Waimakariri District Council

Utilities and Roading Committee

Agenda

Tuesday 17 November 2026
9am

Council Chambers
215 High Street
Rangiora

Members:

Deputy Mayor Philip Redmond (Chairperson)
Cr Tim Bartle
Cr Tim Fulton
Cr Niki Mealings
Cr Joan Ward
Mayor Dan Gordon (ex officio)

WAIMAKARIRI
DISTRICT COUNCIL

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The Chairperson and Members
UTILITIES AND ROADING COMMITTEE

A MEETING OF THE UTILITIES AND ROADING COMMITTEE WILL BE HELD IN THE COUNCIL CHAMBER, RANGIORA SERVICE CENTRE, 215 HIGH STREET, RANGIORA, ON TUESDAY 17 NOVEMBER 2026 AT 9AM.

Sarah Nichols
GOVERNANCE MANAGER

Recommendations in reports are not to be construed as Council policy until adopted by the Council

BUSINESS

Page No

1 APOLOGIES

2 CONFLICTS OF INTEREST

Conflicts of interest (if any) to be reported for minuting.

3 CONFIRMATION OF MINUTES

3.1 **Minutes of the meeting of the Utilities and Roading Committee held on Tuesday, 13 October 2026**

8-21

RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Confirms** the circulated Minutes of the meeting of the Utilities and Roading Committee held on 13 October 2026 as a true and accurate record.

3.2 **Matters Arising (From Minutes)**

4 DEPUTATION/PRESENTATIONS

Nil.

5 REPORTS

5.1 Jelfs Road - Extension of Maintenance Length – Joanne McBride (Roading and Transport Manager) and Don Young (Senior Engineering Advisor)

22-27

RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261021340059.

EITHER:

(b) **Declines** the request to extend the maintained road for a length to include the informal turnaround area.

OR:

(c) **Approves** the extension of the maintained road for a length of 30m on Jelfs Rd from RP550 to RP580 (as per Figure 5), to include the informal turnaround area, at an expected total cost of $3,000 ($1,000 as an initial cost, with a further $2,000 in the next 1-2 years), with minimal additional annual cost, to be funded from existing budgets from the Unsealed Pavement Maintenance budget.

(d) **Notes** that if approval is granted for the turning head is to be maintained, then it will be maintained on an “As Required” basis and to a low level of service.

5.2 Eastern District Sewer Scheme and Oxford Sewer Scheme Annual Compliance Report 2025 – 26 – Caroline Fahey (Water and Wastewater Asset Manager

28-121

RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261031353240.

(b) **Notes** that full compliance was achieved for all Eastern District Sewer Scheme (EDSS) Ocean Outfall consent conditions relating to environmental limits during the 2025-26 monitoring period, except for low dissolved oxygen levels in some Woodend Wastewater Treatment Plant (WWTP) treatment ponds and instances where dissolved oxygen samples were collected outside the required monitoring timeframe.

(c) **Notes** that apparent exceedances of the Ocean Outfall flow rate limit that were attributable to monitoring equipment errors rather than actual consent breaches. These issues did not affect the overall performance of the wastewater treatment systems or result in adverse environmental effects on the receiving environment.

(d) **Notes** that full compliance was achieved for the Oxford Sewer Scheme consent conditions relating to environmental limits during the 2024-25 monitoring period, except for monitoring related irrigation depth exceedances and two isolated ponding incidents within the effluent disposal field.

(e) **Notes** that the depth recording and ponding issues have since been addressed and did not affect the overall performance of the wastewater treatment system and had no adverse environmental effects on the receiving environment

(f) **Notes** that Environment Canterbury are currently reviewing the Annual Compliance Monitoring Reports for the 2023-24 and 2024-25 periods and a compliance report will be issued by Environment Canterbury following the completion of their review

(g) **Circulates** this report to all Community Boards for their information.

(h) **Circulates** a copy of this report to Te Ngāi Tūāhuriri Rūnanga and Te Kōhaka o Tūhaitara Trust for their information.

5.3 **Network Environmental Performance Report 2024-25 and Network Environmental Performance Measures 2025-26 – David Paz Lobon (3 Waters Asset Analyst), Craig Freeman (Asset Management Engineer – Water and Wastewater), Caroline Fahey (Water and Wastewater Asset Manager) and Kalley Simpson (3 Waters Manager)**

122-228

RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261022343325.

(b) **Notes** that overall, Waimakariri District Council performs well in areas identified by the Network Environmental Performance Report 2024-25 as key issues, measures and recommendations.

(c) **Notes** that this positive performance is also reflected in the key areas of focus identified in the 2025-26 Network Environmental Performance Measures.

(d) **Notes** that the following areas for improvement have been identified and will be progressed from existing budgets and where necessary additional budgets sought via the Annual Plan / Long Term Plan process:

- Improve overflow monitoring and measuring capability at wastewater treatment plant overflow points and wastewater pump stations. This improves data quality, levels of service and consent compliance reporting.
- Develop an inflow and infiltration strategy to improve wastewater network performance and reduce wet-weather overflow risks.
- Expand the existing public education programme to reduce wastewater overflows and improve levels of service.
- Review the CCTV Maintenance Contract for opportunities to expand CCTV inspection coverage towards the 30% inspections over a 5-year period international benchmark to improve asset condition understanding and inform planning decisions.
- Undertake further work to better understand and quantify wastewater process emissions for future reporting requirements.
- Investigate the potential for implementation of pressure management across all drinking water supplies to improve water loss management and levels of service.
- Investigate the potential for implementation of district metered areas across all drinking water supplies to improve water loss management and future network planning.
- Consider transitioning to smart water meters to improve data quality, water loss management, residential water use and future network planning.
- Implement targeted leakage intervention works across all drinking water supplies to improve water loss management.
- Improve the fire hydrant testing procedure to enhance data quality and compliance reporting.

(e) **Notes** that the Network Environmental Performance Measures provides numerous performance metrics which can be used for comparative purposes on specific matters nationwide.

(f) **Notes** that the Network Environmental Performance Report for the 2025-26 reporting year will be published by the Authority in 2027 and Council's performance will be reported through to the Utilities and Roading Committee.

6 PORTFOLIO UPDATES

6.1 **Roading – Deputy Mayor Philip Redmond**

6.2 **Drainage, Stockwater and Three Waters (Drinking Water, Sewer and Stormwater) – Councillor Tim Fulton**

6.3 **Solid Waste– Councillor Niki Mealings**

6.4 **Transport – Mayor Dan Gordon**

7 REPORT FOR INFORMATION

7.1 **Proposal for New Water Supply Bore and Site Upgrades at Gladstone Park**

229-298

RECOMMENDATION

THAT the Utilities and Recreation Committee:

(a) **Receives** the information in item 7.1.

8 QUESTIONS UNDER STANDING ORDERS

9 URGENT GENERAL BUSINESS

10 MATTERS TO BE CONSIDERED WITH THE PUBLIC EXCLUDED

In accordance with section 48(1) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by section 6 or section 7 of that Act (or sections 6, 7 or 9 of the Official Information Act 1982, as the case may be), it is moved:

That the public be excluded from the following parts of the proceedings of this meeting:

11.1 Confirmation of Minutes 13 October 2026

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

Item No.	Subject	Reason for excluding the public	Grounds for excluding the public.
REPORTS			
11.1	Confirmation of Minutes 13 October 2026	Good reason to withhold exists under Section 7	To enable any local authority holding the information to carry out, without prejudice or disadvantage, commercial activities. **LGOIMA Section 7 (2)(h)**

NEXT MEETING

The next meeting of the Utilities and Roading Committee is scheduled for Tuesday 8 December 2026 at 9am in the Council Chamber, Rangiora Service Centre, 215 High Street, Rangiora.

Workshop

- *Proposed Programme for New Kerb and Channel – Aaron Kibblewhite (Senior Project Engineer) and Aimee Hurley (Civil Project Graduate Engineer) 30mins*
- *Rural Road Seal Extension Policy Review – Joanne McBride (Roading and Transport Manager) and David McGonigal (Senior Road Maintenance Advisor) 30mins*
- *Mandeville Sewer Servicing Constraints – Kalley Simpson (3 Waters Manager) 30mins*

WAIMAKARIRI DISTRICT COUNCIL

MINUTES OF A MEETING OF THE UTILITIES AND ROADING COMMITTEE HELD IN THE COUNCIL CHAMBER, RANGIORA SERVICE CENTRE, 215 HIGH STREET, RANGIORA, ON TUESDAY, 13 OCTOBER 2026 AT 9AM.

PRESENT:

Deputy Mayor P Redmond (Chairperson), Councillors T Bartle (audio-visual), T Fulton, N Mealings, J Ward, B McLaren (audio-visual), and S Powell (audio-visual).

IN ATTENDANCE:

J Millward (Chief Executive), G Cleary (General Manager Utilities and Roading), K Simpson (3 Waters Manager), C Fahey (Water and Wastewater Asset Manager), J McBride (Roading and Transport Manager), J Eggleton (Project Planning and Quality Team Leader), K Straw (Civil Projects Team Leader); S Binder (Senior Transportation Engineer), S Ashley (Drinking Water Safety Compliance Specialist); and T De Rooy (Governance Support Officer)

1 APOLOGIES

Moved: Deputy Mayor Redmond Seconded: Councillor Fulton

THAT the Utilities and Roading Committee:

(a) **Received** and **sustained** an apology for leave of absence from Mayor Gordon.

CARRIED

2 CONFLICTS OF INTEREST

No conflicts of interest were declared.

3 CONFIRMATION OF MINUTES

3.1 Minutes of the meeting of the Utilities and Roading Committee held on Tuesday, 8 September 2026

Moved: Councillor Fulton Seconded: Councillor Ward

THAT the Utilities and Roading Committee:

(a) **Confirms** the circulated Minutes of the meeting of the Utilities and Roading Committee held on 8 September 2026 as a true and accurate record.

CARRIED

3.2 Matters Arising (From Minutes)

There were no matters arising from the minutes.

4 DEPUTATION/PRESENTATIONS

Nil.

UNCONFIRMED

5 REPORTS

5.1 **Cam River Enhancement Fund Projects for 2026-2027** – S Allen (Water Environment Advisor)

K Simpson took the report as read, noting that approval was being sought for the projects proposed to be funded by the Cam River Enhancement Fund in 2026-27. He provided a brief overview of the projects being funded by the Cam River Enhancement Fund in 2026-27.

Deputy Mayor Redmond queried whether drainage staff had any concerns about access for future maintenance after completion of the proposed works, and whether there would be any maintenance implications. K Simpson advised that all works had been reviewed by the drainage team and would not compromise future maintenance of the waterways or drainage infrastructure.

Councillor Fulton referred to the report's reference to the Tuahiwi Stream being identified as a waterway in *Environment Canterbury's StreamLink data* for sediment control purposes and sought clarification regarding the sediment issue. K Simpson explained that excessive sediment loading adversely affects stream health. Certain lowland streams within the district are expected to have gravel streambeds, which provide important habitat for aquatic species. Excess sediment entering these waterways could smother these habitats and create ecological issues. He further advised that sediment traps had been installed in the lower reaches of the Tuahiwi Stream and Middle Brook, with sections excavated deeper than the stream bed to enable the regular removal of accumulated sediment. K Simpson noted that drains and waterways within the catchment experience high sediment loads and that efforts to address this issue include streambank stabilisation works, stock grazing setbacks, and the establishment of riparian planting and fencing further back from drains and waterways. These measures are intended to reduce sediment entering the catchment and improve waterway health.

Councillor Fulton sought clarification on the implications of anticipated urban growth in the area and questioned what measures and policies were in place to prevent additional sediment from entering waterways as a result of private development, construction activities, and housing growth. K Simpson observed that construction-related sediment management was generally addressed through Erosion and Sediment Control Plans, which outline how earthworks and construction activities were to be managed on site. Depending on the nature and scale of the works, a discharge consent from Environment Canterbury may also be required. In other cases, effective sediment management was achieved through good construction management practices. Regarding broader urban development, K Simpson advised that the Council's operational approach included ensuring structures were appropriately set back from waterways and that sufficient access was maintained for ongoing maintenance activities.

Moved: Councillor Mealings Seconded: Councillor Ward

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 260907269738.

(b) **Notes** that there is $166,670 remaining in the Cam River Enhancement Fund as of 1 September 2026.

UNCONFIRMED

(c) **Approves** the allocation of the Cam River Enhancement Fund budget to the Recommendations as proposed in Table 1 below:

Project name	Proposed allocation ($)	Rationale for allocation
Tuahiwi Stream (Waituere) - Tuahiwi Road private property	Replacement and setback 3m of existing fencing –190m at $30/m = $5,700, and two gates for an estimated $1,000 Native planting- supply and planting of 600 m^2 at an estimated $8,000, including plant maintenance for 3 years Weed control – Provided by the landowner	Priority waterway from Environment Canterbury 'Streamwalk' data for sediment control and habitat improvement. Cultural values within Māori Reserve 873
Tuahiwi Stream (Waituere) - Church Bush Road private property	Willow removal - $8,000 estimated for both true left and true right sides of the waterway Fencing replacement with larger setback of 3 metres - 131 m at $30/m = $3,930, and $1,000 for a fenced-off stream crossing. Native planting – supply, planting and maintenance costs for 450 m^2, an estimated cost of $6,000 Water pipe and trough for stock water supply– provided by landowner	Priority waterway from Environment Canterbury 'Streamwalk' data for sediment control and habitat improvement. Cultural values within Māori Reserve 873
Greens Road Tuahiwi Stream (Waituere) Road Reserve	Bank stabilisation works – an estimated cost of $8,000 including traffic management costs Biodegradable matting and topsoil – an estimated cost of $1,000 Low native plantings and maintenance for 3 years – an estimated cost of $1,000	Priority waterway from Environment Canterbury 'Streamwalk' data for sediment control Road reserve erosion control Cultural values within Māori Reserve 873
Sediment trap emptying (2 sites on the Tuahiwi Stream (Waituere), 3 sites on the Middle Brook)	Sediment removal from existing sediment traps – an estimated cost of $5,000	Tuahiwi Stream (Waituere) is a priority waterway from Environment Canterbury 'Streamwalk' data for sediment control
South Brook private land and WDC drainage reserve and esplanade reserve	Bank stabilisation works – an estimated cost of $15,000 Native planting – an estimated cost of $5,000	Sediment control
TOTAL	**$68,090**	

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(d) **Notes** the works completed under Cam River Enhancement Fund budget in 2025-26.

(e) **Notes** that some projects are outstanding as approved by the Committee on 21 November 2023 and 19 August 2025 but are still intended to be completed.

(f) **Notes** that approved projects will be provided to North Canterbury Fish and Game seeking their agreement, and the Department of Conservation – Rangiora Office for consultation before proceeding, as per the conditions of use for the Cam River Enhancement Fund.

(g) **Circulates** this report to the Rangiora-Ashley and Kaiapoi-Tuahiwi Community Boards, the Central Rural Drainage Advisory Group, and at a Te Ngāi Tūāhuriri Rūnanga – WDC meeting.

CARRIED

Councillor Mealings noted that the fund established in 2021, with annual contributions of $25,000 over five years, had accumulated a significant balance that could now be utilised to undertake environmental improvement works. She commented that there was now a broader range of projects available for delivery and greater funding capacity to support them. Councillor Mealings supported the projects outlined in the report.

Councillor Ward also supported the motion, emphasising the importance of protecting waterways and referred to recent development activity in Southbrook, where developers had installed polyethene sediment-control measures adjacent to waterways to minimise the risk of sediment entering streams during construction. She acknowledged these efforts as a positive contribution to waterway protection and expressed support for the recommendation.

Deputy Mayor Redmond believed that while the proposed initiatives represented relatively small steps, they were expected to have a positive impact on freshwater environments. He also referred to comments made on social media suggesting that sediment had no effect on waterways, stating that such a claim was incorrect. Deputy Mayor Redmond noted that sediment could have significant adverse effects on freshwater ecology and referred to a presentation by the Waimakariri Biodiversity Trust. He further commented that the fund, which had begun as a relatively small investment, had grown substantially over time due to prudent management, and that the projects proposed had the potential to make a meaningful difference while leaving funding available for future initiatives. Deputy Mayor Redmond also supported the motion

Councillor Fulton expressed support for the motion and commented on observations of similar erosion and sediment-control practices used in Christchurch. He noted that some contractors utilised biodegradable wool matting as a sediment-control measure and that a range of complementary approaches could be employed, including fencing setbacks, provided these were supported by appropriate weed management. Councillor Fulton also noted that adequate funding was available to support the proposed works.

Councillor Mealings commented that the effects of sediment on waterways were often underestimated and noted that sediment could be one of the most significant contaminants affecting stream health. She highlighted the adverse impacts of sediment on freshwater ecosystems and the habitat values of waterways. Councillor Mealings noted that the proposed projects represented important work and expressed her support for the initiatives, stating that she looked forward to seeing the results achieved.

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5.2 **Approval of Quarterly Monitoring Report for July to September 2026** – J Eggleton (Project Planning and Quality Team Leader), K Simpson (3 Waters Manager) and G Cleary (General Manager Utilities and Roading)

J Eggleton presented the Quarterly Monitoring Report - Water Services Delivery Plan for the period July to September 2026. She noted that the report was required to monitor progress on implementing the Waimakariri District Council Water Services Delivery Plan (WSDP). The report was scheduled for submission to the Ministry for Cities, Environment, Regions and Transport (MCERT) by 30 October 2026 and had been prepared using MCERT's business unit reporting template. J Eggleton advised that this was the third quarterly monitoring report submitted under the implementation and monitoring requirements for Council's internal water services business unit.

Councillor Fulton sought clarification as to whether the monitoring report related to operational or financial monitoring and questioned the scope of the reporting requirements. J Eggleton confirmed that the report related to the operational delivery of the programme and provided a high-level overview of progress against key transition requirements. This included delivering compliance documentation, the Water Services Strategy, and information disclosures required by the Water Services Commissioner. She noted that separate operational reporting processes remained in place for matters such as drinking water compliance and wastewater discharge consents throughout the year. J Eggleton further advised that the monitoring report was an important mechanism for providing the Government with assurance that the Council was delivering its water services obligations in accordance with the new legislative requirements and remained on track to achieve the required outcomes. G Cleary reported on the correspondence received regarding the Water Services Delivery Plan.

Deputy Mayor Redmond noted that aspects of the process appeared to be slightly behind schedule and queried whether this was impacting other workstreams. J Eggleton observed that the delays related specifically to the development of Service Level Agreements and did not affect any other documents, compliance obligations, or transition requirements under the Water Services Delivery Plan. She advised that 14 Service Level Agreements were being developed across various Council business units, including Water Services, Information Technology, Governance, and Utilities and Roading. It was noted that these agreements were internal arrangements between business units and were not considered critical to programme delivery. G Cleary commented that there was an agreed implementation timeframe for adoption of the agreements over a twelve-month period. The first draft had been provided to the management team during the week and was currently under review.

Moved: Councillor Ward Seconded: Councillor Fulton

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261001296871.

(b) **Approves** the attached quarterly monitoring report – water services delivery plan July –September 2026 for submission to the Ministry for Cities, Environment, Regions and Transport (MCERT).

(c) **Notes** that a quarterly monitoring report will be provided for review each quarter prior to submission to the Ministry for Cities, Environment, Regions and Transport (MCERT).

UNCONFIRMED

(d) **Notes** that all planned activities are complete or remain on track, except for the Water Services Service Delivery Agreements (SLAs), which have been prepared and are currently undergoing review. Due to the volume of agreements (14 in total), the review process has exceeded the original timeframe. As no other deliverables or requirements are dependent on the approval of these agreements, the delay has not affected the progress of any other workstreams.

CARRIED

Councillor Ward acknowledged the significant scale and complexity of the Water Services Transition Programme and commended staff for their work in keeping Council informed and ensuring progress remained on track. She noted that substantial effort was required to meet the new legislative and regulatory requirements and expressed appreciation for staff's ongoing commitment to compliance.

Councillor Fulton observed that the Council was operating within a new environment of increased expectations regarding service delivery, reporting, and oversight by a new government agency. He noted that it was reassuring that the Council remained well positioned to meet these requirements and acknowledged the considerable work undertaken by staff. Councillor Fulton supported the motion.

Deputy Mayor Redmond also expressed support for the motion and commented on the significant volume of documentation and reporting required to establish and operate the internal business unit, despite the Council already delivering water services. He noted that achieving and maintaining compliance with the new regulatory framework was a complex undertaking and acknowledged the considerable work being carried out by staff in this area.

Councillor Ward further acknowledged the expertise of Council staff in managing the transition process and noted that having the necessary capability in-house had provided significant value to Council. She commented that the transition could have resulted in substantially higher costs if external expertise or a council-controlled organisation model had been required.

J Millward advised that there were additional costs associated with the transition, including the requirement for water services to undergo a separate audit process. He noted that this would result in approximately $100,000 in additional audit costs over and above the Council's normal audit programme. It was further advised that a report on these additional costs would be presented to the Audit and Risk Committee later in the month.

5.3 **Drinking Water Quality and Compliance Annual Report 2025/26** – S Ashley (Drinking Water Safety Compliance Specialist) and C Fahey (Water and Wastewater Asset Manager)

S Ashley spoke to the report and provided an update on the results of the Annual Drinking Water Quality and Compliance Review for all Council-owned drinking water supplies for the 2025-26 compliance year. The assessment was based on the requirements of the Water Services Act (2021) and Drinking Water Assurance Rules (DWQAR) and was aligned with the updated Department of Internal Affairs (DIA) Non-financial Performance Measures Rules 2024.

Councillor Fulton questioned the reported 13-day analyser outage, including the associated risks and the duration of the monitoring failure, noting that the matter had received media attention. C Fahey advised that the outage related to the chlorine analyser at the treatment plant, which was not measuring chlorine residuals during the period in question. As a result, staff were unable to verify the chlorine levels being recorded by the analyser at that time. However, routine sampling and testing continued throughout the outage and confirmed that chlorine treatment remained operational and effective. C Fahey emphasised that the issue was a monitoring failure rather than a treatment failure, and that there had been no fault with the water treatment process itself. Improvements were

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required to ensure monitoring data was captured accurately and could be demonstrated to the regulator. The matter constituted a technical non-compliance relating to monitoring requirements and did not reflect any deterioration in the quality or safety of the water supply.

Deputy Mayor Redmond sought confirmation that the water supply had remained safe and that the issue related to increased monitoring requirements rather than water quality. G Cleary explained that Council's water supplies were sourced from secure groundwater, with the exception of Garrymere. All water was treated using ultraviolet (UV) disinfection to protect against bacterial and protozoal contamination, and chlorination was applied to provide ongoing protection against bacteria throughout the reticulation network. He explained that monitoring systems were in place to verify that these treatment processes were functioning correctly; however, providing safe drinking water was complex and relied on multiple treatment plants, monitoring systems, and backup equipment. G Cleary emphasised that staff had no concerns regarding the quality or safety of the water supply during the outage, as other safeguards and verification processes remained in place. Assurance was provided that there was a high level of confidence in the quality of the drinking water, the effectiveness of treatment processes, and the robustness of the Council's water supply systems.

Deputy Mayor Redmond enquired whether real-time monitoring had been introduced or whether it was planned as a future enhancement. S Ashley advised that the reported non-compliance related to a failure of the real-time monitoring system during the relevant period. The treatment processes remained operational; however, the monitoring equipment was not functioning as required, so the Council could not demonstrate continuous compliance through real-time data recording.

Councillor Fulton sought clarification regarding the Garrymere Water Supply and the measures in place to ensure water quality. C Fahey observed that the Garrymere supply differs from the Council's other water supplies as it was sourced from a shallow groundwater source and was therefore more reliant on treatment processes and associated protections. G Cleary noted that both chlorination and ultraviolet (UV) treatment were utilised to ensure the safety of the supply. He further advised that a second well had recently been commissioned to improve the scheme's resilience and that no additional upgrades were currently considered necessary. Assurance was provided that there were no concerns regarding the quality or safety of the Garrymere water supply.

Moved: Deputy Mayor Redmond Seconded: Councillor Mealings

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 260921285084.

(b) **Notes** that the assessment of Council’s drinking water compliance for the 2025-26 compliance year is based on the requirements of the Water Services Act 2021 and Drinking Water Assurance Rules (DWQAR) and is aligned with the updated DIA Non-financial Performance Measures Rules 2024 (the Rules).

(c) **Notes** that results achieved for the 2025–26 compliance period were very good, particularly given that the DWQAR requirements came into immediate effect in November 2022. Council had a very short timeframe to respond yet successfully implemented an accelerated UV programme across the district within the legislative deadline.

UNCONFIRMED

(d) **Notes** that for the 2025-26 compliance year, all drinking water supplies that had chlorine and UV treatment installed for the entire period achieved either “All Met (100%)” or “Almost Met (95-99.99%)” compliance grading. Ohoka did not achieve full compliance mainly due to UV treatment installation during the reporting period and some UV commissioning issues, plus chlorine treatment non-compliances not identified in prior audits.

(e) **Notes** that as of 1 November 2025, UV treatment has been installed on all of Council’s drinking water supplies and is fully operational. Treatment is fully compliant with the DWQAR.

(f) **Notes** that the results for the 2025-26 assessment period are a significant improvement over previous years. This is mainly due to finishing the installation of UV treatment at all supplies, which enables bacterial and protozoal compliance to be met, as well as improvements in data integrity.

(g) **Notes** that the level 3 treatment rules will be updated in July 2027 to require continuous chlorine monitoring at all treatment plants except Garrymere. Some procurement of new turbidity analysers will be required to meet these rules.

(h) **Circulates** this report to the Community Boards for their information.

(i) **Circulates** a copy of this report to Te Ngāi Tūāhuriri Rūnanga for their information.

CARRIED

Deputy Mayor Redmond thanked staff for the report and noted that the introduction of UV treatment appeared to have had a positive impact on the district's water supplies. He expressed confidence that Council continued to provide a safe and reliable drinking water supply that was subject to rigorous monitoring. Deputy Mayor Redmond noted that residents could be confident in the quality of the Waimakariri District's water supply.

Councillor Mealings welcomed S Ashley to the team and expressed satisfaction with the results achieved. She commented that the district continued to receive the high-quality water supply it had historically enjoyed and acknowledged the efforts of staff responsible for managing and maintaining the network. Councillor Mealings also recognised the Council's achievement in implementing UV treatment across the district within the required legislative timeframe and thanked staff for their work in ensuring the ongoing safety of the community's drinking water.

Councillor Fulton noted that many of the water supply schemes referred to in the report had recently undergone significant upgrades funded through water rates. He acknowledged the investment required to deliver improvements to treatment plants, including the implementation of UV treatment and chlorination systems, and observed that ongoing funding was necessary to maintain these critical assets and services. Councillor Fulton thanked staff for the report and expressed his support for the recommendation.

6 PORTFOLIO UPDATES

6.1 **Roading** – Deputy Mayor P Redmond

- Pre-seal repairs and drainage improvement work continued in preparation for the commencement of the road sealing season.
- The Williams Street Kerb and Channel Replacement Project, south of Smith Street, was reported as substantially complete, with only minor remedial and tidy-up works remaining.

UNCONFIRMED

- The Lees Valley Cattle Stop Project was completed, and the road had subsequently been reopened to traffic.
- A Kickstart Motorcycle Event was held in Kaiapoi during the month to promote motorcycle safety and rider awareness. The event was attended by more than 100 participants.

6.2 **Drainage, Stockwater and Three Waters (Drinking Water, Sewer and Stormwater)** – Councillor T Fulton

- Water Supply
  - A meeting with High Street business owners was held during the week to discuss the proposed watermain renewal project. The project would be a significant infrastructure undertaking for the Rangiora town centre. The Advisory and Liaison Groups would be established to facilitate ongoing engagement and communication with affected stakeholders and to minimise disruption to businesses during the construction period.
  - Water conservation communications would be issued in advance of the summer period. Current forecasts indicated the potential for hot and dry conditions, which were expected to place increased demand on the district's water supplies. The communications would encourage residents to use water responsibly and support water conservation efforts over the summer months.
- Wastewater
  - Desludging works at the Kaiapoi Wastewater Treatment Plant (WWTP) were completed during the reporting period.
  - A follow-up visit to the Kaiapoi Wastewater Treatment Plant with key representatives of the Kaiapoi River Preservation Society had been scheduled for 2 November 2026. The visit was intended to provide an opportunity for further engagement and discussion regarding plant operations and matters of interest to the Society.
- Drainage / Stockwater
  - Blackett Street Stormwater Upgrade works were reported as progressing well and remained on schedule, with completion anticipated by mid-November 2026.
  - Tenders for the Petries Road Detention Pond Project in eastern Woodend had closed. Subject to final approvals and contractor engagement, construction was expected to commence and be completed prior to Christmas.
  - The Mandeville Park Drive Mower Bridge Replacement Project was scheduled to be undertaken during the month.

6.3 **Solid Waste**– Councillor N Mealings

- Consultation on the Waste Management and Minimisation Plan (WMMP) had closed. Submissions were currently being reviewed, and preparations were underway for the hearing process.
- A visit was planned to the newly established ECO E-Waste facility in Rangiora, together with Felix Recycling, which provides battery recycling services. The facilities were acknowledged as valuable additions to the district's waste and recycling infrastructure.
- An update was provided regarding Canterbury Waste matters.
- Representatives from Transwaste were expected to attend a future meeting to provide a presentation and discuss relevant matters, with the date yet to be confirmed.

UNCONFIRMED

Deputy Mayor Redmond sought clarification from Councillor Mealings regarding the two facilities proposed for inspection and queried whether they were located within the district. Councillor Mealings advised that both facilities were located in Christchurch.

6.4 **Transport – Mayor Dan Gordon**

Nil.

7 REPORTS REFERRED FROM COMMUNITY BOARDS

7.1 **Request approval of No-Stopping Restrictions on Railway Road** – S Binder (Senior Transportation Engineer) and N Puthupparambil (Transportation Engineer)

S Binder took the report as read.

Deputy Mayor Redmond commented that the school was very supportive of the proposal. He queried whether time-based restrictions, such as limiting the controls to specific days or times, had been considered as an alternative to a full-time restriction. S Binder explained that time-restricted options had been considered during the assessment process. However, staff recommended implementing a No Stopping at Any Time restriction because it provided a clear and consistent message to road users. S Binder noted that an all-day restriction would be simpler to understand, improve compliance, and be easier to enforce than restrictions applying only during specified times or days.

Moved: Councillor Mealings Seconded: Deputy Mayor Redmond

THAT the Utilities and Roading Committee:

(a) **Approves** installation of the following No-Stopping restriction:

i. The west side of Railway Road from Torlesse Street to Gefkins Road (being a length of 80m).

CARRIED

Councillor Mealings advised that the proposal had been initiated by Southbrook School and subsequently supported by the Rangiora-Ashley Community Board. She supported the motion.

Deputy Mayor Redmond also supported the motion, noting that the Community Board had carefully considered the matter and received support from those affected by the proposal. He further commented that the road was relatively narrow in the area concerned and considered that the proposed No Stopping at Any Time restrictions would provide safety and traffic management benefits.

7.2 **Request to Approve No-Stopping Restrictions on Courtenay Drive** – J McBride (Roading and Transport Manager) and N Puthupparambil (Transportation Engineer)

S Binder took the report as read.

Councillor Fulton referred to Figure 1 of the report and queried the proposed road-marking treatment, noting that the painted no-stopping lines appeared to be an unusual configuration near a railway crossing and barrier arms. S Binder explained that the markings were intended to maintain clear sightlines and provide sufficient space for cyclists. Staff noted that the available road width was limited and that it was important to discourage vehicles from parking too close to the crossing area in order to improve safety for all road users.

UNCONFIRMED

Deputy Mayor Redmond noted that the proposal arose from a submission by a local resident who raised concerns about the intersection layout. J McBride observed that the proposed no-stopping restrictions would help ensure vehicles remained within the traffic lane and improve the overall operation of the intersection.

Moved: Deputy Mayor Redmond Seconded: Councillor Fulton

THAT the Utilities and Roading Committee:

(a) **Approves** installation of an additional length of 18m of No-Stopping restrictions on the north side of Courtenay Drive, from the end of the existing No-Stopping restriction to the driveway to No. 104 Courtenay Drive.

(b) **Notes** that targeted consultation was undertaken with the two adjacent properties regarding the proposed No-Stopping restrictions on Courtenay Drive, and that positive feedback was received.

CARRIED

Deputy Mayor Redmond further commented that the location was not a high-volume traffic area and that the proposal was not considered a high-priority project. However, he considered that introducing the no-stopping restrictions would improve visibility and openness at the intersection, resulting in a worthwhile safety improvement. Deputy Mayor Redmond supported the recommendation and noted that the Kaiapoi-Tuahiwi Community Board had endorsed it.

Councillor Fulton commented that the proposed changes would improve the safety and operation of the intersection, particularly in relation to the interaction between road traffic and the railway crossing. He expressed his support for the motion.

Deputy Mayor Redmond concluded that the proposal represented a relatively low-cost safety improvement, as the works primarily involved installing road markings and no-stopping lines rather than significant infrastructure investment.

7.3 **Relocation of Bus Stops – Williams Street** – J McBride (Roading and Transport Manager) and K Straw (Civil Projects Team Leader)

K Straw advised that concerns had been raised that the proposed relocation could obstruct views. However, investigations identified sight distances of approximately 515 metres in one direction, compared with 250 metres in the opposite direction. He noted that the proposed relocation would effectively position the bus stop midway between these distances while providing better alignment with the walkway, café, and preschool. The preschool had expressed concerns about potential noise impacts from buses, particularly for sleeping children, and requested that the bus stop be relocated closer to the reserve. It was noted that the preschool would support the proposal if this amendment were made.

