance PRV and the last 100m of the pipeline.



PE pipe being welded and Open pipe trench

### 5.6 Contract 865 - Greenfield and Milton to Waiholo Pump Stations

Cowley Electrical Dairy and Pumps and Rutter Civil are making good progress, work is ahead of schedule. Milburn pump station work is completed, and Milton WTP VSD cables to pumps have been installed. Draft commissioning was discussed, now work on the final commissioning plan to commission the Milton Waiholo Scheme, it is planned to be commissioned on the week of 15 July 2024.

The lower Greenfield pump station pump building is completed, and installation of the electrical unit and pumps is completed. The upper Greenfield pump station building is completed, and we are installing the pump and electrical units in it. The Crain Road pump station building is almost complete as well with pump and electrical unit installation to be done in the coming months.

### 5.7 Taylor Park Cabins

The four cabins currently located at Taylor Park will be sold, which will be offered in the first instance to Clutha District camping grounds at market value. A valuation report has been received for those four cabins at the campground. A staff report will be prepared for councillors which will provide options for the future of the additional six cabins, four of which are now nearing completion at Otago Corrections Facility.

The flooring issue will be remediated to achieve a Code of Compliance Certificate.





### **5.8 Contract 845 - Milton Mainstreet Underground Utilities**

The Contractor has completed the foul sewer renewal in Gray St which is the last item for Phase 1. The next phase of undergrounding the electrical network and new water main has commenced at the High Street intersection. The Contractor proposes to utilise a second crew to complete the additional water main and foul sewer work west of Union Street.

### **5.9 Contract 880 – Milton Community Pool/Library Hub Project**

Following due diligence processes, we have the knowledge that original cost estimations had not included a number of items that are requirements for the construction of this project.

These updated values were provided as part of the Staff Submissions Decision Report on 12 June 2024. The Council resolution advised that we are now required to go out to the public with a Special Consultation Process. The project team and the Bruce Community Trust are now starting to work through the requirements associated with this consultation document, inclusive of agreed options for submissions.

### **5.10 Contract 863 – Reservoir Civil Construction – North Bruce, Puerua, Lawrence and Moa Flat**

**North Bruce** – The installation of the inlet flange marks a significant step forward in the project. The request from Tasman Tank engineers for additional columns to be added to the tank roof structure. Designs are in progress and fabrication will commence thereafter. Estimated modification completion is scheduled for the end of July 2024.

**Puerua** – 2000KL tank installation completed. Prefabrication of Inlet, Outlet and overflow pipes are progressing slow due to inclement winter weather.

**Lawrence** – The completion of the concrete curing process marked a significant milestone. Following this, the successful completion of 1000kL tank installation was achieved. Fabrication of Inlet, Outlet and overflow pipes are progress.

**Moa Flat** – 3000KL Tank installation was successfully constructed. Fabrication of Inlet, Outlet and overflow pipes are progress. Scheduled for completion late July.

### 5.11 Contract 883 – Mt Cooee Leachate Pump Station and Owaka Wastewater Pump Station

Mt Cooee: The new pump chamber has been delivered by Pump & Valve and installed on site by Isaac Construction.



Owaka: The rising main pipe is being installed on the track and it will be at the end of the track this week, after that Isaac's will install the new rising main outlet at the pond.



### 5.12 Local Water Done Well

Attached is a brief summary of the work that is underway regarding collaboration and planning across the Otago/Southland in the water space in anticipation of the expected framework under the Local Water Done Well (LWDW) Legislation.

## Otago Southland - Regional Response

Proposed Regional Approach put forward by DCC (on behalf of wider working party) to the Otago Southland Mayor's & CE's for consideration.

At the CE's request, Otago Southland LWDW Working Group formed and tasked to provide a proposed approach to each to enable the following to be defined:

- Detailed scope of work,
- Required resources &
- Timetable.

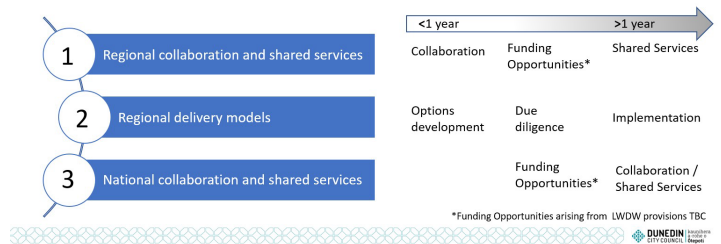
Working Group formed & proposed overall approach put to Mayors for review & approval to proceed.

Approach, timeframe, and resource requirements put to CE's. Approval secured to proceed.

- Regional Delivery Model - Phase One work – Morrison Low proposal received to support delivery.
- Collaboration Wins - Securing appropriately skilled resources to progress sizing & scoping or four identified opportunities.

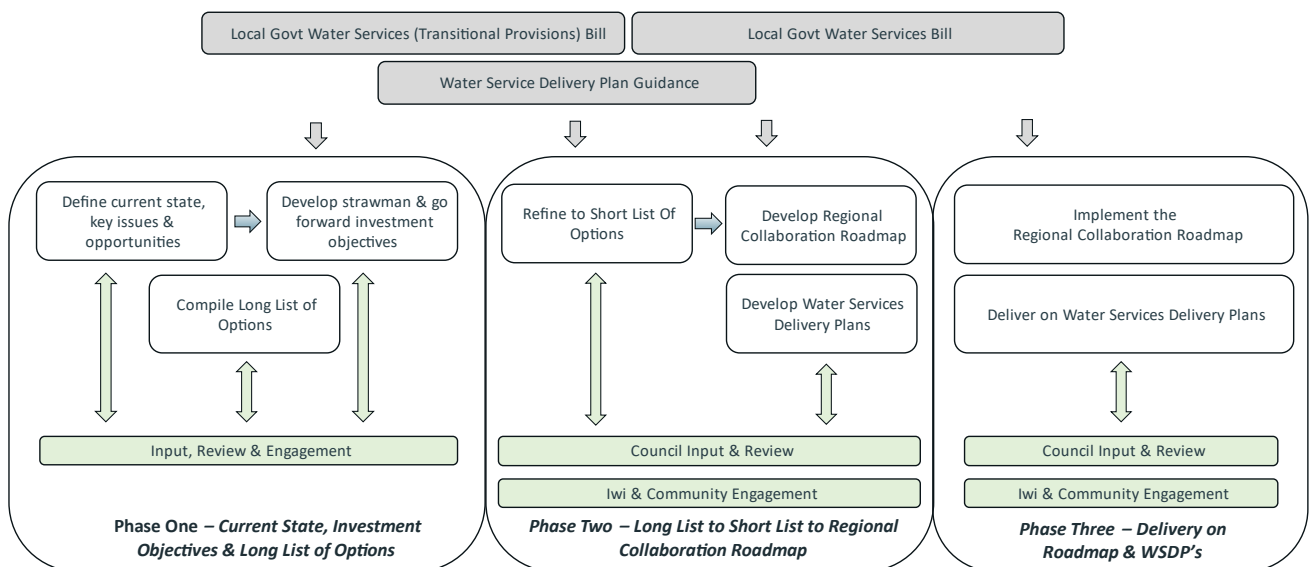
### Three parallel activities

Three groups of activities are introduced in the figure below and detailed in the slides that follow



### 2 Regional delivery models

## Approach to defining a Regional Delivery Model



# Regional Collaboration Wins

1. **Strengthening Our Regulatory Position through:**
  - a) **Creating Consistent Water Safety Plans**
    - Format & Reporting
    - Independent assurance
    - Developing a common operating strategy
  - b) **Drinking Water Quality Assurance Rules – Backflow Prevention**
    - Audit of current state
    - Risk assessment
    - System & data requirements
    - Approach to implementation
    - Reporting & Auditing
2. **Managing and Operating our networks and facilities consistently**
  - Review of Control systems, e.g. Scada
  - Review of Data Standards
  - Review of key resources and identification of gaps
  - Developing a common operating strategy
3. **Creating An Efficient And Consistent Position On Subdivision Planning:**
  - Regionally consistent approach
  - Improved advice to developer representatives & design consultants
  - Consistent construction standards

**These opportunities have been selected on the basis that they:**

- Closely align with the below principles
- Will improve our regulatory compliance performance
- Will give direction to external parties
- Will lead to efficiencies and savings ( Opex and Capex)

**Principles used to Identify Collaboration Wins**

- Join up existing teams and foster collaboration
- No change to reporting lines / funding
- Each Council bears its own costs
- Good cost / effort efficiencies on offer e.g. through standardized approach / templates / interactions
- National standards exist and offer a template for Councils to implement to a common standard.
- No / minimal regret effort / spend - in the scenario of a future setup of a Regional / Sub Regional Collaboration model.

# National Collaboration & Shared Services

These opportunities will become apparent with time – we need to be flexible to adapt the work we are doing when determining Regional Collaboration Wins and a Regional Delivery Model to incorporate national / inter-regional opportunities of potential value.

**Potential Sources include:**

- Water NZ
- DIA direction
- Other regions may offer services
- What services could the Southland / Otago region offer Councils / Regions
- NTU material (*Over 10k Program Outputs catalogued and provided for download*)

# High Level Plan

- 1 Regional collaboration and shared services
- 2 Regional delivery models
- 3 National collaboration and shared services

## DIA Key Dates

Water Services Delivery Plan (WSDP) Guidance  
 DIA Check Ins  
 Submit Final WSDP

## Legislation - (Subject to legislative timetable)

Local Govt Water Services (Transitional Provisions) Bill  
 Local Govt Water Services Bill

## Regional Delivery Model Definition - Indicative Plan

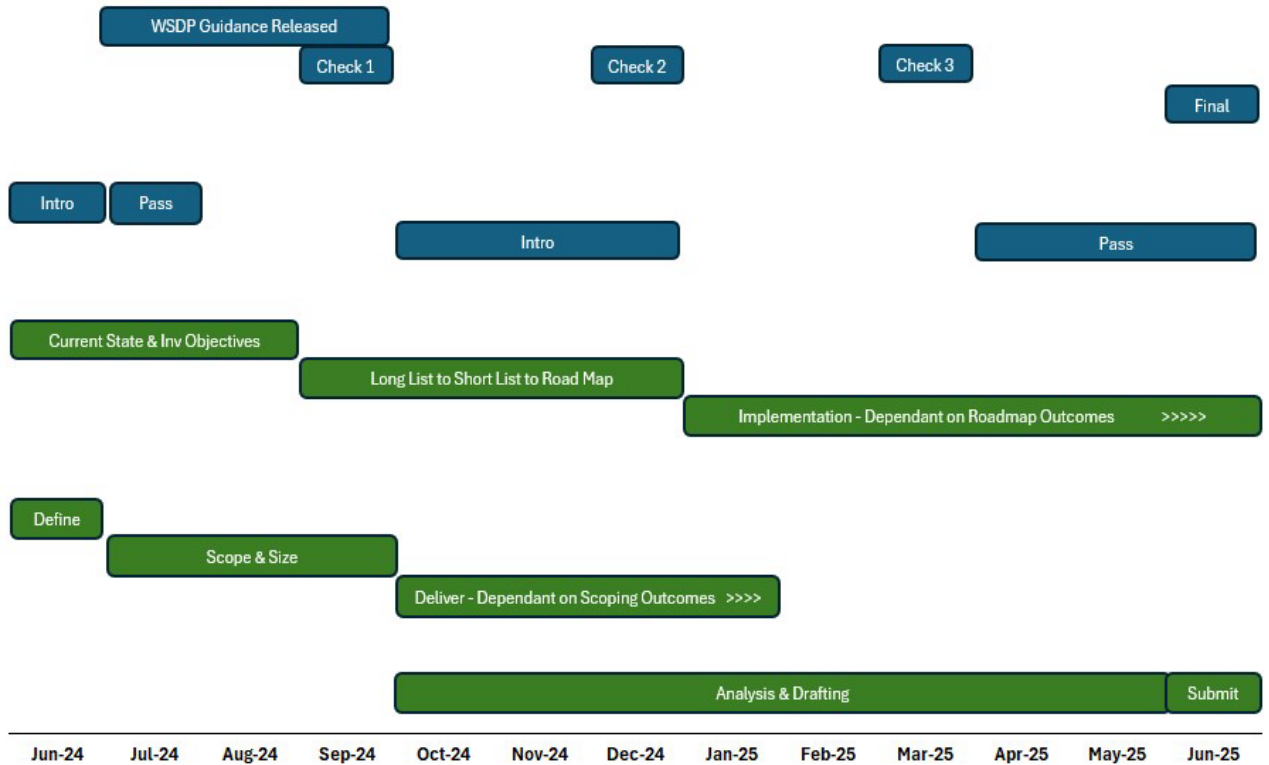
Phase 1 - Investment Objectives, Current state & long list  
 Phase 2 - Refine to short list & develop Regional Collaboration Road Map  
 Phase 3 - Implement the Regional Collaboration Roadmap

## Regional Collaboration Wins - Indicative Plan

Define Short list of Collaboration Wins  
 Form teams to size / scope & define implementation approach  
 Delivery

## Councils

Councils Prepare WSDP in isolation / collaboration



---

# Infrastructure Strategy & Operations Committee

## Item for INFORMATION

<b>Report</b>	Compliance Update Report
<b>Meeting Date</b>	18 July 2024
<b>Item Number</b>	5
<b>Prepared By</b>	Keiran Medel – Senior Compliance Engineer Daniel Pickup – Team Leader Compliance and Reporting
<b>File Reference</b>	902182

---

### REPORT SUMMARY

This report provides an update on all compliance-related issues across the Three Waters Operations department. It includes information that was previously provided in both the Operations and Infrastructure Strategy reports as well as additional specific information on compliance activities.