Deputy Mayor Redmond enquired whether consultation had been undertaken with the occupants of 416 and whether they supported the proposed location. K Straw advised that consultation had not occurred with those occupants and that discussions had only been held with the preschool. He noted that the preschool had access to off-street parking. It was further noted that the property at 416 also had off-street parking available.

Moved: Councillor Fulton Seconded: Deputy Mayor Redmond

THAT the Utilities and Roading Committee:

(a) **Approves** the relocation of existing Bus Stop No. 13811 (northbound) to be located opposite No. 414 Williams Street.

UNCONFIRMED

(b) **Approves** the relocation of existing Bus Stop No. 42260 (southbound) to be located at the southern boundary of No. 414 Williams Street.

(c) **Notes** that, as per Section 339 of the Local Government Act 1974, all impacted properties have been consulted on the relocation of the bus stop and the installation of the proposed bus shelter and that minor changes to the exact location were made as a result of this consultation.

(d) **Notes** that Environment Canterbury has been consulted on the proposal, and they have no concerns.

(e) **Notes** that should the recommendations of this report be approved, staff will proceed with the relocation of the bus stops, and the installation of the concrete foundation slab for the proposed bus shelter within the 2026 / 27 year, but that the installation of the shelter will not proceed until the 2027 / 28 year.

CARRIED

Councillor Fulton noted that a wide range of community considerations had been carefully assessed and respected, with significant time and effort invested in evaluating the proposal. He acknowledged that while the proposed location might not be ideal for everyone, a balance of competing interests needed to be considered, including potential impacts on nearby residents and families. Councillor Fulton was pleased to see the recommendation progressing and supported its adoption.

Deputy Mayor Redmond supported the motion, noting that the Kaiapoi-Tuhiwai Community Board also supported it. He further commented that locating the bus stop closer to local businesses could create additional opportunities and benefits for the area.

Councillor Mealings referred to the correction of discrepancies relating to the distances between bus stops and noted that the proposed location would be situated adjacent to a business rather than directly outside a residential property. She observed that concerns about noise are often raised when bus stops are located outside homes and considered the proposed location to be more appropriate. Councillor Mealings noted that the site was adjacent to the walkway, would not obstruct views of the golf course, and had been selected following careful consideration. Councillor Mealings considered the proposal to represent a positive outcome and expressed her support for the recommendation.

8 QUESTIONS UNDER STANDING ORDERS

Nil.

9 URGENT GENERAL BUSINESS

Nil.

10 MATTERS TO BE CONSIDERED WITH THE PUBLIC EXCLUDED

In accordance with section 48(1) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act, it was moved:

UNCONFIRMED

Moved: Deputy Mayor Redmond Seconded: Councillor Ward

That the public be excluded from the following parts of the proceedings of this meeting:

10.1 Confirmation of Minutes 8 September 2026
10.2 Briefing Notes 8 September 2026
10.3 S17A Review Kerbside Collection Services and Transfer Station Operations and Maintenance Contracts

The general subject of each matter to be considered while the public was excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution were as follows:

Item No.	Subject	Reason for excluding the public	Grounds for excluding the public.
CONFIRMATION OF MINUTES			
10.1	Confirmation of Minutes 8 September 2026	Good reason to withhold exists under Section 7	To enable any local authority holding the information to carry out, without prejudice or disadvantage, commercial activities. **LGOIMA Section 7 (h).**
10.2	Briefing Notes 8 September 2026	Good reason to withhold exists under Section 7	To enable any local authority holding the information to carry out, without prejudice or disadvantage, commercial activities. **LGOIMA Section 7 (h).**
REPORT REFERRED FROM THE SOLID AND HAZARDOUS WASTE WORKING PARTY			
10.3	S17A Review Kerbside Collection Services and Transfer Station Operations and Maintenance Contracts	Good reason to withhold exists under Section 7	To enable any local authority holding the information to carry out, without prejudice or disadvantage, commercial activities. **LGOIMA Section 7 (h).**

CARRIED

CLOSED MEETING

The Public Excluded portion of the meeting commenced at 9.56 am and concluded at 10.03 am.

OPEN MEETING

11 NEXT MEETING

The next meeting of the Utilities and Roading Committee was scheduled for Tuesday 17 November 2026 at 9am in the Council Chamber, Rangiora Service Centre, 215 High Street, Rangiora.

THERE BEING NO FURTHER BUSINESS, THE MEETING CONCLUDED AT 10.03 AM.

CONFIRMED

_____
Chairperson

UNCONFIRMED

_____
Date

UNCONFIRMED

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	RDG-01 / 261021340059
REPORT TO:	UTILITIES AND ROADING COMMITTEE
DATE OF MEETING:	17 November 2026
AUTHOR(S):	Joanne McBride, Roading and Transport Manager Don Young, Senior Engineering Advisor
SUBJECT:	Jelfs Road - Extension of Maintenance Length
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager / Chief Executive

1. SUMMARY

1.1. The purpose of this report is to seek a decision on the extent of maintenance on Jelfs Rd.

1.2. The Council has a long-standing established end to its maintained length, which is formalised in its asset register, and instructed in the Road Maintenance Contract.

1.3. During the last decade, an informal turnaround area has been established by a third party, which provides some functionality to the local residents that access the road, the road maintenance contactor, and the general public.

1.4. Recently the local residents have raised a number of wider issues about Council-maintained services in that area, in particular relating to drainage and roading.

1.5. Extending the maintained area would assist with a significant portion of the roading concerns, however, is for a very low volume portion of the network.

1.6. It is recommended that Council considers maintaining an extra 30m of the turnaround area, noting that this would be maintained to a low level of service as is appropriate for this category of road.

1.7. The wider drainage concerns are being dealt with by staff separately.

2. RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261021340059.

EITHER:

(b) **Declines** the request to extend the maintained road for a length to include the informal turnaround area.

OR:

(c) **Approves** the extension of the maintained road for a length of 30m on Jelfs Rd from RP550 to RP580 (as per Figure 5), to include the informal turnaround area, at an expected total cost of $3,000 ($1,000 as an initial cost, with a further $2,000 in the next 1-2 years), with minimal additional annual cost, to be funded from existing budgets from the Unsealed Pavement Maintenance budget.

(d) **Notes** that if approval is granted for the turning head is to be maintained, then it will be maintained on an "As Required" basis and to a low level of service.

3. BACKGROUND

3.1. The Council's roading network consists of many kilometres of legal road reserve, of which as proportion is actively maintained. The extent of the maintained length has previously been determined by custom and practice over many years and has then been formalised into the Roading Activity Management plan, and subsequently into the schedule of maintained roads included in the Road Maintenance Contract.

3.2. In the majority of cases, this initial decision is relatively straight-forward, and there is no reason to change or challenge it. However, at times changes to the environment occur, and this necessitates a review of the exact extent that a road is maintained to.

3.3. Recently, the Council has received queries from the locals about the extent of maintenance on Jelfs Rd (amongst other concerns). In this instance, the concerns raised are around a large turnaround area past the end of the maintained length, which is poorly formed with resulting drainage issues. This turnaround area is used by two or three local residences for access and also is utilised by the maintenance crews for turning at the end of the road.

3.4. The turnaround was not formed by the Council and appears to have been established over time as neighbouring properties developed and created accesses on to the legal road.

4. A similar report was taken to the Utilities & Roading Committee in November 2024, following a request for an additional length of Taaffes Glen Road to be maintained. The Utilities & Roading Committee agreed to provide infrequent assistance but not take over the overall responsibility of the road. KEY ISSUES

4.1. The current length of maintained road that is identified in the Council's maintenance register and included in the road maintenance contract schedule is to just past the last culvert (i.e. RP 0.550).



Figure 1 – Extent of maintained length of Jelfs Rd (current)



Figure 2 – Current extent of maintained length

4.2. There is an informal turnaround area beyond this point, which has been formed by a third party. It appears from aerial photos to have been formed between 2012 and 2014, about the time that a new equestrian facility was being constructed. There are no records indicating that this work was carried out by the Council or its contractors.



Figure 3 - 2012 Aerial Photo – end of Jelfs Rd



Figure 4 - 2014 photo – end of Jelfs Rd

4.3. The property that predominantly utilises direct access off of the informal turnaround area is the equestrian facility (to the right in Figure 4) and would be one of the key beneficiaries of the proposed change to maintenance. However, an additional residence is currently being built on the property in the bottom left of Figure 4.

4.4. It is noted that there is a new residence being constructed beyond the extent of the maintained road, however this does not automatically result in the Council extending the maintenance length. There are a number of instances around the district where those properties have a private right formed on the paper road with a Licence to Occupy for the private asset over underlying paper road, with maintenance being at the owner's cost. Private Right of Ways can feed up to six properties.

4.5. However, in this instance it could be considered that there is some wider public good that is provided by the informal turnaround area, in particular, it is utilised by the road maintenance grader to turn around. Therefore, in conjunction with the increased usage, this could be considered as a reasonable case to extend the maintained limits, on an "As required" only basis.

4.6. Staff have carefully considered the extent of the turnaround area that it would be appropriate for the Council to maintain. As the informal area is quite large, and was constructed to an unknown standard, it is prudent for the council to clearly define the area. This is indicated in Figure 5 below.

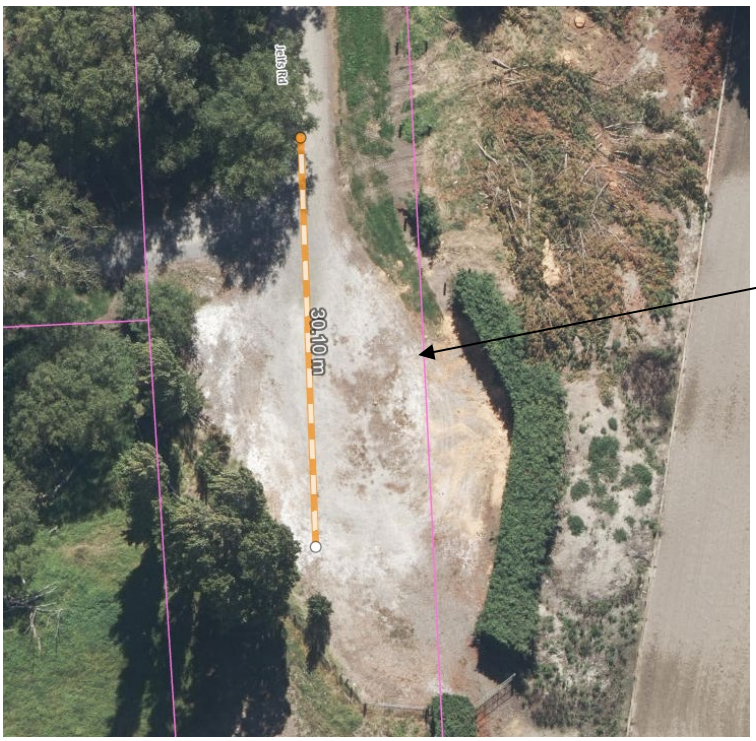


Figure 5 – Additional 30m proposed to be maintained

5. OPTIONS

5.1. The Utilities & Roading Committee has the following options available:

5.2. Option One – Extend the Maintenance Length by approximately 30m to include the turning head

This option involves extending the maintained area to RP 580.0. This would incorporate a turnaround area. This would better reflect current usage and would ensure an area that was effectively utilised by the general public is effectively maintained.

There would be some initial costs to bring the area up to a better standard (including placing some metal and carrying out a more intensive initial grade), and potentially the occasional extra loads of metal. However, the ongoing costs would be relatively minimal and can be covered under existing budgets.

5.3. Option Two – Retain the Status Quo

This option would see the Committee not extending the current maintained area and effectively retaining the status quo.

5.4. The Management Team has reviewed this report and supports the recommendations.

6. STRATEGIC ALIGNMENT AND COMMUNITY VIEWS

Mana Whenua Engagement

6.1. The subject matter and/or recommendations contained within this report are not likely to be of interest to mana whenua.

Groups, Organisations and the Wider Community

6.2. There are groups, organisations, or members of the wider community likely to be affected by, or to have an interest in, the subject matter of this report.

The Jelfs Rd residents have expressed their concern about the current arrangement and have requested the Council address a number of matters relating to both roading and drainage (including this issue). An on-site meeting with the local MP and Councillors has been held.

Implications for Community Wellbeing

6.3. There are implications on community wellbeing by the issues and options that are the subject matter of this report. The residents are concerned about the road and drainage condition, and the effects on their well-being.

Community Outcomes and Strategic Priorities

6.4. The Council's community outcomes are relevant to the actions arising from recommendations in this report.

- *Infrastructure and services are sustainable, resilient and affordable*

6.5. The Council's Strategic Priorities are relevant to the actions arising from recommendations in this report.

- *Advance an integrated and accessible transport network*

7. OTHER IMPLICATIONS AND RISK MANAGEMENT

Financial Implications

7.1. There are financial implications for the decisions sought by this report.

7.2. Funding is currently provided within the Annual / Long Term Plan.

- The initial estimate for this work is about $1,000, which is to place 2-3 loads of metal at the turnaround area, and then have it graded into place on the next grading round.
- Following that, a further cost of $2,000 will be required to place metal, shape and compact. This will be programmed in the next 1-2 years.
- Subsequently there will be minimal extra costs to maintain as it is only an incremental increase in grading length.
- This would be funded from the Unsealed Pavement Maintenance budget.

Community Resilience and Sustainability

7.3. The recommendations in this report do not have sustainability and/or climate change impacts.

Risk Management

7.4. There are no risks arising from the adoption/implementation of the recommendations in this report.

Health and Safety

7.5. There are no health and safety risks arising from the adoption/ implementation of the recommendations in this report. The Road Maintenance Contractor is SiteWise registered and required to provide a contract Health & Safety Plan.

8. CONTEXT

Consistency with Policy

8.1. This matter is not a matter of significance in terms of the Council's Significance and Engagement Policy.

Authorising Legislation

8.2. This matter is covered by the Local Government Act.

Authorising Delegations

8.3. The Utilities and Roading Committee has delegated authority to consider this matter.

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR INFORMATION

FILE NO and TRIM NO:	SEW 12 / 261031353240
REPORT TO:	UTILITIES AND ROADING COMMITTEE
DATE OF MEETING:	17 November 2026
AUTHOR(S):	Caroline Fahey, Water and Wastewater Asset Manager
SUBJECT:	Eastern District Sewer Scheme and Oxford Sewer Scheme Annual Compliance Report 2025 – 26
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager / Chief Executive

1. SUMMARY

1.1. The purpose of this report is to update the Utilities and Roading Committee on the consent compliance performance of the Eastern District Sewer Scheme (EDSS) and Oxford Sewer Scheme for the 2025-26 compliance year (1 July 2025 to 30 June 2026).

1.2. The Eastern District Sewer Scheme (EDSS) Ocean Outfall operates under Resource Consent CRC041162.2, together with twelve additional consents that enable operation of the wastewater scheme. Compliance with these consents is assessed at two levels:

- Whether monitoring results comply with the environmental limits specified in the consent conditions.
- Whether monitoring has been undertaken at the frequency required by the consent conditions.

1.3. Full compliance was achieved for all EDSS consent conditions relating to environmental limits during the 2025/26 monitoring period, except for low dissolved oxygen levels in some Woodend Wastewater Treatment Plant (WWTP) treatment ponds and instances where dissolved oxygen samples were collected outside the required monitoring timeframe. Apparent exceedances of the ocean outfall flow rate limit that were attributable to monitoring equipment errors rather than actual consent breaches. These issues did not affect the overall performance of the wastewater treatment systems or result in adverse environmental effects on the receiving environment.

1.4. The Oxford Sewer Scheme is operated under three Canterbury Regional Council (CRC) resource consents being CRC961013, CRC144561 and CRC184787. These consents do not require an annual compliance report however a report has been prepared as good practice.

1.5. Full compliance was achieved for all Oxford scheme consent conditions relating to environmental limits during the 2025-26 monitoring period, except for monitoring related irrigation depth exceedances and two isolated ponding incidents within the effluent disposal field. These issues have been addressed and did not affect the overall performance of the wastewater treatment system and had no adverse environmental effects on the receiving environment.

1.6. Environment Canterbury (ECan) are currently reviewing the Annual Compliance Monitoring Reports for the 2024-25 and 2026-26 periods. A full compliance report will be issued by ECan following the completion of their review.

Attachments:

i. Eastern District Sewer Scheme – Annual Compliance Monitoring Report 2025-2026 (TRIM 261102353518)

ii. Oxford Sewer Scheme – Annual Compliance Monitoring Report 2024-2025 (TRIM 261102353537)

2. RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261031353240.

(b) **Notes** that full compliance was achieved for all Eastern District Sewer Scheme (EDSS) Ocean Outfall consent conditions relating to environmental limits during the 2025-26 monitoring period, except for low dissolved oxygen levels in some Woodend Wastewater Treatment Plant (WWTP) treatment ponds and instances where dissolved oxygen samples were collected outside the required monitoring timeframe.

(c) **Notes** that apparent exceedances of the Ocean Outfall flow rate limit that were attributable to monitoring equipment errors rather than actual consent breaches. These issues did not affect the overall performance of the wastewater treatment systems or result in adverse environmental effects on the receiving environment.

(d) **Notes** that full compliance was achieved for the Oxford Sewer Scheme consent conditions relating to environmental limits during the 2024-25 monitoring period, except for monitoring related irrigation depth exceedances and two isolated ponding incidents within the effluent disposal field.

(e) **Notes** that the depth recording and ponding issues have since been addressed and did not affect the overall performance of the wastewater treatment system and had no adverse environmental effects on the receiving environment

(f) **Notes** that Environment Canterbury are currently reviewing the Annual Compliance Monitoring Reports for the 2023-24 and 2024-25 periods and a compliance report will be issued by Environment Canterbury following the completion of their review

(g) **Circulates** this report to all Community Boards for their information.

(h) **Circulates** a copy of this report to Te Ngāi Tūāhuriri Rūnanga and Te Kōhaka o Tūhaitara Trust for their information.

3. BACKGROUND

3.1. The purpose of this report is to update the Utilities and Roading Committee on the consent compliance performance of the Eastern District Sewer Scheme and Oxford Sewer Scheme for the 2025-26 reporting year.

Eastern District Sewer Scheme

3.2. The Rangiora, Kaiapoi, Woodend and Waikuku Beach Wastewater Treatment Plants (WWTP's) discharge into a pipeline (the Ocean Outfall), that discharges into Pegasus Bay between Pines/Kairaki Beach and Woodend Beach, approximately 1.5km off the coast. These WWTPs and the Ocean Outfall comprise the Eastern District Sewer Scheme (EDSS) that service just under 23,000 properties. Figure 1 below geographically shows the layout of the scheme. The EDSS operates under a number of resource consents from the Canterbury Regional Council. The main focus of this report is CRC041162.2, the consent that authorises the discharge of treated effluent into the coastal marine environment from the Ocean Outfall.

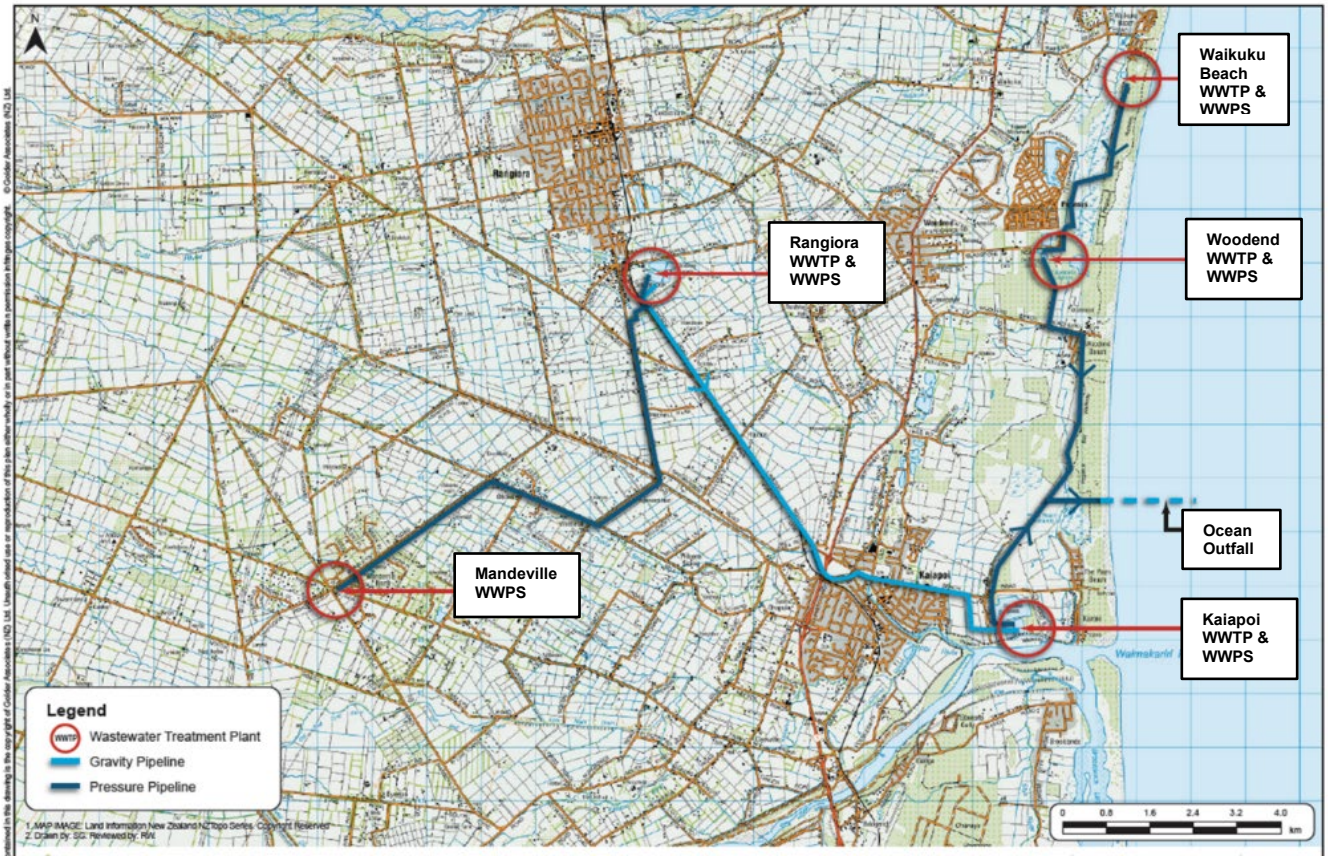


Figure 1: Eastern District Sewer Scheme Map

Oxford Sewer Scheme

3.3. The Oxford Sewer Scheme operates a wastewater treatment plant (WWTP) at Oxford, which serves just over 900 properties. The WWTP is located on the north side of the Eyre River on High Street with an irrigation disposal field location on the south side of the Eyre River on Woodstock Road. Figure 2 below shows these locations geographically.

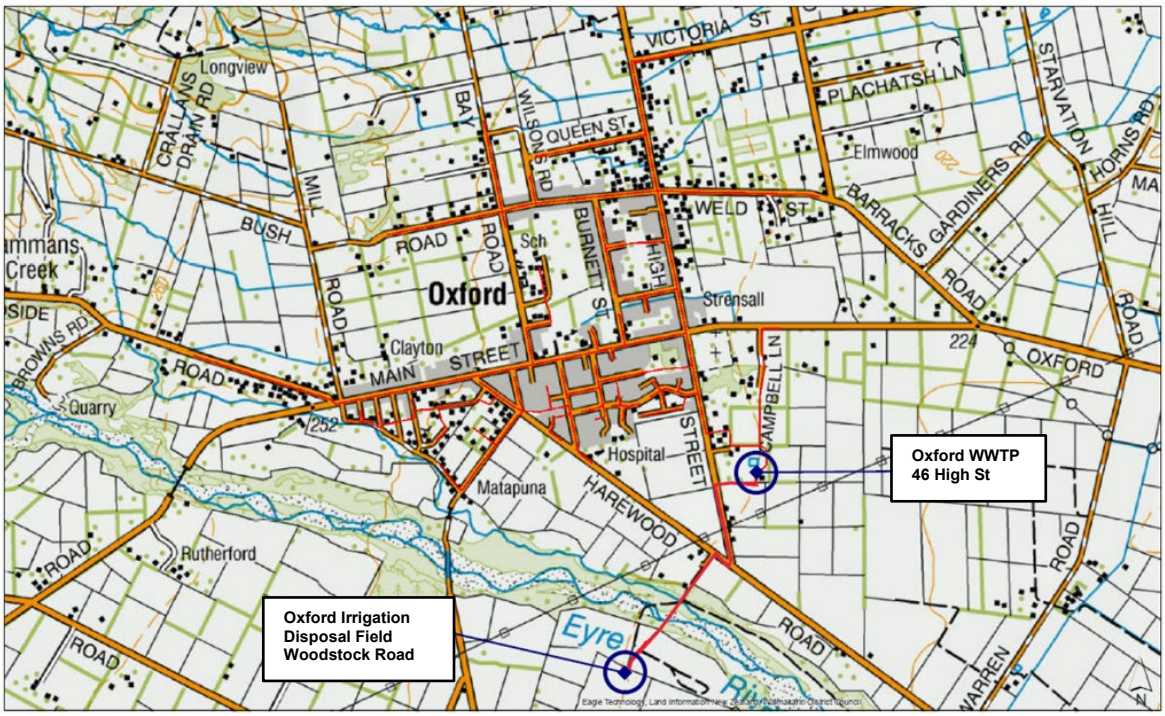


Figure 2: Oxford Sewer Scheme Map

4. KEY ISSUES AND OPTIONS

4.1. Eastern District Ocean Outfall

4.1.1. Table 1 below provides a summary of compliance for each consent utilised to operate the Eastern District Ocean Outfall. Full compliance was achieved for all the consents for the 2025-26 monitoring period relating to environmental limits, except for low dissolved oxygen levels in some Woodend Wastewater Treatment Plant (WWTP) treatment ponds and instances where dissolved oxygen samples were collected outside the required monitoring timeframe. Apparent exceedances of the ocean outfall flow rate limit that were attributable to monitoring equipment errors rather than actual consent breaches.

Table 1: Summary of Eastern District Ocean Outfall Consent Compliance 2025-26

Consent	Activity	Compliance
CRC041162.2	To discharge treated sewerage effluent into coastal marine area from sub-aqueous Ocean Outfall	Mostly Compliant – data recording error of Ocean Outfall instantaneous flow due to plant maintenance affecting the accuracy of readings on several occasions between November 2025 to March 2026 that has been resolved.
CRC041049	To discharge treated sewage effluent to the infiltration wetland and to ground water via seepage at the Kaiapoi WWTP	Fully Compliant
CRC168391	To discharge treated sewage effluent via seepage onto land (Woodend)	Fully Compliant
CRC145027	To discharge dewatered sludge removed from a wastewater pond to land (Rangiora)	Fully Compliant
CRC031724	To discharge groundwater from subsoil drains into the marine area of Jockey Baker Creek	Fully Compliant (no discharge)
CRC168388	To discharge contaminants to air (Woodend)	Partially Compliant - low dissolved oxygen levels in aeration pond 1, 3 and settlement pond 2, below the required minimum environmental limits. Pond performance being further investigated.
CRC950610	To discharge contaminants to air (Kaiapoi)	Fully Compliant
CRC962560	To discharge contaminants to air (Waikuku)	Fully Compliant
CRC030917	To discharge contaminants, via seepage, from Rangiora STP to land	Fully Compliant
CRC041163	For the erection, placement and maintenance of an ocean outfall pipeline and temporary structures, including a trestle structure and sheet piling for the purpose of constructing an ocean outfall, within the coastal marine area	Fully Compliant
CRC154176	To discharge contaminants to land (Kaiapoi)	Fully Compliant
CRC168390	To use land for storing, treating and discharging human effluent (Woodend)	Fully Compliant
CRC173124	To discharge contaminants (odour) to air (Rangiora)	Mostly Compliant - several dissolved oxygen samples not being collected within required daily timeframe of 11am to 2pm. The plant operators have confirmed they will manage sample schedules to meet the timeframe moving forward.

4.2. **Eastern District Scheme non-compliances**

Discharge Volume and Rate

4.2.1. CRC041162.2 Condition 2

"The discharge shall not exceed a rate of 660 litres per second or 57,000 cubic metres per day."

4.2.2. For the 2025/26 compliance year, the Ocean Outfall daily discharge volumes remained compliant with the consent limit of 57,000 m^3/day. However, there were some apparent exceedances of the instantaneous flow limit of 660 l/ between November 2025 to March 2026

4.2.3. Investigations determined these exceedances to be caused by flow meter recording inaccuracies associated with the maintenance work carried out on the surge tanks at the Kaiapoi WWTP, rather than actual exceedances of the consent limit.

4.2.4. Refurbishment works to the Kaiapoi surge tanks have now been completed and further maintenance works have been scheduled for the Woodend surge tanks. Following completion of these works no further data recording errors should occur moving forward.

4.2.5. The "non-compliance" with Condition 2 is considered addressed and is not considered to be a material performance / compliance issue.

Low Dissolved Oxygen

4.2.6. CRC168388 – Conditions 5

The dissolved oxygen concentration of effluent in the aeration ponds (1A, 1B and 1C) and settling ponds (2A and 2B) as shown in Plan CRC168388A attached to this consent shall:

a) Be measured in each pond on one day in every seven day period;

b) Be maintained at levels of no less than two grams per cubic metre, based on the ten percentile of annual results, between the hours of 11am and 2pm; and

c) Not have a concentration of less than two grams per cubic metre for more than three consecutive measurements in accordance with condition (5)(a).

4.2.7. Full compliance was not achieved as Conditions 5(b) and 5(c) were not fully met during the 2025/26 compliance period. Sampling results showed that three of the five ponds (Aeration Basin 1, Aeration Basin 3, and Settling Pond 2) did not achieve the minimum dissolved oxygen (DO) concentration of 2g/m^3 for the 10th percentile of annual results. In addition, two of the five ponds (Aeration Basin 1 and Aeration Basin 3) recorded DO concentrations below the consent limit for more than three consecutive monitoring events.

4.2.8. The sampling results indicate that insufficient aeration occurred in some ponds during late spring and summer 2025/26, when DO concentrations were generally lower than those recorded during the winter period. To address this issue, staff have increased performance monitoring at the Woodend WWTP by increasing sampling frequency and installing permanent DO probes within the ponds. This will provide more accurate and continuous data to inform operational improvements required to achieve compliance with the consent DO limits.

4.2.9. CRC173124 – Condition 3

Dissolved oxygen levels shall be measured in each pond between the hours of 11am and 2pm on one day in every seven day period.

4.2.10. Full Compliance for the 2025/26 compliance period was not achieved due to several samples from the ponds not collected within the timeframe specified in Condition 3, which is between 11am and 2pm daily.

4.2.11. Staff will ensure that the sampling schedule is being managed to comply with the timeframe moving forward.

4.3. Oxford Sewer Scheme

4.3.1. Table 2 provides a summary of compliance for each consent utilised to operate the Oxford Sewer Scheme. Full compliance was achieved for all conditions relating to environmental limits during the 2025-25 monitoring period except for monitoring related irrigation depth exceedances and two isolated ponding incidents within the effluent disposal field.

Table 2: Summary of Oxford Sewer Scheme Consent Compliance 2025-26

Consent	Activity	Compliance
CRC961013	To discharge contaminants to air	Fully compliant
CRC144561	Land use consent for the establishment of a sewage storage basin	Fully compliant
CRC184787	To discharge contaminant into land to water	Mostly compliant. The west irrigator depth applied to land was fully compliant in 2025/26. An issue with SCADA data occurred during July 2025 and on 14 October 2025 on the east irrigator, recording excessive effluent discharge application depths to land, which has been subsequently corrected. Recorded effluent application depths outside of these dates, from the east irrigator, were compliant. Two reports of ponding from the irrigators were made during the 2025/26 year by Water Unit operators, which were promptly resolved.

4.4. Oxford Sewer Scheme non-compliances

Irrigator Issues

4.4.1. CRC184787 Condition 13

The depth of effluent application on the primary block identified on Plan CRC184787B, attached to this consent shall not exceed 22 millimetres per day. The depth of effluent irrigation on the secondary and tertiary blocks identified on plan CRC184787B shall not exceed 10 millimetres per day.

4.4.2. Full compliance with this condition was not achieved for the 2025/26 compliance year. While the west irrigator was fully compliant with a maximum recorded application depth of 12 mm/day, data for the east irrigator showed a number of apparent application depth exceedances.

4.4.3. Several monitoring and instrumentation issues affected the reliability of the irrigator application depth calculations for the east irrigator. These included delayed commissioning of flow meters, a malfunctioning east irrigator position sensor, suspected valve issues and calibration adjustments to the rotation sensor.

4.4.4. These issues resulted in several apparent exceedances of application depth limits but investigations have determined that the recorded values were overstated due to inaccurate movement data rather than an actual exceedances. The identified monitoring issues have since been resolved, and data from both irrigators is now considered reliable.

4.4.5. There were several improvements made to the Oxford irrigator site last financial year to improve compliance. Irrigator 1 was replaced (due to being at the end of useful life) to increase reliability and also flow metering installed to each of the 2 irrigators which provided more accurate flow information. There was also an upgrade to the SCADA system which improved the ability to monitor the performance of the irrigators and provide more accurate data to calculate the depths of effluent applied to land.

4.4.6. CRC184787 Condition 14

There shall be no ponding of effluent.

4.4.7. During the 2025/26 compliance year, two isolated ponding incidents were recorded within the effluent disposal fields on 22 December 2025 and 13 January 2026. Both incidents were identified during routine inspections and were promptly addressed through maintenance actions recorded by operators.

4.4.8. Follow-up inspections confirmed satisfactory conditions, with no evidence of recurring or prolonged ponding. These incidents constitute two minor, isolated non-compliances with Condition 14 and do not indicate an ongoing operational issue.

4.5. The Management Team has reviewed this report and supports the recommendations.

5. STRATEGIC ALIGNMENT AND COMMUNITY VIEWS

Mana Whenua Engagement

5.1. The subject matter and/or recommendations contained within this report are of interest to mana whenua.

Te Ngāi Tūāhuriri hapū will be interested in the findings of the Ocean Outfall Compliance Report 2025/26, due to their relationship with the coastal area used for kai moana/mahinga kai gathering. The Iwi Management Plan specifically opposes the Ocean Outfall and advocates for a culturally sustainable alternative to discharging wastewater to the sea. It identifies Pegasus Bay, where the Ocean Outfall is located, as one of the areas immensely significant for mahinga kai and considers eliminating these wastewater discharges as a priority for tāngata whenua. The recommendations of this report include circulation of this report and the attachments to Te Ngāi Tūāhuriri Rūnanga for their information.

The report will be presented and discussed at the next joint meeting between Te Ngāi Tūāhuriri Rūnanga and Council representatives.

Groups, Organisations and the Wider Community

5.2. There are groups, organisations, or members of the wider community likely to be affected by, or to have an interest in, the subject matter of this report.

Council staff meet regularly with residents adjacent to the Woodend Wastewater Treatment Plan (WWTP), who are interested in operations and performance of this plant. A copy of the Annual Compliance Monitoring Report can be made available to them for information purposes.

Te Kōhaka o Tūhaitara Trust manages the Tūhaitara Coastal Park where the Ocean Outfall is located.

Implications for Community Wellbeing

5.3. There are no implications on community wellbeing by the issues and options that are the subject matter of this report.

Despite non-compliances there are no known implications on community wellbeing by the issues and options that are the subject matter of this report.

Community Outcomes and Strategic Priorities

5.4. The Council's community outcomes are relevant to the actions arising from recommendations in this report.

- The natural and built environment in which people live is clean, healthy and safe.
- Infrastructure and services are sustainable, resilient, and affordable.

5.5. The Council's Strategic Priorities are not relevant to the actions arising from recommendations in this report.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

Financial Implications

6.1. There are no financial implications for the decisions sought by this report.

However it should be noted that on-going non-compliances can result in increased monitoring costs and action being taken against the Council (i.e. abatement notice). Such instances can result in loss of confidence from the public as well as adverse effect to Council's reputation. Approximately $100,000 is being allowed for in the budgets for monitoring of the Ocean Outfall.

Any additional budget required for treatment plant improvement works to achieve and maintain compliance will be requested through the Annual Plan and Long Term Plan.

Community Resilience and Sustainability

6.2. The recommendations in this report do have sustainability and/or climate change impacts.

Risk Management

6.3. There are risks arising from the adoption/implementation of the recommendations in this report.

The Oxford WWTP discharge consent is due to expire in August 2031 which presents a risk for Council if not proactively addressed. This risk is being managed through a wider project looking at the wastewater strategy for the Western Waimakariri District.

Health and Safety

6.4. There are no health and safety risks arising from the adoption/ implementation of the recommendations in this report.

7. CONTEXT

Consistency with Policy

7.1. This matter is not a matter of significance in terms of the Council's Significance and Engagement Policy.

Authorising Legislation

7.2. The Local Government Act and Water Services Act are relevant in this matter.

Authorising Delegations

7.3. This report is for information only as the compliance reports have already been submitted to Environment Canterbury for review, therefore no actions requiring delegated authority are recommended.

REPORT

Eastern Districts Sewer Scheme – Annual Compliance Monitoring Report 2025 - 2026

Waimakariri District Council

Date 31 August 2026

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LIST OF ABBREVIATIONS AND UNITS

ammoniacal-N	ammoniacal nitrogen
BODs	five-day biochemical oxygen demand
˚C	degrees Celsius
cfu/100 mL	colony forming units per 100 mililitres
CRC	Canterbury Regional Council
DIN	dissolved inorganic nitrogen
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
EDSS	Eastern Districts Sewer Scheme
EDS	Eastern Districts Sewer
E. coli	*Escherichia coli*
ESR	Institute of Environmental Science and Research
g/m^3	grams per cubic metre
iu	infectious units
km	kilometre
LOESS	local polynomial regression fitting
L/s	litres per second
MDL	method detection limit
m	metres
mL	millilitres
m^3	cubic metres
m^3/day	cubic metres per day
N	number of samples
nitrate-N	nitrate nitrogen
NIWA	National Institute of Water and Atmospheric Research
PCB	polychlorinated biphenyls
PAH	polycyclic aromatic hydrocarbons
pfu	plaque forming units
SCADA	supervisory control and data acquisition

TN	total nitrogen
TP	total phosphorus
TSS	total suspended solids
UV	ultraviolet
WDC	Waimakariri District Council
WWTP	wastewater treatment plant

1. INTRODUCTION

1.1. Background

Waimakariri District Council (WDC) operates wastewater treatment plants (WWTPs) at Rangiora, Kaiapoi, Woodend and Waikuku Beach, located in the eastern part of the district. In 2006, the treatment facilities at each WWTP were upgraded, with the flows from these four locations combined for discharge to the coastal marine environment via an ocean outfall located in Pegasus Bay. The upgraded system and ocean outfall, shown in Figure 1, is known as the Eastern District Sewer Scheme (EDSS).

The EDSS operates under a number of resource consents from Canterbury Regional Council (CRC) also known as Environment Canterbury (ECan), which are listed in Table 1 along with their respective reporting requirements and level of compliance for the 2025/26 monitoring year.

Table 1: Eastern District Sewer Scheme Resource Consents

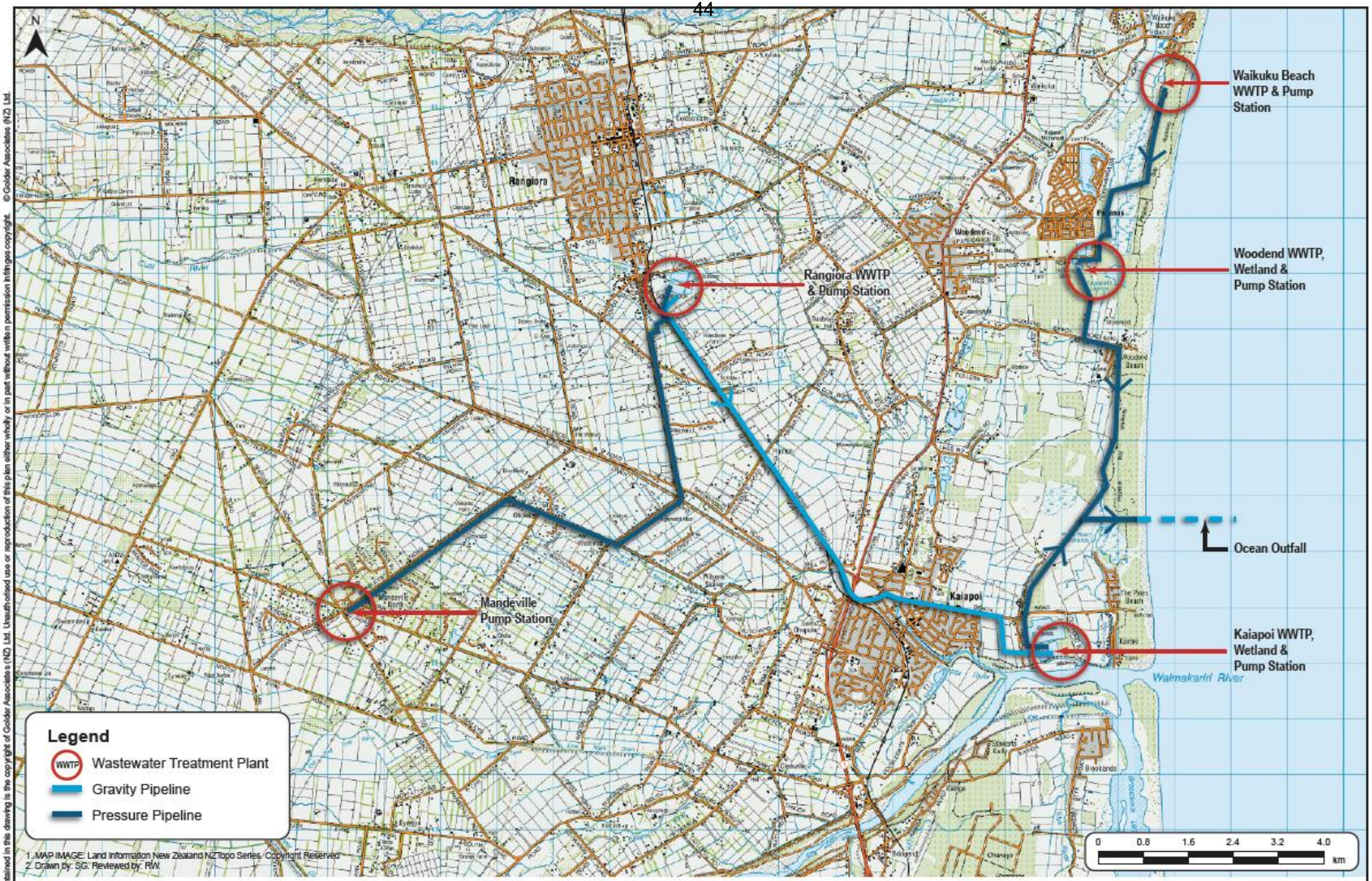
Consent	Activity	Reporting	Compliance
CRC041162.2	To discharge treated sewerage effluent into coastal marine area from sub-aqueous ocean outfall	Refer to Section 2.0 of this report	Mostly Compliant – data recording error of Ocean Outfall instantaneous flow due to plant maintenance affecting the accuracy of readings on several occasions between November 2025 to March 2026 that has been resolved.
CRC041049	To discharge treated sewage effluent to the infiltration wetland and to ground water via seepage at the Kaiapoi WWTP	Refer to Section 3.0 of this report	Full Compliance
CRC168391	To discharge treated sewage effluent via seepage onto land (Woodend)	Refer to Section 4.0 of this report	Full Compliance
CRC145027	To discharge dewatered sludge removed from a wastewater pond to land (Rangiora)	Refer to Section 6.0 of this report	Full Compliance
CRC031724	To discharge groundwater from subsoil drains into the marine area of Jockey Baker Creek	Refer to Section 5.0	Full Compliance (no discharge)
CRC168388	To discharge contaminants to air (Woodend)	Refer to Section 8.0	Partial Compliance - low dissolved oxygen levels in aeration pond 1, 3 and settlement pond 2, below the required minimum

			environmental limits. Pond performance being further investigated.
CRC950610	To discharge contaminants to air (Kaiapoi)	No reporting required No Events to Report	Full Compliance
CRC962560	To discharge contaminants to air (Waikuku)	No reporting required No events to Report	Full Compliance
CRC030917	To discharge contaminants, via seepage, from Rangiora STP to land	No reporting required	Full Compliance
CRC041163	For the erection, placement and maintenance of an ocean outfall pipeline and temporary structures, including a trestle structure and sheet piling for the purpose of constructing an ocean outfall, within the coastal marine area	No reporting required	Full Compliance
CRC154176	To discharge contaminants to land (Kaiapoi)	No reporting required	Full Compliance
CRC168390	To use land for storing, treating and discharging human effluent (Woodend)	No reporting required	Full Compliance
CRC173124	To discharge contaminants (odour) to air (Rangiora)	Section 7.0	Mostly Compliant - several dissolved oxygen samples not being collected within required daily timeframe of 11am to 2pm. The plant operators have confirmed they will manage sample schedules to meet the timeframe moving forward.

1.2. Report Scope

The scope of this report fulfils the reporting requirements of consents issued to WDC by ECan for the purpose of managing and administering the EDSS, these include; CRC041162.2, CRC041049, CRC168391, CRC173124 and CRC145027. These consents require an annual monitoring report be submitted to Environment Canterbury. The reports are required to be submitted variously between 31 July and 31 August each year. However, a combined report for all five resource consents with a due date of 31 August has been agreed between WDC and ECan. Annual reporting for CRC168388 was

included from the 2023/24 year to ensure ongoing monitoring is undertaken and reported every year. Figure 1 below shows the location of the District Ocean Outfall pipeline and individual WWTP sites.



1. MAP IMAGE: Land Information New Zealand NZTopo Series. Copyright Reserved
2. Drawn by: SG. Reviewed by: RW.

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GOLDER

TITLE EASTERN DISTRICT SEWER SCHEME

OCTOBER 2018
PROJECT 1478107201

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2. CRC041162.2 – DISCHARGE FROM OCEAN OUTFALL

2.1. Overview

Consent compliance for the period 1 July 2025 through to 30 June 2026 ('the monitoring period'), has been assessed by WDC. This report includes comparison with data reported in previous monitoring periods, where applicable, reported under the EDSS resource consents.

2.2. Condition 2 – Discharge Volume and Rate

Condition 2 states:

"The discharge shall not exceed a rate of 660 litres per second or 57,000 cubic metres per day."

Discharge volumes to the ocean outfall were recorded by a supervisory control and data acquisition (SCADA) system, which transmits via a broadband connection to an InTouch data visualisation system. This system is more reliable than the radio link previously used to download outflow data. The meter is also read manually on at least a monthly basis to provide a backup data record in the event the SCADA system fails.

Daily discharge volume for the 2025/26 period is plotted in Figure 2 and instantaneous flow is plotted in Figure 3. The raw data can be viewed in the attached spreadsheets in APPENDIX A1 and A2 containing ocean outfall total outflow raw data volumes and instantaneous flow data. The spreadsheets and graphs show that total discharge volumes remained well below the consent limit of 57,000m3 per day throughout the year.

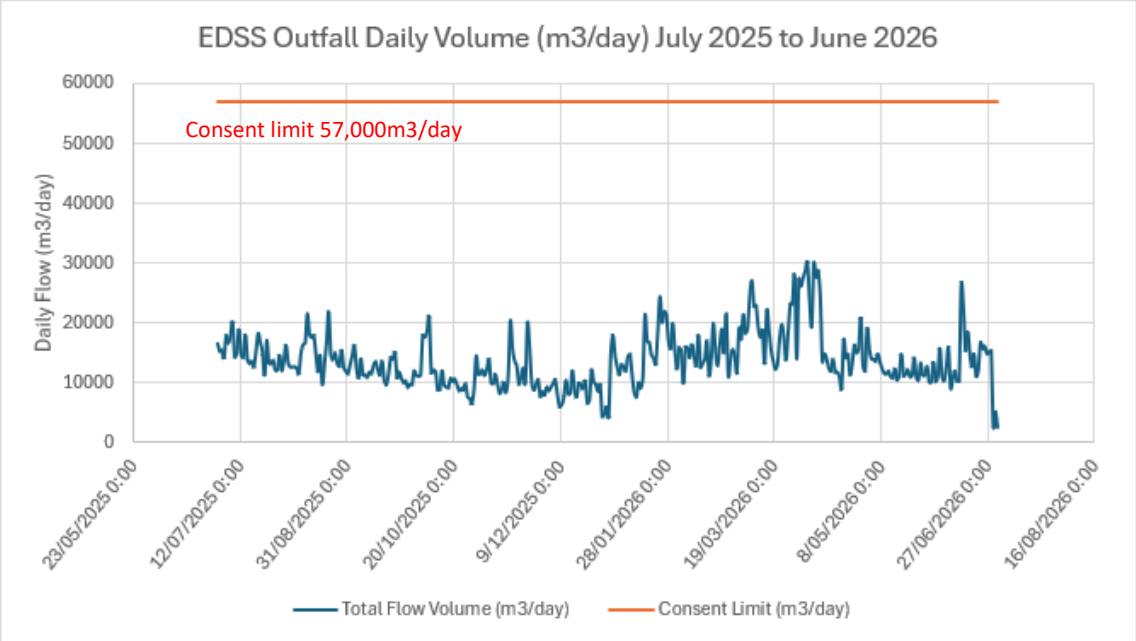


Figure 2. Daily discharge volumes to ocean outfall July 2025 to June 2026

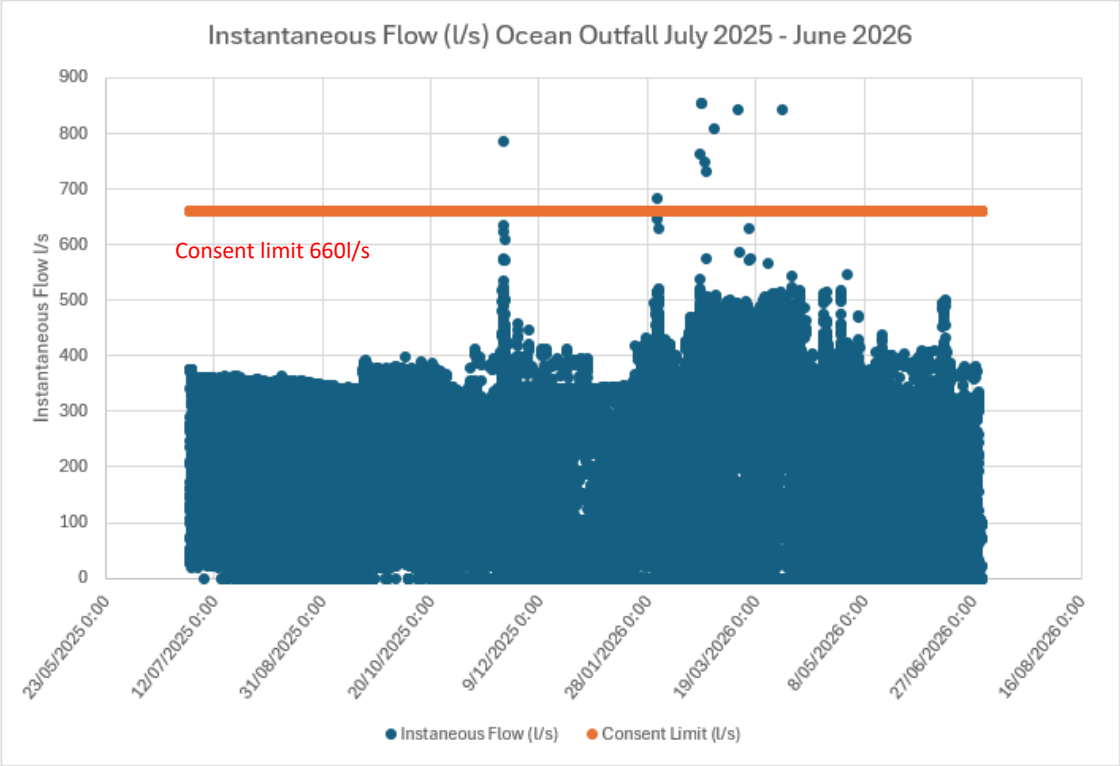


Figure 3. Maximum instantaneous daily discharge rate between July 2025 to June 2026

Figures 2 and Figure 3 above show the ocean outfall daily discharge volume remained consistently below the consent limit of 57,000 m^3/day. However the data shows that there were some instances where the instantaneous flow exceeded the limit of 660 l/s during the year. This has been determined to be due to plant maintenance of the surge vessel at Kaiapoi WWTP affecting the accuracy of the flow meter readings intermittently during the period November 2025 to March 2026. The "exceedances" are from data recording errors which do not accurately represent the outfall actual instantaneous flow. As at the time of reporting (August 2026) the maintenance issues affecting the outfall flow recording have been mostly resolved, with outstanding works to the east and west surge tanks refurbishment now being completed at the Kaiapoi plant and refurbishment due on the Woodend surge tank shortly. Following completion of each of these, no further data recording errors should occur moving forward. As a result, the "non-compliance" is considered addressed and is not considered to be a material performance / compliance issue. Compliance with Condition 2 is considered to currently be met.

2.3. Conditions 9 – 12: Ocean Outfall Pipeline Discharge Quality

2.3.1. Overview of monitoring and compliance requirements

Condition 9

Condition 9 states the following:

> *"A single grab sample shall be taken from the ocean outfall pipeline at the frequencies noted in this condition and the same shall be analysed for the identified contaminants at the frequencies noted for each contaminant. Report schedules shall be prepared recording the results of such analyses. Grab sample locations and the times at which the grab samples are taken shall be recorded and included in the reporting schedules. The consent holder shall retain the reporting schedules.*

a) Weekly

i. pH -reported as pH units
ii. Dissolved oxygen - reported as % saturation
iii. Temperature - reported as °C
iv. Five-day biochemical oxygen demand - reported as g O/m^3
v. Filtered five-day biochemical oxygen demand - reported as g 0/ m^3
vi. *Total suspended solids - reported as g/ m^3*
vii. Dissolved inorganic nitrogen - reported as g N/ m^3
viii. Ammoniacal nitrogen - reported as g N/ m^3
ix. Dissolved reactive phosphorus - reported as g P/ m^3
x. Faecal coliforms - reported as no./100ml
xi. Enterococci - reported as no./100ml
xii. Escherichia coli - reported as no./100ml.

b) Monthly

i. Total phosphorus – reported as g P/ m^3
ii. Total nitrogen – reported as g N/ m^3

c) Three monthly for the first two years and then six monthly thereafter

i. *Arsenic - reported as g/ m^3*
ii. Cadmium - reported as g/ m^3
iii. Chromium - reported as g/ m^3
iv. *Copper - reported as g/ m^3*
v. Lead - reported as g/ m^3
vi. Nickel - reported as g/ m^3
vii. Zinc - reported as g/ m^3
viii. Mercury - reported as g/ m^3

All metal analysis shall be for total metals only.

d) Three Monthly for the first two years and then annually thereafter

i. Human Enterovirus. (no./10l)
ii. Human Adenovirus. (no./10l).

e) Annually

i. Thermophilic campylobacter spp (cfu/l)
ii. Salmonella spp (no./l)
iii. Organo chlorine pesticides – reported as g/ m^3
iv. Polychlorinated biphenyls – report as g/ m^3
v. Polycyclic aromatic hydrocarbons – reported as g/ m^3

The initial two year monitoring period began in May 2006 and concluded in April 2008. Since then, metals have been analysed at least to six monthly intervals though often quarterly, with viral and bacterial monitoring completed annually, in line with Condition 9 above.

Condition 11

Condition 11 requires that monitoring results for five-day biochemical oxygen demand (BODs), total suspended solids (TSS) and ammoniacal nitrogen (ammoniacal-N) are compared with the following limits:

> *"Based on the weekly sampling required by Condition (9) of this consent, and taken over each 26 week period commencing on the 1st of May, and the 1st of November of each year during*

the term of this consent, no more than 16 values in each 26 week period shall exceed the following standards for each of the named contaminants [Table 3]:"

Table 3: Condition 11 limit of resource consent CRC041162.2.

Contaminant	Unit	Standard
BOD5 (filtered)	g/m^3	25
Total suspended solids	g/m^3	200
Ammoniacal nitrogen	g/m^3	27

Condition 12

Condition 12 requires that faecal indicator bacteria monitoring results are compared with prescribed limits:

"Based on the weekly sampling required by Condition (9) of this consent, over each Summer period (November - February inclusive) and over each Winter period (March - October inclusive), no more than six values from eight consecutive samples, shall exceed the following standard values and no more than two values from eight consecutive samples, shall exceed the higher value for enterococci and faecal coliforms /Table 4/."

Table 4: Condition 12 limits of resource consent CRC041162.2.

Contaminant	Unit	Standard value		Higher value	
		Summer	Winter	Summer	Winter
Enterococci	No./100mL	500	500	1,500	1,500
Faecal coliforms	No./100mL	1,000	9,000	5,000	20,000

2.3.2. Physiochemical

The results of weekly physicochemical monitoring at the outfall structure between July 2025 and June 2026 are summarised in Table 5, alongside results from the previous monitoring periods (July 2023 – June 2024 and July 2024 – June 2025). Dissolved Oxygen (% saturation) was added for the first time in the 2023/24 annual report. Each of these results are discussed by parameter below.

Physiochemical sample monitoring requirements for field pH, DO (g/m3) and DO (% saturation) were met as required during the 2025/26 period, with 52 weekly samples collected over the year. Field data available for 2025/26 is summarised in the table and graphs below and provided in APPENDIX L "Ocean Outfall Field Data".

Table 5: Physiochemical water quality in the ocean outfall discharge.

Parameter	July 2025 to June 2026			July 2024 to June 2025		July 2023 to June 2024		Consent Limit
	Samples	Median	Range	Median	Range	Median	Range	
Laboratory pH (unit less)	53	7.9	7.6 – 9.4	8	7.6-9	7.9	7.5-9.3	
Field pH (unit less)	52	7.78	7.34 – 9.66	8.05	7.28 – 9.12	7.7	7.16 – 9.42	
Field DO (g/m³)	52	0.915	0.16 – 8.7	0.985	0.16-8.9	0.55	0.02 – 8.83	
Field DO (% Saturation)	52	7.35	0.42 - 69	9.65	1.6 – 69.5	4.9	0.2 – 72.4	
Field Temperature (˚C)	52	13.75	4.4 – 19.1	14.75	4.9-20.9	14.1	4.9 - 22	
TSS (g/m³)	53	39	18-95	49.5	12-155	38	8-102	200

pH

Laboratory measured pH and field measured pH in 2025/26 are compared with earlier years in the graphs below. There is no consent limit for pH. The field results show a spike of high pH in August 2022 (several results show a pH of around 16 which is likely to be a meter reading error or data entry error). The error has been subsequently corrected as seen in subsequent data. However most lab and field results were between 7.5 and 8.5. The laboratory and field data shows a spike occurs in pH in the Ocean Outfall discharge in around January and February each year.

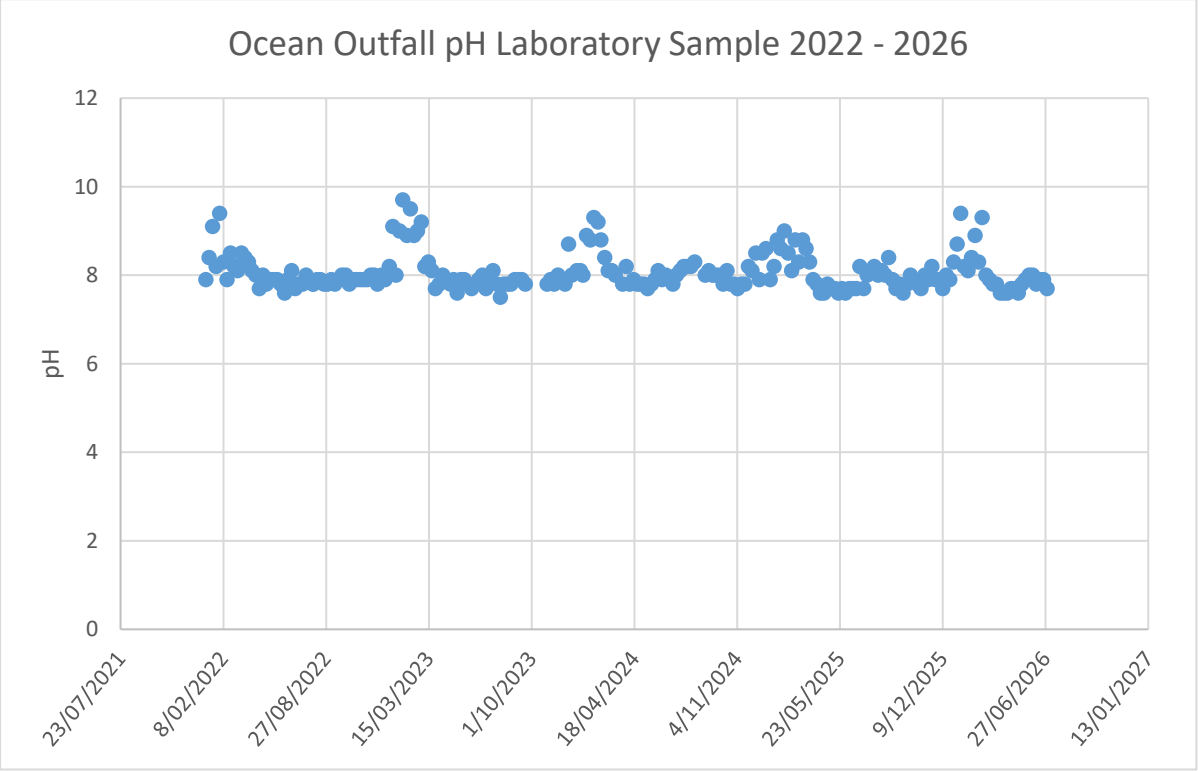


Figure 4: pH (laboratory sample) of the ocean outfall discharge between January 2022 to June 2026

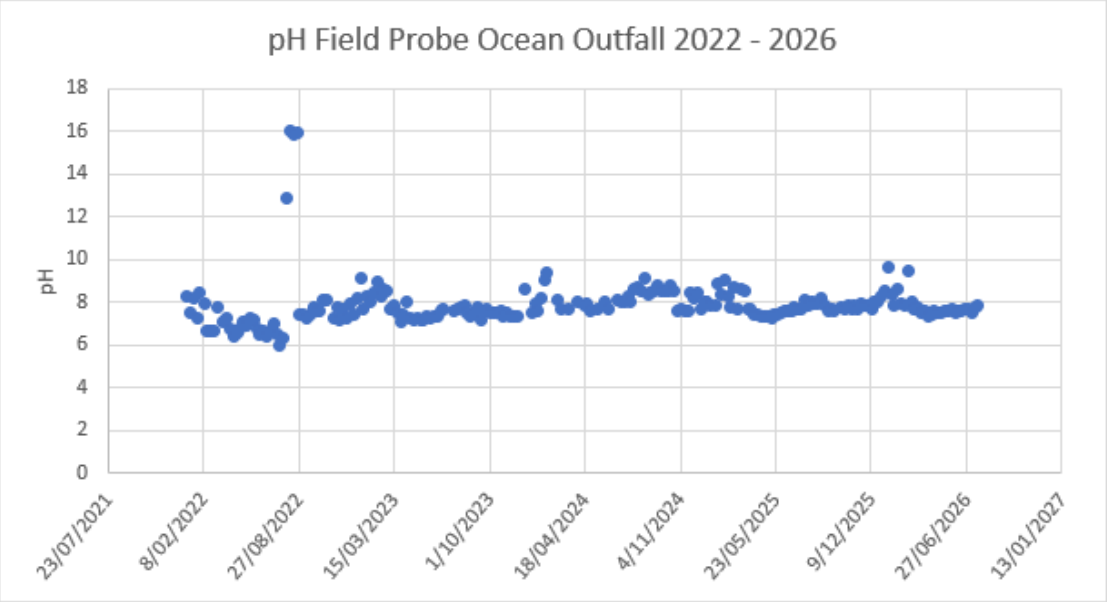


Figure 5: pH (field probe) of the ocean outfall discharge between January 2022 to July 2026

Dissolved oxygen

Dissolved oxygen (DO) concentrations in the Ocean Outfall discharge were trending downwards in the last three years in comparison with previous years, as shown in the below graph. The DO measurements are taken with handheld meters that are calibrated monthly. The DO was sampled weekly at the outfall structure as required under Condition 9 (see APPDENDIX L for raw data records). There is no consent limit for DO.

Dissolved oxygen is lower in the summer months and higher during winter months as shown in the below graphs.

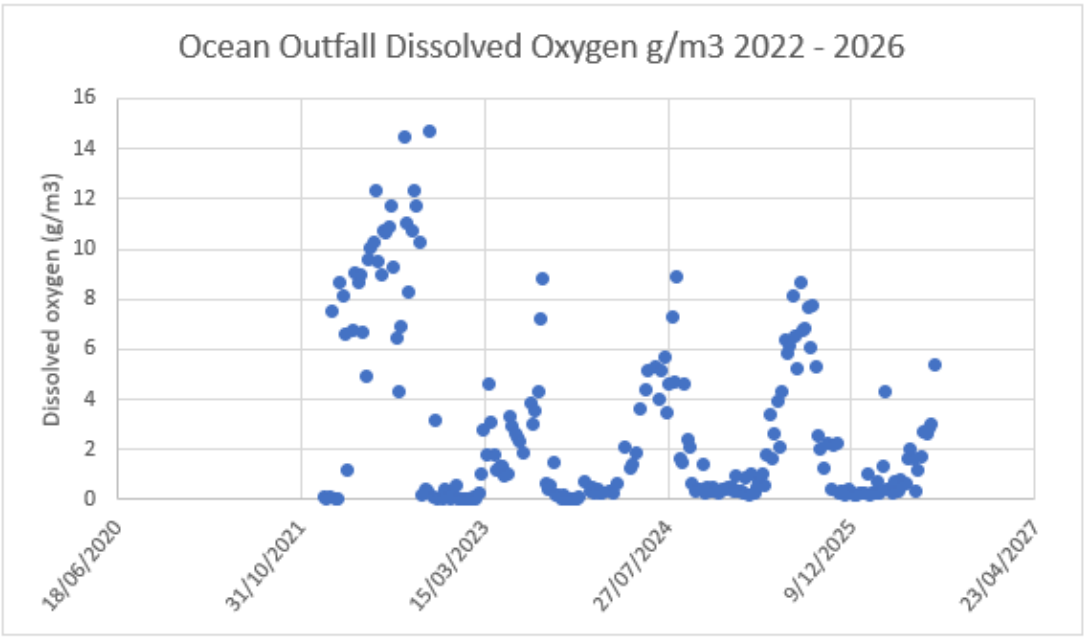


Figure 6. Dissolved oxygen concentrations in the ocean outfall discharge between January 2022 and July 2026.