### RECOMMENDATIONS

- 1 That the Infrastructure Strategy & Operations Committee receives the ‘Compliance Update’ report dated 18 July 2024.**

### REPORT

#### **1 Water Treatment Plant (WTP) Compliance Focus**

##### **1.1 Drinking Water Quality Assurance Rules (DWQAR) Compliance Summary**

Since the implementation of the DWQARs in November 2022, several of the Councils WTPs and distribution networks were identified, through routine sample analysis and monitoring, as having inadequate treatment processes, resulting in the supply of non-compliant drinking water to those consumers. Refer to Appendix A for an overview of the DWQARs that are not currently met by the WTPs and distribution networks subject to a Boil Water Notice (BWN) or Advisory Notice.

Monthly Compliance achieved / anticipated	Technical Non-compliance	Moderate Non-compliance	Significant Non-compliance
---	--------------------------	-------------------------	----------------------------

<b>Balclutha WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.4 UV Treatment	100%	100%	100%	100%	94%	100%
T3 Proto: 4.10.2.5 Filters T3 Proto: 4.10.2.13 UV Treatment	97%	93%	100%	93%	100%	100%
D3 Bacto Balclutha: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
Compliance Comments	T3 Bacto: The UV Dose was not consistently maintained for the required period to achieve compliance.					

<b>Milton WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	94%	100%	94%	100%	100%	97%
T3 Proto: 4.10.2.11 Membranes	80%	52%	97%	100%	97%	97%
D3 Bacto Milton: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	72%
D3 Bacto OCF: 4.11.4 Residual Disinfection	100%	92%	100%	100%	100%	100%
Compliance Comments	D3 Bacto: Low FAC results in the Milton reticulation, including a result <0.1 mg/l.					

<b>Stirling WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.4 UV Treatment	94%	93%	97%	100%	100%	93%
T3 Proto: 4.10.2.5 Filters T3 Proto: 4.10.2.13 UV Treatment	100%	100%	100%	100%	100%	100%
D3 Bacto Stirling: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
D3 Bacto South Bruce: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
Compliance Comments	The UV Dose was not maintained for the required period to achieve compliance.					

<b>Kaitangata WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	100%	97%	100%	100%	97%	90%
T3 Bacto: 4.10.1.4 UV Treatment	97%	100%	100%	100%	100%	100%
T3 Proto: 4.10.2.5 Filters T3 Proto: 4.10.2.13 UV Treatment	97%	93%	100%	100%	100%	100%
D3 Bacto Kaitangata: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
D3 Bacto Wangaloa: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
Compliance Comments	The chlorine dose rate and contact time were not maintained for the required period to achieve compliance.					

<b>Whitelea Rd WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	0%	17%	39%	43%	23%	20%
T3 Proto: 4.10.2.11 Membranes	84%	93%	100%	100%	71%	73%
D3 Bacto North Richardson: 4.11.4 Residual Disinfection	100%	100%	100%	100%	88%	100%
Compliance Comments	T3 Bacto: The chlorine dose rate and contact time were not maintained for the required period to achieve compliance.					
	T3 Proto: The turbidity in the filtered water exceeded the maximum allowable NTU.					
	D3 Bacto non-compliance when FAC levels in the distribution are <0.1mg/L.					

<b>Puerua WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.4 UV Treatment	87%	100%	97%	100%	94%	97%
T3 Proto: 4.10.2.13 UV Treatment	81%	97%	97%	100%	94%	93%
D3 Bacto Richardson South: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
D3 Bacto Kaka Point: 4.11.4 Residual Disinfection	82%	100%	100%	100%	100%	100%
Compliance Comments	The UV Dose was not maintained for the required period to achieve compliance.					

<b>Owaka WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.4 UV Treatment	90%	83%	94%	100%	100%	97%
T3 Proto: 4.10.2.13 UV Treatment	100%	86%	87%	100%	100%	97%
D3 Bacto Owaka: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
Compliance Comments	Improvements must be made to the Owaka bore head to ensure it complies with the DWQAR Sanitary Requirements.					

<b>Clydevale-Pomahaka WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.4 UV Treatment	100%	100%	100%	100%	100%	100%
T3 Proto: 4.10.2.13 UV Treatment	100%	93%	97%	93%	100%	100%
D3 Bacto Clydevale: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
D3 Bacto Clinton: 4.11.4 Residual Disinfection	100%	100%	100%	100%	100%	100%
Compliance Comments	NA					

<b>Glenkenich WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	65%	100%	97%	100%	100%	100%
T3 Proto: 4.10.2.11 Membranes	42%	83%	71%	70%	97%	93%
D3 Bacto Glenkenich: 4.11.4 Residual Disinfection	82%	84%	100%	100%	100%	100%
Compliance Comments	T3 Proto: The turbidity in the filtered water exceeded the maximum allowable NTU.					

<b>Lawrence WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T2 Bacto: FAC Disinfection	96%	64%	86%	3%	3%	17%
T2 Bacto: UV Disinfection	67%	79%	77%	80%	84%	100%
T2 Proto: UV Disinfection	74%	79%	77%	10%	68%	100%
T3 Proto: Filters	77%	69%	81%	63%	94%	83%
D2 Bacto Lawrence	100%	79%	86%	91%	87%	88%
Compliance Comments	The UV dose and UVT was not maintained for the required period to achieve compliance.					
	The chlorine dose rate and/or contact time was not maintained for the required period to achieve compliance.					
	The pH level in the final water was outside the required range to achieve compliance.					
	Lawrence is on a long-term BWN due to the inadequate barriers at the treatment plant.					



<b>Tapanui WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	100%	100%	100%	80%	97%	80%
T3 Proto: 4.10.2.5 Filters	90%	66%	52%	70%	84%	23%
D3 Bacto Tapanui: 4.11.4 Residual Disinfection	100%	100%	100%	87%	100%	100%
Compliance Comments	The turbidity in the treated water exceeded the maximum allowable NTU.					
	The chlorine dose rate and contact time were not maintained for the required period to achieve compliance.					
	Tapanui is on a BWN following treatment issues related to the recent wet weather event.					

<b>Tuapeka West WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T2 Bacto: FAC Disinfection	100%	89%	89%	100%	58%	93%
T2 Proto: Filters	0%	0%	0%	0%	0%	0%
D2 Bacto Tuapeka West	100%	100%	88%	89%	89%	75%
Compliance Comments	D2 Bacto non-compliance when FAC levels in the distribution are <0.1mg/L.					
	There is no protozoal treatment at this site.					

<b>North Bruce WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	0%	0%	0%	10%	0%	0%
T3 Bacto: 4.10.1.4 UV Treatment	0%	24%	68%	63%	97%	63%
T3 Proto: 4.10.2.13 UV Treatment	0%	0%	52%	50%	90%	47%
D3 Bacto North Bruce: 4.11.4 Residual Disinfection	78%	97%	100%	100%	100%	100%
D3 Bacto Waiholo: 4.11.4 Residual Disinfection	56%	87%	93%	93%	100%	83%
Compliance Comments	The turbidity in the treated water exceeded the maximum allowable NTU.					
	The chlorine dose rate and contact time was not maintained for the required period to achieve compliance.					
	The UV dose and UVT was not sufficient to achieve compliance.					

<b>Moa Flat WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	0%	90%	84%	80%	65%	0%
T3 Bacto: 4.10.1.4 UV Treatment	7%	28%	87%	73%	74%	60%
T3 Proto: 4.10.2.13 UV Treatment	0%	17%	68%	63%	42%	17%
D3 Bacto Moa Flat: 4.11.4 Residual Disinfection	100%	97%	100%	100%	100%	100%
Compliance Comments	The UV dose and UVT was not sufficient to achieve compliance.					
	The chlorine dose rate and contact time was not maintained for the required period to achieve compliance.					

<b>Waitahuna WTP</b>	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
T3 Bacto: 4.10.1.1 FAC Disinfection	0%	0%	0%	0%	0%	0%
T3 Proto: 4.10.2.5 Filters	0%	0%	0%	0%	0%	0%
D3 Bacto Balmoral 1: 4.11.4 Residual Disinfection	0%	5%	94%	92%	100%	77%
D3 Bacto Balmoral 2: 4.11.4 Residual Disinfection	0%	5%	0%	78%	100%	57%
D3 Bacto Tuapeka East: 4.11.4 Residual Disinfection	0%	5%	90%	72%	100%	46%
Compliance Comments	The turbidity in the treated water exceeded the maximum allowable NTU.					
	The chlorine dose rate and contact time was not maintained for the required period to achieve compliance.					

## 1.2 Boil Water and Conserve Water Notices

Tuapeka West remains on a BWN due to inadequate treatment at the plant and inconsistent chlorine levels in the reticulation. The BWN will not be lifted without considerable upgrades as there is currently no protozoal treatment at this site. This is the only site that has no protozoal treatment. The Greenfield Rural Water Scheme will replace the Tuapeka West WTP at the end of 2024.

## 1.3 Boil Water and Aluminium Advisory Notices

Tapanui residents were issued a BWN on 16 June 2024 due to plant treatment issues which were likely impacted by the recent wet weather event. Tapanui will remain on a BWN until the treatment plant demonstrates compliance with Sections 4.10.1.1, and 4.10.2.5 and the distribution networks demonstrate compliance with the D3 Rules. The plant does not demonstrate the consistent compliance required to lift the BWN.

- The treatment plant struggles to consistently achieve the required turbidity levels to provide assurance that the bacteria in the water has been adequately disinfected with chlorine.
- The treatment plant struggles to achieve the required turbidity levels to provide assurance that protozoa in the water has been adequately removed by the coagulation, flocculation, sedimentation, and filtration process.

*E. coli* was not detected in Tapanui distribution zone during the past seven weeks of monitoring, demonstrating compliance with Rule D3.29. All FAC results analysed were above the minimum requirement of 0.2 mg/L during the past seven weeks of monitoring, demonstrating compliance with Rule D3.19.

Two aluminium results analysed from the Tapanui distribution network were above the MAV of 1 mg/L during the past seven weeks of monitoring, the most recent non-compliant residual was detected on 9 May 2024.

All aluminium results analysed from the Tapanui WTP were below the MAV of 1 mg/L during the past seven weeks of monitoring. An Aluminium Advisory Notice was not issued.