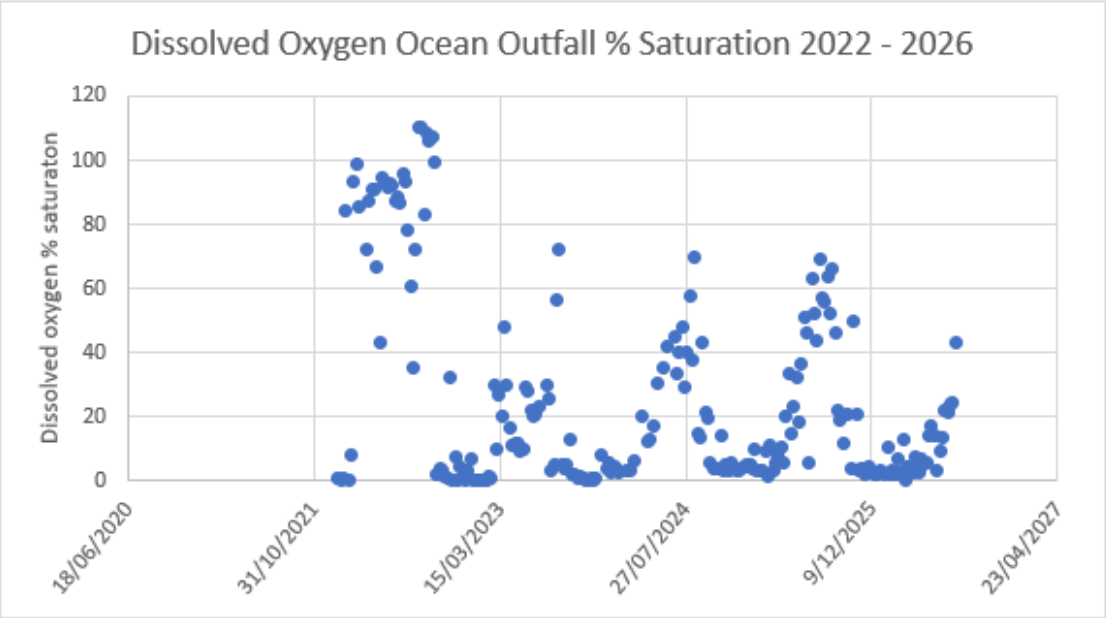


Figure 7: *Dissolved oxygen concentrations (% Saturation) in the Ocean Outfall discharge between January 2022 and July 2026.*

Temperature

Temperature data showed typical seasonal variation (Figure 8). The annual temperature range in 2025/26 is consistent with previous years. The temperature was sampled weekly at the Outfall structure as required under Condition 9 (see APPENDIX L for raw data records). There is no consent limit for temperature.

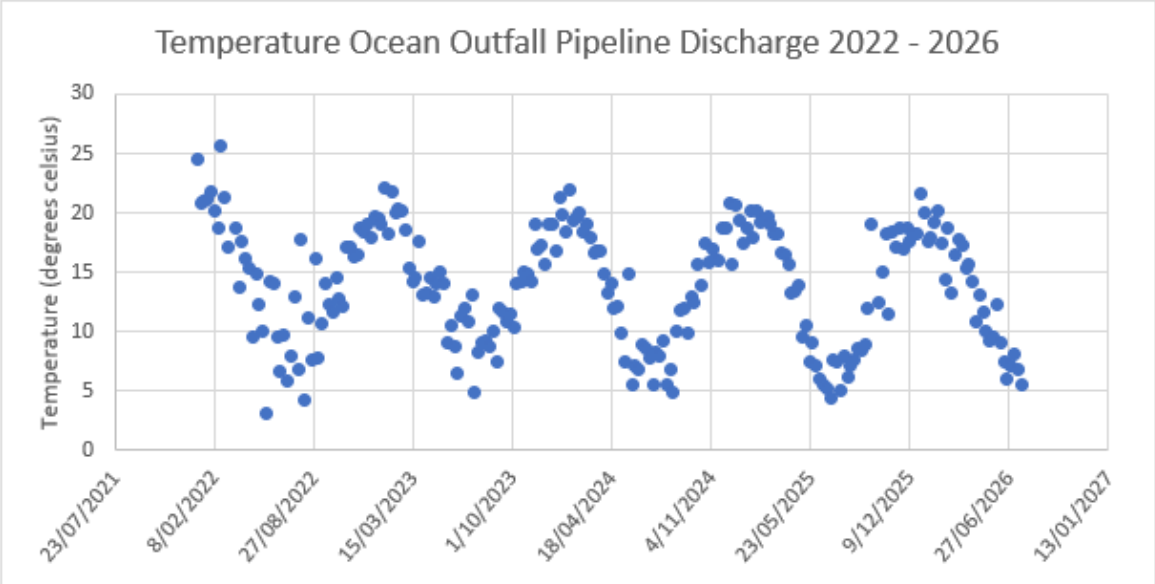


Figure 8. Temperature of the ocean outfall discharge between *January 2022 and July 2026*

Total suspended solids

There was no exceedance of the consent limit for TSS (200 g/m^3) over the 2025/26 monitoring period of 53 samples (Figure 9), with the maximum reading during this reporting year of 95 g/m^3 which is well below this limit. Therefore, full compliance was achieved for Condition 11 of the resource consent, which allows up to 16 exceedances in each 26-week period of the current monitoring period. On average the results were very similar with the previous monitoring period (median in 2025/26 of 39, compared with a median in 2024/25 of 49.5g/m3 and 38g/m3 in 2023/24). In general, the TSS concentrations displayed consistent quality with a slight downwards trend in the discharge in recent years. The higher TSS results recorded are related to times of high algal numbers in the treatment ponds which occurs at around January each year.

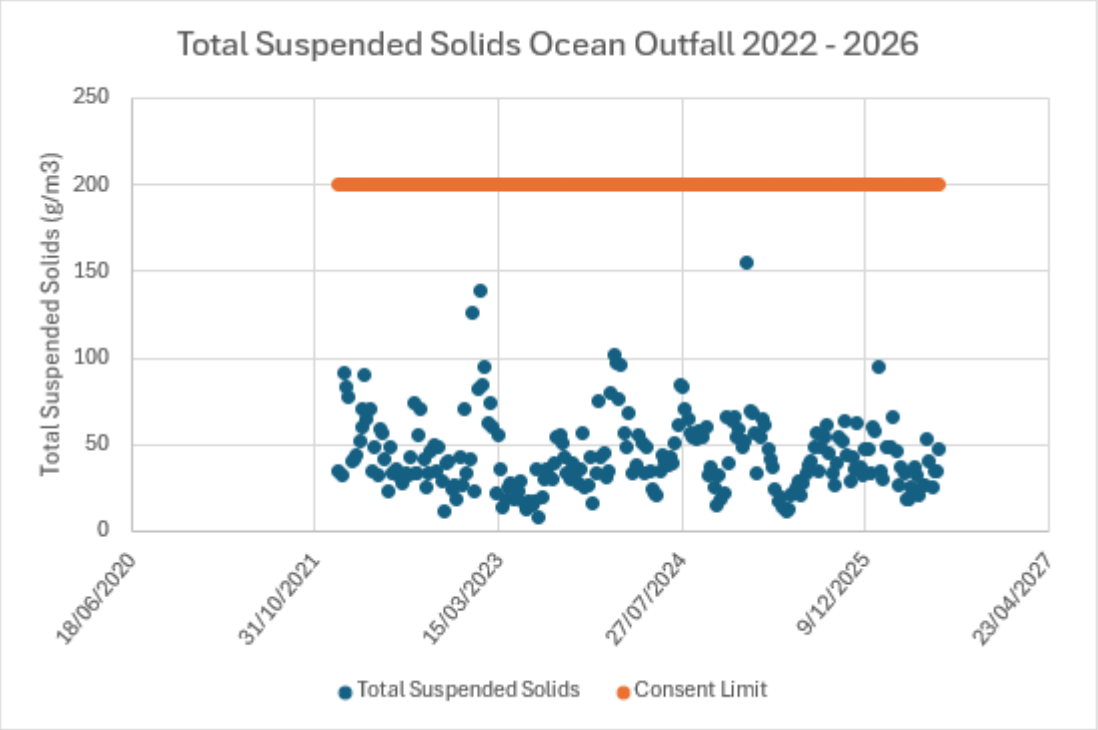


Figure 9. Total suspended solids in the ocean outfall discharge between January 2022 and June 2026.

2.3.3. Biochemical oxygen demand

Biochemical oxygen demand (BOD) results for the 2025/26 monitoring period were similar to those recorded during 2024/25 (Table 6), ranging in the current year from 13gO^2/m^3 to 60gO^2/m^3 , compared with 8 g O^2/m^3 to 78g O^2/m^3 in the previous year.

The soluble BOD results were similar in the 2025/26 monitoring period compared to previous periods and remain well below the consent limit. A summary of BOD results from the ocean outfall discharge is provided in Table 6. The soluble BOD5 graph below shows a slight seasonal variation well below the consent limit from the period 2022 to 2026. The long term BOD5 total and soluble data is attached in APPENDIX B "Ocean Outfall Laboratory Sample Raw Data". The continuing low soluble biochemical oxygen demand indicates a low level of oxygen is being removed from the discharge water, providing a good (residual) level of oxygen for oxygen demanding aquatic species to feed on. This generally signifies good water quality is available for aquatic organisms in the receiving environment.

Table 6: Biochemical oxygen demand (g O_2/m^3) in the ocean outfall discharge.

Species	July 2025 to June 2026			July 2024 to June 2025		Consent Limit
	Samples	Median	Range	Median	Range	
BOD_5 (g O2/m3)	53	25	13-60	20	8-78	
Soluble BOD5 (g O2/m3)	53	3.5	1.2-9.1	2.98	1.02-14.6	25

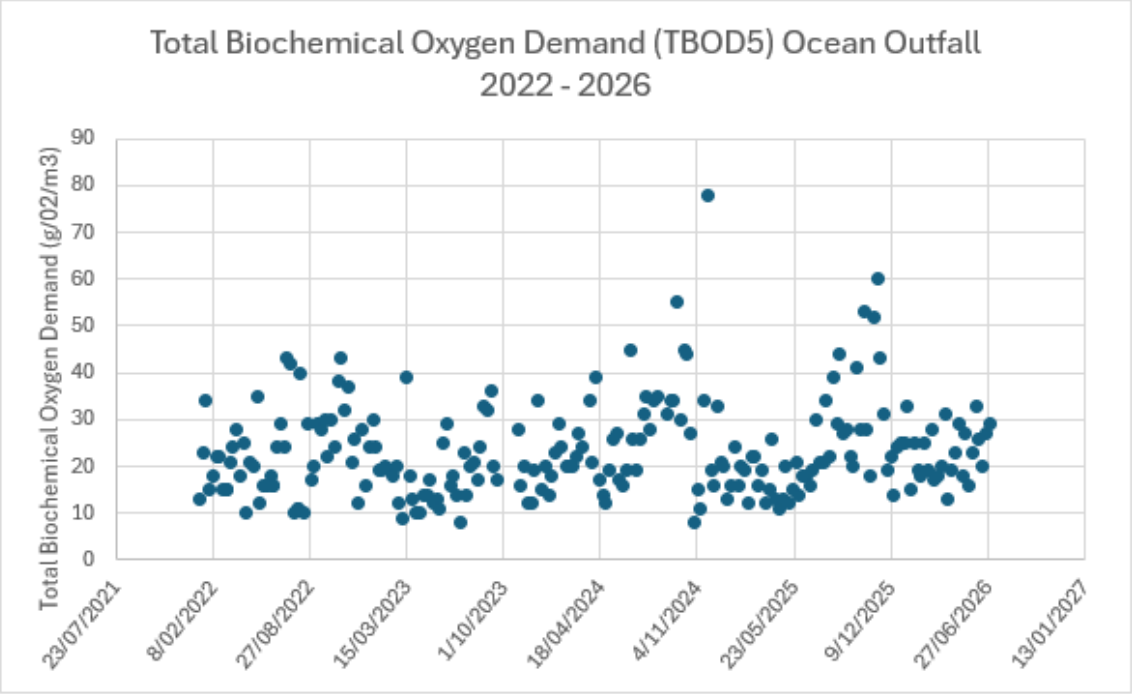


Figure 10: Five-day biochemical oxygen demand of the ocean outfall discharge January 2022 - June 2026.

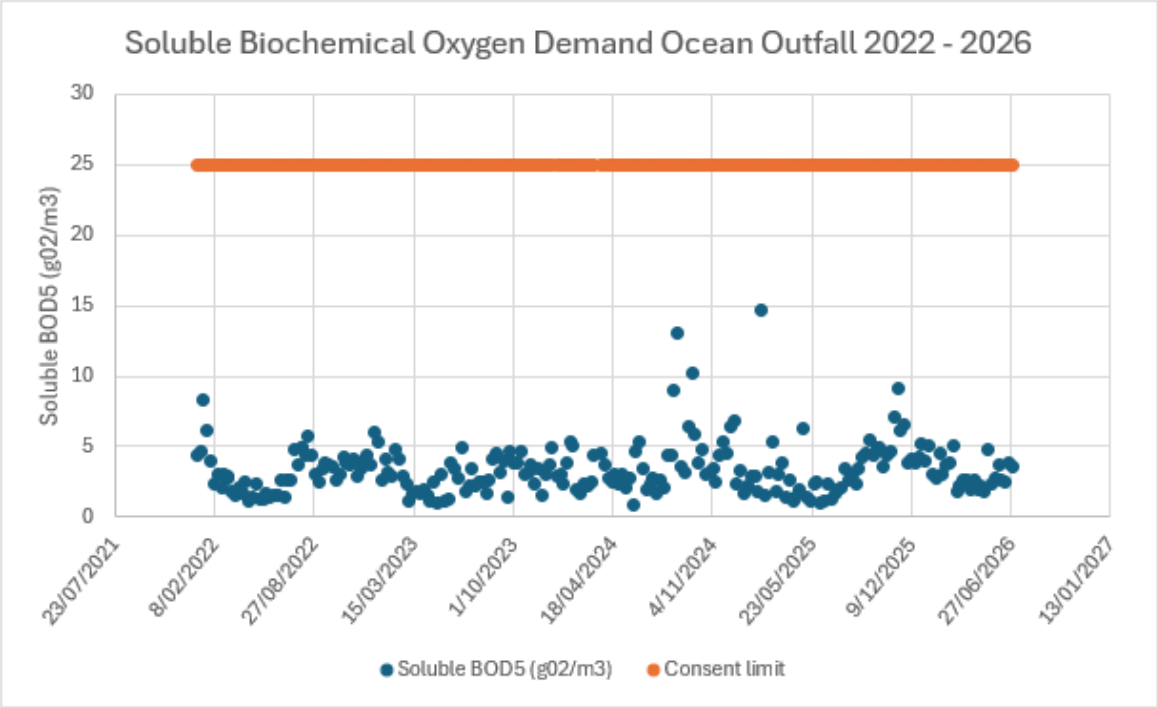


Figure 11. Soluble five-day biochemical oxygen demand of the ocean outfall discharge from January 2022-June 2026

2.3.4. Nutrients

Condition 9 requires dissolved inorganic nitrogen (DIN), ammoniacal-N and dissolved reactive phosphorus (DRP) to be measured weekly. Total nitrogen (TN) and total phosphorus (TP) are required to be measured monthly. The frequency of monitoring prescribed by Condition 9 was met for all parameters during 2025/26. Raw lab data for these parameters is attached in Appendix B spreadsheet Ocean Outfall Raw Laboratory Data.

Table 7: Nutrient concentrations (g/m^3) in the ocean outfall discharge.

Parameters	Samples	July 2025 to June 2026		July 2024 to June 2025		July 2023 to June 2024		Consent Limit
	N	Median	Range	Median	Range	Median	Range	
Dissolved inorganic nitrogen	52	16.6	0.35-28	12.8	1.77-31	17.1	1.14 – 28	
Ammoniacal-N	53	15.2	0.34-28	12.3	1.55-31	15.7	1.13 -27.6	27
Total nitrogen	15	22	11.1 - 31	16.9	5.8-34	19.6	8.2 - 33	
Dissolved reactive phosphorus	53	4.7	1.91 – 8.3	4.9	1.61-8.3	4.8	2.2 – 8.2	
Total phosphorus	15	5.8	2 – 8.9	6.1	2-8.2	5.75	3.7 – 7.6*	

Note: No more than 16 values to exceed limit in the 26-week period beginning 1 May and 1 November. N: number of samples.
*Anomolous TP result of 300g/m3 from 7 February 2024 was corrected to the median

The dissolved inorganic nitrogen results shown in Figure 12 below, indicate seasonal fluctuation with a decrease throughout the summer months and seasonal peaks each winter/spring. There is a slightly increasing trend in the spring peaks recorded since 2022 and no clear trend in the median recorded DIN levels since 2023. There is no consent limit for DIN.

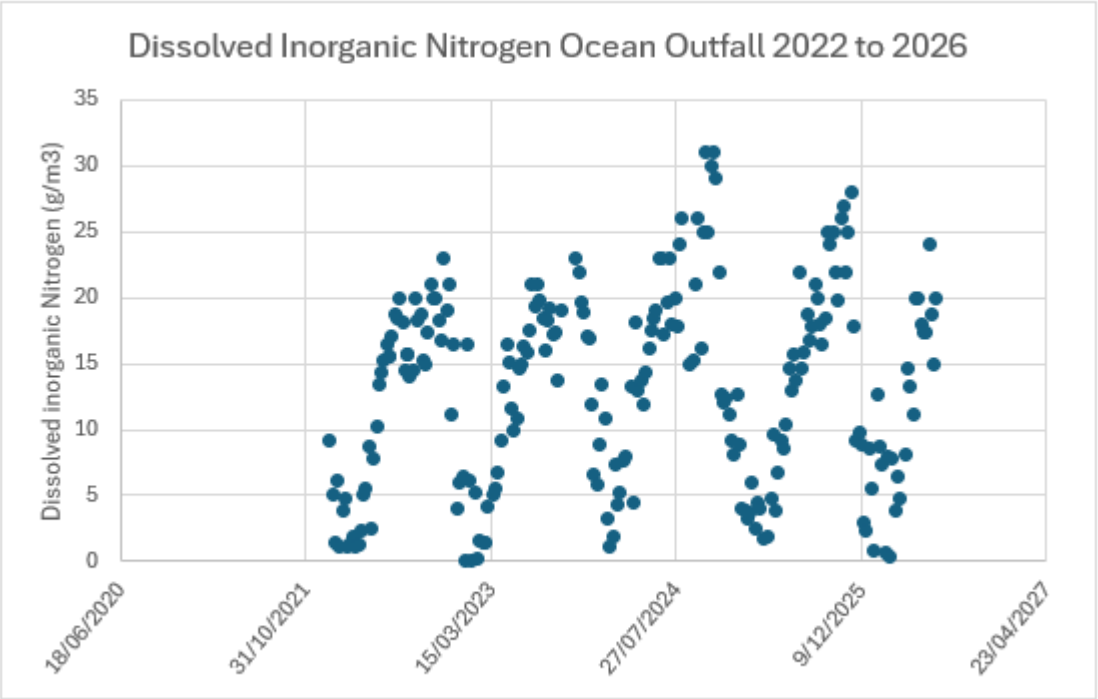


Figure 12. Dissolved inorganic nitrogen concentrations in ocean outfall discharge January 2022-June 2026

In general the Ammoniacal-N (NH_4) (TAN) levels are similar to the previous monitoring periods. TAN levels are also lower over the summer months with a seasonal peak each winter and seasonal fluctuation. There is no apparent trend in the median level of ammonia recorded since 2023. During the 2025/26 year there was one exceedance of the consent limit of 27g/m3 of Total Ammoniacal-N. However, consent compliance is achieved as demonstrated through the below graph and attached *"APPENDIX B Ocean Outfall Raw Laboratory Data*" spreadsheet. The consent condition 11 states *"Based on the weekly sampling required by Condition (9) of this consent, and taken over each 26 week period commencing on the 1st of May, and the 1st of November of each year during the term of this consent, no more than 16 values in each 26 week period shall exceed the following standards for each of the named contaminants".*

There were less than 16 exceedances over the 2025/26 year within each 26 week monitoring period, therefore the consent condition was achieved.

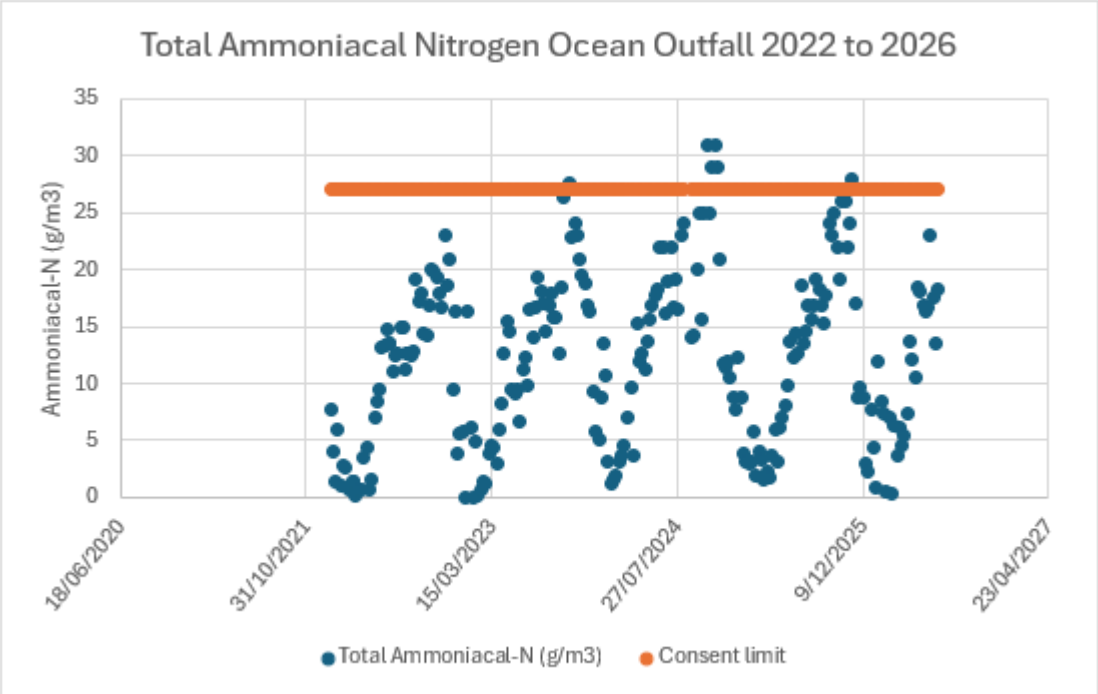


Figure 13. Ammoniacal-N concentrations in the ocean outfall discharge between January 2022 and June 2026

Total nitrogen (TN) concentrations over the last five years show a slight increasing trend (Figure 14 below). There is no consent limit for TN.

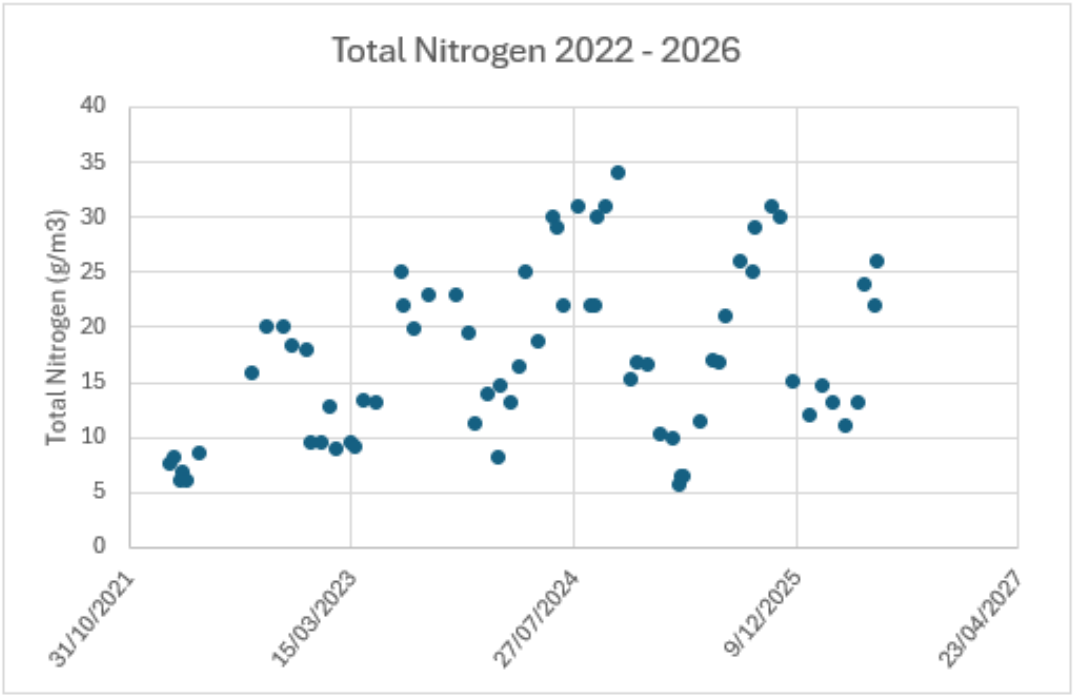


Figure 14. Total nitrogen concentrations in ocean outfall discharge between January 2022 and June 2026

The monitoring results for dissolved reactive phosphorous (DRP) and total phosphorus (TP) are shown in Figures 15 and 16. The pond performance and algae species and numbers remained stable during the 2025 -26 period. There are no consent limits for DRP or TP. The median DRP was similar between 2023/24, 2024/25 and 2025/26 (measuring 4.7g/m^3 to 4.9g/m^3). There appears to be a slight downward trend in Dissolved Reactive Phosphorous discharges between 2022 and 2026.

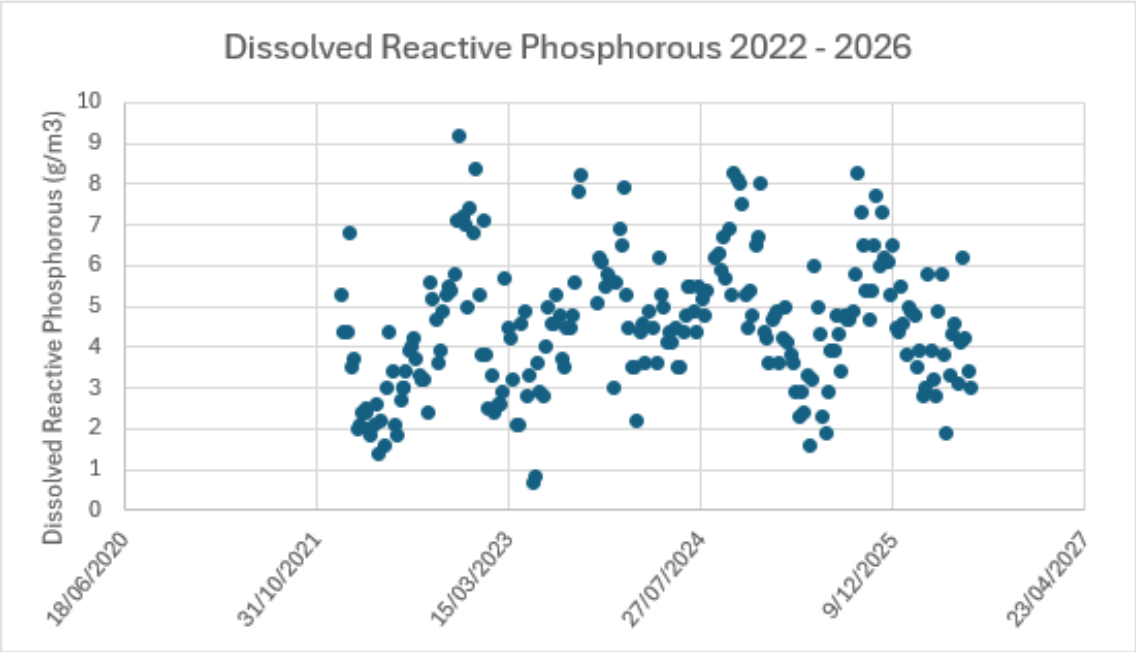
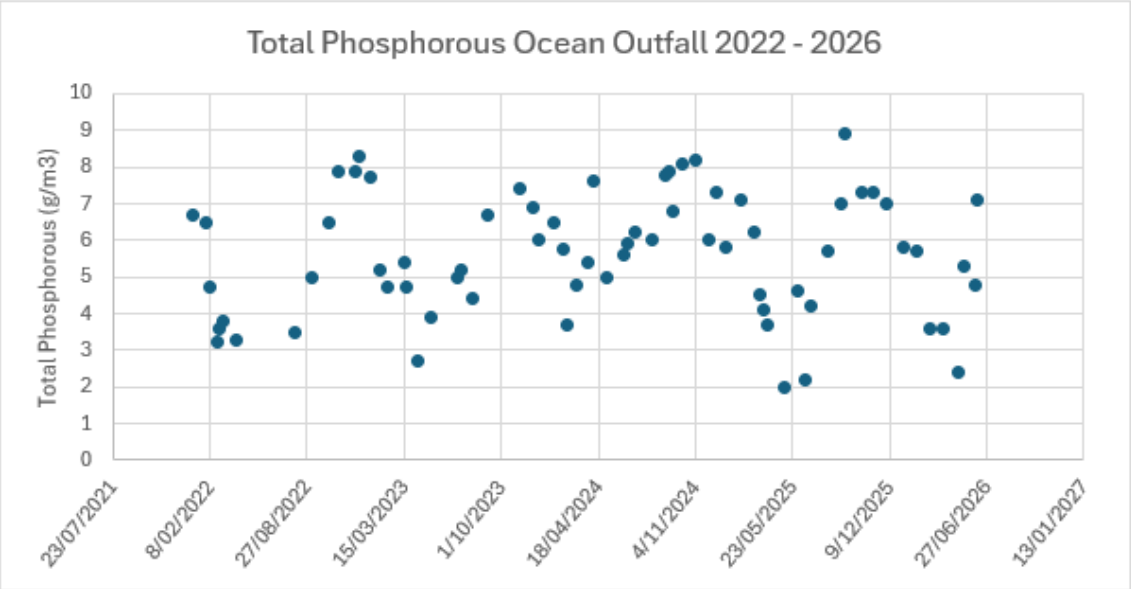


Figure 15. Dissolved reactive phosphorus concentrations in the ocean outfall discharge from January 2022 to June 2026.

The unusually high peak of total phosphorous recorded on 7/02/2024 was a laboratory result and may be considered an anomaly given no other similar peaks occurred during the sampling period. This has been removed from the below graph and statistical data summary.



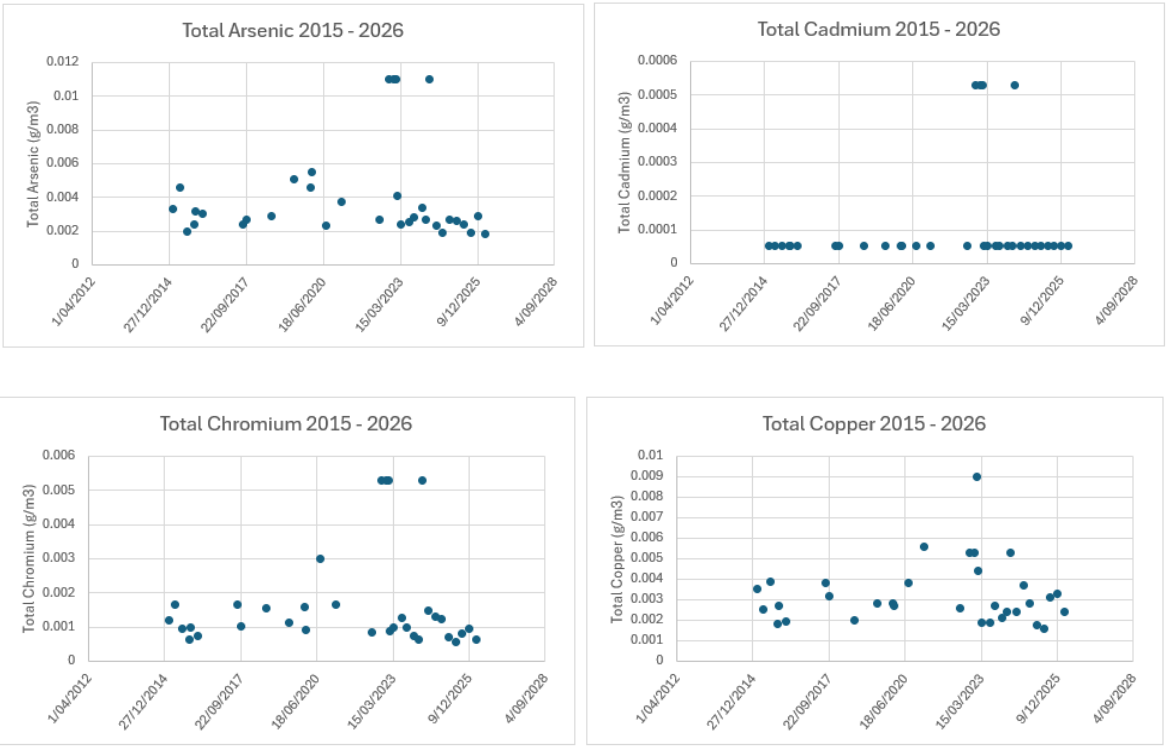
**Note: raw data correction included anomolous result of TP of 300g/m3 corrected to median from 7 February 2024*

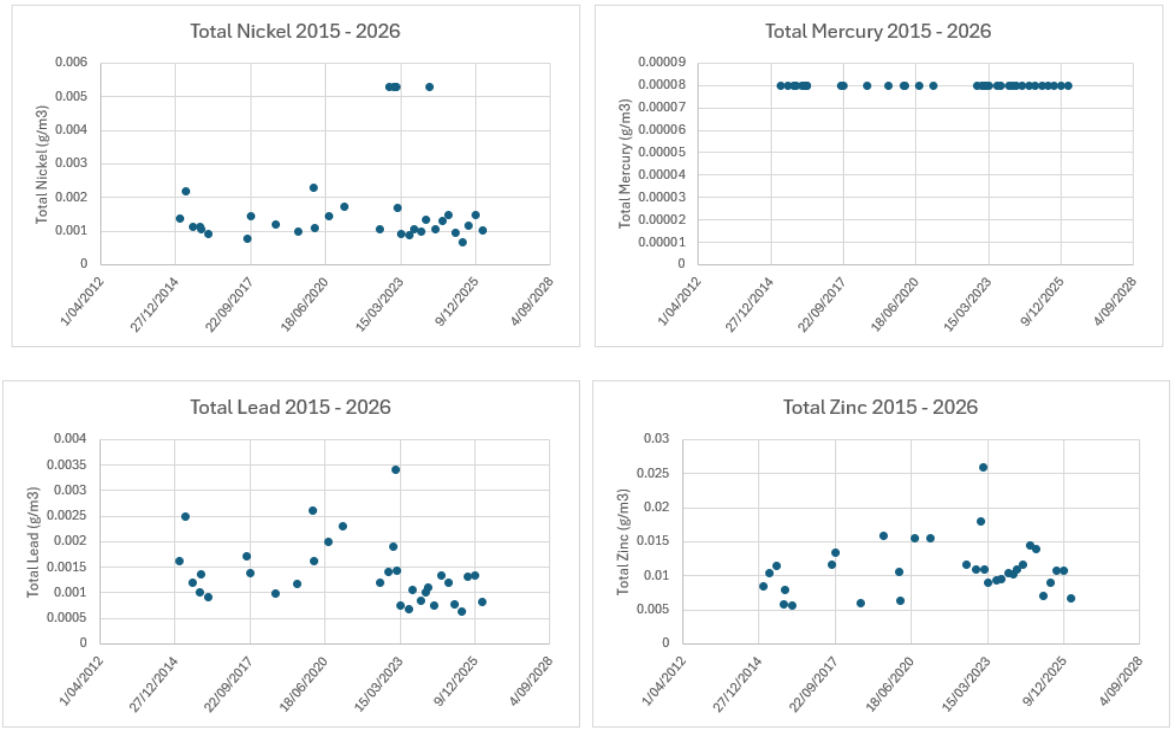
Figure 16. Total phosphorus concentrations in ocean outfall discharge between January 2022 and June 2026

2.3.5. Metals and metalloids

Total metal and metalloid concentrations from February 2015 until June 2026 are shown in Figure 17 below. These metals are required to be sampled twice a year however 3 samples of each parameter were taken during the 2025/26 year (see results in APPENDIX B – Ocean Outfall Raw Laboratory Data). The 2026 review shows the results for the metals which are frequently detected in the Ocean Outfall effluent discharge (e.g. arsenic, chromium, copper, nickel, lead and zinc) were generally on a declining trend when compared with the previous monitoring periods.

The most recent individual spike in copper, lead and zinc occurred in the January 2023 sample, which appears to be an isolated event (see Figure 17 below). Results for mercury and cadmium in the samples appear flat in their graphed result ranges because these metals were not detected by the laboratory during 2025/26 or in any earlier period. A group of consistent results at the top or bottom of the graph also indicates that this metal was not detected in that sample (e.g. as particularly evident in the graphs of arsenic, chromium and nickel). There are no consent limits for any trace metals or metalloids.





**Note Mercury and Cadmium were below detection limits in all samples*

Figure 17: Total metals and metalloids in ocean outfall discharge between 2015 and 2026

2.3.6 Microbiological quality

The Woodend and Kaiapoi WWTPs have ultraviolet (UV) disinfection systems in operation to reduce bacterial numbers in the discharge. During the 2025/26 monitoring period the UV systems were in continuous operation for both the Kaiapoi and Woodend WWTP's.

Consent CRC041162.2 specifies weekly monitoring of three faecal indicator bacteria:

- Faecal coliforms
- Enterococci
- *Escherichia coli (E. coli)*

The faecal indicator monitoring data for 2025/26 is summarised in Table 8 and is compared with the previous year (2024/25) (see APPENDIX B for raw data). This data is plotted alongside relevant consent limits as shown in the Figures on the following pages. The sampling frequency for faecal indicator bacteria during the current monitoring period complied with the requirements of Condition 9 and Condition 12 with weekly samples collected as required and with all sampled values meeting the requirements of the consent conditions.

The graphs on the following pages show faecal coliform winter samples below relevant seasonal consent limits over the full 2025/26 monitoring period, in line with previous years.

There were lower or similar median sample levels recorded for each parameter during 2025/26 than in the preceding 2024/25 year, as shown in the below table. For faecal coliforms there appears a slightly declining trend in comparison with the previous year. The 2025/26 sample levels for each faecal indicator type each met the consent requirements for number of exceedances within each limit and season (see further analysis below).

Table 8: Faecal indicator bacteria in the ocean outfall discharge (cfu/100 mL).

Indicator	July 2025 to June 2026			July 2024 to June 2025			Consent Limit	
	N	Median	Range	N	Median	Range	Standard	High
Faecal coliforms (summer: Nov-Feb)	17	170	20-1,900	17	270	0-10,250	1,000	5,000
Faecal coliforms (winter: March - Oct)	36	20	0-530	35	50	0-1,400	9,000	20,000
Enterococci	53	40.5	0-24,197	52	40.7	0-2,420	500	1,500
E. coli	53	50	0-400	52	50	0-3,800	-	-

Note: "For each period (summer: November—February; winter: March—October) no more than six out of eight consecutive samples may exceed the 'standard' value and no more than two out of eight consecutive samples may exceed the 'high' value. N: number of samples.

Enterococci numbers in a wastewater discharge of this type are typically lower than faecal coliform or *E. coli* numbers, which are more likely to include non-human derived faecal indicator bacteria as well as human-derived sources. Consent limits for enterococci do not vary between seasons as they do for faecal coliforms, although there is still a standard (500 cfu/100 mL) and high (1,500 cfu/100 mL) limit.

There was only one exceedance of the enterococci "high" limit over 2025/26, meeting the consent limit which allows for two exceedances. There was also only one exceedance of the enterococci "standard" limit over 2025/26, which is less than the consent limit of six exceedances over this time period. Results for the year were generally lower than the standard consent limit.

The Council believes a likely cause of the individual enterococci spike shown in the graph below is from biofilm sloughing off within the pipe when the sample is taken which causes an occasional very high enterococci reading. This is not representative of the usual water quality of the discharge. In any

case, full compliance with Condition 12 was achieved for enterococci with both the standard and high consent limits (refer Appendix B for enterococci raw data records).

The faecal coliform samples taken from January 2022 until June 2026 are graphed separately below for summer and winter samples against their respective consent limits. As seen in the summer graph, there were no exceedances of the high consent limit in the 2025/26 year. Only one result over the summer of 2025/26 in total breached the standard limit, which also meets the consent requirement. On no occasion over this reporting period were either the standard or high consent requirements breached for faecal coliforms during either summer or winter.

For E.coli, the below graph of results from 2022 to 2026 shows most results are below 500cfu/100mL. There are only a couple of isolated spikes where E.coli populations reach around or above 1,000cfu/100mL and one occasion where a population of 1,400 cfu/100mL was discharged during the last four years. There was also a one off spike of 3,800cfu/100mL on 17 December 2024. These spikes are considered anomalies and are discharged into the ocean from a point 1.5km offshore, away from coastal swimming areas. Therefore there is not considered to be any danger to the public from occasional high E.coli spikes in the ocean outfall discharge.

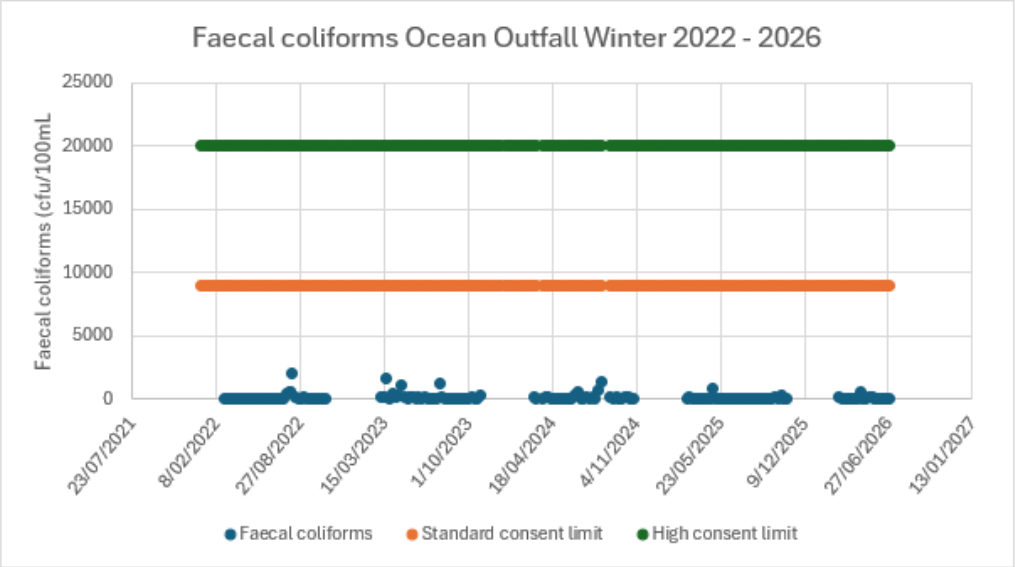


Figure 18. Faecal coliforms in ocean outfall discharge between January 2022 to June 2026 (winter samples only)

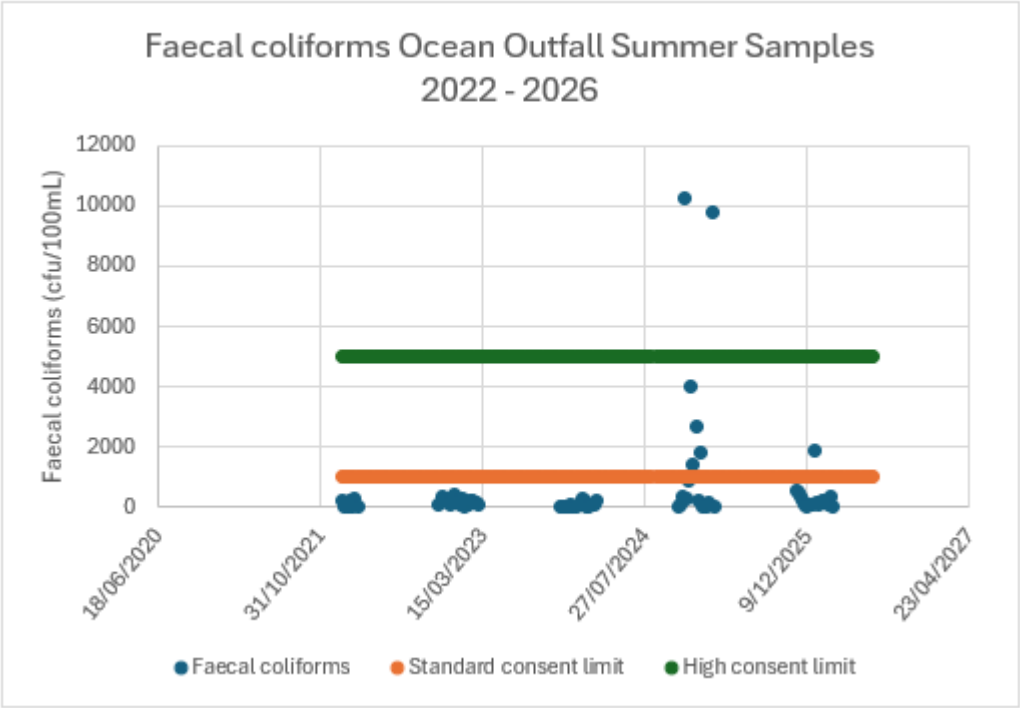


Figure 19. Faecal coliforms in ocean outfall discharge between January 2022 and June 2026 (summer samples only)

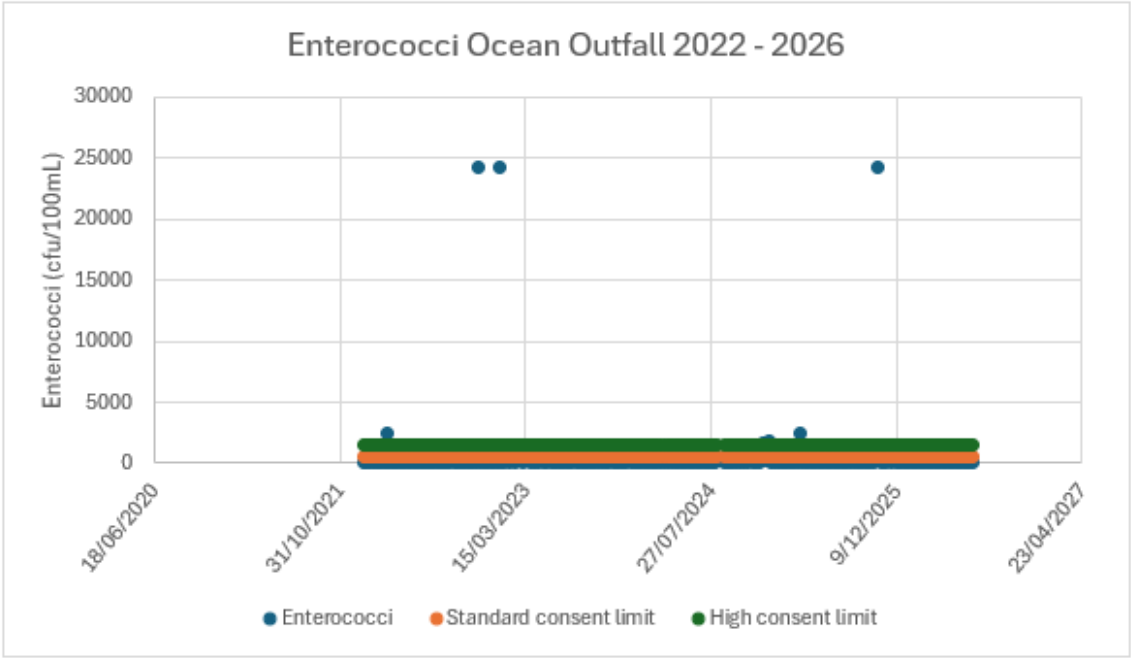


Figure 20. Enterococci in ocean outfall discharge between January 2022 and June 2026

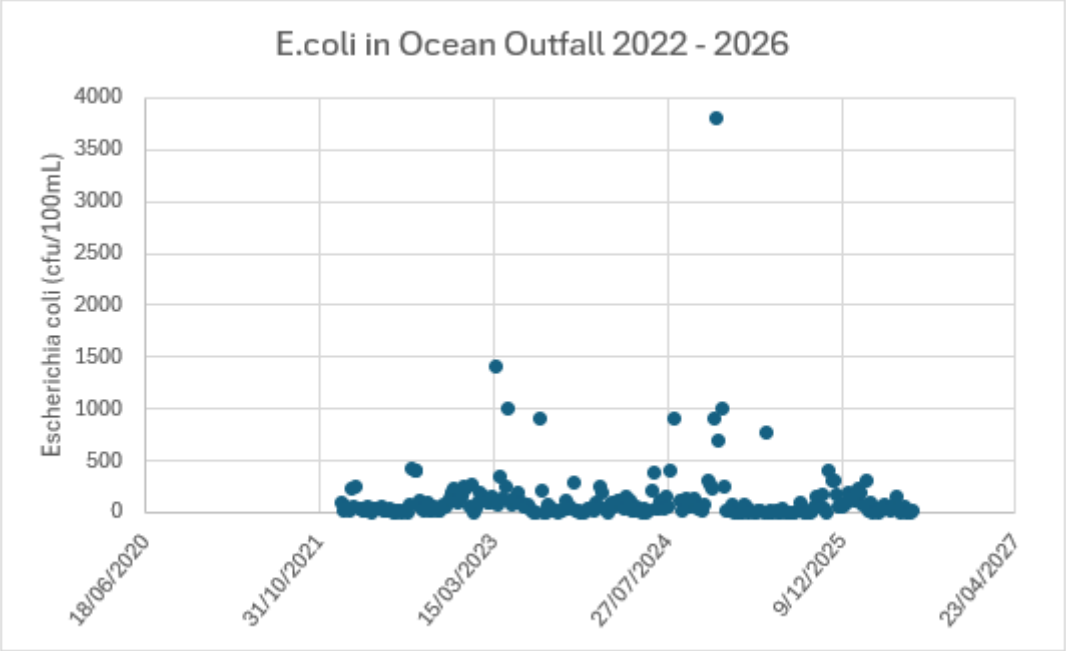


Figure 21. Escherichia coli in ocean outfall discharge between January 2022 and June 2026

2.3.7 Human pathogens

The results for the 2025/26 human pathogen tests are shown in Table 9 alongside results from the previous monitoring periods. Human enterovirus, adenovirus, *Campylobacter* and *Salmonella spp*. are required to be sampled annually (see TRIM 260423101930 – APPENDIX CI and TRIM 260420099413– APPENDIX C2), as the three-monthly sampling was only required for the first two years.

The human pathogen sampling requirements of Condition 9(d) were met in full in 2025/26. When sampled, human enterovirus and adenovirus were below their respective MDL during the 2025/26 monitoring period (see APPENDIX C1). There are no consent limits for human pathogens.

Table 9: Human pathogens in ocean outfall discharge.

Pathogen	March 2026	March 2025	March 2024	March 2023	March 2022
Human enterovirus (pfu/10 L)	Not detected	Not detected	Not detected	Not detected	Not detected
Human adenovirus (iu/10 L)	Not detected	Not detected	Not detected	Not detected	Not detected
Campylobacter	Detected	Not detected	Detected	Detected	Not detected
Salmonella spp. (/500 mL)	Not detected	Not detected	Not detected	Not detected	Not detected

Note: Units: pfu = plaque forming units; iu = infectious units. * Pathogen monitoring during 2015 occurred over various dates.

2.3.8 Organochlorine pesticides, PCBs and PAHs

The annual monitoring for organochloride pesticides, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) was undertaken in March 2026 (TRIM 260420099413 – see APPENDIX C2). There are no limits for organochloride pesticides, PCBs and PAHs, specified in the resource consent. Laboratory testing results show organochloride pesticides, PCBs and PAHs were below detection limits in the Ocean Outfall discharge in the March 2026 sampling.

2.3.9 Summary

Overall, requirements of conditions 9 — 12 have been fully met. The following are the main points from the outfall monitoring program:

- The plants are performing well, with monitoring showing the effluent quality comfortably meeting the consent requirements for flow volume (other than for a brief period of mechanical flow recording glitches caused by plant maintenance)
- The plants are consistently meeting the environmental quality limits.
- A recent and ongoing apparent decline in level of metals and metalloids in comparison with previous monitoring periods
- No clear trend in the median for DIN and Ammonia in recent years
- A decline in median values for faecal indicator bacteria compared with the previous year, whilst continuing to meet all consent requirements
- The frequency of laboratory sampling for all parameters was undertaken as required by the consent conditions.
- All organochlorine pesticide, PCB and PAH results were below their respective method detection limits.

2.4 Condition 13 – Woodend Beach, The Pines Beach and Waimakariri River mouth

2.4.1 Monitoring requirements

Condition 13 of CRC041162.2 requires weekly monitoring for faecal coliforms and enterococci at Woodend Beach and The Pines Beach. Woodend Beach is located to the north of the ocean outfall and The Pines Beach to the south. Both locations are north of the Waimakariri River mouth, as shown in Figure 1. The frequency of monitoring during the 2025/26 period at Woodend Beach and Pines

Beach complied with these requirements (see APPENDIX D – raw data Beach Samples). In addition to the weekly monitoring at Woodend Beach and Pines Beach, WDC also sampled at the Waimakariri River Mouth.

2.4.2 Microbiological monitoring results

The microbiological data measured at each site are shown in Figure 22 and Figure 23, and summarised in Table 10 (see APPENDIX D for raw data).

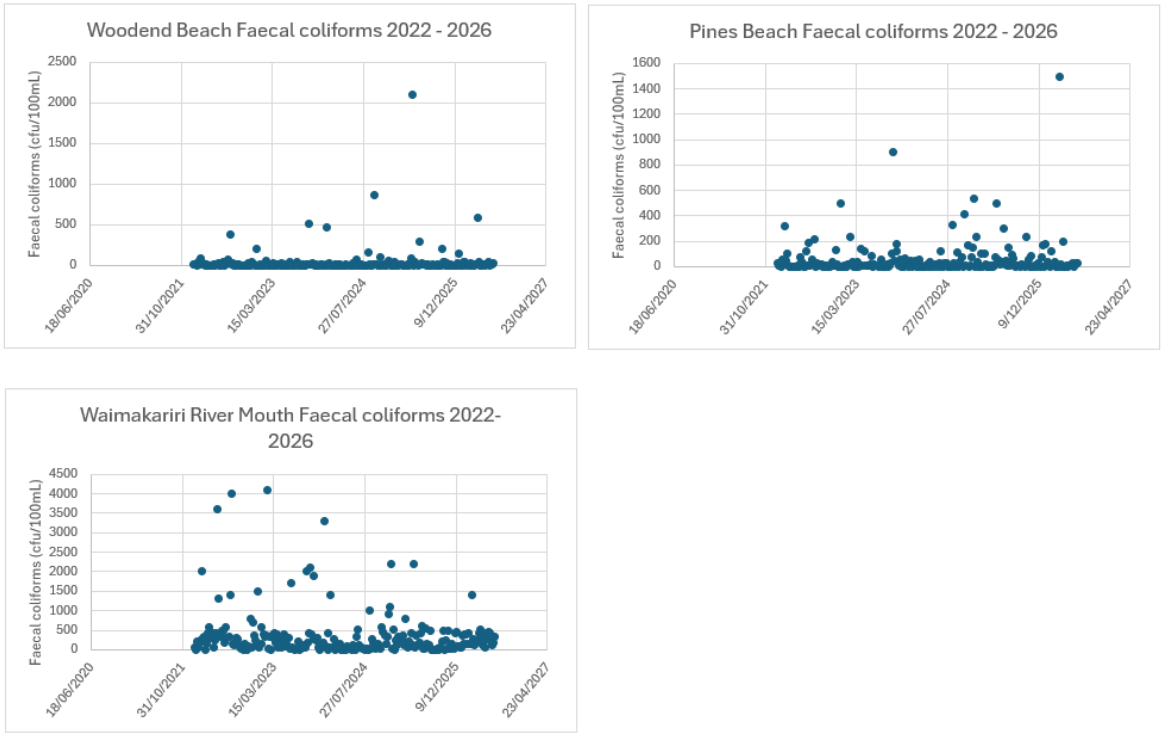


Figure 22: Faecal coliforms at Woodend Beach, The Pines Beach and the Waimakariri River Mouth between January 2022 and July 2026

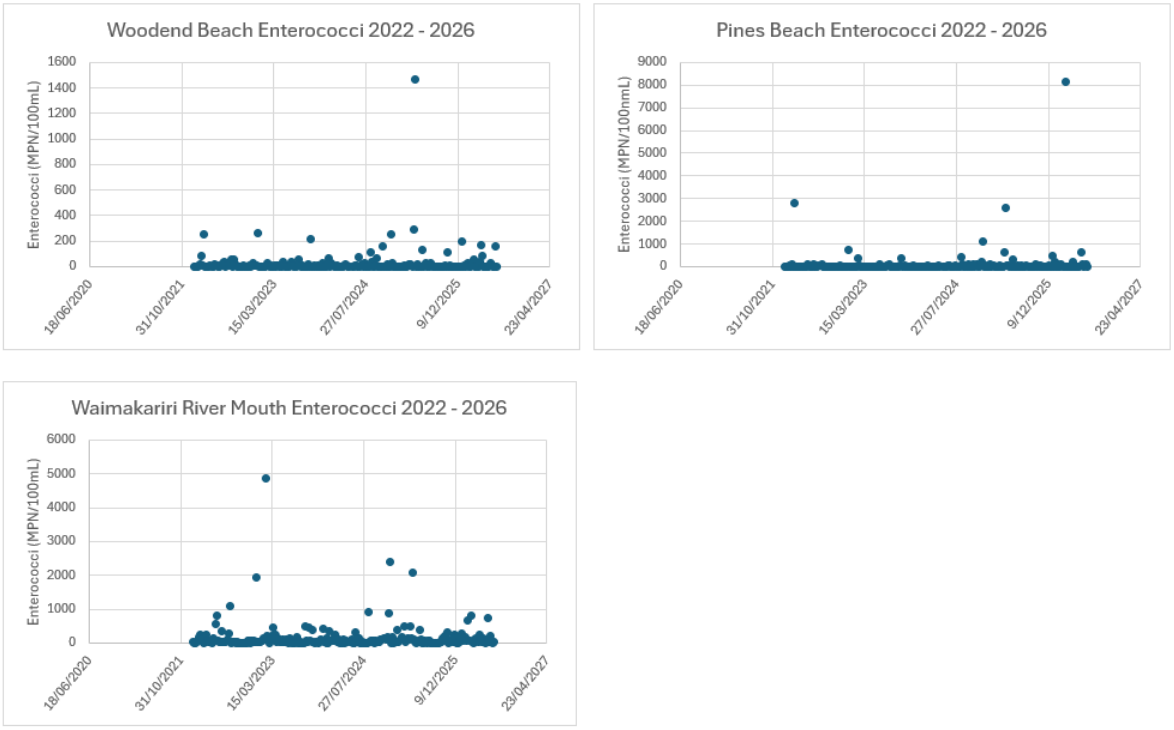


Figure 23: Enterococci at Woodend Beach, Pines Beach and Waimakariri River Mouth between January 2022 and July 2026

Table 10: Microbiological monitoring results for Woodend Beach, The Pines Beach and Waimakariri River Mouth July 2025 – June 2026

Indicator	Woodend Beach		The Pines Beach		Waimakariri River Mouth	
	N	Median (range)	N	Median (range)	N	Median (range)
Faecal coliforms (cfu/100 ml)	53	5 (0-580)	53	8 (0-1,500)	53	160 (0-1,400)
Enterococci (MPN/100 ml)	53	0 (0-199)	53	0 (0-8,164)	53	52.1 (0-801)

Note: N: number of samples

Median numbers of faecal coliforms and enterococci were highest at the Waimakariri River Mouth in all monitoring reported this year (Figures 22 and 23) and Table 10. These results could be due to a number of factors that differentiate the river mouth water quality from Woodend and The Pines Beach, such as catchment contaminant inflow from the lowland tributaries [Styx River and Kaiapoi River] entering near the mouth.

Further possible causes of the higher coliforms and enterococci at the river mouth include birdlife from Brooklands Lagoon or pigeons nesting below the Williams Street Bridge in Kaiapoi. A further factor is the short survival rate of faecal coliforms in marine waters.

The data shows that the Ocean Outfall discharge is not having a demonstrable effect on microbiological indicators at the Woodend or Pines Beach. Other factors at the river mouth have more of an impact on microbiological quality, including bird life, or agricultural catchment contaminant inflow down the Waimakariri River into the mouth.

2.4.3 Compliance summary – Beaches

The monitoring requirements in Condition 13 for sampling at Woodend Beach and The Pines Beach have been met in full during the 2025/26 monitoring period.

2.5 Condition 14 – Visual Observations

As required by Condition 14, WDC make visual observations at each sampling site to assess the presence of conspicuous oil or grease films, scums or foams or floatable materials. Wind speed and direction were also recorded and are available on request.

During the 2025/26 period, no conspicuous oil or grease films, scums or foams, or floatable materials were noted at either Woodend Beach or the Pines Beach on any of the weekly site visits during the monitoring.

2.6 Conditions 15 to 26 – Water Quality, Surface Sediments and Benthic Infauna

WDC was granted a variation to the conditions of consent, effective from 12 March 2009, relating to the sampling of mixing zone water quality, sediments and Benthic Infauna. Sampling is required after three years following commissioning of the ocean outfall and at five yearly intervals thereafter.

Water quality, surface sediments and Benthic Infauna sampling was undertaken in May 2022 and provided to Environment Canterbury with the 2021/22 Annual Compliance report. The next sampling under Conditions 15 – 26 is due in 2027.

2.7 Condition 30 – Complaints

Condition 30 states the following:

> *"The consent holder shall maintain and keep a complaints register for all aspects of all operations in relation to the discharge into the ocean. The register shall detail the date, time and type of complaint, cause of the complaint, and action taken by the Consent Holder in response to the complaint. The register shall be available to the Canterbury Regional Council at all reasonable times."*

WDC maintains a complaints register in accordance with the requirements of Condition 30 (see APPENDIX G).

There were no complaints concerning odour/sludge management concerning the wastewater treatment plants in the 2025/26 year. Several complaints were received about wastewater overflows or pump station operating odours during the year which have all been resolved at or shortly after the time of reporting (see APPENDIX G/results tab for full list of wastewater complaints for the 25/26 year).

Cultural feedback in the form of a consent review by Mahaanui Kurataiao Limited was undertaken in 2024 (TRIM 240801127099). In this review it was recommended that *"WDC continue to engage with Te Ngāi Tūāhuriri Rūnanga for all proposed upgrades, modifications, renewal of the consent and any feasible alternatives. It is also recommended that WDC send monitoring and compliance reports to the Runanga to keep them informed of the results and compliance".*

2.8 WWTP Operations, Maintenance and Major Shutdowns

There were no major shutdowns of the ocean outfall in the 2025/26 monitoring period.

Condition 32 requires the Council to add a list of any maintenance works needed, proposed or undertaken to ensure compliance with the conditions of the consent.

The Council arranges ocean outfall diffuser maintenance periodically, which requires inspections undertaken with a boat and diver. The most recent inspection reports are provided from 19 October 2023 and 18 October 2022 which summarise results from inspections of all 4 diffusers over 2022 to 2023 (see TRIM 231027171812 – APPENDIX E1 and TRIM 221031189044 APPENDIX E2).

Since initial construction in 2006, periodic diffuser maintenance has been undertaken on average through diving maintenance visits about every two years. The Council has signed a contract with NZDS to carry out diving every year for 3 years from 2024/25 - 2026/27. The Diffuser 2 & 3 were completed in 2024/25, and Diffuser 1 & 4 maintenance was completed on 20 May 2026 (TRIM 260603129485 - APPENDIX E3).

The plants have performed well in the 2025/26 monitoring period with no major issues. Midges are noted as an ongoing operational control issue for the Woodend and Kaiapoi wastewater treatment plants. The management approach for midges is discussed below under commentary on the insect management plan for the Kaiapoi consent CRC041049.

There was an accidental wastewater overflow incident that occurred at the Rangiora Wastewater Treatment Plant (WWTP) on 26 November 2025. Council staff took immediate and proactive steps to cease the overflow once it was identified, in order to minimise environmental impacts, and voluntarily alerted Environment Canterbury of the incident. Testing undertaken showed some elevated E.coli results but these were not above levels that can occur naturally in the stream. A formal report was presented to the Council's Utilities & Roading Committee on the incident and the improvement actions being implemented to prevent reoccurrence (refer TRIM 260430105765, Appendix O).

2.9 Summary of Compliance – CRC041162.2

A summary of compliance with condition CRC041162.2 is presented in Table 11 below.

Table 11: Summary if compliance for 2025/26 for consent CRC041162.2.

Consent condition	Description	Compliance
Condition 2	Discharge volume and rate	Mostly compliant – data recording error of Ocean Outfall instantaneous flow due to plant maintenance affecting accuracy of the flow meter readings on several occasions between November 2025 to March 2026 that has now been resolved.
Condition 9	Ocean outfall discharge quality	Full compliance for all sampling and environmental limits
Condition 11	Discharge BODs, TSS, ammoniacal-N limits	Full compliance
Condition 12	Discharge microbiological limits	Full compliance
Condition 13	Woodend Beach and The Pines Beach	Full compliance
Condition 14	Visual observations	Full compliance

Condition 15 – 26	Water quality, surface sediments and benthic infauna	No testing was required this monitoring period – Full compliance
Condition 30	Complaints	Full compliance

3 CRC041049 – DISCHARGE FROM KAIAPOI WWTP

3.1 Condition 2 – Groundwater Quality Monitoring

Condition 2 states the following:

> *"The consent holder shall monitor on-site bores 1, 2, and 3 and two new monitoring bores within 200 metres of the site, on a monthly basis for a period of up to two years after the introduction of Rangiora effluent into the wetland, thereafter at three monthly intervals. Samples from the monitoring shall be analysed for faecal coliforms, E. coli, nitrate-nitrogen and ammoniacal-nitrogen."*

The locations of the groundwater quality monitoring bores are shown in Figure 24. The regional groundwater flow is assumed to be towards the east in the direction of the coast. Bore 1 (labelled as WDC1) and Bore A are considered 'control' bores as they are located up-gradient of the WWTP, whereas bores 2, 3 (labelled as WDC2 and WDC3, respectively) and B are 'effects' bores as they are down-gradient from the WWTP. Effects of the WWTP may be evident in groundwater quality through a comparison of the 'control' bores with the down-gradient bores' water quality.