Tapanui WTP	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	11	31	44
Compliant Samples collected in the past seven weeks	11	31	44

Tapanui Distribution Network	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	6	5	5
Compliant Samples collected in the past seven weeks	4	5	5

## Water Treatment - Tapanui WTP

Treated Water Compliance Report for June 2024

Section 4.10.1.1: Bacterial Rules - Water Disinfected with Chlorine						
Rule:		T3.2	T3.3	T3.4	T3.5	T3.6
	Requirement: Plant Run Time	% of day C.t value is at least 15 min.mg/L	% of day FACe is $\geq$ 0.2mg/L	Minimum T <sup>10</sup> contact time	% of day where the turbidity of water leaving WTP is < 1.0 NTU	# consecutive 15 min periods where the turbidity of water leaving WTP is > 2.0 NTU
Date	min/day	95%	95%	5	95%	0
1/06/2024	1440	100.0%	100%	623	100.0%	0
2/06/2024	1320	100.0%	100%	729	99.9%	0
3/06/2024	1335	100.0%	100%	647	100.0%	0
4/06/2024	852	100.0%	100%	518	99.2%	0
5/06/2024	867	100.0%	100%	403	100.0%	0
6/06/2024	1353	100.0%	100%	494	99.0%	0
7/06/2024	1365	100.0%	100%	163	100.0%	0
8/06/2024	1440	100.0%	100%	591	100.0%	0
9/06/2024	1350	100.0%	100%	781	100.0%	0
10/06/2024	1155	100.0%	100%	755	99.6%	0
11/06/2024	1110	100.0%	100%	787	99.9%	0
12/06/2024	1079	100.0%	100%	774	99.5%	0
13/06/2024	1114	100.0%	100%	730	100.0%	0
14/06/2024	210	100.0%	100%	784	100.0%	0
15/06/2024	158	100.0%	100%	723	4.4%	0
16/06/2024	1320	100.0%	100%	342	83.5%	162
17/06/2024	1395	100.0%	100%	423	98.4%	2
18/06/2024	1410	100.0%	100%	399	98.2%	2
19/06/2024	1140	100.0%	100%	478	88.6%	2
20/06/2024	488	100.0%	100%	324	76.2%	2
21/06/2024	1399	100.0%	100%	271	98.7%	0
22/06/2024	1440	100.0%	100%	322	100.0%	0
23/06/2024	1440	100.0%	100%	365	100.0%	0
24/06/2024	1335	100.0%	100%	426	98.3%	0
25/06/2024	1395	100.0%	100%	494	98.2%	0
26/06/2024	1410	100.0%	100%	543	99.0%	0
27/06/2024	1410	100.0%	100%	555	98.7%	0
28/06/2024	1440	100.0%	100%	646	100.0%	0
29/06/2024	1410	100.0%	100%	579	99.7%	0
30/06/2024	1440	100.0%	100%	303	100.0%	0
Number of Days that were Compliant:		30	30	30	26	25
Operator / Supplier Comments:						

## Water Treatment - Tapanui WTP

## Treated Water Compliance Report for June 2024

## Section 4.10.2.5: Protozoal Rules - Coagulation, Flocculation, Sedimentation, and Filtration

Rule:		Filter 1						
	Plant Run Time	Filter 1 Run Time	T3.39	T3.40	T3.43	T3.44	T3.47	T3.48
Date	min/day	min/day	% of day where turbidity was <= 0.3 NTU	# consecutive 15 min periods where turbidity was > 0.5 NTU	% of day where turbidity was <= 0.15 NTU	# consecutive 15 min periods where turbidity was > 0.5 NTU	% of day where turbidity was <= 0.1 NTU	# consecutive 15 min periods where turbidity was > 0.3 NTU
			95%	0	95%	0	95%	0
1/06/2024	1440	1440	100.0%	0	100.0%	0	99.9%	0
2/06/2024	1320	1320	99.7%	0	99.6%	0	99.5%	0
3/06/2024	1335	1335	99.8%	0	99.7%	0	99.0%	0
4/06/2024	852	852	66.3%	34	57.7%	34	53.4%	195
5/06/2024	867	867	88.9%	0	70.8%	0	65.5%	18
6/06/2024	1353	1353	98.8%	0	98.7%	0	98.3%	0
7/06/2024	1365	1365	99.9%	0	98.3%	0	95.9%	0
8/06/2024	1440	1440	99.9%	0	99.8%	0	98.9%	0
9/06/2024	1350	1350	99.9%	0	97.9%	0	91.7%	0
10/06/2024	1155	1155	97.4%	1	91.8%	1	78.4%	5
11/06/2024	1110	1110	99.3%	0	96.5%	0	82.0%	0
12/06/2024	1079	1079	98.0%	0	93.6%	0	84.4%	3
13/06/2024	1114	1114	98.2%	0	77.7%	0	60.4%	0
14/06/2024	210	210	77.1%	0	0.0%	0	0.0%	18
15/06/2024	158	158	0.0%	90	0.0%	90	0.0%	90
16/06/2024	1320	1320	51.8%	229	18.0%	229	5.2%	464
17/06/2024	1395	1395	81.9%	13	41.9%	13	17.9%	18
18/06/2024	1410	1410	84.6%	11	48.1%	11	20.3%	14
19/06/2024	1140	1140	68.9%	123	33.1%	123	15.4%	146
20/06/2024	488	488	62.9%	97	0.8%	97	0.0%	102
21/06/2024	1399	1399	93.0%	10	40.2%	10	16.7%	15
22/06/2024	1440	1440	89.9%	0	33.8%	0	10.0%	0
23/06/2024	1440	1440	75.6%	0	8.9%	0	0.0%	0
24/06/2024	1335	1335	45.6%	4	3.0%	4	0.0%	209
25/06/2024	1395	1395	73.3%	8	32.3%	8	22.1%	12
26/06/2024	1410	1410	92.8%	0	51.7%	0	31.3%	2
27/06/2024	1410	1410	86.0%	4	38.2%	4	10.2%	6
28/06/2024	1440	1440	26.4%	0	0.0%	0	0.0%	394
29/06/2024	1410	1410	34.0%	2	20.7%	2	15.3%	594
30/06/2024	1440	1440	50.1%	0	11.9%	0	3.8%	140
Number of Days that were Compliant			11	17	8	17	6	11
Operator / Supplier Comments:								

North Bruce and Waihola will remain on a BWN until the treatment plant demonstrates compliance with Sections 4.10.1.4, and 4.10.2.13 and the distribution networks demonstrate compliance with the D3 Rules. The plant does not demonstrate the consistent compliance required to lift the BWN.

- The treatment plant struggles to consistently achieve the required UV Dose to provide assurance that the bacteria in the water has been adequately disinfected with UV Light.
- The treatment plant struggles to achieve the required UV Dose and UVT required to provide assurance that protozoa in the water has been adequately disinfected by the UV treatment process.
- Low levels of residual chlorine detected in the distribution network prevents compliance with the D3 Rules.

*E. coli* was not detected in the North Bruce distribution zone during the past seven weeks of monitoring, demonstrating compliance with Rule D3.29. All FAC results analysed were above the minimum requirement of 0.2 mg/L during the past seven weeks of monitoring, demonstrating compliance with Rule D3.19.

*E. coli* was not detected in the Waihola distribution zone during the past seven weeks of monitoring, demonstrating compliance with Rule D3.29. Three FAC result analysed were below the required 0.2 mg/L (>0.1 mg/L) during the past seven weeks of monitoring.

Two aluminium results analysed from the Waihola distribution network were above the MAV of 1 mg/L during the past seven weeks of monitoring, the most recent non-compliant residual was detected on 12 June 2024.

All aluminium results analysed from the North Bruce distribution network were below the MAV of 1 mg/L during the past seven weeks of monitoring.

One aluminium result analysed at the North Bruce WTP was above the MAV of 1 mg/L during the past seven weeks of monitoring, the most recent non-compliant residual was detected on 18 June 2024. An elevated sampling programme will remain in place for the distribution while the analysed results are above the MAV.

North Bruce WTP	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	2	0	23
Compliant Samples collected in the past seven weeks	1	0	23

Waihola Distribution Network	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	17	21	35
Compliant Samples collected in the past seven weeks	15	21	33

North Bruce Distribution Network	Total Aluminium <sup>1</sup>	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	6	7	21
Compliant Samples collected in the past seven weeks	6	7	21

<sup>1</sup> Includes results received up to 25 June 2024.

Water Treatment - North Bruce WTP

Treated Water Compliance Report for June 2024

Rule:		Section 4.10.1.4: Bacterial Rules - Water Disinfected with Ultraviolet Light				
Requirement:		T3.15	T3.16	T3.17	T3.18	
Plant Run Time	UV Reactor 1 Run Time	% of day flow rate within validated range	% of the day where a Reduction Equivalent Dose (RED) of at least 40mJ/cm <sup>2</sup> (or equivalent) was achieved	<40 mJ/cm <sup>2</sup> for 15 consecutive minutes or more (total time)	>5.0 NTU for 15 consecutive minutes or more (total time)	
Date	min/day	min/day	95%	95%	0	0
1/06/2024	1440	1319	100.0%	100.0%	0	0
2/06/2024	1440	1430	100.0%	98.7%	0	0
3/06/2024	1440	1337	100.0%	100.0%	0	0
4/06/2024	1440	1333	100.0%	100.0%	0	0
5/06/2024	1440	1362	100.0%	100.0%	0	0
6/06/2024	1440	1391	100.0%	99.2%	0	0
7/06/2024	1440	1316	100.0%	99.2%	0	0
8/06/2024	1440	1205	100.0%	100.0%	0	0
9/06/2024	1409	464	100.0%	89.0%	37	0
10/06/2024	1440	1377	100.0%	98.3%	10	0
11/06/2024	1440	1440	100.0%	100.0%	0	0
12/06/2024	1440	1218	100.0%	100.0%	0	0
13/06/2024	1440	1413	100.0%	100.0%	0	0
14/06/2024	1440	1324	100.0%	94.5%	11	0
15/06/2024	1440	1215	100.0%	98.9%	0	0
16/06/2024	1440	1248	100.0%	75.1%	271	0
17/06/2024	1440	1136	100.0%	30.7%	728	0
18/06/2024	1440	1337	100.0%	54.2%	569	0
19/06/2024	1440	1027	100.0%	62.3%	341	0
20/06/2024	1440	1351	100.0%	80.0%	195	0
21/06/2024	1440	1295	100.0%	67.6%	363	0
22/06/2024	1440	1356	100.0%	37.2%	777	0
23/06/2024	1440	1399	100.0%	56.0%	571	0
24/06/2024	1440	1372	100.0%	99.4%	0	0
25/06/2024	1440	1405	100.0%	99.4%	0	0
26/06/2024	1440	1392	100.0%	100.0%	0	0
27/06/2024	1440	1380	100.0%	100.0%	0	0
28/06/2024	1440	1388	100.0%	98.5%	0	0
29/06/2024	1440	1399	100.0%	100.0%	0	0
30/06/2024	1440	1365	100.0%	99.8%	0	0
Number of Days that were Compliant:		30	20	19	30	
Operator / Supplier Comments:						

Section 4.10.2.13: Protozoal Rules - Ultraviolet Light					
T3.85	T3.86	T3.87	T3.88	T3.89	T3.90
% of the day flow rate within validated range	% of day UV dose met log credit requirement	< log credit requirement for 15 consecutive minutes or more (total time)	>5.0 NTU for 15 consecutive minutes or more (total time)	% of day where UVT is ≥ 95% of lowest UVT validated	<80% of lowest validated UVT for 15 consecutive minutes or more (total time)
95%	95%	0	0	95%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	98.7%	0	0	100.0%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	99.2%	0	0	100.0%	0
100.0%	99.2%	0	0	100.0%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	48.9%	37	0	38.6%	0
100.0%	98.3%	10	0	100.0%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	86.9%	0	0	86.9%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	94.3%	11	0	100.0%	0
100.0%	38.6%	0	0	23.2%	0
100.0%	29.4%	271	0	0.0%	0
100.0%	12.5%	728	0	0.0%	0
100.0%	33.2%	569	0	0.0%	0
100.0%	23.3%	341	0	18.8%	0
100.0%	34.3%	195	0	42.8%	0
100.0%	31.6%	363	0	45.3%	0
100.0%	24.3%	777	0	33.4%	0
100.0%	55.3%	571	0	45.1%	0
100.0%	99.3%	0	0	100.0%	0
100.0%	97.1%	0	0	97.7%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	100.0%	0	0	100.0%	0
100.0%	81.8%	0	0	27.5%	0
100.0%	73.7%	0	0	0.1%	0
100.0%	71.9%	0	0	0.0%	0
30	15	19	30	16	30
Operator / Supplier Comments:					

Moa Flat will remain on a BWN until the treatment plant demonstrates compliance with Sections 4.10.1.1, 4.10.1.4, and 4.10.2.13 and the distribution network demonstrates compliance with the D3 Rules. The plant does not demonstrate the consistent compliance required to lift the BWN.

- The treatment plant does not consistently achieve the required C.t. Value, turbidity levels, and UV Dose to provide assurance that the bacteria in the water has been adequately disinfected with chlorine and UV Light.
- The treatment plant struggles to achieve the required UV Dose and UVT required to provide assurance that protozoa in the water has been adequately disinfected by the UV treatment process.

*E. coli* was not detected in the Moa Flat distribution network during the past seven weeks of monitoring, demonstrating compliance with Rule D3.29. All FAC results analysed were above the minimum requirement of 0.2 mg/L during the past seven weeks of monitoring, demonstrating compliance with Rule D3.19.

All aluminium result analysed from the Moa Flat distribution network were below the MAV of 1 mg/L during the past seven weeks of monitoring. An elevated sampling programme will remain in place while the analysed results remain inconsistently high.

Moa Flat WTP	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	2	0	25
Compliant Samples collected in the past seven weeks	2	0	25

Moa Flat Distribution Network	Total Aluminium <sup>2</sup>	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	6	7	20
Compliant Samples collected in the past seven weeks	6	7	20

<sup>2</sup> Includes results received up to 25 June 2024.

## Water Treatment - Moa Flat WTP

### Treated Water Compliance Report for June 2024

Section 4.10.1.1: Bacterial Rules - Water Disinfected with Chlorine						
Rule:		T3.2	T3.3	T3.4	T3.5	T3.6
	Requirement: Plant Run Time	% of day C.t value is at least 15 min.mg/L	% of day FACe is $\geq$ 0.2mg/L	Minimum T <sup>10</sup> contact time	% of day where the turbidity of water leaving WTP is < 1.0 NTU	>2.0 NTU for 15 consecutive minutes or more (total time)
Date	min/day	95%	95%	5	95%	0
1/06/2024	1404	100.0%	100%	13	60.0%	0
2/06/2024	1397	100.0%	100%	12	63.3%	0
3/06/2024	1410	100.0%	100%	14	60.4%	0
4/06/2024	1404	100.0%	100%	13	69.6%	0
5/06/2024	1370	100.0%	100%	15	78.2%	0
6/06/2024	1410	100.0%	100%	13	67.6%	0
7/06/2024	1410	100.0%	100%	11	71.3%	0
8/06/2024	1410	100.0%	100%	12	67.3%	0
9/06/2024	1394	100.0%	100%	13	73.3%	0
10/06/2024	1410	100.0%	100%	12	78.7%	0
11/06/2024	1410	100.0%	100%	14	83.1%	0
12/06/2024	1402	100.0%	100%	14	87.1%	0
13/06/2024	1384	99.3%	100%	15	92.6%	0
14/06/2024	1384	100.0%	100%	14	91.3%	0
15/06/2024	1301	100.0%	100%	15	88.5%	0
16/06/2024	1288	100.0%	100%	14	89.6%	0
17/06/2024	1374	100.0%	100%	15	85.0%	0
18/06/2024	1307	100.0%	100%	14	71.6%	0
19/06/2024	1118	97.9%	100%	6	71.1%	12
20/06/2024	1410	100.0%	100%	13	82.8%	0
21/06/2024	1410	100.0%	100%	13	72.7%	0
22/06/2024	1357	100.0%	100%	12	70.5%	0
23/06/2024	1377	100.0%	100%	14	90.8%	0
24/06/2024	1350	100.0%	100%	14	80.2%	0
25/06/2024	1349	100.0%	100%	15	86.2%	0
26/06/2024	1242	100.0%	100%	13	82.5%	0
27/06/2024	1140	93.1%	99%	13	57.6%	0
28/06/2024	1316	100.0%	100%	14	91.7%	0
29/06/2024	1300	100.0%	100%	16	91.8%	0
30/06/2024	1222	100.0%	100%	17	91.7%	0
Number of Days that were Compliant:		29	30	30	0	29
Operator / Supplier Comments:						



Water Treatment - Moa Flat WTP

Treated Water Compliance Report for June 2024

Section 4.10.1.4: Bacterial Rules - Water Disinfected with Ultraviolet Light							Section 4.10.2.13: Protozoal Rules - Ultraviolet Light					
Rule:		T3.15	T3.16	T3.17	T3.18	T3.85	T3.86	T3.87	T3.88	T3.89	T3.90	
Requirement:	UV Reactor 1 Run Time	% of day flow rate within validated range	% of the day where a Reduction Equivalent Dose (RED) of at least 40mJ/cm <sup>2</sup> (or equivalent) was achieved	<40 mJ/cm <sup>2</sup> for 15 consecutive minutes or more (total time)	>5.0 NTU for 15 consecutive minutes or more (total time)	% of the day flow rate within validated range	% of day UV dose met log credit requirement	< log credit requirement for 15 consecutive minutes or more (total time)	>5.0 NTU for 15 consecutive minutes or more (total time)	% of day where UVT is ≥ 95% of lowest UVT validated	<80% of lowest validated UVT for 15 consecutive minutes or more (total time)	
Date	min/day	min/day	95%	95%	0	0	95%	95%	0	0	95%	0
1/06/2024	1404	1404	100.0%	99.4%	0	0	100.0%	69.5%	0	0	98.9%	0
2/06/2024	1397	1397	100.0%	100.0%	0	0	100.0%	60.9%	0	0	100.0%	0
3/06/2024	1410	1410	100.0%	100.0%	0	0	100.0%	61.1%	0	0	99.9%	0
4/06/2024	1404	1404	98.9%	97.9%	12	0	98.9%	55.7%	12	0	100.0%	0
5/06/2024	1370	1370	98.9%	100.0%	0	0	98.9%	89.3%	0	0	100.0%	0
6/06/2024	1410	1410	100.0%	99.5%	0	0	100.0%	71.1%	0	0	99.9%	0
7/06/2024	1410	1410	98.9%	99.7%	0	0	98.9%	47.4%	0	0	98.9%	0
8/06/2024	1410	1410	100.0%	100.0%	0	0	100.0%	66.0%	0	0	96.2%	0
9/06/2024	1394	1394	100.0%	95.3%	52	0	100.0%	73.5%	52	0	93.2%	0
10/06/2024	1410	1410	100.0%	100.0%	0	0	100.0%	90.6%	0	0	99.4%	0
11/06/2024	1410	1410	97.9%	97.1%	13	0	97.9%	77.4%	13	0	97.4%	0
12/06/2024	1402	1402	100.0%	99.9%	0	0	100.0%	68.2%	0	0	99.9%	0
13/06/2024	1384	1384	97.8%	99.3%	0	0	97.8%	90.5%	0	0	100.0%	0
14/06/2024	1384	1384	98.9%	100.0%	0	0	98.9%	94.9%	0	0	99.1%	0
15/06/2024	1301	1301	100.0%	100.0%	0	0	100.0%	93.7%	0	0	100.0%	0
16/06/2024	1288	1288	100.0%	99.1%	0	0	100.0%	95.0%	0	0	100.0%	0
17/06/2024	1374	1374	100.0%	96.7%	31	0	100.0%	83.2%	31	0	97.8%	0
18/06/2024	1307	1307	95.4%	96.3%	33	0	95.4%	71.2%	33	0	96.4%	0
19/06/2024	1118	1118	100.0%	88.2%	98	0	100.0%	68.3%	98	0	86.0%	0
20/06/2024	1410	1410	98.9%	99.9%	0	0	98.9%	77.8%	0	0	96.4%	0
21/06/2024	1410	1410	100.0%	77.7%	262	0	100.0%	37.6%	262	0	65.3%	0
22/06/2024	1357	1357	98.9%	29.3%	878	0	98.9%	1.2%	878	0	0.0%	0
23/06/2024	1377	1377	98.9%	71.6%	321	0	98.9%	6.3%	321	0	0.0%	0
24/06/2024	1350	1350	100.0%	71.9%	308	0	100.0%	4.6%	308	0	0.0%	0
25/06/2024	1349	1349	97.8%	91.8%	96	0	97.8%	58.9%	96	0	58.9%	0
26/06/2024	1242	1242	100.0%	100.0%	0	0	100.0%	100.0%	0	0	100.0%	0
27/06/2024	1140	1140	98.7%	91.8%	59	0	98.7%	60.3%	59	0	98.8%	0
28/06/2024	1316	1316	96.6%	100.0%	0	0	96.6%	96.6%	0	0	100.0%	0
29/06/2024	1300	1300	98.8%	100.0%	0	0	98.8%	100.0%	0	0	100.0%	0
30/06/2024	1222	1222	98.8%	99.1%	0	0	98.8%	96.0%	0	0	100.0%	0
Number of Days that were Compliant:		30	23	18	30	30	4	18	30	23	30	
Notes												

Waitahuna will remain on a BWN until the treatment plant demonstrates compliance with Sections 4.10.1.1, and 4.10.2.5 and the distribution networks demonstrate compliance with the D3 Rules. The plant does not demonstrate the consistent compliance required to lift the BWN.

- The treatment plant struggles to achieve the required contact time, and turbidity levels to provide assurance that the bacteria in the water has been adequately disinfected with chlorine.
- The treatment plant struggles to achieve the required turbidity levels to provide assurance that protozoa in the water has been adequately removed by the coagulation, flocculation, sedimentation, and filtration process.
- Low levels of residual chlorine detected in the three distribution networks limits compliance with Rule D3.19.

All FAC results analysed at the Waitahuna WTP were above the minimum requirement of 0.2 mg/L during the past seven weeks of monitoring.

*E. coli* was not detected in any of the distribution networks during the past seven weeks of monitoring, demonstrating compliance with Rule D3.29.

Of the 22 FAC samples analysed from the Balmoral 1 distribution three were below the minimum requirement of 0.2 mg/L (<0.1 mg/L) during the past seven weeks of monitoring, failing to comply with Rule D3.19.

Of the 23 FAC samples analysed from the Balmoral 2 distribution three were below the minimum requirement of 0.2 mg/L (<0.1 mg/L) during the past seven weeks of monitoring, failing to comply with Rule D3.19.

Of the 23 FAC samples analysed from the Tuapeka East distribution six were below the minimum requirement of 0.2 mg/L (<0.1 mg/L) during the past seven weeks of monitoring, failing to comply with Rule D3.19.

One aluminium result analysed from the Waitahuna WTP was above the MAV of 1 mg/L during the past seven weeks of monitoring, the most recent non-compliant residual was detected on 18 June 2024.

All aluminium results analysed from the Balmoral 1 distribution network were below the MAV of 1 mg/L during the past seven weeks of monitoring.

All aluminium results analysed from the Balmoral 2 distribution network were below the MAV of 1 mg/L during the past seven weeks of monitoring.

All aluminium result analysed from the Tuapeka East distribution network were below the MAV of 1 mg/L during the past seven weeks of monitoring. An elevated sampling programme will remain in place while the analysed results remain inconsistently high.

Waitahuna WTP	Total Aluminium	E. coli	FAC
Samples Collected in the past seven weeks	2	0	19
Compliant Samples collected in the past seven weeks	1	0	19

Balmoral 1 Distribution Network	Total Aluminium	E. coli	FAC
Samples Collected in the past seven weeks	7	10	22
Compliant Samples collected in the past seven weeks	7	10	19

Balmoral 2 Distribution Network	Total Aluminium	E. coli	FAC
Samples Collected in the past seven weeks	8	10	23
Compliant Samples collected in the past seven weeks	8	10	20

Tuapeka East Distribution Network	Total Aluminium	E. coli	FAC
Samples Collected in the past seven weeks	8	13	23
Compliant Samples collected in the past seven weeks	8	13	17

## Water Treatment - Waitahuna WTP

### Treated Water Compliance Report for June 2024

Section 4.10.1.1: Bacterial Rules - Water Disinfected with Chlorine						
Rule:		T3.2	T3.3	T3.4	T3.5	T3.6
	Requirement:	% of day C.t value is at least 15 min.mg/L	% of day FACe is ≥ 0.2mg/L	Minimum T <sup>10</sup> contact time	% of day where the turbidity of water leaving WTP is < 1.0 NTU	# consecutive 15 min periods where the turbidity of water leaving WTP is > 2.0 NTU
Date	Plant Run Time min/day	95%	95%	5	95%	0
1/06/2024	944	50.7%	100%	2	0.0%	608
2/06/2024	945	48.8%	100%	2	0.0%	143
3/06/2024	765	69.3%	100%	2	38.3%	0
4/06/2024	1039	78.5%	100%	2	44.3%	0
5/06/2024	849	35.2%	99%	2	31.0%	0
6/06/2024	692	20.2%	100%	2	0.0%	0
7/06/2024	970	61.6%	100%	2	34.2%	0
8/06/2024	598	42.8%	100%	2	23.2%	0
9/06/2024	782	6.6%	100%	2	0.0%	0
10/06/2024	655	5.8%	100%	2	0.0%	0
11/06/2024	957	4.4%	100%	2	0.0%	13
12/06/2024	606	42.7%	100%	2	34.8%	74
13/06/2024	881	16.0%	100%	2	1.9%	0
14/06/2024	785	25.4%	100%	1	0.0%	273
15/06/2024	677	17.7%	100%	2	0.0%	198
16/06/2024	1195	0.3%	9%	2	0.0%	985
17/06/2024	1285	4.1%	77%	2	0.0%	1229
18/06/2024	1009	15.5%	94%	2	0.0%	687
19/06/2024	933	49.9%	98%	2	21.9%	555
20/06/2024	916	79.9%	100%	2	12.0%	581
21/06/2024	989	31.0%	100%	2	8.3%	679
22/06/2024	900	28.1%	94%	2	0.0%	564
23/06/2024	898	21.2%	100%	2	0.0%	534
24/06/2024	933	52.1%	100%	2	0.0%	652
25/06/2024	528	25.9%	100%	2	0.0%	175
26/06/2024	924	31.0%	99%	1	28.7%	0
27/06/2024	1125	12.8%	100%	2	0.0%	632
28/06/2024	751	5.6%	100%	2	0.0%	315
29/06/2024	876	14.2%	100%	2	19.1%	23
30/06/2024	926	12.5%	100%	2	16.2%	0
Number of Days that were Compliant:		0	26	0	0	11
Operator / Supplier Comments:						