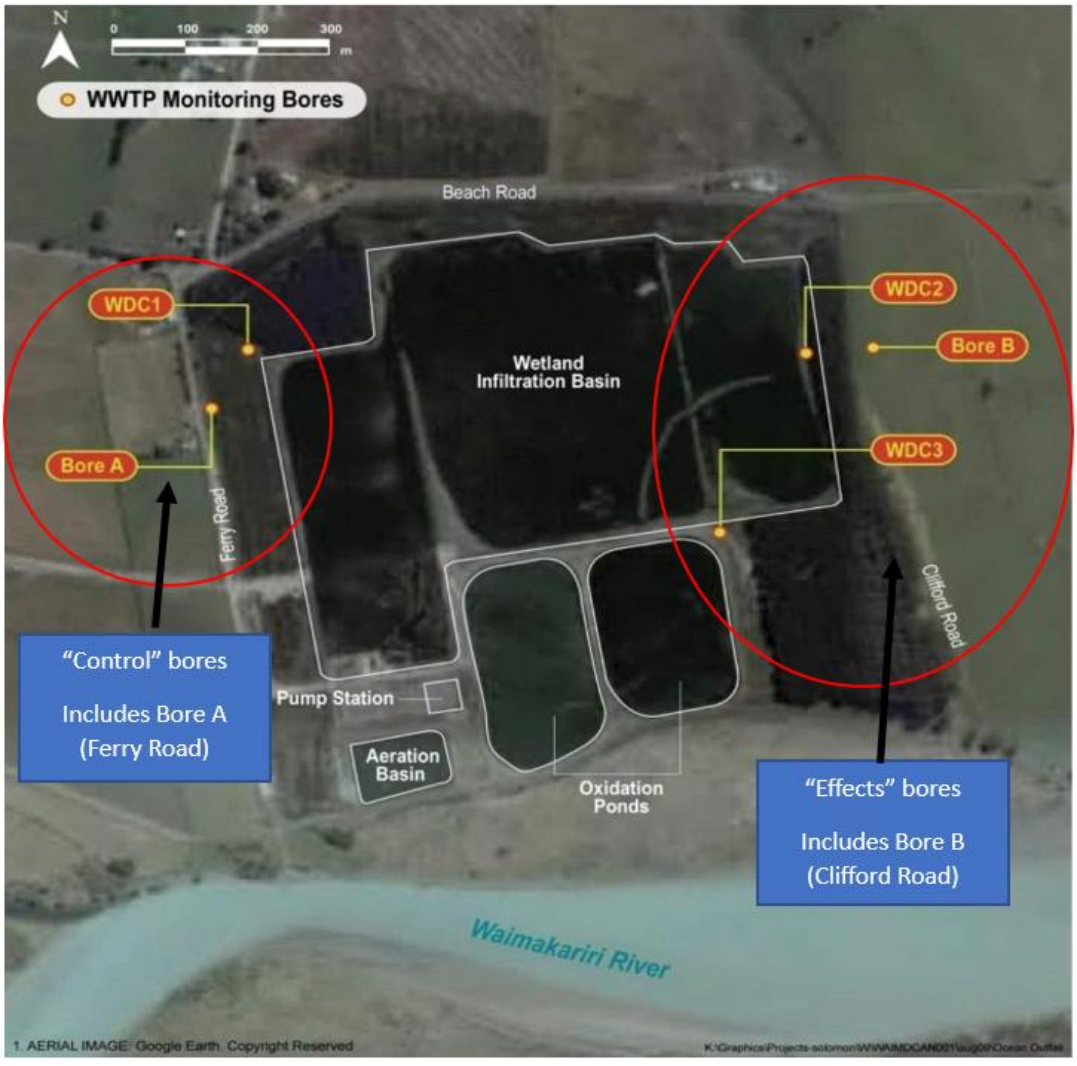


Figure 24: Location of Kaiapoi monitoring bores

Although the two-year period of monthly sampling required by Condition 2 was met as of February 2008, monthly sampling continued until February 2010 when three-monthly sampling commenced. Four samples were collected during the 2025/26 monitoring period (refer to Table 12). Therefore, the three-monthly sampling requirement was met.

3.2 Groundwater Monitoring Results

3.2.1 Nutrients

Nutrient concentrations in the five bores for the 2025/26 monitoring period are shown in Table 12. Nitrate nitrogen (nitrate-N) data is plotted in Figure 25 and ammoniacal-N data is plotted in Figure 26.

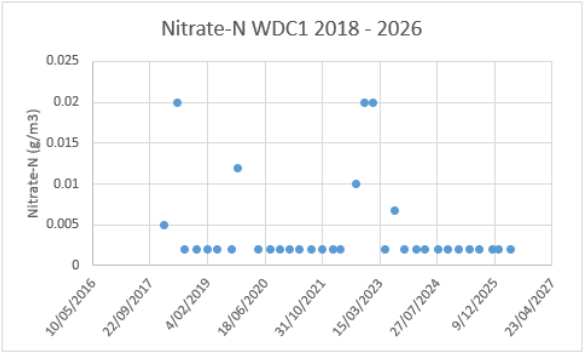
Table 13 below clarifies sample container names with sample sites – useful when referring to laboratory sheets and the supporting raw data spreadsheet (APPENDIX F). Table 13 has been provided due to historical data correction, however data sampled and analysed in the 2025/26 year is considered correct. Nitrate-N results show low detection levels in all monitored bores. Ammoniacal Nitrogen results show higher ammonia concentrations in the down-gradient "effects" bores, although concentrations decrease in the east towards the coast.

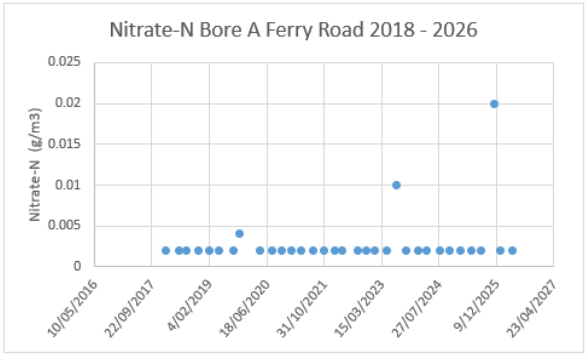
Table 12: Nitrate-N and ammoniacal-N concentrations in Kaiapoi WWTP groundwater monitoring bores: 1 July 2025 until 30 June 2026

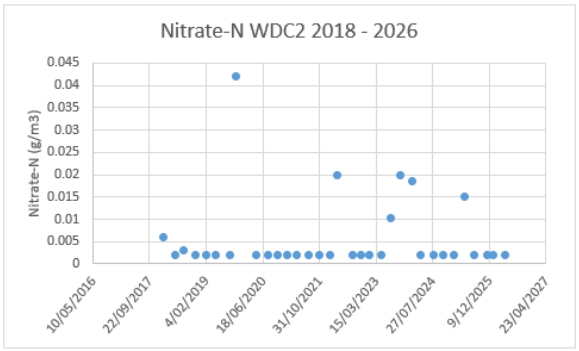
Bore	Nitrate-nitrogen (g/m³)				Ammoniacal-nitrogen (g/m³)			
	Jul 25	Nov 25	Jan 26	Apr 26	Jul 25	Nov 25	Jan 26	Apr 26
WDC1 (control)*	< 0.002	< 0.002	< 0.002	< 0.002	0.016	0.019	0.014	0.017
Bore A Ferry Road (control)	< 0.002	< 0.02	< 0.002	< 0.002	0.066	0.098	0.128	0.105
WDC2 (effect)	< 0.002	< 0.002	< 0.002	< 0.002	12.8	13.4	13	17.4
WDC3 (effect)*	<0.02	0.003	< 0.02	< 0.002	13.6	15.3	16.3	14.7
Bore B Clifford Road (effect)	< 0.002	< 0.002	0.009	<0.002	6.7	8.9	8.9	7.9

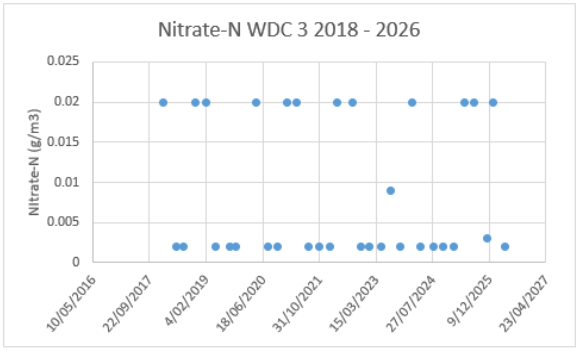
Table 13: Lab Sheet, Container Label and Site Map Reconciliation Table.

Bore Index – Map	Lab Sheet and Container Label Reference
WDC1 (control)	Kaiapoi Bore 1
Bore A Ferry Road (control)	Ferry Road
WDC2 (effect)	Kaiapoi Bore 2
WDC3 (effect)	Kaiapoi Bore 3
Bore B Clifford Road (effect)	Clifford Road









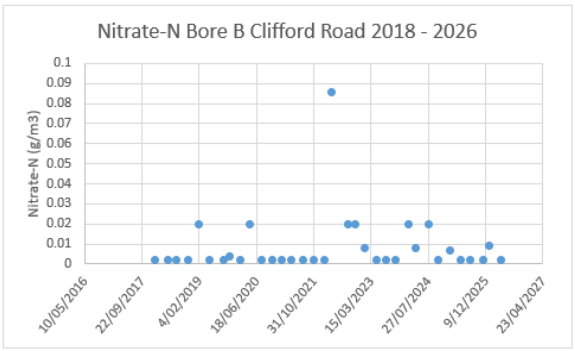
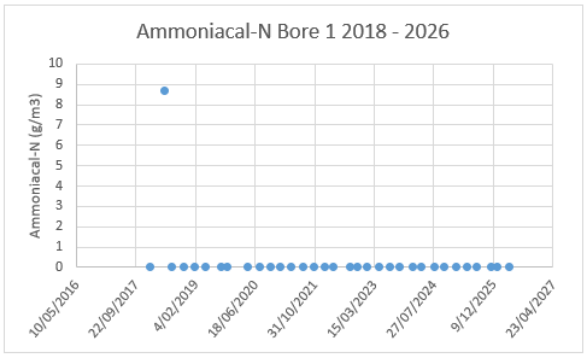
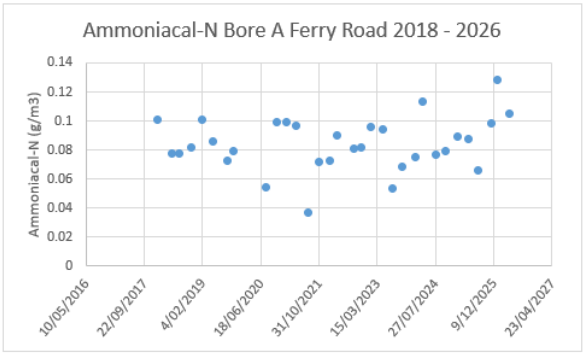
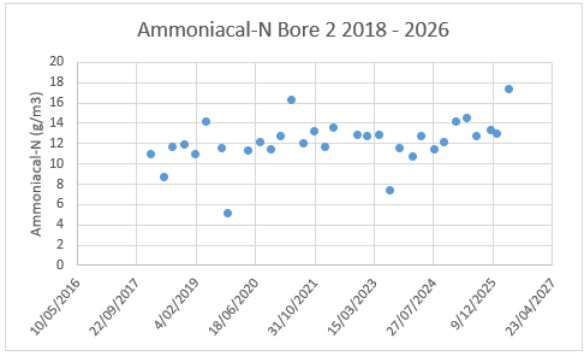


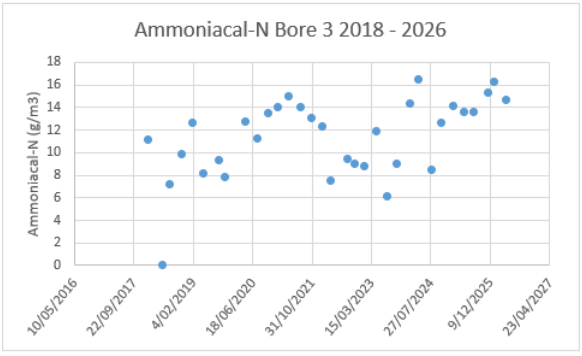
Figure 25: Nitrate-N concentrations in Kaiapoi WWTP monitoring bores between 2018 and 2026

There are low levels of detection and no trend apparent in detections or levels of Nitrate-N in Kaiapoi groundwater bores between 2018 and 2026.









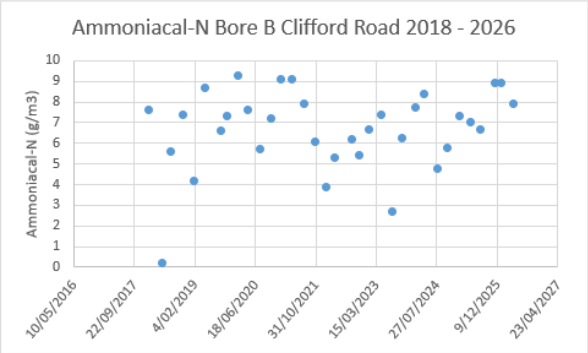


Figure 26: Ammoniacal-N concentration in groundwater monitoring bores from 2018 – 2026

There is a trend apparent for Ammoniacal-N concentration. This is shown in Figure 26 to be higher in the effects bores than the control bores. It is however lower in "effect" Bore B – Clifford Road to the east of the plant, when compared with "effect" bores WDC2 and WDC3. These WDC 2 and 3 bores are used to assess quality of shallow groundwater directly beneath the wastewater basin areas and have higher ammonia (within usual ranges of 6 g/m3 - 17 g/m3) in comparison with the "down-gradient" Clifford Road bore (within a lower usual ammonia range of 3 g/m3 – 10 g/m3).

The movement of shallow groundwater at the site is understood to be towards the east towards the coast. The reduced concentrations of ammonia in shallow groundwater east of the plant indicates a reduction in eco-toxicity of ammonia in shallow groundwater as it is conveyed away from the plant. This occurs through nitrification as ammonia is converted to nitrite-N and then nitrate-N which is less harmful to aquatic life. It is also noted that ammonia in the 3 effects bores is also within its historic ranges for each bore within the period 2018 to 2026 and there is no increasing trend.

3.2.2 Faecal indicator bacteria

E. coli and faecal coliform numbers measured during sampling in 2025/26 are tabulated in Table 13 and shown on Figure 27 and Figure 28, respectively.

E.coli and faecal coliform numbers in groundwater were mostly not detected in either the control or effects bores. However there are periodic spikes in both populations in the laboratory results for the effects bores. These unique spikes in these parameters are unique "one-off" events and "high spikes" have not occurred in recent years.

Table 14: Escherichia coli and faecal coliforms in Kaiapoi WWTP groundwater monitoring bores.

Bore	Escherichia coli (cfu/100mL)				Faecal coliforms (cfu/100 mL)			
	Jul 25	Nov 25	Jan 26	Apr 26	Jul 25	Nov 25	Jan 26	Apr 26
WDC1 (control)*	<1	<1	<1	<1	<1	<1	<1	<1
A Ferry Road (control)	<1	<1	<1	<1	<1	<1	<1	<1
WDC2 (effect)	<1	<1	<1	<1	1	<1	<1	<1
WDC3 (effect)*	<1	1	<1	2	<1	1	2	2
B Clifford Road (effect)	<1	10	<1	<1	<1	13	<1	<1

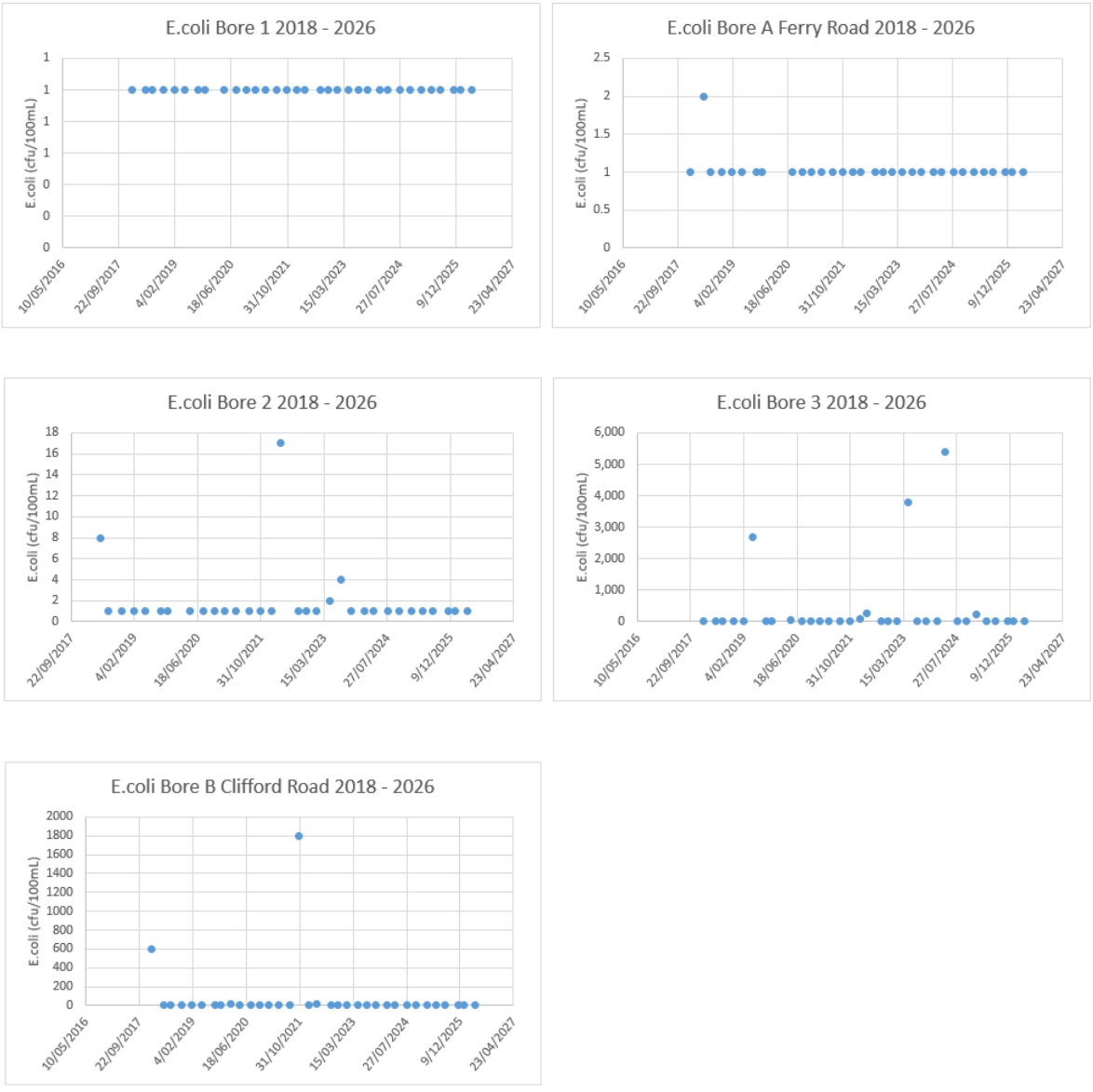


Figure 27: Escherichia coli in Kaiapoi WWTP monitoring bores between 2018 and 2026



Figure 28: Faecal coliforms in Kaiapoi WWTP monitoring bores between 2018 and 2026

There are no increasing or reducing environmental trends in shallow groundwater down-gradient of the plant for faecal coliform population numbers or E.coli. There have been periodic spikes in previous years in the "effect" bore data shown in Figures 27 and 28 but no recent spikes recorded over the last few years. These Figures illustrate there were no trends in each of these data sets between 2018 to 2026 for each parameter sampled. Figures 27 and 28 show all data reported for each site and parameter is within its historical range.

3.3 Condition 6 – Operating and Reporting

There were no major works undertaken at the Kaiapoi WWTP in the 2025/26 monitoring period, other than replacement of the inlet screens with spiral sieve screens. No major maintenance of the plant facilities was required or undertaken in the 2025/26 monitoring year.

Condition 6 (f) requires reporting on the activities undertaken under the insect control management plan. This is provided as follows:

Insect Control Management Plan:

The Council provides its insect surveillance methodology through (a) monitoring and responding to nearby resident complaints. The control methodology (b) is through maintenance of basin and wetland water levels, aeration levels and maintaining wetland water circulation plus planting, *Bacillus thuringiensis israelensis* (Bti) spraying and shallow basin larval disruption dredging. Trigger levels (c) and consultation with the community (d) are monitored through midge trap monitoring, service requests and evidence of public reports of insect complaints. Reporting (e) and review (f) are undertaken through annual reports to the Utilities and Roading Committee and reviews of the Kaiapoi and Woodend WWTP Midge Management Plan. A report to the Utilities and Roading Committee of Council from Sophie Allen, Water Environment Advisor, summarises recent midge management activities up until mid-2025 (TRIM251030205990 see Appendix N (a)) and management actions are summarised in the Kaiapoi and Woodend WWTP Midge Management Plan (TRIM 240801127732 – see Appendix N (b) (attached).

A check of insect complaints through the service request system was also undertaken for the period 1 July 2025 until 30 June 2026 (see Appendix G). One insect complaint was received for the Woodend plant on 28 November 2025. The Council follow up advised that "Sophie has booked next round of BTI spraying to help control midges at Woodend during that period".

A longer term historic check of insect complaints from 1.1.19 until 13.06.24 was also provided through the service request system (email from Maree Harris Customer Services Manager dated 13 June 2024 TRIM 240627104472 – available on request) which did not identify any relevant complaints. The Council is aware that insect complaints have not generally been picked up in the Council's service request system although formal reporting of all insect complaints through the service request system has now been put in place.

The Kaiapoi Wastewater Treatment Plant (WWTP) has received complaints regarding insect swarms from a neighbouring residential property via direct email or phone call to WDC staff. This species has been confirmed to be *Chironomus zealandicus*, a native non-biting midge that has caused nuisance issues at several wastewater treatment plants around New Zealand. Neighbours of the Woodend WWTP and Pegasus wetland complex have also noted the presence of midges, thought to be *C. zealandicus,* with formal complaints received in early summer of 2021 from Woodend WWTP neighbours after the removal of pine trees to the west of the WWTP.

The Kaiapoi and Woodend WWTP Midge Management Plan is an integrated midge management plan for the control of *C. zealandicus* that is being developed for the Kaiapoi and Woodend WWTPs based on practices employed at the two largest WWTPs in NZ (Mangere and Bromley, Christchurch) as well as methods detailed in literature.

Condition 6(g) also requires the Council to report on activities undertaken under the groundwater monitoring plan. This is provided as follows:

Groundwater Monitoring Plan:

From the Groundwater Monitoring Plan, the measurement points (a) are control bores "WDC 1" and "Ferry Road" and effects bores "WDC 2", "WDC 3" and "Clifford Road". The measurement programme (b) is quarterly sampling which is ongoing every year. The consultation with adjacent property owners occurs through Council monitoring any complaints received via any service request. However there

are no down-gradient private groundwater drinking water supply bores that could be affected by this activity and no complaints about shallow groundwater quality have been received. The reporting (d) and review (e) continue to be undertaken through the Annual Compliance Report from looking at results of the sampling programme described above.

Groundwater depth levels are now being recorded in Infrastructure Data and results for the last several years are provided in the attached spreadsheet for the sample rounds from October 2023 until the present (see APPENDIX F5– Kaiapoi WWTP Bores Quarterly). This bore water depth data is recorded in the spreadsheet for each bore but was not collected prior to October 2023.

There are no proposed changes to the frequency and type of measurements being taken during groundwater monitoring which is considered sufficient to identify trends over time and assess any changes in groundwater quality. As discussed above there is no increasing trend in any monitored parameter and effects of ammonia in shallow groundwater reduce moving east from the plant.

The above statements indicate the Council is now fully meeting the requirements of this condition.

3.4 Summary of Compliance – CRC041049

Table 15: Summary of compliance for 2025/26 under CRC041049.

Consent condition	Description	Compliance
Condition 2	Groundwater monitoring	Full compliance
Condition 6	Annual reporting	Full compliance

4 CRC168391 – FROM WOODEND WASTEWATER TREATMENT PLANT

4.1 Overview

The Woodend WWTP is located approximately 23 km north of Christchurch (Figure 29) and receives wastewater from Woodend, Waikuku Beach, Pegasus, Tuahiwi, Ravenswood and Woodend Beach. The WWTP consists of two inlet screens, three aeration basins, two oxidation ponds and two constructed wetlands. Treated wastewater passes through an ultraviolet (UV) disinfection system before being pumped to the ocean outfall in Pegasus Bay between The Pines Beach and Woodend Beach, north of the Waimakariri River mouth.



Figure 29: Location of Woodend WWTP and groundwater monitoring sites.

Resource consent compliance for the period 1 July 2025 to 30 June 2026 (the monitoring period) has been assessed using monitoring data provided by WDC. WDC undertakes additional monitoring at the WWTP which, although is not required by the consent, is included in this report where relevant.

4.2 Conditions 5 – 6: Seepage

4.2.1 Record keeping for daily volumes

The resource consent requires WDC to keep records of daily volumes received by the Woodend WWTP and daily volumes discharged to the ocean outfall. As shown in Figure 30, the Woodend WWTP receives influent wastewater from seven wastewater pump stations. These are:

- Gladstone Road pump station
- Petries Road pump station
- Woodend Beach pump station
- Waikuku Beach WWTP
- Pegasus Main Street pump station
- Mary Ellen Street pump station
- Kesteven Place pump station

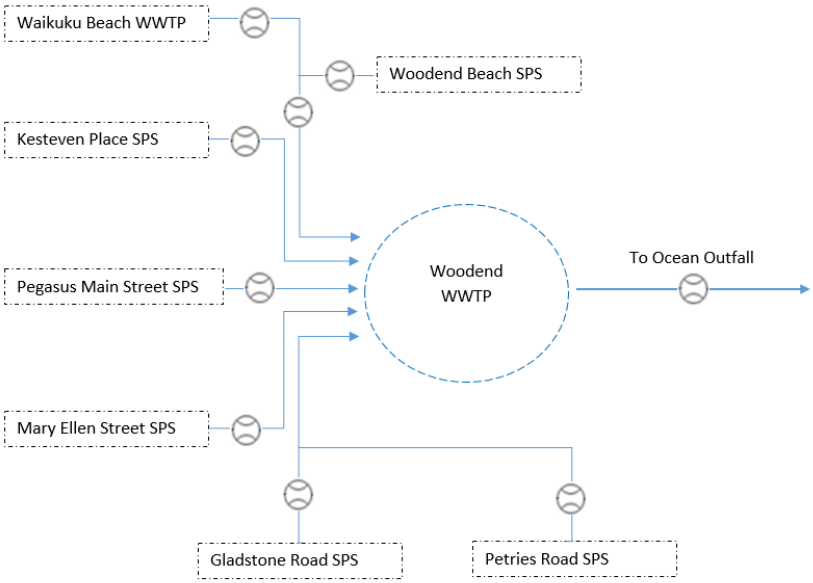


Figure 30: Schematic Woodend sewer network

Inflow records from the electromagnetic flow meters at Gladstone Road, Petries Road, Woodend Beach, Waikuku Beach WWTP, Pegasus Main Street, Mary Ellen Street and Kesteven Place for the monitoring period were recorded by the WDC SCADA system. These volumes are presented as the combined daily inflow volumes mapped alongside rainfall data from the Woodend, Gladstone weather station for the corresponding period on the same figure for comparison.

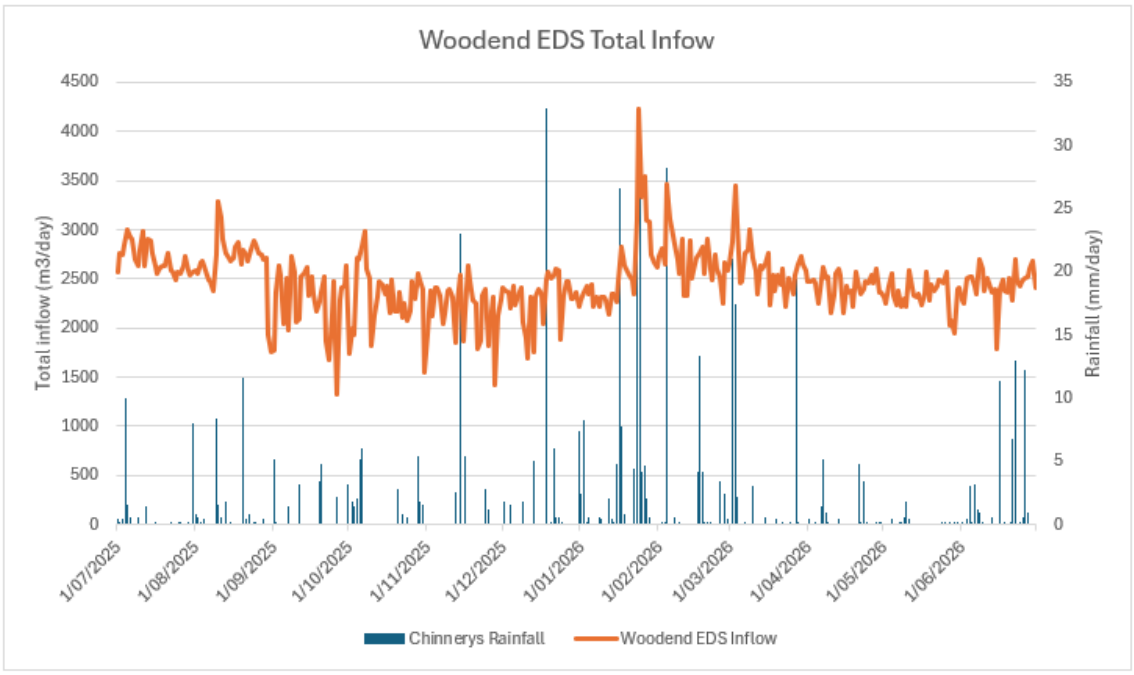


Figure 31: Daily inflow volumes July 2025 – June 2026 plotted with rainfall at Woodend.

Outflow data is measured by an electromagnetic flow meter and logged via a SCADA system. Flows from Woodend WWTP to the ocean outfall for the 2025/26 monitoring period are shown in Figure 32. Flow data for the Woodend WWTP is presented in APPENDIX A3.

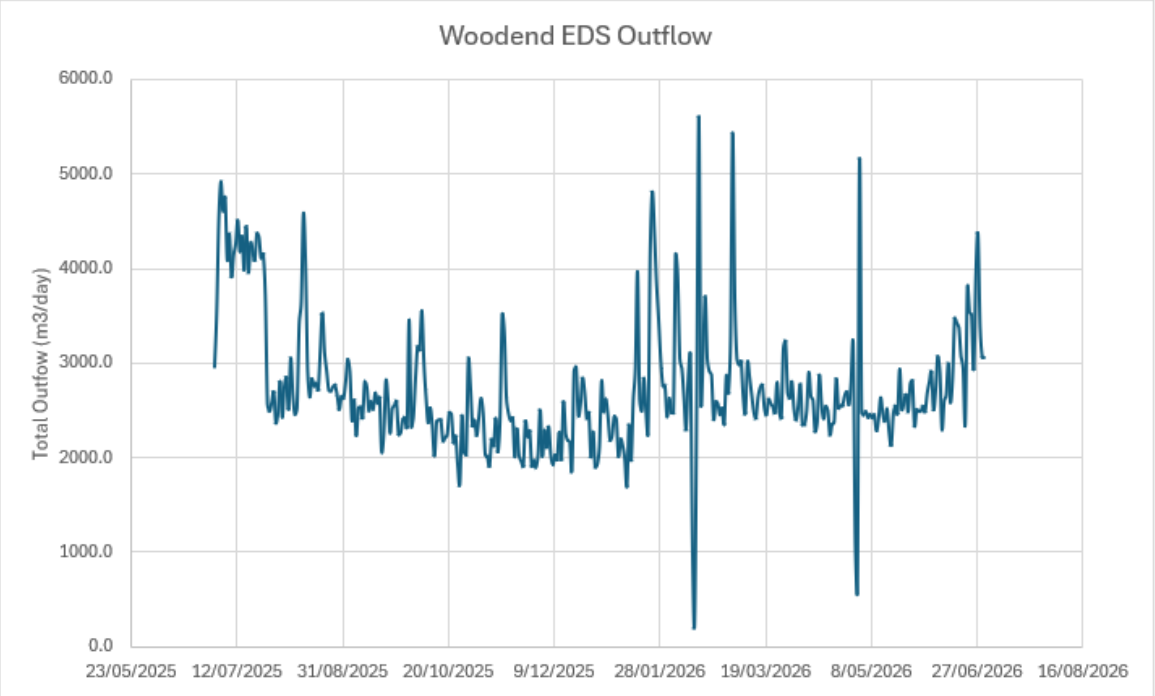


Figure 32: Daily outflow volumes (m^3/day) from Woodend WWTP to ocean outfall July 2025 to June 2026

4.2.2 Daily seepage discharge volumes

The resource consent states that the volume of treated wastewater discharged via seepage should be calculated by subtracting the volume of wastewater discharged to the ocean outfall from the volume of wastewater received at the WWTP. Calculated seepage volumes for the monitoring period are shown in Figure 33.