**Water Treatment - Waitahuna WTP**  
**Treated Water Compliance Report for June 2024**  
**Section 4.10.2.5: Protozoal Rules - Coagulation, Flocculation, Sedimentation, and Filtration**

Rule:			Filter 1					
	Plant Run Time	Filter 1 Run Time	T3.39	T3.40	T3.43	T3.44	T3.47	T3.48
			% of day where turbidity was <= 0.3 NTU	# consecutive 15 min periods where turbidity was > 0.5 NTU	% of day where turbidity was <= 0.15 NTU	# consecutive 15 min periods where turbidity was > 0.5 NTU	% of day where turbidity was <= 0.1 NTU	# consecutive 15 min periods where turbidity was > 0.3 NTU
Date	min/day	min/day	95%	0	95%	0	95%	0
1/06/2024	944	944	0.0%	608	0.0%	608	0.0%	608
2/06/2024	945	945	0.0%	621	0.0%	621	0.0%	621
3/06/2024	765	765	24.2%	413	12.2%	413	9.4%	456
4/06/2024	1039	1039	12.9%	700	3.6%	700	1.0%	759
5/06/2024	849	849	7.8%	603	0.5%	603	0.0%	630
6/06/2024	692	692	0.0%	384	0.0%	384	0.0%	384
7/06/2024	970	970	12.3%	661	9.4%	661	5.9%	683
8/06/2024	598	598	9.9%	279	7.0%	279	3.0%	294
9/06/2024	782	782	0.0%	359	0.0%	359	0.0%	359
10/06/2024	655	655	0.0%	221	0.0%	221	0.0%	221
11/06/2024	957	957	0.0%	635	0.0%	635	0.0%	635
12/06/2024	606	606	25.2%	194	4.5%	194	0.0%	215
13/06/2024	881	881	0.0%	559	0.0%	559	0.0%	559
14/06/2024	785	785	0.0%	351	0.0%	351	0.0%	351
15/06/2024	677	677	0.0%	283	0.0%	283	0.0%	283
16/06/2024	1195	1195	0.0%	985	0.0%	985	0.0%	985
17/06/2024	1285	1285	0.0%	1229	0.0%	1229	0.0%	1229
18/06/2024	1009	1009	0.0%	687	0.0%	687	0.0%	687
19/06/2024	933	933	0.0%	765	0.0%	765	0.0%	765
20/06/2024	916	916	0.0%	748	0.0%	748	0.0%	748
21/06/2024	989	989	0.0%	849	0.0%	849	0.0%	849
22/06/2024	900	900	0.0%	564	0.0%	564	0.0%	564
23/06/2024	898	898	0.0%	534	0.0%	534	0.0%	534
24/06/2024	933	933	0.0%	653	0.0%	653	0.0%	653
25/06/2024	528	528	0.0%	206	0.0%	206	0.0%	206
26/06/2024	924	924	0.0%	683	0.0%	683	0.0%	699
27/06/2024	1125	1125	0.0%	887	0.0%	887	0.0%	887
28/06/2024	751	751	0.0%	345	0.0%	345	0.0%	345
29/06/2024	876	876	0.0%	621	0.0%	621	0.0%	621
30/06/2024	926	926	0.0%	786	0.0%	786	0.0%	786
Number of Days that were Compliant			0	0	0	0	0	0
Operator / Supplier Comments:								

Lawrence will remain on a BWN until the treatment plant demonstrates compliance with the T2 Treatment Rules, and Section 4.10.2.5 and the distribution network demonstrates compliance with the D2 Rules. The plant does not demonstrate the consistent compliance required to lift the BWN.

- The treatment plant struggles to consistently maintain the required FAC residual and pH levels to provide assurance that the bacteria in the water has been adequately disinfected with chlorine.
- The treatment plant struggles to consistently achieve the required UV Dose and UVT to provide assurance that the bacteria and protozoa in the water has been adequately disinfected with UV Light.
- The treatment plant struggles to consistently achieve the required turbidity levels to provide assurance that protozoa in the water has been adequately removed by the coagulation, flocculation, sedimentation, and filtration process.
- Low levels of residual chlorine detected in the distribution network limits compliance with Rule D2.5.

*E. coli* was not detected at the Lawrence WTP during the past seven weeks of monitoring. Two FAC results analysed were below the minimum requirement of 0.5 mg/L during the past seven weeks of monitoring, failing to comply with Rule T2.19.

*E. coli* was not detected in the Lawrence distribution network during the past seven weeks of monitoring. Of the 32 FAC samples analysed three were below the minimum requirement of 0.2 mg/L during the past seven weeks of monitoring, failing to comply with Rule D2.5.

All aluminium result analysed from the Lawrence distribution network were below the MAV of 1 mg/L during the past seven weeks of monitoring. The Aluminium Advisory Notice was lifted on 23 May 2024.

Lawrence WTP	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	9	7	17
Compliant Samples collected in the past seven weeks	9	7	15

Lawrence Distribution Network	Total Aluminium	<i>E. coli</i>	FAC
Samples Collected in the past seven weeks	18	8	32
Compliant Samples collected in the past seven weeks	18	8	29

**Water Treatment - Lawrence WTP**  
**Treated Water Compliance Report for October 2023**

Rule:		4.7 T2 Treatment Rules								T3 3 Log Rules	
Requirement:	Filter Run Time	T2.9	UV Run Time	T2.12	T2.13	T2.14	T2.19	T2.21	T3.39	T3.40	
Plant Run Time		% of day Turbidity < 5.0 NTU		% of day UVI within Certified Dose (40 mJ/cm3)	% of day UVT > Min (89.6%)	% of day UV Flow Rate < Max (12.5 l/s)	% of day FAC > 0.5 mg/l	% of day pH Between 6.5 - 8.0	Lawrence.Filter NTU.<=0.3.Percent	Lawrence.Filter NTU.>0.5.Minutes	
Date	min/day	95%		95%	95%	95%	95%	95%	95%	0.00	
1/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	100.0%	100.0%	0.0	
2/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	100.0%	89.3%	0.9	
3/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	100.0%	74.6%	0.1	
4/06/2024	1440	1440	100.0%	1440	99.9%	100.0%	99.9%	98.8%	100.0%	0.0	
5/06/2024	1440	1440	100.0%	1440	99.9%	100.0%	99.9%	89.6%	100.0%	0.0	
6/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	47.8%	100.0%	0.0	
7/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	57.7%	100.0%	0.0	
8/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	71.7%	100.0%	0.0	
9/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	53.5%	100.0%	0.0	
10/06/2024	1440	1440	100.0%	1440	98.5%	100.0%	100.0%	63.9%	98.9%	0.0	
11/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	46.7%	100.0%	0.0	
12/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	94.0%	100.0%	0.0	
13/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	56.9%	100.0%	0.0	
14/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	93.7%	100.0%	0.0	
15/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	95.7%	100.0%	0.0	
16/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	90.8%	100.0%	0.0	
17/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	88.3%	80.6%	91.3%	
18/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	98.9%	49.6%	48.3%	
19/06/2024	1435	1435	100.0%	1435	100.0%	99.5%	100.0%	86.9%	96.4%	81.7%	
20/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	98.1%	100.0%	97.9%	
21/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	95.2%	100.0%	100.0%	
22/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	62.1%	100.0%	100.0%	
23/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	26.3%	99.9%	99.9%	
24/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	58.1%	100.0%	100.0%	
25/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	63.5%	98.6%	100.0%	
26/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	76.7%	100.0%	100.0%	
27/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	63.7%	100.0%	96.8%	
28/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	59.8%	99.8%	100.0%	
29/06/2024	1440	1440	100.0%	1440	99.9%	100.0%	99.9%	77.4%	100.0%	100.0%	
30/06/2024	1440	1440	100.0%	1440	100.0%	100.0%	100.0%	68.3%	100.0%	100.0%	
<b>Number of Days that were Compliant:</b>			<b>30</b>		<b>30</b>	<b>30</b>	<b>30</b>	<b>6</b>	<b>28</b>	<b>25</b>	<b>26</b>
<b>Operator / Supplier Comments:</b>											

#### **1.4 Water Treatment Abatement Notices and Compliance Orders**

The Whitelea Rd WTP was assessed as Significantly Non-compliant due to the ongoing breaches of the weekly backwash discharge volume. In response to this assessment, an application is underway to vary the existing consent to make allowance for the additional volume that continuously discharges from the treatment plant.

The Glenkenich WTP was issued Abatement Notice EM.RMA.24.0024 on 16 May 2024 in relation to the non-compliant levels of Dissolved Aluminium in the backwash water discharged to the Pomahaka River. The Abatement Notice was cancelled on 21 June 2024 following Council's challenge.

#### **1.5 Taumata Arowai Reviews and Audits**

Taumata Arowai was provided with an update in June for Clutha District Council's progress with requirements of the Compliance Order for the Milton water supply. An update was also provided to Taumata Arowai on the status of the Lawrence boil water notice. No feedback has been received from Taumata Arowai at the time of writing.

On June 27th, Taumata Arowai released the Drinking Water Regulation Report for 2023. Clutha District Council featured prominently, specifically in reference to aluminium notifications, *E. coli* notifications for the Waitahuna supply, and the Compliance Order for Milton. From p65 of the report: "Since serving the compliance order, the areas of highest risk have been addressed and improved risk management practices have been put in place across all Clutha supplies."

#### **1.6 Disinfection By-products**

Disinfection by-products (DBP) are formed when disinfectants like chlorine interact with natural organic matter in the source water. The pH of the water, length of time chlorine is in contact with the organic matter, temperature, and cleanliness of the distribution network all contribute to the formation of DBPs. The increased concentration of chlorine in the water causes an increase in DBP formation.

The formation of DBPs is impacted by increased temperatures, so it would be expected that there will be more DBPs formed in spring and summer.

The type of DBP formed depends on the pH. The types found in the Waitahuna and Milton distribution networks are associated with lower water pH (6.5 – 7.5).

Waitahuna Supply				
Date	Location	Dichloroacetic acid (MAV 0.05 mg/L)	Trichloroacetic Acid (MAV 0.2 mg/L)	FAC (mg/L)
9/5/2024	Balmoral 1	0.068	0.19	0.94
	Balmoral 2	0.068	0.15	0.94
17/5/2024	Tuapeka East	0.036	0.09	2.17
	Balmoral 1	0.033	0.06	2.02
22/5/2024	Balmoral 2	0.050	0.15	1.4
23/5/2024	Balmoral 1	0.053	0.15	-
	Balmoral 2	0.048	0.15	-
24/5/2024	Tuapeka East	0.051	0.13	0.77
	Balmoral 2	0.055	0.14	0.91
4/6/2024	Tuapeka East	0.049	0.15	<0.05
7/6/2024	Tuapeka East	0.055	0.12	0.99
	Balmoral 1	0.050	0.09	1.14
	Balmoral 2	0.057	0.14	1.31

Milton Supply				
Date	Location	Dichloroacetic acid (MAV 0.05 mg/L)	Trichloroacetic Acid (MAV 0.2 mg/L)	FAC (mg/L)
9/5/2024	Milton Town	0.008	<0.05	1.19
	Milton OCF	<0.005	<0.05	1.42
7/6/2024	Milton Town	0.007	<0.05	1.55
	Milton OCF	<0.005	<0.05	1.11

Public health advice regarding DBPs, and water treatment is that the microbiological quality of the water should not be compromised to minimise DBP formation. Reducing the concentration of chlorine in the treated water to prevent DBP formation could result in increased levels of *E. coli*. Adverse health effects from DBPs are based upon long-term continuous exposures.





The Kaitangata WWTP abatement notice was issued in December 2022 in relation to the discharge quality. The Council requested an extension of the abatement notice on 7 November 2023. The Council were able to demonstrate ongoing improvements to the discharge quality, and in response the ORC granted an extension until 30 June 2024. The council will now request to cancel the abatement notice.

Another 36no. Bioshells aerator installed (inc. new blowers in a new building), along with floating hex covers. All commissioned in January 2024, look to have started reducing NH3-N.

- The Kaitangata WWTP is likely to maintain compliance with the limits for pH, BOD5, TSS, TN, TP, and *E. coli*.
- Despite the significant improvements, the Kaitangata WWTP is unable to achieve compliance with the limits for NH3-N by 30 June 2024.

Kaitangata Wastewater Treatment Plant Resource Consent Compliance Report RC No.: RM14.001.01; Expiry Date: 21/03/2049 Plant Discharge Volume (m <sup>3</sup> ) Plant Effluent Sample Results (YTD)								
ORC Site Name		pH	BOD	TSS	NH -N	TN	TP	E.coli
	Lower Limit	6.5	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL
	Upper Limit	9	20	30	20	35	10	260
Kaitangata Oxidation Pond Final Effluent	3/07/2023	7.7	14	23	19.6	24.8	3.7	50
Kaitangata Oxidation Pond Final Effluent	9/08/2023	8.4	2	3	16.8	18.9	2.0	10
Kaitangata Oxidation Pond Final Effluent	7/09/2023	7.9	6	3	17.9	20.6	2.3	10
Kaitangata Oxidation Pond Final Effluent	5/10/2023	7.7	10	6	16.6	18.9	1.8	10
Kaitangata Oxidation Pond Final Effluent	2/11/2023	7.9	8	3	29.0	33.6	1.0	5
Kaitangata Oxidation Pond Final Effluent	4/12/2023	7.8	4	3	31.6	35.3	1.1	5
Kaitangata Oxidation Pond Final Effluent	4/01/2024	8.0	6	3	23.5	28.6	0.9	5
Kaitangata Oxidation Pond Final Effluent	7/02/2024	8.6	3	3	14.0	19.1	1.1	5
Kaitangata Oxidation Pond Final Effluent	6/03/2024	7.5	3	3	23.3	29.7	0.4	20
Kaitangata Oxidation Pond Final Effluent	3/04/2024	7.8	4	3	18.5	27.0	0.1	5
Kaitangata Oxidation Pond Final Effluent	3/05/2024	8.0	1	6	19.6	22.7	0.1	100
Kaitangata Oxidation Pond Final Effluent	5/06/2024	7.5	3	6	18.3	20.2	0.0	30
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	0	0	0	4	1	0	0
	Limit of non-compliant samples	1	1	1	1	1	1	1
	Compliant?	Yes	Yes	Yes	No	Yes	Yes	Yes

Improvement: Monthly Compliance achieved / anticipated	No Change (may be a non-compliance if continues)	Consent non-compliance
--	--	------------------------

Balclutha WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
Discharge Volume Limit									
Compliant									
Discharge Parameters:									
Non-compliant results.									
Dissolved Oxygen:									
Compliant average									
HSE access:									
Concerns for samplers and operators – existing workarounds are in place.									

Balclutha Wastewater Treatment Plant								
Resource Consent Compliance Report								
RM17.328.01								
Final Discharge Results								
Plant Effluent Sample Results (YTD) Monthly								
ORC Site Name	Parameter	CBOD5	TSS	E. Coli	NH -N	TP	DO	pH
		g/m <sup>3</sup>	g/m <sup>3</sup>	cfu/100 mL	g/m <sup>3</sup>	g/m <sup>3</sup>	g/m <sup>3</sup>	
	8 out of 12	40	70	55000	20	7.2	2	9
	2 out of 12	85	150	350000	25	8.9		6.5
Balclutha Wastewater Treatment Plant	5/07/2023	37	48	8000	31.3	3.01	0.2	6.6
Balclutha Wastewater Treatment Plant	2/08/2023	34	48	8000	27.4	2.73	0.4	7.2
Balclutha Wastewater Treatment Plant	5/09/2023	31	40	110000	31.4	2.59	0.4	7.5
Balclutha Wastewater Treatment Plant	6/10/2023	19	37	10000	27.9	2.17	0.0	7.3
Balclutha Wastewater Treatment Plant	2/11/2023	23	29	10000	28.5	1.47	0.8	7.5
Balclutha Wastewater Treatment Plant	4/12/2023	33	26	1600	33.5	2.62	2.6	7.8
Balclutha Wastewater Treatment Plant	4/01/2024	37	49	1000	31.1	2.97	5.5	7.6
Balclutha Wastewater Treatment Plant	8/02/2024	39	66	2200	28.9	2.74	6.2	8.0
Balclutha Wastewater Treatment Plant	6/03/2024	24	53	800	29.2	2.54	11.8	7.6
Balclutha Wastewater Treatment Plant	3/04/2024	24	36	5700	32.7	3.26	0.8	7.6
Balclutha Wastewater Treatment Plant	6/05/2024	30	30	210000	33.3	2.92	0.6	7.5
Balclutha Wastewater Treatment Plant	6/06/2024	32	61	20000	42.7	3.58	1.0	7.4
Number of Samples		12	12	12	12	12		
8 out of 12 consecutive samples	Limit of non-compliant samples	8	8	8	8	8		
	Actual	1	0	2	12	0		
Median Compliant?		Yes	Yes	Yes	No	Yes		
2 out of 12 consecutive samples	Limit of non-compliant samples	2	2	2	2	2		
	Actual	0	0	0	12	0		
95th Compliant?		Yes	Yes	Yes	No	Yes		

#### Balclutha WWTP Site Upgrades include:

- Segregation of the existing pond into two linked cells. Two aerators will impart both dissolved oxygen and circulation pattern around the cell.
- Installation in the downstream cell of 85 BioShell units, intended to reduce BOD, TSS and NH<sub>3</sub>. This includes new building to house blowers and recirculation pumps, along with a curtain wall in the BioShell zone which will contain floating hexagonal plates to eliminate sunlight. The BioShell installation is expected to be fully commissioned by end of June 2024 but will take time before noticeable improvements to the final effluent quality can be expected.
- Revised programming to control daily discharge volumes will prevent the exceedance of the daily discharge limit.
- Alum dosing to reduce suspended solids and reduce organic matter should improve TSS and TP to be installed.

Clinton WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
Discharge Volume Limit: Nine Non-compliances									
Discharge Parameters: Compliant.									
Dissolved Oxygen: Compliant average									
HSE access: Concerns for samplers and operators – existing workarounds are in place.									

Clinton Wastewater Treatment Plant									
Resource Consent Compliance Report									
RC No.: 17.092.01; Expiry Date: 5/5/2027									
Final Discharge Results									
Plant Effluent Sample Results (YTD)									
ORC Site Name		DO	pH	cBOD <sub>5</sub>	TSS	E. Coli	NH <sub>3</sub> -N	TP	
		g/m <sup>3</sup>	6.5	g/m <sup>3</sup>	g/m <sup>3</sup>	cfu/100ml	g/m <sup>3</sup>	g/m <sup>3</sup>	
		Lower Limit	9						
		Median Limit							
	95th Percentile Limit	2							
Clinton STP Final Effluent	5/07/2023	9.1	7.2	10	34	3100	14.9	3.4	
Clinton STP Final Effluent	2/08/2023	13.0	8.2	6	31	110	10.4	1.5	
Clinton STP Final Effluent	5/09/2023	9.0	8.3	5	23	140	10.7	2.8	
Clinton STP Final Effluent	6/10/2023	9.0	8.2	13	24	180	11.2	3.9	
Clinton STP Final Effluent	2/11/2023	5.0	7.3	10	23	2100	12.9	4.7	
Clinton STP Final Effluent	7/12/2023	5.0	7.8	12	19	2600	11.4	4.1	
Clinton STP Final Effluent	4/01/2024	3.0	7.8	4	13	6000	12.8	5.4	
Clinton STP Final Effluent	8/02/2024	9.5	7.8	22	40	2100	6.9	6.2	
Clinton STP Final Effluent	4/03/2024	10.3	7.9	20	53	2300	6.8	6.0	
Clinton STP Final Effluent	4/04/2024	12.0	7.6	38	40	350	6.5	5.5	
Clinton STP Final Effluent	6/05/2024	14.9	7.9	41	39	120	8.3	5.1	
Clinton STP Final Effluent	5/06/2024	10.1	7.3	10	21	360	10.4	3.3	
Number of Samples				12	12	12	12	12	12
8 out of 12 consecutive samples	Limit of non-compliant samples			8	8	8	8	8	8
	Actual			2	6	6	1	7	7
Median Compliant?				Yes	Yes	Yes	Yes	Yes	Yes
2 out of 12 consecutive samples	Limit of non-compliant samples			2	2	2	2	2	2
	Actual			2	1	1	0	0	0
95th Compliant?				Yes	Yes	Yes	Yes	Yes	Yes

#### Clinton WWTP Site Upgrades include:

- Segregation of the existing pond into two linked cells by a curtain wall installed across the pond.
- Installation of BioShell units in the downstream portion of the pond, intended to reduce BOD, TSS and NH<sub>3</sub>. This includes associated blowers, and floating hexagonal plates in the BioShell zone. The BioShell were commissioned in April 2024.
- Installation of a UV reactor between the pond and the wetland to provide bacterial disinfection; expected to be commissioned in June 2024. The UV Reactor will help reduce *E. coli*.
- Installation of additional plants in the wetland cells and removal of accumulated sludge.
- Alum dosing to reduce suspended solids and reduce organic matter should improve TSS and TP to be installed.

Waihola WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
Discharge Volume Limit:									
Six Non-compliances.									
Discharge Parameters:									
Non-compliant results.									
Dissolved Oxygen:									
Compliant average									
HSE access:									
No new H&S issues have been identified at this site.									

Waihola Wastewater Treatment Plant								
Resource Consent Compliance Report								
RM15.364.01 Expire date May 2028								
Final Effluent (YTD)								
ORC Site Name	Date	CBOD <sub>5</sub>	TSS	E. Coli	NH <sub>3</sub> -N	TP	DO	pH
		g/m <sup>3</sup>	g/m <sup>3</sup>	cfu/100 ml	g/m <sup>3</sup>	g/m <sup>3</sup>	g/m <sup>3</sup>	
	median	75	100	80000	23	5.7		9
95 percentile	140	175	315000	31	8.2		6.5	
Waihola Wastewater Treatment Plant	24/07/2023	3	33	1100	0.1	0.117	4.4	7.2
Waihola Wastewater Treatment Plant	10/08/2023	15	39	8000	26.9	3.78	6.3	7.2
Waihola Wastewater Treatment Plant	8/09/2023	10	38	450	28.6	5.87	6.6	7.2
Waihola Wastewater Treatment Plant	11/10/2023	18	35	730	26.2	4.84	6.3	7.1
Waihola Wastewater Treatment Plant	8/11/2023	16	37	5400	27.9	6.64	7.8	7.3
Waihola Wastewater Treatment Plant	6/12/2023	15	122	1600	31.5	9.15	4.2	7.1
Waihola Wastewater Treatment Plant	4/01/2024	12	33	6400	37.5	9.87	10.8	9.3
Waihola Wastewater Treatment Plant	7/02/2024	8	29	780	41.7	11.6	4.6	7.1
Waihola Wastewater Treatment Plant	4/03/2024	14	52	4800	44.3	8.78	0.5	7.5
Waihola Wastewater Treatment Plant	5/04/2024	22	17	10	51.9	8.86	6.6	7.3
Waihola Wastewater Treatment Plant	6/05/2024	16	19	1400	30.3	4.91	6.9	7.5
Waihola Wastewater Treatment Plant	5/06/2024	10	26	10000	26.0	5.27	6.5	7.5
Number of Samples		12	12	12	12	12		
8 out of 12 consecutive samples	Limit of non-compliant samples	8	8	8	8	8		
	Actual	0	1	0	11	7		
Median Compliant?		Yes	Yes	Yes	No	Yes		
2 out of 12 consecutive samples	Limit of non-compliant samples	2	2	2	2	2		
	Actual	0	0	0	5	5		
95th Compliant?		Yes	Yes	Yes	No	No		

#### Waihola WWTP Site Upgrades include:

- Inlet screen installed to help reduce TSS and BOD – not yet commissioned.
- New PLC and control philosophy was commissioned in June 2024.
- Installation of BioShell units in the downstream portion of the pond, intended to reduce BOD, TSS and NH<sub>3</sub>. This includes associated blowers, and floating hexagonal plates in the BioShell zone. The BioShell were commissioned in June 2024 but take time before noticeable improvements to the final effluent quality can be expected.
- Additional aerator installed during March 2024, imparting both dissolved oxygen and circulation pattern around the cell.
- Alum dosing to reduce suspended solids and reduce organic matter should improve TSS and TP to be installed.