The prescribed method for calculating the discharge via seepage does not account for:

- Pond / Wetland attenuation and fluctuating water levels
- Rainfall
- Evaporation from pond/wetland water surfaces and evapotranspiration from wetland plants
- Pond buffering (this can be significant during changes in plant operation)

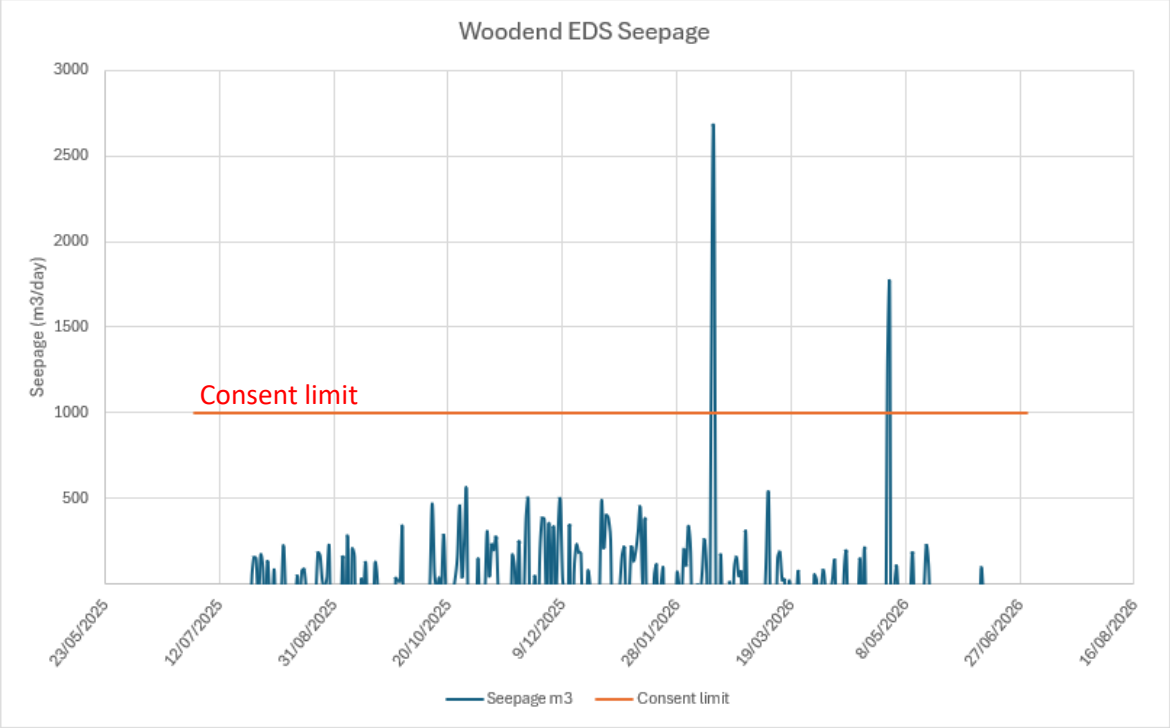


Figure 33: Calculated daily seepage volumes (m^3/day) July 2025 to June 2026

Condition 5 states that;

> "the volume of treated effluent discharged to land via seepage shall not exceed 1000 cubic metres per day."

The data shows that, during the 2025/26 period, there were two exceedances of the consent limit.

The first was on 13 February, when inflow was fairly consistent with the preceding and following days, but the wastewater plant outflow dropped off sharply after a preceding peak and was then followed by a further peak two days later. In operational detail:

10 Feb 14:00 the flow from the settling ponds into the wetland areas was stopped and water began to back up on the settling ponds while the wetland levels began to drop. As the levels in the wetland dropped, the flow into the pump station decreased and therefore the pumps began to run far less frequently and the outflow dropped dramatically.

13 Feb at 11:00 the flow from the Settling Ponds through to the wetlands was reinstated and the wetlands began to fill again. This ended up with high flows through the wetlands and into the pump station, with the pump station running continuously from 17:45 on the 13th through until 07:30 on the 14th. Normal flows were not restored until about 08:00 on the 15th.

This is considered to be a result of pond buffering, with flows retained within the plant and released leading to an apparent "exceedance" when a delay occurs between the inflow and discharge dates. A similar event occurred with the second "exceedance" on 1 May.

Pond buffering occurs where the effluent levels within the plant are managed to pass flows slowly through the plant after periods of high rainfall or to manage other operational and treatment

requirements, so that effluent discharges around 1 - 2 days after the rain or other storage event. This is considered to represent a high storage period/event in the ponds prior to release of the inflow in following day/s, rather than a seepage event on a certain date. This is a common occurrence following periods of significant rainfall. For these events the difference between the inflow and outflow under these conditions is due to a temporary (around 24 – 48 hour) increase in storage levels within the ponds and wetlands rather than any actual discharge to land via seepage. The data demonstrates the timeframe of conveyance of effluent through the plant between the inlet and outlet during the treatment process.

The data indicates that on average over the 2025/26 monitoring period verified, actual compliance with the daily seepage volume consent limit has been achieved.

4.3 Conditions 9 to 11 – Groundwater Monitoring

4.3.1 Monitoring requirements

Condition 9 of the resource consent requires two monitoring bores (south-east and west) to be sampled at three-monthly intervals. The south-east bore is located down-gradient of the WWTP and the west bore is located up-gradient (Figure 29 above and Figure 34 below).



Figure 34: Location of south-east down-gradient (M35/8773) and south–west up-gradient (M35/11301) groundwater monitoring bores

In accordance with the Groundwater Monitoring Plan (WDC 2008), which is required under Condition 15, WDC began monitoring two domestic bores in February 2007, located on the Robinson and McKenzie properties directly to the west (up-gradient) of the WWTP (also shown in Figure 29 above). Although the bores on these properties are consented for domestic water supply, both properties have an alternative water source supplied by WDC where they now receive a restricted water supply (2 m^3/day) from the Woodend water supply.

4.3.2 Depth to groundwater

Depth to groundwater was measured in the south-east and west bores on 4 occasions during the 2025/26 monitoring period (Table 16) (APPENDIX H2).

The reason for the absence of groundwater depth data results for the McKenzie and Robinsons bores is that these are private water supplies, not able to be readily accessed by Council.

4.3.3 Groundwater quality

Groundwater samples were collected and analysed for nitrate-N, ammoniacal-N and faecal coliforms, as per Condition 11. The results are shown in Figures 35 and 36 and summarised in Table 16 below (see raw data in APPENDIX H1). There are no consent limits for these parameters.

Table 16: Groundwater quality monitoring at Woodend WWTP from July 2025 to June 2026.

Sample	Bore	Top Water Level (m)	Ammoniacal-N (g/m^3)	Nitrate-N (g/m^3)	Faecal coliforms (cfu/100ml)
24 July 2025	McKenzie (up-gradient)	N/A	< 0.010	< 0.002	<1
	Robinsons (up-gradient)	N/A	< 0.010	< 0.002	76
	West (up-gradient)	3.25	0.93	< 0.02	<1
	South-east (down-gradient)	2.6	0.035	26	<1
20 November 2025	McKenzie (up-gradient)	N/A	<0.010	<0.002	<1
	Robinsons (up-gradient)	N/A	0.029	<0.002	<1
	West (up-gradient)	3.18	0.90	<0.02	<1
	South-east (down-gradient)	2.86	2.4	2.3	<1
28 January 2026	McKenzie (up-gradient)	N/A	<0.010	<0.002	<1
	Robinsons (up-gradient)	N/A	0.014	<0.02	230
	West (up-gradient)	3.15	0.89	<0.02	<1
	South-east (down-gradient)	2.85	2.5	<0.02	<1
24 April 2026	McKenzie (up-gradient)	N/A	<0.010	<0.002	<1
	Robinsons (up-gradient)	N/A	0.011	<0.002	1
	West (up-gradient)	3.4	0.89	<0.02	<1
	South-east (down-gradient)	2.9	2.6	<0.02	<1

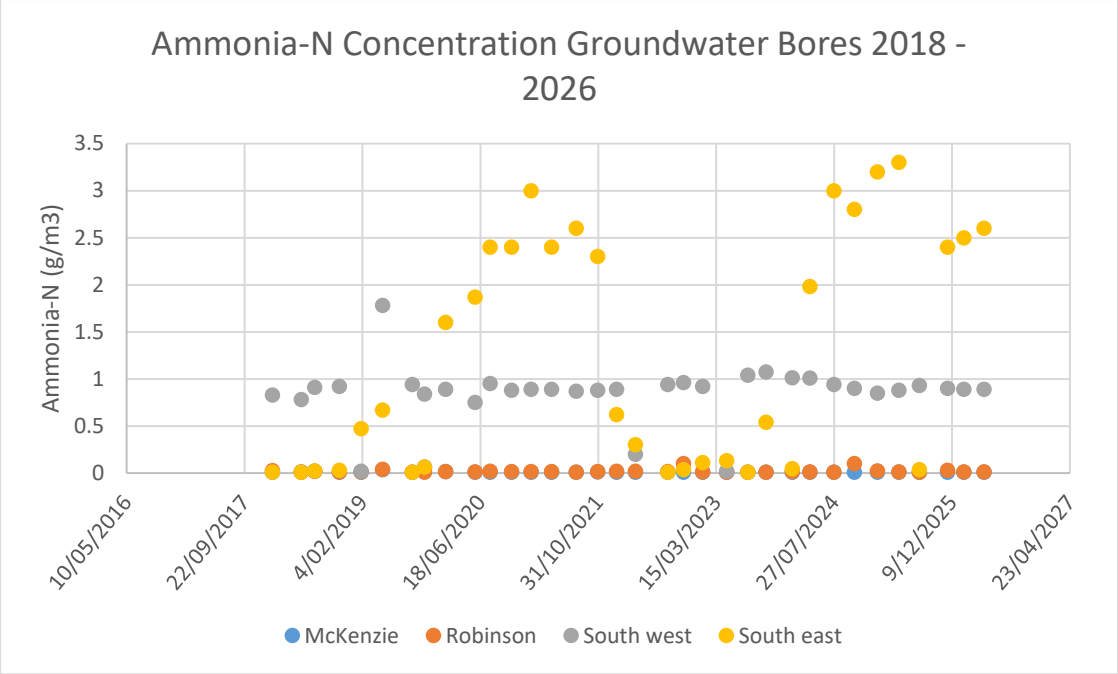


Figure 35: Ammoniacal-N concentration on groundwater monitoring bores from 2018 to 2026

Ammoniacal-N concentrations between 2018 and 2026 are periodically elevated in the down-gradient bore. However ammonia is at a consistent low level in the west (up-gradient bore) of often just above or just below 1 g/m3 (as shown in APPENDIX H1 - raw data).

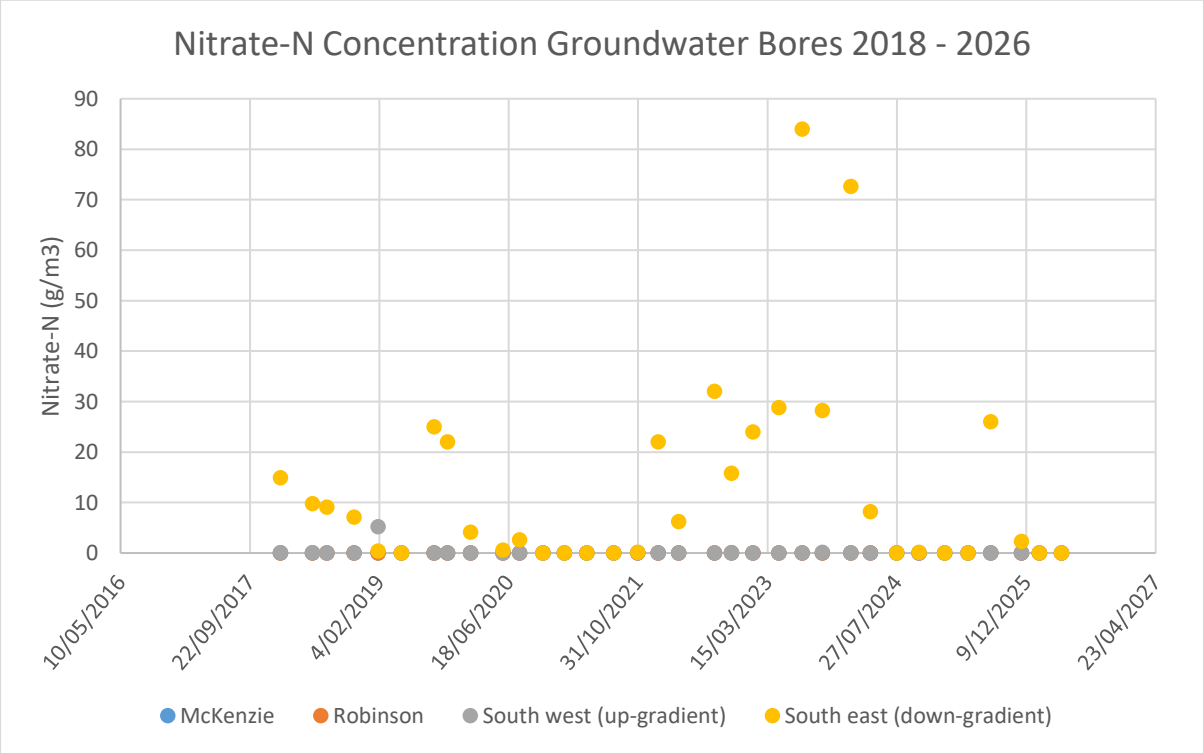


Figure 36: Nitrate-N concentration in groundwater monitoring bores from 2018 to 2026

As can be seen from these graphs and above table, Nitrate-N levels are elevated in the groundwater bore down-gradient of the Woodend WWTP, but mostly below detection in the control bores. There was a recent spike in nitrate-N in the down-gradient groundwater during the 2023/24 and 2024/25 year, which has however dropped back to low levels in the latest 2025 and 2026 samples. There is no known effect on private groundwater drinking water supply bores in the Woodend Beach area from the high Nitrate-N in the groundwater in proximity to the wastewater plant. For instance, the Woodend Beach Holiday Park groundwater latest two groundwater samples on 4 March 2024 (TRIM 240325046751 – see APPENDIX IA) and then on 2 September 2025 (TRIM 250918178498 – see APPENDIX IB) results showed Nitrate–N was not detected in either sample.

A longer-term review of results from sampling Nitrate – N in this bore since 2006 shows periodic elevated levels of Nitrate – N in groundwater with an earlier peak occurring in 2006 to 2008 with a further, lesser peak in 2023/24. However, levels appear to have reduced from the middle of 2024 until present.

The Council's Water Environment Advisor is currently working with the ECan groundwater team on a potential future investigation to further understand the effect of any elevated Nitrate-N or ammonia in groundwater down-gradient of the southeast bore and in groundwater further east and south-east of the wastewater treatment plant. This will enable any human health or environmental effects of these contaminants in groundwater to be better understood.

The Council also notes that recent LAWA Tutaepatu Lagoon sampling results from 2021 to 2024 (see Appendix H7) show Ammoniacal Nitrogen levels mid-lake to be either not detected or below Canterbury Land and Water Regional Plan Table S5C environmental limits at 95% species protection at indicative pH range levels of 7.2 (ammonia limit is 1.99 mg/L), or pH at 7.8 (ammonia limit is 1.18 mg/L). This provides strong evidence that the Woodend Wastewater Treatment Plant has not been causing ecological harm to aquatic species present in the Tutaepatu Lagoon in recent years.

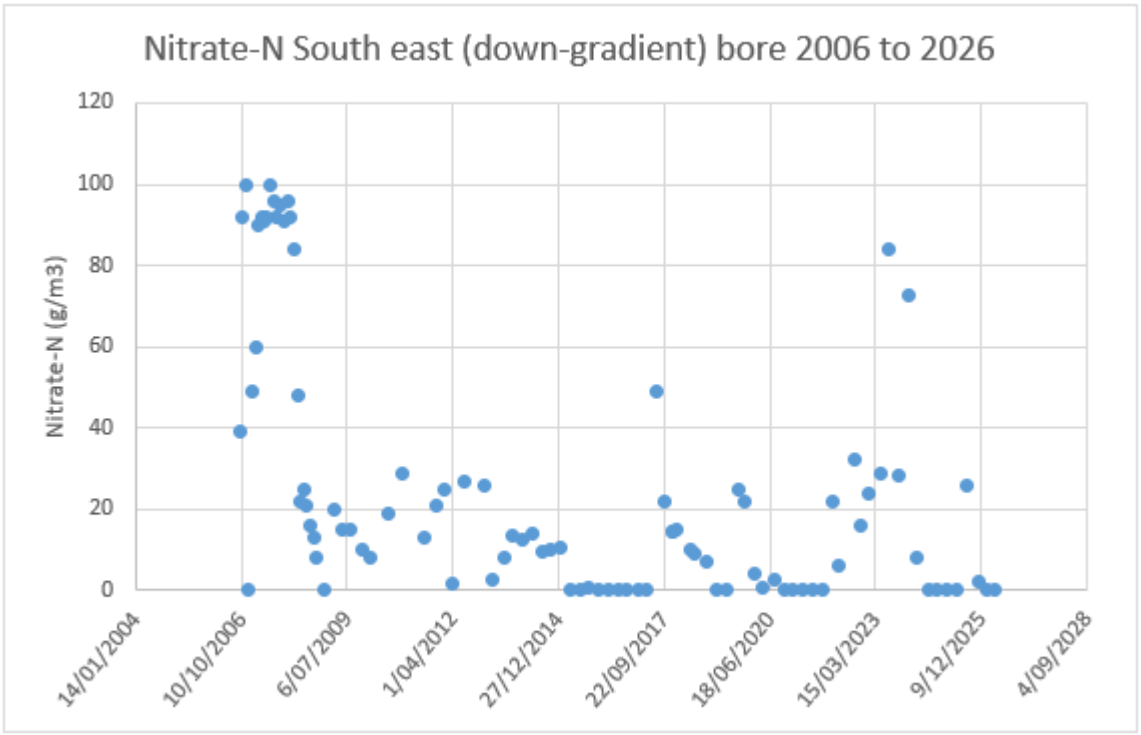


Figure 37: Nitrate-N concentration in down-gradient monitoring bore from 2006 to 2026

Faecal coliforms have been detected periodically in the Robinson bore. Any results lower than detection are graphed as one.

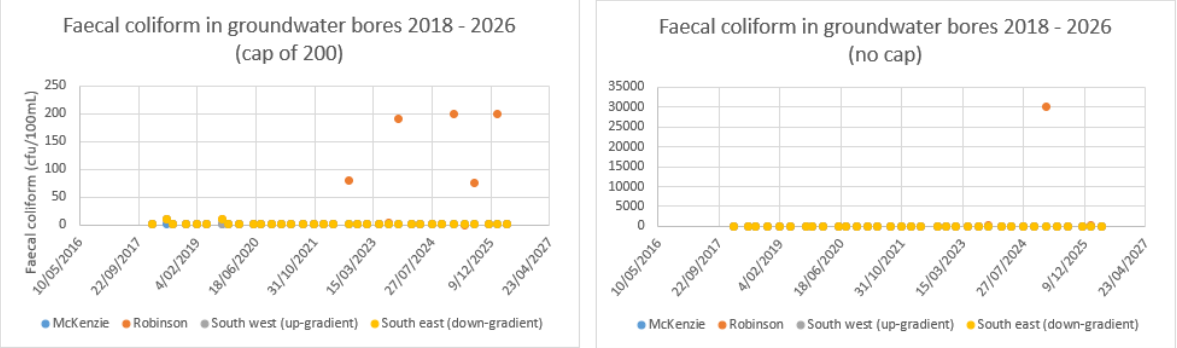


Figure 38: Faecal coliform numbers in groundwater monitoring bores from 2018 to 2026 (graph on left is capped at 200 cfu/100mL to illustrate the range in smaller numerical results).

Faecal coliform is elevated periodically in the Robinson bore which is upgradient of the Woodend wastewater ponds in terms of groundwater movement. These elevated levels are not considered to be associated with the activity in the wastewater treatment plant.

4.4 Operations and Maintenance

During the 2025/26 monitoring period there were no major capital works other than replacement of inlet screens with spiral sieve screens. The plant operation and maintenance has been standard with no significant unplanned maintenance required.

4.5 Summary of Compliance – CRC168391

Record keeping of wastewater volumes complied with the requirements of the resource consent and enabled seepage volumes to be calculated. Analysis of results shows seepage volumes for the 2025/26 monitoring period met the requirements of Conditions 5 and 6.

Groundwater monitoring records for 2025/26 were complete. Water quality samples were collected on four sample dates at all bores. Therefore, the requirements of Conditions 9, 10 and 11 were met in full.

The groundwater monitoring undertaken in 2025/26 indicates that:

- The long-term trend in Ammoniacal-N in the south east bore is for levels to fluctuate from "below detection" in some years to elevated above 2 g/m3 but below 3.5g/m3 in other years. There is a long-term fluctuation tendency in this data rather than any notable increase or decrease trend over time (see APPENDIX H1 "Woodend WWTP Groundwater" for long-term data history records).
- Nitrate-N concentrations in the down gradient bore are periodically elevated compared to the up-gradient bores although the recent spike has dropped back to low levels from July 2024 until present. On review of data over an 18 year period the concentrations of Nitrate-N have fluctuated with the most recent spike during 2022/23 and 2023/24 appearing to be currently significantly reducing.
- Prior to 2009 Nitrate-N levels were even higher than recent levels at up to 100 g/m^3 (see APPENDIX H1 "Woodend WWTP Groundwater" for data history records). It appears Nitrate-

N in down-gradient groundwater has had cyclical high periods over several years from 2006 until the present.

Overall, WDC has achieved compliance with the conditions of resource consent CRC168391.

5 CRC031724 – DISCHARGE TO JOCKEY BAKER CREEK

5.1 Monitoring and Reporting Requirements

Resource consent CRC031724 was granted in 2004 to drain groundwater from subsoil drains and toe drains around the infiltration wetland into the coastal marine area of Jockey Baker Creek in the vicinity of Ferry Road, Kaiapoi.

In the event a discharge occurs into Jockey Baker Creek an alarm is raised in SCADA to inform the operators the event has occurred. If this occurs samples are to be taken as per Conditions 5 and 6.

The consent CRC031724 has been rarely exercised since the commissioning of the Ocean Outfall. During high rain events, the discharge via sub-surface drains to the Jockey Baker Creek has become effectively obsolete since the commissioning of the ocean outfall in 2006.

The consent has however been retained by the Council because it allows a discharge of any surplus stormwater from a 'toe' drain that surrounds the wetlands. This discharge occurs only during high rainfall events, when the toe drain flow exceeds 5 litres a second. This is expected to be a rare event and the discharge will be almost entirely storm run-off, not effluent.

Retention of the consent ensures the Council can continue to divert any surplus runoff away from the plant's effluent treatment system so as to not overwhelm it and assist it to avoid any reduction in effectiveness of the wastewater treatment.

There was no discharge into Jockey Baker Creek during the 2025/26 monitoring period.

6 CRC145027 – DESLUDGING AT RANGIORA WASTEWATER TREATMENT PLANT

6.1 Monitoring and Reporting Requirements

Resource consent CRC145027 was granted in October 2014 to permit the discharge of dewatered sludge removed from wastewater Pond 1A at the Rangiora WWTP to land. Sludge is suction dredged, then piped via a closed system to geotextile bags for storage and dewatering.

The existing geotextile bags are slowly dewatering, Council will be assessing long term options for disposal of the biosolids in the future.

The monitoring requirements are set out in Conditions 16 and 17:

Condition 16

"On completion of the pond dredging operation and commencement of the dewatering phase, the consent holder shall either:

a) Sampling the drainage water from the dewatering/dewatered sludge at six monthly intervals for the following parameters:
Arsenic
Copper
Cadmium

Chromium
Lead
Mercury
Nickel
Zinc, with all metals in the soluble form; and
Total Nitrogen
Ammoniacal Nitrogen
Dissolved Reactive Phosphorus; or

b) A subsequent sampling regime and timeframe that has received written approval from the Chief Executive of the Canterbury Regional Council or delegate shall be undertaken."

Condition 17

"The consent holder shall either:

a) Monitor the downstream monitoring bore M35/9177 at six monthly intervals (generally September and April) for the following parameters:
pH
Ammoniacal Nitrogen
Total Nitrogen
Metals (Zinc, Copper and Arsenic in the soluble form); or

b) A subsequent sampling regime and timeframe that has received written approval from the Chief Executive of the Canterbury Regional Council or delegate shall be undertaken."

The reporting requirements are set out in Condition 20 and state that the annual report is to include the following details:

- The discharge point of drainage water.
- Findings of the three monthly inspections of the liner, bund and drainage.
- Results of laboratory analyses undertaken in the previous 12-month period.
- Details of any spills.

6.2 Monitoring Results

6.2.1 Drainage water discharge point

All discharge from the discharge chamber is currently pumped back into Pond 1A at the Rangiora WWTP. There is no intention to move the discharge of drainage water to land discharge. Drainage water will be permanently discharged to the treatment plant for further treatment.

6.2.2 Three monthly inspections

Inspections of the sludge pond are done on a weekly basis, which is more regular than the three-monthly frequency required by the resource consent. There have been no reports of any issues associated with the liner, pump, bund or drainage from the sludge pond during the 2025/26 monitoring period.

6.2.3 Laboratory analyses

Samples from the sludge pond pump chamber and M35/9177 were collected on the following dates:

- 26 August 2025 (TRIM 250905168892 and TRIM 250905168894)
- 26 March 2026 (TRIM 260306070721 and TRIM 260306071228)

The lab results are all attached as Appendix M to this report. If the discharge is below the trigger levels, the drainage water can be discharged direct to ground. Condition 16 of the resource consent requires two samples to be collected annually, at six monthly intervals from the sludge pond pump chamber. Thus the monitoring requirements of Condition 16 were met during the 2025/26 monitoring period. The table below shows that trigger levels were not exceeded for any of the discharge values from the pump chamber.

Table 17: Dewatering sample results and comparison with trigger values.

Parameter (g/m^3)	26 August 2025	25 February 2026	Trigger Levels[1]
Dissolved Arsenic	< 0.02	<0.02	0.2
Dissolved Cadmium	0.026	0.0196	
Dissolved Chromium	< 0.010	<0.010	
Dissolved Copper	1.58	1.68	
Dissolved Lead	0.012	0.012	
Dissolved Mercury	<0.00008	<0.00008	
Dissolved Nickel	0.144	0.112	1.6
Dissolved Zinc	11.1	7.6	30
Total Nitrogen	41	33	224
Ammoniacal-N	6.9	0.68	30
Dissolved Reactive Phosphorus	0.024	0.05	

Condition 17 of the resource consent requires two samples to be collected annually from groundwater bore M35/9177, at six monthly intervals. Therefore, compliance with the requirements of Condition 17 were met in full during the 2025/26 monitoring period.

The results are shown in Table 17 and compared with 80% of the relevant maximum allowable value (MAV) reported in the New Zealand Drinking-Water Standards (NZDWS). Condition 14 states that should subsequent groundwater monitoring under Condition 17 show an upward trend extending over four consecutive sampling events, or a trigger level reaches 80% of the relevant MAV, then the discharge of dewatering water to land must cease and be returned to the treatment pond.

The table below shows most parameters recorded concentrations less than their respective 80% of MAV (where applicable). However, in the last year pH has fallen below the recommended range in the groundwater bore (MoH 2008). There is a recent fall in pH and detection of total Ammoniacal-N for the first time within the last 4 years in the February 2026 sample. These are not breaches of consent as a trend has not occurred over 4 consecutive samples and the limit of 80% of MAV has not been breached. However, the ongoing monitoring of this bore in future in accordance with the consent conditions will determine if any trend is becoming apparent over time.

It is noted that WDC is not discharging to land so groundwater quality will not be affected by the sludge pond.

[1] If monitoring data is below the trigger level drainage from the liner can be discharged direct to ground.

Table 18: Groundwater monitoring results for Bore M35/9177.

Parameter	30th Aug 2023	28th March 2024	26 August 2024	26 March 2025	26 August 2025	25 February 2026	80% of MAV[2]
pH	7.3	7.4	7.2	7.5	6.8	6.8	7.0-8.52
Total Nitrogen	0.91	0.98	0.94	0.88	0.95	0.93	-
Ammonia cal-N	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.026	1.2
Soluble Arsenic	< 0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	< 0.0010	0.008
Soluble Copper	< 0.0005	< 0.0005	< 0.0005	< 0.0005	<0.0005	< 0.0005	1.6
Soluble Zinc	< 0.0010	< 0.0010	0.0011	0.0011	<0.0010	< 0.0010	1.2

6.2.4 Spills

There were no spills from the dewatering system during the 2025/26 monitoring period.

6.3 Operations and Management

There have been no significant operational changes that have an effect on CRC145027. The long-term plan for the discharge is to continue to return the drainage water back to the treatment plant. Discharge to ground will not be undertaken. Options to obtain a variation to the consent need to be assessed to provide for final disposal of the dewatered sludge, if required in future.

6.4 Summary Compliance – CRC145027

The monitoring and sampling results completed during the 2025/26 monitoring period fully comply with Conditions 16 and 17.

[2] Maximum Allowable Value as defined in the New Zealand Drinking Water Standards as at time of granting the consent.

7 CRC173124 – DISCHARGE CONTAMINANTS TO AIR - RANGIORA WASTEWATER TREATMENT PLANT

7.1 Monitoring and Reporting Requirements

The following is an extract from the consent that outlines the sampling requirements.

Condition 2

The wastewater treatment ponds and aeration basin shall be operated so that the dissolved oxygen concentrations of the wastewater in the ponds are maintained at levels of no less than two grams per cubic metre, based on the ten percentile of annual results during the hours of measurement as stated in Condition 3.

Condition 3

Dissolved oxygen levels shall be measured in each pond between the hours of 11am and 2pm on one day in every seven day period.

Condition 4

The consent holder shall maintain a record of dissolved oxygen measurements which shall include the following information:

- The date and time the measurements were taken; and
- Water temperature at the time the measurements were taken; and
- Dissolved oxygen concentrations; and
- Identification of the pond in which the measurements were taken.

The information required in condition 4 is attached in Appendix J.

The following graph shows Dissolved Oxygen in the Rangiora WWTP Ponds (Pond 1A, Pond 1B, Pond 2 and Pond 3), for which a minimum level of 2 mg/L is required to be maintained for the 10 percentile of annual results.

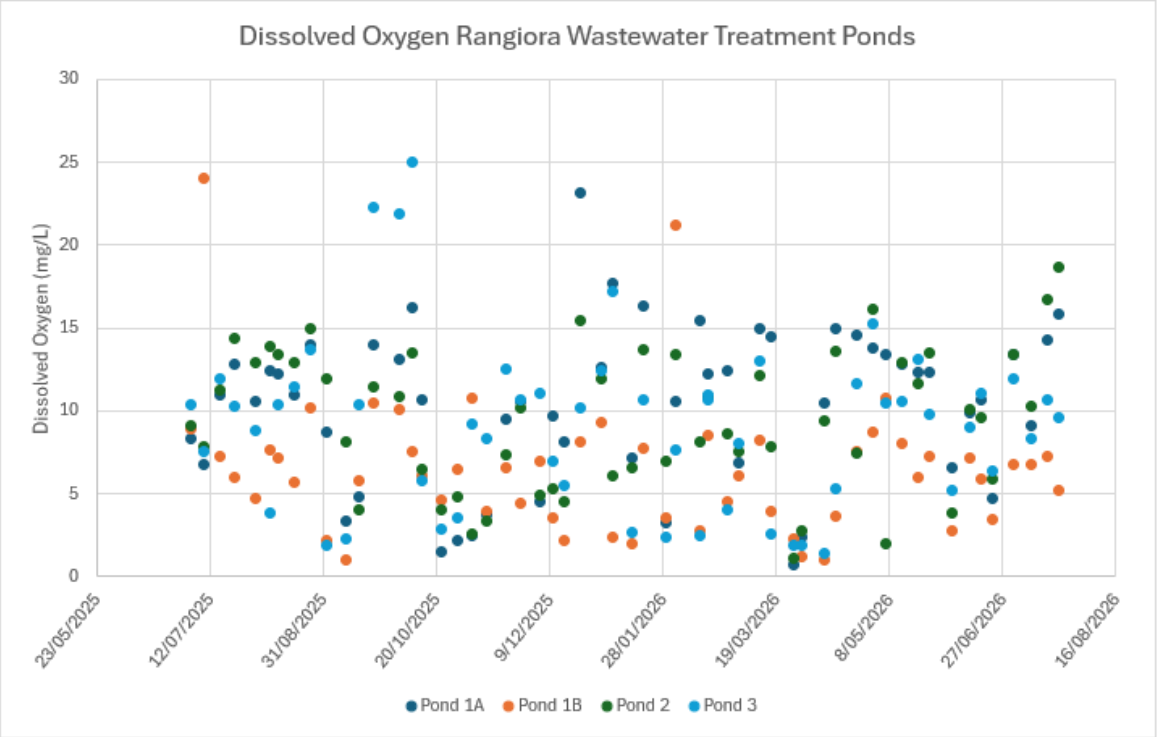


Figure 39: Dissolved Oxygen in Rangiora WWTP ponds July 2025 to June 2026

The 10 percentile of annual results for each pond for the 2025/26 reporting year is:

3.33 mg/L	Pond 1A
2.23 mg/L	Pond 1B
3.95 mg/L	Pond 2
2.42 mg/L	Pond 3
2.6	**All ponds average**

The data shows that all Rangiora ponds each individually and together meet the measure with 10 percentile of dissolved oxygen (DO) above 2mg/L (see APPENDIX J for raw data records and percentile calculations).