<b>Milton WWTP</b>	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
<u>Discharge Volume Limit:</u> Four Non-compliances.	Red	Green	Green	Green	Green	Green	Red	Green	Red
<u>Discharge Parameters:</u> Non-compliant result.	Green	Green	Green	Green	Green	Green	Green	Red	Green
<u>Treatment Plant Bypass:</u> Partially treated effluent bypassed the treatment plant twice.	Red	Red	Red	Red	Green	Green	Red	Green	Red
<u>HSE concerns:</u> Raised by sampling staff, ORC & operators regarding safe access to sample locations and below ground maintenance pits – upgrades are underway.	Green	Green	Green	Green	Green	Green	Green	Green	Green

#### Milton WWTP Site Upgrades include:

- Sludge is being removed as expediently as possible from the Imhoff tanks over this summer and dried on the sludge drying beds, then short-term on-site storage before bulk removal to landfill.
- A full set of spare UV lamps have been purchased in January 2024 and are now held on site (along with other UV equipment spares).
- Servicing of the UV system by Xylem (UV equipment manufacturer/supplier) has been completed. This included replacing the UV lamps and replacing the UV light intensity reference sensors.

<b>Kaitangata WWTP</b>	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
<u>Discharge Volume Limit</u> Compliant	Green	Green	Green	Green	Green	Green	Green	Green	Green
<u>Pond Overflow</u> Non-compliant	Green	Green	Green	Green	Green	Green	Green	Green	Red
<u>Discharge Parameters:</u> Compliant	Green	Red	Red	Red	Green	Red	Green	Green	Green
<u>HSE access:</u> Concerns for samplers and operators – existing workarounds are in place.	Green	Green	Green	Green	Green	Green	Green	Green	Green

#### Kaitangata WWTP Site Upgrades include:

- Inlet screen installed and commissioned in mid-2023. The screen will help reduce TSS and BOD.
- Alteration to existing curtain wall segregations.
- Additional BioShells and aerator installed, along with floating hex covers, intended to reduce BOD, TSS and NH<sub>3</sub>. All commissioned in January 2024.
- Full manhole inspection completed during March 2024.
- Trade Waste permits are to be revised to ensure appropriate conditions apply to high-risk trade waste discharges.

Heriot WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
Discharge Volume Limit: Compliant									
Pond Overflow Compliant									
Discharge Parameters: Non-compliant results.									

Heriot Wastewater Treatment Plant Resource Consent Compliance Report RC No.:RM13.443.01; Expiry Date: 28/02/2049 Final Effluent Sample Results (YTD)								
ORC Site Name		NH -N	BOD	E. coli	pH	TSS	TN	TP
		g/m3	g/m3	cfu/100mL		g/m3	g/m3	g/m3
		Lower Limit				6.5		
Upper Limit		20	20	260	9	30	35	10
Heriot Oxidation Pond Final Effluent	6/07/2023	22.4	3	10	7.8	3	27.1	3.0
Heriot Oxidation Pond Final Effluent	9/08/2023	18.6	3	5	8.2	3	23.2	2.5
Heriot Oxidation Pond Final Effluent	7/09/2023	23.2	16	10	7.8	6	27.0	3.6
Heriot Oxidation Pond Final Effluent	5/10/2023	20.4	6	10	7.9	6	29.1	3.6
Heriot Oxidation Pond Final Effluent	2/11/2023	22.9	3	10	9.2	6	26.8	3.4
Heriot Oxidation Pond Final Effluent	4/12/2023	19.8	2	10	6.8	3	24.8	4.8
Heriot Oxidation Pond Final Effluent	4/01/2024	19.3	2	5	8.0	3	26.5	5.3
Heriot Oxidation Pond Final Effluent	7/02/2024	7.55	10	5	7.9	3	11.5	4.8
Heriot Oxidation Pond Final Effluent	6/03/2024	11.4	2	10	7.8	3	15.8	5.2
Heriot Oxidation Pond Final Effluent	29/04/2024	34.4	6	50	7.6	3		6.0
Heriot Oxidation Pond Final Effluent	6/05/2024	14.6	6	10	7.6	6	36.0	5.7
Heriot Oxidation Pond Final Effluent	7/06/2024	31.2	4	10	7.8	6	32.6	4.0
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	5	0	0	1	0	1	0
	Limit of non-compliant samples	1	1	1	1	1	1	1
	Compliant?	No	Yes	Yes	Yes	Yes	Yes	Yes

Heriot WWTP Site Upgrades include:

- Installed another five BioShells, supplementing the existing units, along with floating hex covers, intended to reduce BOD, TSS and NH<sub>3</sub>. All commissioned in January 2024. It will take time before consistent improvements to the final effluent quality can be expected.
- Trade Waste permits are to be revised to ensure appropriate conditions apply to high-risk trade waste discharges.
- Marshalls addressing short circuiting of the pond the week of 1 July which should help with NH<sub>3</sub>-N compliance.

Kaka Point WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
Discharge Volume Limit: Missing discharge data, reinstated 14 June 2024.									
Pond Overflow: Compliant									
Discharge Parameters: Non-compliant results.									
HSE access: Concerns for samplers and operators – existing workarounds are in place.									

Kaka Point Wastewater Treatment Plant Resource Consent Compliance Report RC No.: 2008.690; Expiry Date: 26/01/2046 Final Effluent Sample Results (YTD)								
ORC Site Name	Date	NH -N	BOD	Enterococci	pH	TSS	TN	TP
		g/m <sup>3</sup>	g/m <sup>3</sup>	cfu/ 100mL		g/m <sup>3</sup>	g/m <sup>3</sup>	g/m <sup>3</sup>
Kaka Point Oxidation Pond	5/07/2023	5.2	6	110	6.5	10	34.2	5.2
Kaka Point Oxidation Pond	2/08/2023	4.1	6	80	6.1	34	28.6	4.2
Kaka Point Oxidation Pond	5/09/2023	2.3	13	60	6.6	22	29.1	5.4
Kaka Point Oxidation Pond	6/10/2023	6.2	9	10	7.6	26	28.5	6.1
Kaka Point Oxidation Pond	9/11/2023	5.3	1.5	10	4.3	7	42.8	7.1
Kaka Point Oxidation Pond	7/12/2023	14.2	10	20	6.8	18	42.0	8.4
Kaka Point Oxidation Pond	4/01/2024	7.3	13	5	7.4	19	39.9	10.3
Kaka Point Oxidation Pond	7/02/2023	38.8	14	30	7.5	9	52.0	8.7
Kaka Point Oxidation Pond	6/03/2024	49.9	12	360	7.6	22	49.5	8.9
Kaka Point Oxidation Pond	3/04/2024	7.8	9	20	6.5	7	46.3	8.2
Kaka Point Oxidation Pond	3/05/2024	9.8	5	100	6.4	9	52.2	7.9
Kaka Point Oxidation Pond	5/06/2024	2.7	6	10	6.6	6	49.6	7.9
Consented Limit		20	12	140	6.5-9	30	30	10
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	2	3	1	2	0	8	1
	Limit of non-compliant samples	1	1	1	1	1	1	1
	Compliant?	No	No	Yes	No	Yes	No	Yes

Kaka Point WWTP Site Upgrades include:

- Inlet screen installed and commissioned in mid-2023. The screen will help reduce TSS and BOD.
- Peripheral drain installed around the Biofiltro bed in early 2024 to capture liquid leaking from walls, directing the captured liquid to the Pond.
- Wood shavings and worms completely replaced during February 2024.
- New PLC and control philosophy was commissioned in April 2024, resulting in missing data for April, May, and June 2024.
- The Regional Council accepted the proposed wording for new compliance monitoring conditions for the Biofiltro sites which simplifies the monitoring requirements at this site. In accordance with the new wording, the consent is non-compliant with NH3-N, BOD5, pH, and TN.



Owaka WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
<u>Discharge Volume Limit:</u> Missing discharge data, reinstated 6 June 2024. 12 Non-compliances.	Red	Green	Green	Green	Green	Green	Green	Yellow	Red
<u>Pond Overflow:</u> Compliant	Green	Green	Green	Green	Green	Green	Green	Green	Green
<u>Discharge Parameters:</u> Compliant	Red	Red	Green	Green	Red	Green	Red	Red	Green
<u>HSE access:</u> Concerns for samplers and operators – existing workarounds are in place.	Green	Green	Green	Green	Green	Green	Green	Green	Green

Owaka Wastewater Treatment Plant									
Resource Consent Compliance Report									
RC No.:2003.680; Expiry Date: 25/11/2045									
Final Effluent Sample Results 90th Percentile Compliance									
ORC Site Name	Sample Date	NH <sub>3</sub> -N	BOD <sub>5</sub>	E.coli	pH	TSS	TN	TP	
		g/m <sup>3</sup>	g/m <sup>3</sup>	cfu/100mL		g/m <sup>3</sup>	g/m <sup>3</sup>	g/m <sup>3</sup>	
Owaka STP Final Effluent	5/07/2023	6.7	10	10	7.4	19	13.9	1.8	
Owaka STP Final Effluent	2/08/2023	0.1	3	5	7.2	15	2.4	0.1	
Owaka STP Final Effluent	5/09/2023	4.7	12	10	7.2	11	9.2	3.2	
Owaka STP Final Effluent	1/10/2023	2.7	19	10	7.2	26	11.6	1.6	
Owaka STP Final Effluent	2/11/2023	11.2	17	110	7.3	46	16.6	4.5	
Owaka STP Final Effluent	7/12/2023	6.8	10	5	7.9	17	16.8	4.8	
Owaka STP Final Effluent	4/01/2024	5.6	6	30	7.1	8	9.8	6.2	
Owaka STP Final Effluent	7/02/2024	5.1	17	170	7.5	45	18.0	7.1	
Owaka STP Final Effluent	6/03/2024	0.5	8	10	7.9	3	18.1	6.5	
Owaka STP Final Effluent	3/04/2024	15.2	23	20	7.6	33	31.0	8.1	
Owaka STP Final Effluent	3/05/2024	10.4	21	60	8.3	54	19.9	3.9	
Owaka STP Final Effluent	5/06/2024	1.2	3	120	7.4	6	3.2	0.3	
Consented Limit		20	12	260	6.5-9	30	30	10	
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	0	5	0	0	4	1	0	
	Limit of non-compliant samples	1	1	1	1	1	1	1	
	Compliant?	Yes	No	Yes	Yes	No	Yes	Yes	

Owaka WWTP Site Upgrades include:

- Inlet screen installed and commissioned in mid-2023. The screen will help reduce TSS and BOD.
- Peripheral drain installed around the Biofiltro bed in early 2024 to capture liquid leaking from walls, directing the captured liquid to Pond 2.
- The new Owaka Pump Station and associated rising main to the WWTP has started construction and will be commissioned within the next three months.
- Work to replace the Biofiltro bed is complete.
- New PLC and control philosophy was commissioned in May 2024, resulting in missing data for 2024.
- The Regional Council accepted the proposed wording for new compliance monitoring conditions for the Biofiltro sites which simplifies the monitoring requirements at this site. In accordance with the new wording, the consent is non-compliant with BOD<sub>5</sub>, and TSS.

Stirling WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
Discharge Volume Limit:									
One Non-compliances									
Pond Overflow:									
Compliant									
Discharge Parameters:									
Non-compliant results.									
HSE access:									
Concerns for samplers and operators – existing workarounds are in place.									

Stirling Wastewater Treatment Plant								
Resource Consent Compliance Report								
RC No.: 2005.193; Expiry Date: 25/11/2045								
Final Effluent Sample Results 90th Percentile Compliance								
ORC Site Name	Date	NH -N	BOD	E. coli	pH	TSS	TN	TP
		g/m <sup>3</sup>	g/m <sup>3</sup>	cfu/100mL		g/m <sup>3</sup>	g/m <sup>3</sup>	g/m <sup>3</sup>
Stirling Oxidation Pond Final Effluent	5/07/2023	10.5	10	20	7.1	8	33.0	5.5
Stirling Oxidation Pond Final Effluent	2/08/2023	3.3	1	5	6.5	8	34.9	5.3
Stirling Oxidation Pond Final Effluent	5/09/2023	2.5	9	10	8.3	24	25.4	5.7
Stirling Oxidation Pond Final Effluent	6/10/2023	0.5	6	10	8.5	5	18.6	4.7
Stirling Oxidation Pond Final Effluent	2/11/2023	1.6	3	5	7.5	21	20.4	6.1
Stirling Oxidation Pond Final Effluent	7/12/2023	0.4	7	5	7.6	18	18.0	6.9
Stirling Oxidation Pond Final Effluent	4/01/2024	1.4	7	10	8.6	18	7.8	7.9
Stirling Oxidation Pond Final Effluent	7/02/2024	6.1	8	10	7.4	11	16.0	8.6
Stirling Oxidation Pond Final Effluent	4/03/2024	9.9	6	140	7.4	14	19.8	7.4
Stirling Oxidation Pond Final Effluent	3/04/2024	7.5	7	10	7.2	19	22.8	6.9
Stirling Oxidation Pond Final Effluent	6/05/2024	7.3	4	10	6.8	6	35.7	5.1
Stirling Oxidation Pond Final Effluent	5/06/2024	31.1	10	10	7.5	16	40.4	5.5
Consented Limit		20	12	260	6.5-9	30	30	10
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	1	0	0	0	0	2	0
	Limit of non-compliant samples	1	1	1	1	1	1	1
	Compliant?	Yes	Yes	Yes	Yes	Yes	No	Yes

#### Stirling WWTP Site Upgrades include:

- Inlet screen installed and commissioned in mid-2023. The screen will help reduce TSS and BOD.
- New PLC and control philosophy was commissioned in March 2024, resulting in missing data for April 2024.
- Biofiltro bed replaced in May 2024.
- Trade waste Investigations underway due to heightened NH<sub>3</sub>-N and TN results.
- The Regional Council accepted the proposed wording for new compliance monitoring conditions for the Biofiltro sites which simplifies the monitoring requirements at this site. In accordance with the new wording, the consent is non-compliant with TN.

Lawrence WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
<u>Discharge Volume Limit:</u>									
Missing discharge data, reinstated 6 May 2024. One non-compliance.									
<u>Dissolved Oxygen:</u>									
Compliant average									
<u>Pond Overflow:</u>									
Compliant									
<u>Discharge Parameters:</u>									
Non-compliant results.									

Lawrence Wastewater Treatment Plant								
Resource Consent Compliance Report								
RC No.: 2008.308; Expiry Date: 21/01/2046								
Final Effluent Sample Results (YTD)								
ORC Site Name	Sample Date	NH - N g/m <sup>3</sup>	BOD g/m <sup>3</sup>	E. coli cfu/100mL	pH	TSS g/m <sup>3</sup>	TN g/m <sup>3</sup>	TP g/m <sup>3</sup>
Lawrence Oxidation Pond Final Effluent	6/07/2023	3.4	22	230	6.8	39	33.8	4.4
Lawrence Oxidation Pond Final Effluent	3/08/2023	9.3	22	10	7.2	37	27.6	4.0
Lawrence Oxidation Pond Final Effluent	5/09/2023	13.5	39	100	8.0	76	31.3	6.2
Lawrence Oxidation Pond Final Effluent	6/10/2023	3.4	28	10	6.8	39	35.0	6.4
Lawrence Oxidation Pond Final Effluent	2/11/2023	20.2	38	10	7.2	30	27.3	8.1
Lawrence Oxidation Pond Final Effluent	7/12/2023	18.0	22	10	7.9	14	35.0	8.3
Lawrence Oxidation Pond Final Effluent	4/01/2024	18.1	12	20	7.1	20	36.8	6.9
Lawrence Oxidation Pond Final Effluent	7/02/2024	15.6	19	10	7.4	53	28.1	9.2
Lawrence Oxidation Pond Final Effluent	6/03/2024	1.5	12	10	7.2	16	41.7	7.2
Lawrence Oxidation Pond Final Effluent	4/04/2024	0.9	12	10	7.7	15	32.2	7.2
Lawrence Oxidation Pond Final Effluent	6/05/2024	18.9	8	10	7.2	11	43.0	6.1
Lawrence Oxidation Pond Final Effluent	5/06/2024	10.2	9	10	6.4	6	37.9	5.0
Consented Limit		20	12	260	6.5-9	30	30	10
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	1	5	0	1	3	8	0
	Limit of non-compliant samples	1	1	1	1	1	1	1
	Compliant?	Yes	No	Yes	Yes	No	No	Yes

#### Lawrence WWTP Site Upgrades include:

- Inlet screen installed and commissioned in mid-2023. The screen will help reduce TSS and BOD.
- Wood shavings and worms completely replaced during February 2024.
- New aerator installed during March 2024, imparting both dissolved oxygen and circulation pattern around the cell.
- New PLC and control philosophy was commissioned in April 2024, resulting in missing data for April and May 2024.
- The Regional Council accepted the proposed wording for new compliance monitoring conditions for the Biofiltro sites which simplifies the monitoring requirements at this site. In accordance with the new wording, the consent is non-compliant with BOD5, TSS, and TN.

Tapanui WWTP	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
<u>Discharge Volume Limit</u>									
Missing discharge data, reinstated 9 June 2024. 18 non-compliances.									
<u>Pond Overflow</u>									
Non-compliant.									
<u>Discharge Parameters</u>									
Compliant									

Tapanui Wastewater Treatment Plant								
Resource Consent Compliance Report								
RC No.2005.246; Expiry Date: 25/11/2045								
Final Effluent Sample Results 90th% Compliance (YTD)								
ORC Site Name	Date	NH -N	BOD	E.coli	pH	TSS	TN	TP
		g/m3	g/m3	cfu/100mL		g/m3	g/m3	g/m3
Tapanui STP Final Effluent	6/07/2023	11.7	8	Overflow	7.0	10	21.8	3.2
Tapanui STP Final Effluent	9/08/2023	4.1	5	5	7.6	6	12.0	2.3
Tapanui STP Final Effluent	7/09/2023	0.0	2	230	7.6	20	0.8	0.0
Tapanui STP Final Effluent	6/10/2023	8.2	6	100	6.8	9	18.1	3.8
Tapanui STP Final Effluent	2/11/2023	2.2	9	5	6.7	3	29.1	3.7
Tapanui STP Final Effluent	4/12/2023	4.3	3	5	6.3	3	33.9	3.1
Tapanui STP Final Effluent	4/01/2024	11.1	11	5	6.8	7	25.7	5.3
Tapanui STP Final Effluent	7/02/2024	9.0	10	5	6.9	12	23.4	5.0
Tapanui STP Final Effluent	6/03/2024	12.8	20	90	7.2	15	28.4	4.5
Tapanui STP Final Effluent	5/04/2024	8.0	11	10	6.8	18	20.0	4.5
Tapanui STP Final Effluent	6/05/2024	13.4	10	10	7.6	28	25.1	3.9
Tapanui STP Final Effluent	7/06/2024	3.0	2	10	7.1	6	25.3	2.9
Consented Limit		20	12	260	6.5-9	30	30	10
9 out of 10 consecutive samples not to exceed	Non-compliant Samples	0	1	0	1	0	1	0
	Limit of non-compliant samples	1	1	1	1	1	1	1
	Compliant?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Tapanui WWTP Site Upgrades include:

- Inlet screen installed and commissioned in mid-2023. The screen will help reduce TSS and BOD.
- This site suffers from significant I&I flows during winter months. One known problem manhole repaired in March 2024 and CDC staff are discussing a relining programme for other problematic manholes in the town's sewer network.
- New aerator installed during March 2024, imparting both dissolved oxygen and circulation pattern around the cell.
- New PLC and control philosophy was commissioned in June 2024, resulting in missing data for June 2024.
- The Regional Council accepted the proposed wording for new compliance monitoring conditions for the Biofiltro sites which simplifies the monitoring requirements at this site. In accordance with the new wording, the consent is non-compliant with pH.

## Appendix A: Drinking Water Quality Assurance Rules Technical Details

Section 4.10.1.1 of the DWQARs details the requirements that must be met to provide assurance that bacteria in the water has been adequately disinfected with chlorine. The following rules make up the requirements set out by Section 4.10.1.1:

- Rule T3.2 requires the treated water to achieve a chlorine C.t. value of at least 15 min.mg/L for 95% of the day. The C.t. value is determined by the residual chlorine (mg/L) in the final water and the T10 contact time (Rule T3.4). A low result in either of these values will result in a non-compliant C.t. value.
- Rule T3.4 requires a T<sub>10</sub> disinfectant contact time of at least 5 minutes to be demonstrated. The T10 contact time is determined by the water level in the contact tanks (%) and the flow rate (l/s) of water through those tanks. A low reservoir level or high flow rate can result in a non-compliant T<sub>10</sub> contact time. The continuous monitoring report takes the lowest T10 value from each 24-hour period.
- Rule T3.3 requires the residual chlorine in the final water to remain above 0.2 mg/L for 95% of the day.
- Rule T3.5 requires the turbidity in the final water to remain below 1.0 NTU for 95% of the day.
- Rule T3.6 requires the turbidity in the final water to remain below 2.0 NTU.

Section 4.10.1.4 of the DWQARs details the requirements that must be met to provide assurance that bacteria in the water has been adequately disinfected with Ultraviolet (UV) Light. The following rules make up the requirements set out by Section 4.10.1.4:

- Rule T3.16 requires an applied UV dose of greater than 40 mJ/cm<sup>2</sup> be achieved for 95% of the day.
- Rule T3.17 requires an applied UV dose of not less than 40 mJ/cm<sup>2</sup> be achieved for any consecutive 15-minute period.
- A reduction in UV dose is caused by low lamp intensity, fouling of the lamps, poor quality water, and high flow rate (l/s) through the UV unit.

Section 4.10.2.5 to 4.10.2.7 of the DWQARs details the requirements that must be met to provide assurance that protozoa in the water has been adequately removed by the coagulation, flocculation, sedimentation, and filtration process. The following rules make up the requirements set out by Section 4.10.2.5:

- Rule T3.39 requires the turbidity in the final water to remain below 0.3 NTU for 95% of the day.
- Rule T3.40 requires the turbidity in the final water to not exceed 0.5 NTU for any consecutive 15-minute period.
- The maximum credit achieved through compliance with Section 4.10.2.5 is 3-log.

The following rules make up the requirements set out by Section 4.10.2.6:

- Rule T3.43 requires the turbidity in the final water to remain below 0.15 NTU for 95% of the day.

- Rule T3.44 requires the turbidity in the final water to not exceed 0.5 NTU for any consecutive 15-minute period.
- The maximum credit achieved through compliance with Section 4.10.2.6 is 3.5-log.

The following rules make up the requirements set out by Section 4.10.2.7:

- Rule T3.47 requires the turbidity in the final water to remain below 0.1 NTU for 95% of the day.
- Rule T3.48 requires the turbidity in the final water to not exceed 0.3 NTU for any consecutive 15-minute period.
- The maximum credit achieved through compliance with Section 4.10.2.6 is 4-log.
- Turbidity levels are susceptible to weather events that cause changes to the raw water quality, and over or under dosing of the coagulant.

Section 4.10.2.13 of the DWQARs details the requirements that must be met to provide assurance that protozoa in the water has been adequately removed by the UV disinfection. The following rules make up the requirements set out by Section 4.10.2.13:

- Rule T3.86 requires the applied UV dose to meet or exceed that required to achieve the claimed log credit for 95% of the day.
- Rule T3.87 requires an applied UV dose of not less than that required to achieve the claimed log credit for any consecutive 15-minute period.
- A reduction in UV dose is caused by low lamp intensity, fouling of the UV lamps, poor water quality, and high flow rate through the UV unit.
- Rule T3.89 requires the UV Transmission (UVT) to meet or exceed 95% of the UVT for which the reactor has been certified for at least 95% of the day.
- Rule T3.90 requires the UVT of not less than 80% of the lowest UVT for which the reactor has been certified for any consecutive 15-minute period.
- A reduction in UVT is caused by an increase in organics and dissolved compounds in the water passing through the UV unit.

Rules T3.92 and T3.93 requires the monitoring of identified Treatment Chemical Determinands that are introduced into the drinking water supply during the treatment process. Aluminium is used at most WTPs as a coagulant and must be monitored in accordance with Table 33 and Table 34 of the DWQARs.

Distribution Rule D3.19 requires the chlorine residual in the water distributed to the networks to remain above 0.2 mg/L in 85% of the analysed samples. The FAC must remain above 0.1 mg/L in every analysed sample.

Distribution Rule D3.29 requires the monitoring of *E. coli* and total coliforms in the distribution networks according to the frequency set out in Table 39 of the DWQARs. The Maximum Allowable Value (MAV) for *E. coli* is <1 CFU/100ml.