This is a significant improvement in DO performance of the ponds in comparison with the previous 2 years. The improved calibration and use of optical meters is considered to contribute to the improved performance. Previous aeration issues may have also been resolved by an aerator upgrade in the aeration basin in late 2024, which may have improved aeration in the basin which flowed through into the downstream ponds.

Condition 3 was mostly met as most measurements of DO were taken between 11am and 2pm on the day these were measured (see APPENDIX J, column A for daily sample times).

Condition 4 was met, as the spreadsheet APPENDIX J shows the operators visit the sites weekly and record the data that is electronically recorded. 53 sample results were recorded between 3 July 2025 and 22 June 2026, meeting the weekly sample requirement. This data has been forwarded to ECAN electronically and is available upon request. It is noted some of the samples were not taken within required timeframes. WDC has now put in place measures to ensure compliance with Condition 3 as far as possible in the future, sampling within 11am until 2pm as far as achievable within available

resources. Note that this was not always achieved as operators were not always available to get to every pond within the required 11am to 2pm timeframe.

Note that Conditions 9, 10, 11, 12 are no longer applicable. These relate to the using of sprays that were used to remove NH4. These have been decommissioned.

7.2 Odour Complaints

There were no odour complaints for the 2025/26 monitoring period for the Rangiora wastewater treatment plant (see Complaints Register in APPENDIX G).

7.3 Summary of Compliance

Compliance was not achieved for CRC173124 due to several samples from the ponds not collected in the timeframe specified, which is between 11am and 2pm daily. Note that this was not always achieved during 2025/2026 as operators were not always available to get to every pond within the required 11am to 2pm timeframe. However, the plant operators have reiterated that they will now manage the sample schedule to comply with the timeframe moving forward.

8 CRC168388 – DISCHARGE CONTAMINANTS TO AIR - WOODEND WASTEWATER TREATMENT PLANT

8.1 Monitoring and Reporting Requirements

The following conditions outline the annual reporting requirements for consent CRC168388.

Condition 5

5. The dissolved oxygen concentration of effluent in the aeration ponds (1A, 1B and 1C) [renamed aeration basin 1, 2 and 3 in the table and graph below] and settling ponds (2A and 2B) [renamed settlement ponds 1 and 2 below] as shown in Plan CRC168388A attached to this consent shall:

a. Be measured in each pond on one day in every seven day period;
b. Be maintained at levels of no less than two grams per cubic metre, based on the ten percentile of annual results, between the hours of 11am and 2pm; and
c. Not have a concentration of less than two grams per cubic metre for more than three consecutive measurements in accordance with condition (5)(a).

Condition 6

6. The consent holder shall maintain a record of dissolved oxygen measurements in accordance with condition (5)(a) which shall include the following information:

a. The date and time the measurements were taken; and
b. Water temperature at the time the measurements were taken; and
c. Dissolved oxygen concentrations; and
d. Identification of the pond in which the measurements were taken.

Condition 7

A copy of the record referred to in condition (6) shall be retained and provided to the Canterbury Regional Council annually by 31 August each year.

The spreadsheet in APPENDIX K, attached to this report, provides the Dissolved Oxygen sampling records as required by Condition 5, Condition 6 and Condition 7. The Council complies with the recording and reporting requirements of conditions 6 and 7.

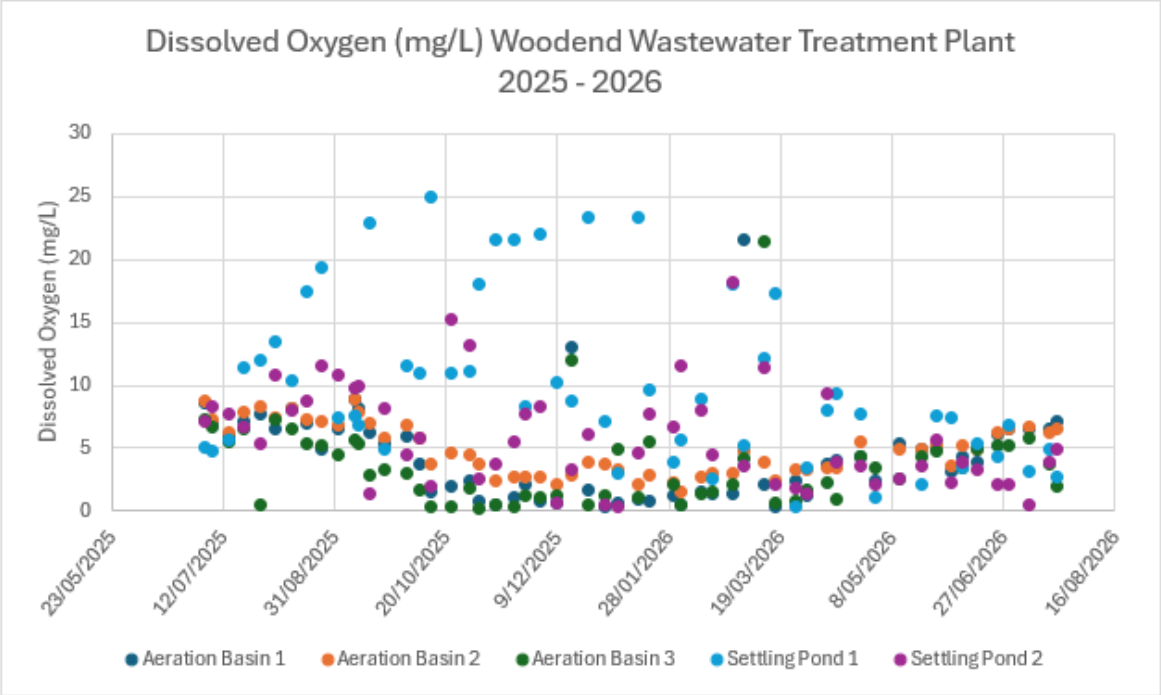
For condition 5(b), the sampling shows that Aeration Basin 1, Aeration Basin 3 and Settling Pond 2 do not meet the minimum dissolved oxygen level of no less than 2mg/L for the 10 percentile of annual results. The other two ponds meet the measure. Most of the samples are taken within the required timeframe of 11am – 2pm in all ponds, so this requirement is mostly compliant and plant operators have confirmed they will ensure compliance with the sampling timeframe moving forward. For 5(c), there is low dissolved oxygen of less than 2mg/L for more than 3 consecutive measures in both Aeration Basin 1 and Aeration Basin 3 (see yellow highlight in these records in Appendix K), but the measure is met in each of the 3 other ponds. There is thereby overall partial compliance demonstrated with the requirements of condition 5, as seen in the below table and graph.

The following table shows the Dissolved Oxygen (mg/L) in each of the Woodend wastewater ponds sampled.

The 10 percentile of annual results for each pond for the 2025/26 reporting year is:

0.72mg/L	Aeration Basin 1
2.52mg/L	Aeration Basin 2
0.51mg/L	Aeration Bason 3
3.0mg/L	Settling Pond 1
1.6mg/L	Settling Pond 2

The below graph indicates the relative performance of the ponds through the 2025/26 year. It appears there was insufficient aeration occurring in several of the basins as shown below during the late spring to summer of 2025/26, when DO levels were generally lower across the ponds than in the winter season. The Council is now looking at increased monitoring at the Woodend WWTP by increasing sampling and also installing permanent DO probes.



As seen in these results, there is only partial compliance through the basins and ponds with the DO minimum level of 2mg/L, with the exception of Aeration Basin 2 and Settling Pond 1 which are compliant on all measures (APPENDIX K). The spreadsheet shows periods of low dissolved oxygen periodically, but particularly over the summer of 2025/26 with results tending to improve during the colder seasons. Results also improve as the wastewater is conveyed through the treatment train and into settlement pond 1 and 2, which have generally higher DO performance at most times than the aeration basins.

8.2 Summary of Compliance

Compliance was not achieved for CRC168388 due to low oxygen levels in several of the Woodend wastewater treatment ponds. This is considered likely due to low aeration of the ponds during the summer of 2025/26. These non-compliant samples indicate likely ongoing issues with the optical meter sampling location or pond aeration levels and performance which may require further investigation.

REPORT

Oxford Sewer Scheme – Annual Compliance Monitoring Report 2025 - 2026

Waimakariri District Council

October 2026

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1. INTRODUCTION

1.1. Background

Waimakariri District Council (WDC) operates a wastewater treatment plant (WWTP) at Oxford, which serves 944 properties as at the 2026/27 rates strike. The WWTP is located on the north side of the Eyre River on High Street, while the irrigation disposal field is located on the south side of the Eyre River on Woodstock Road (refer Figure 1).

The WWTP was constructed in 1999 and has undergone a number of upgrades, including the addition of a wet weather flow holding pond in 2014 and modifications to the Modified Ludzack-Ettinger activated sludge process in 2018 to improve the aeration system.

The Oxford scheme is operated under a number of resource consents from Canterbury Regional Council (CRC) also known as Environment Canterbury (ECan), which are listed in Table 1 along with their respective reporting requirements and level of compliance for the 2025/26 monitoring year.

Table 1: Oxford Sewer Scheme Resource Consents

Consent	Activity	Reporting	Compliance
CRC961013	To discharge contaminants to air	Refer to Section 2.0 of this report	Fully compliant
CRC144561	Land use consent for the establishment of a sewage storage basin	Refer to Section 3.0 of this report	Fully compliant
CRC184787	To discharge contaminant into land to water	Refer to Section 4.0 of this report	Mostly compliant. The west irrigator depth applied to land was fully compliant in 2025/26. An issue with SCADA data occurred during July 2025 and on 14 October 2025 on the east irrigator, recording excessive effluent discharge application depths to land, which has been subsequently corrected. Recorded effluent application depths outside of these dates, from the east irrigator, were compliant. Two reports of ponding from the

	irrigators were made during the 2025/26 year by Water Unit operators, which were promptly resolved.

1.2. Report Scope

The scope of this report is to summarise the annual compliance with the three consents that the Oxford sewer scheme is operated under, these include; CRC961013, CRC144561 and CRC184787. These consents do not require an annual monitoring report be submitted to Environment Canterbury, however this report has been prepared as good practice and will be submitted to ECan for information purposes.



Figure 1 - Oxford Sewer Scheme

2. CRC961013 – DISCHARGE TO AIR

2.1. Overview

This consent covers the discharge of contaminants into air at or about map references L35:447-655 (i.e.: the irrigation disposal field on Woodstock Road) and L35:458-663 (i.e.: the WWTP on High Street) from a sewage effluent treatment and disposal system.

Consent compliance for the period 1 July 2025 through to 30 June 2026 ('the monitoring period'), has been assessed by WDC.

2.2. Condition 1 – Irrigation of Effluent

Condition 1 states:

"There shall be no spray irrigation of effluent onto land within 15 metres of a property boundary protected by a tree shelter belt, within 150 metres of a property boundary where there is no intervening tree shelter belt and within 150 metres of any dwelling house."

The irrigation fields are located 40m from the closest property boundary to the east (refer Figure 2 below). There is a shelter belt on this eastern boundary therefore compliance with Condition 1 is achieved. The irrigation fields are located more than 150m from the western and southern boundaries. The northern property boundary is within the 150m buffer, however this is publicly owned river bed land that is managed and leased out by Environment Canterbury. The closest dwelling is located just over 400m away to the south of the irrigation fields as shown in Figure 2 below.

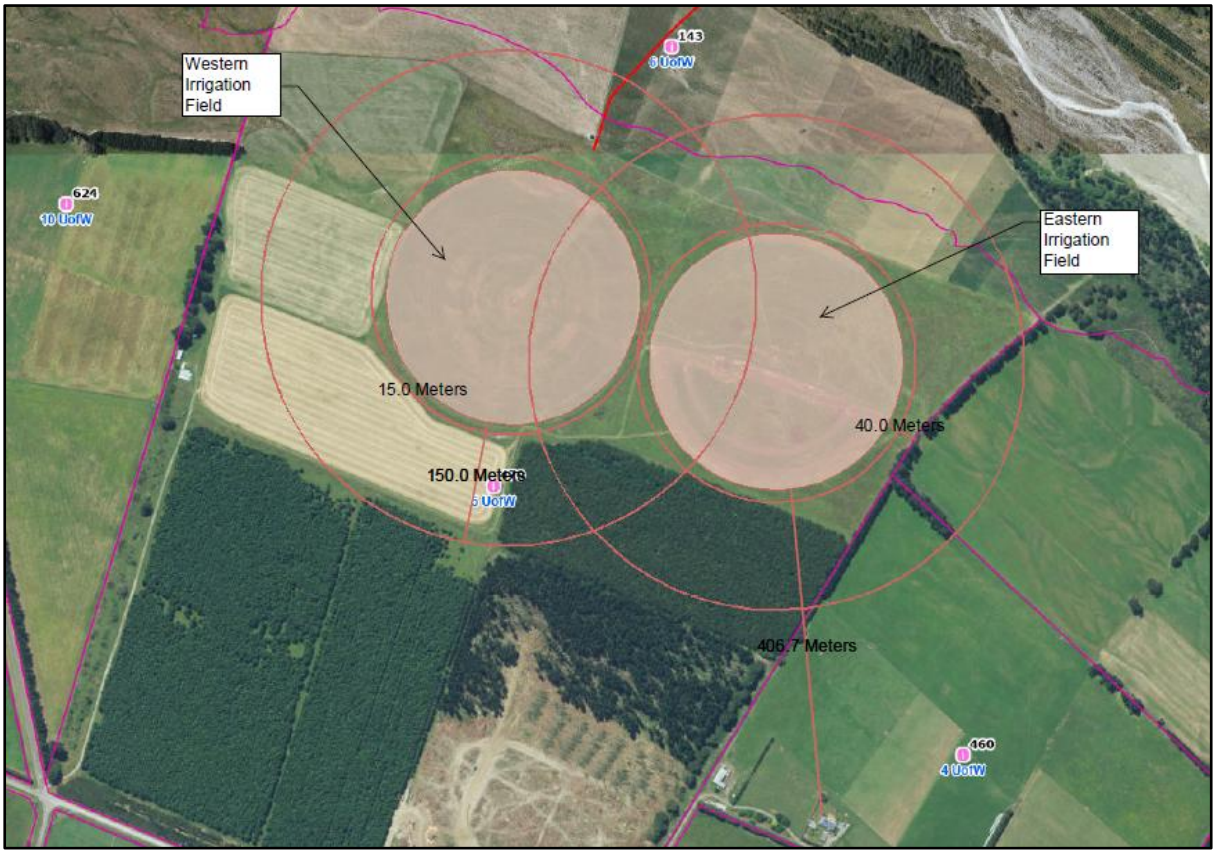


Figure 2. Irrigation disposal fields and required buffers

2.3. Conditions 2 – 5: Odour Management

Condition 2 states the following:

> *"All collection bins containing solids removed from the effluent shall be covered to prevent odorous emissions."*

All bins used for collection of screenings from the WWTP are covered to prevent odour emissions.

Condition 3 states the following:

> *"The sludge holding tank shall be mechanically aerated to minimise odorous emissions."*

The sludge holding tank is mechanically aerated to minimise odour emissions.

Condition 4 states the following:

> *"The discharge shall not cause an odour, which is determined to be objectionable or offensive by an enforcement officer of the Canterbury Regional Council, beyond the property boundary of the consent holder."*

No objectionable or offensive odours or other issues were observed during the 2025/26 monitoring period (refer APPENDIX D Wastewater Complaints record 2025/26). This did not identify any odour complaints from the Oxford plant during the 2025/26 year. Condition 5 states the following:

> *"A record of complaints relating to odour emissions from the site shall be maintained, and shall include:*
>
> *(a) location of where odour detected by complainant;*
> *(b) date and time when odour detected;*
> *(c) a description of wind speed and wind direction when odour detected by complainant;*
> *(d) the most likely cause of odour detected; and*
> *(e) any corrective action undertaken by the consent holder to avoid, remedy or mitigate the odour detected by complainant.*
>
> *This record shall be provided to the Canterbury Regional Council on request."*

No complaints relating to odours from the Oxford plant were received during the 2025/26 monitoring period (refer Appendix D) – sewer complaints record which did not identify any odour complaints from the Oxford plant during this year.

2.4. Summary of Compliance – CRC961013

A summary of compliance with consent CRC961013 is presented in Table 2 below.

Table 2: Summary of compliance for 2025/26 for consent CRC961013

Consent condition	Description	Compliance
Condition 1	Irrigation of effluent	Fully compliant
Conditions 2-5	Odour management	Fully compliant

3. CRC144561 – HOLDING POND LAND USE

3.1. Overview

This land use consent covers the establishment of a storage basin to store sewage and for associated earthworks.

Consent compliance for the period 1 July 2025 through to 30 June 2026 ('the monitoring period'), has been assessed by WDC.

3.2. Conditions 1-4, 7-9, 10(b), 12(a), 15 and 16 – Holding Pond Construction

Conditions 1, 2, 3, 4, 7, 8, 9, 10(b), 12(a), 15 and 16, relate to the construction of the holding pond.

Condition 1 states:

> *"The use of land shall be only for:*
>
> *(a) excavation associated with the construction of a Wet Weather Holding Pond; and*
> *(b) the collection, storage and treatment of municipal domestic wastewater and stormwater ('wastewater')."*

Excavation works for the holding pond were completed in 2014. The land use at the site is for the collection storage and treatment of municipal domestic wastewater and stormwater.

Condition 2 states:

> *"The Wet Weather Holding Pond shall be located as shown on Plan CRC144561A, which forms part of this consent."*

The wet weather holding pond has previously been validated by Environment Canterbury to be located within the consented area as identified in CRC144561A (refer TRIM 220713119239).

Condition 3 states:

> *"The Wet Weather Holding Pond shall be sealed with a material of low permeability such that any seepage from these structures onto or into land does not exceed an average rate of one millimetre per day."*

The holding pond is lined with a 1.5 mm thick High-Density Polyethylene (HDPE) membrane liner. The construction methodology report (refer TRIM 141121127984[v2]), provided as a requirement of Condition 4, demonstrated that the HDPE pond liner ensures that the average seepage rate from the pond does not exceed 1mm per day.

Condition 4 states:

> *"The consent holder shall provide to the Canterbury Regional Council a report on the method of construction of the Wet Weather Holding Pond that demonstrates compliance with the seepage rate referred to in condition (3). The report shall be supplied to Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, prior to the first use of the wastewater storage facility."*

The construction methodology report (refer TRIM 141121127984[v2]) demonstrated compliance with the average seepage rate from the pond does not exceed an average rate of 1mm per day. The

report required by this condition was provided to Environment Canterbury on the 25th November 2014, which was prior to the storage pond first being used (refer TRIM 150112003139).

Condition 7 states:

> *"The Wet Weather Holding Pond shall not be located within:*
>
> *(a) 20 metres of any wetland, surface water body or artificial watercourse; or*
> *(b) 50 metres up gradient in relation to groundwater flow and 30 metres in any other direction of a bore."*

The holding pond is not located within 20m of a wetland surface water body or artificial watercourse. The nearest bore (L35 0668) is located more than 70m away. This bore is owned by Waimakariri District Council and is used for observation purposes.



Figure 3. Holding pond location

Condition 8 states:

> *"Construction works authorised by this consent shall:*
>
> *(a) be limited to the area defined on Plan CRC144561A; and*
> *(b) not be carried out on Sundays or public holidays; and*
> *(c) from Monday through to Friday only occur between the hours of 7.30am and 5.30pm inclusive; and*
> *(d) on Saturdays only occur between the hours of 9am and 5pm inclusive.*

The construction works were completed in 2014 and the post-construction compliance monitoring report by Environment Canterbury confirmed compliance with this consent (refer TRIM 150112003139).

Condition 9 states:

> *"Within one month of the installation of the Wet Weather Holding Pond, the consent holder shall provide to the Canterbury Regional Council, Attention: RMA Compliance and Monitoring, a copy of the Odour Management Plan. The Odour Management Plan shall be incorporated into the Oxford Wastewater Treatment Plant's Operations Manual and shall include the specifications detailed in Appendix A.*

The Odour Management Plan was provided to Environment Canterbury on the 19th December 2014 (refer TRIM 141219141903), as an amendment to the existing operations manual for the wastewater treatment plant.

Condition 10(b) states:

> *"The Wet Weather Holding Pond shall:*
>
> *(b) be constructed in accordance with the specifications on Plan CRC144561B."*

The wet weather holding pond has previously been validated by Environment Canterbury to be constructed in accordance with the specifications on Plan CRC144561B (refer TRIM 150112003139).

Condition 12(a) states:

> *"The spillway incorporated into the design for the Wet Weather Holding Pond shall:*
>
> *(a) be constructed in accordance with the design specifications on Plan CRC144561B page 2 of 2;"*

The spillway from the wet weather holding pond has previously been validated by Environment Canterbury to be constructed in accordance with the design specifications on Plan CRC144561B (refer TRIM 220713119239).

Condition 14 states:

> *On the completion of works:*
>
> *(a) All disturbed areas shall be stabilised and/or revegetated; and*
> *(b) All spoil and other waste material from the works shall be removed from site.*

The site was appropriately reinstated following completion of the works back in 2014.

Condition 15 states:

> *In the event of any discovery of archaeological material:*
> *(a) the consent holder shall immediately:*
> *i. Cease earthmoving operations in the affected area and mark off the affected area; and*
> *ii. Advise the Canterbury Regional Council of the disturbance; and*
> *iii. Advise the New Zealand Historic Places Trust of the disturbance.*
> *(b) If the archaeological material is determined to be Koiwi Tangata (human bones) or taonga (treasured artefacts) by the New Zealand Historic Places Trust, the consent holder shall immediately advise the office of the appropriate runanga (office contact information can be obtained from the Canterbury Regional Council) of the discovery.*
> *(c) If the archaeological material is determined to be Koiwi Tangata (human bones) by the New Zealand Historic Places Trust, the consent holder shall immediately advise the New Zealand Police of the disturbance.*

(d) Work may recommence if the New Zealand Historic Places Trust (following consultation with runanga if the site is of Maori origin) provides a statement in writing to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager that appropriate action has been undertaken in relation to the archaeological material discovered. The Canterbury Regional Council shall advise the consent holder on written receipt from the New Zealand Historic Places Trust that work can recommence.

No archaeological material was encountered during the construction works back in 2014.

3.3. Conditions 10(a), 11, 12(b), and 13 – Holding Pond Operation

Conditions 10(a), 11, 12(b), and 13, relate to the operation of the holding pond.

Condition 10(a) states:

"The Wet Weather Holding Pond shall:

(a) be used for storage of excess flows relating to extreme weather events only when wastewater flows to the treatment facility exceed the rate of 16 litres per second;"

The holding pond was used on 14 occasions during the 2025/26 monitoring period (see APPENDIX A, Figure 5a below and Appendix B). This compares to the 16 occasions it was used during the 2024/25 monitoring period, the 13 occasions it was used during the 2023/24 monitoring period and 15 occasions it was used in the 2022/23 monitoring period. The usage of the pond during the last four reporting years is seen to be consistent with the most recent 2025/26 year. The trend of pond usage remains similar to recent years.

The pond is considered in use when the level is above 250mm.

In context for the following assessments, the effect of rainfall on the operation of the system is seen in the below graph in the 2025/26 year. The holding pond is used during times when there are peaks in the Oxford scheme total daily outflow.

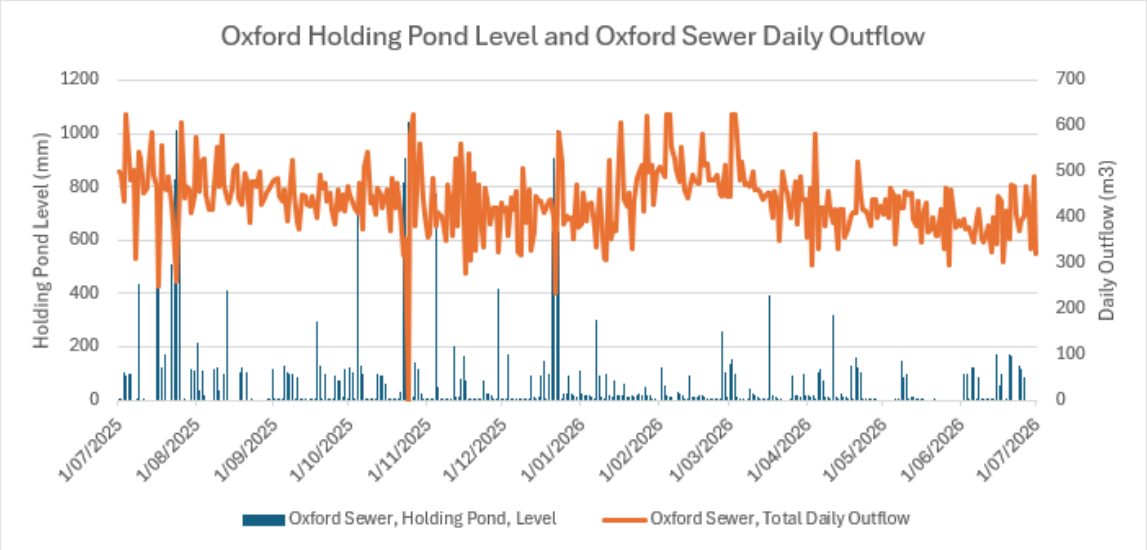


Figure 4: Oxford sewer holding pond level and Oxford sewer total daily outflow 2025/26

Condition 11 states:

> *"All stored wastewater contained within the Wet Weather Holding Pond labelled on Plan CRC144561A shall be pumped back through the secondary treatment processes at the plant following temporary storage."*

The water level in the holding pond did not exceed the spillway during the 2025/26 year (see Appendix A and Appendix B). There is a metered level now set to record spills from the pond, however no spill occurred in this most recent year. A flow meter has been installed on the spillway so the Council can now record actual overflow volumes, validating whether a spill occurred, and if so, providing actual volumes spilled.

All stored volumes were pumped back through the plant for treatment following temporary storage. It is noted the holding pond is located on flat land in an area of deep groundwater >3m below ground level. Therefore any future spills draining into land will drain toward a low lying area in the centre of the site and will not enter any nearby waterway.

During the 2025/26 year the holding pond was operated well beneath the revised recalculated spill level of 3,625mm.

Condition 12(b) states:

> *"The spillway incorporated into the design for the Wet Weather Holding Pond shall:*
>
> *(b) be used only in the event of a catastrophic 1 in 100 year rainfall event."*

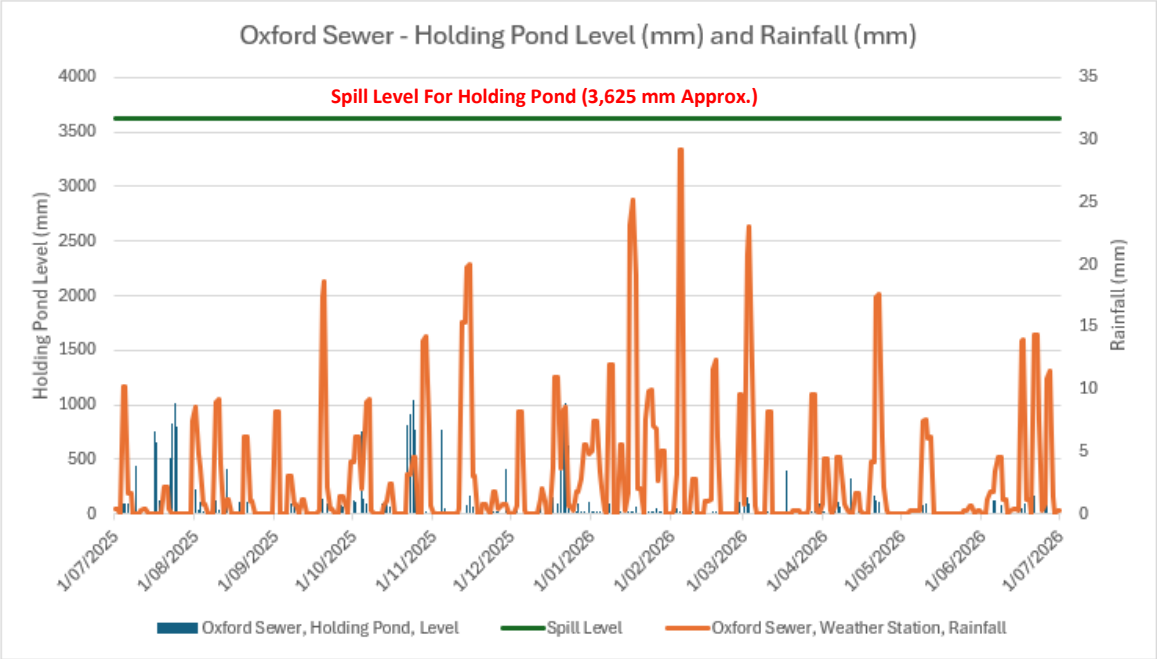


Figure 5(b): Holding pond level during 2025/26

The graph shows the holding pond operation complied with the consent requirement to avoid spills in the 2025/26 year.

Condition 13 states:

> *"The Wet Weather Holding Pond labelled on Plan CRC144561A shall be used for storing diluted municipal wastewater and operated in accordance with the Site Management Plan (Appendix A) including, but not restricted to, the following requirements:*
>
> *(a) Wastewater held within the Wet Weather Holding Pond shall be drained back to the plant for secondary treatment as soon as practicable once influent flows recede to below 16 litres per second to the plant.*
> *(b) The consent holder shall ensure that hydraulic retention times for wastewater stored within the Wet Weather Holding Pond shall not exceed 10 days as far as practicable. (Hydraulic retention times will vary with season, groundwater levels, precipitation events, and plant operational conditions).*
> *(c) The Wet Weather Holding Pond shall be cleaned after each use to remove any accumulated solids.*

The wastewater stored in the holding pond was returned to the plant for treatment as soon as practical. The longest duration of overall ponding in the holding pond was 4 days from 22 July 2025, 4 days from 22 October 2025 and 4 days from 20 December 2025 during the 2025/26 monitoring period, see APPENDIX B.

The holding pond fills while it is raining and doesn't start draining immediately after. Discharge only commences when inflow returns to usual levels.

The pond holding level is also affected by surface area rainfall falling within the immediate pond area which also has to drain.

The hydraulic retention times are shown in Table 3 below.

During the 2025/26 year the pond appears to have been draining fully between each event. The pond is sufficient to hold most rainfall events impacting the wastewater system in Oxford. In the 2025/26 year the table below shows the 10 day hydraulic retention limit was met, with maximum hydraulic retention time through the year in the pond being only 4 days during each of the 3 separate occasions when ponding occurred above 250mm.

Although the pond capacity has been exceeded in unusually large events in past years, there was no exceedance in the most recent 2025/26 year. Staff have indicated that temporary aerators can be dispatched to combat odour if the 10 days hydraulic retention limit is exceeded in future (or if excessive ponding occurs in future). However, over the last monitoring period odour was not reported as an issue and this mitigation was not required.

Staff consider that going forward, with the effects of climate change, the system will be more likely to experience similar patterns as in the previous non-complying years, where multiple events occurred in close succession or very large events overwhelmed the system and the holding pond did not have capacity or would not have time to drain back to 250mm (below 250mm is considered empty) before the next event occurs. This could lead to more likely future occurrences of extensive ponding and/or breach of the 10 day hydraulic retention period. The pond can't be drained any faster without having negative impacts on the wastewater treatment plant. Faster draining would increase the risk of reducing treatment and discharging contaminants.

Table 3: Holding pond hydraulic retention times during 2025/26

Event Date	Duration of Retention (days)
9/07/2025	1
16/07/2025	2
22/07/2025	4
13/08/2025	1
18/09/2025	1
4/10/2025	1
22/10/2025	4
4/11/2025	1
29/11/2025	1
20/12/2025	4
7/01/2026	1
26/02/2026	1
17/03/2026	1
11/04/2026	1

The holding pond was cleaned down after each use in accordance with the site management plan.

3.4. Conditions 5, 6 and 14 – Holding Pond Maintenance and Monitoring

Conditions 5, 6 and 14, relate to the maintenance and monitoring of the holding pond.

Condition 5 states:

> *"At any time as requested by the Canterbury Regional Council, the consent holder shall have the average seepage rate of the Wet Weather Holding Pond tested and certified by a Chartered Professional Engineer (CPEng). The certificate shall be supplied to Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the completion of the testing."*

Environment Canterbury did not request that the seepage from the holding pond be tested during the 2025/26 monitoring period.

Condition 6 states:

> *"The Wet Weather Holding Pond and all associated tanks, pipes and channels shall be sealed and maintained to prevent the leakage or overflowing of wastewater onto or into land."*

The pond is inspected during wet weather events when the holding pond is in use. There was no observed leakage or overflow during 2025/26.

Condition 14 states:

> *"The Wet Weather Holding pond shall be:*
>
> *(a) inspected at least annually and maintained in sound structural condition;*
> *(b) maintained in accordance with the specifications in the Site Management Plan (Appendix A); and*
> *(c) monitored to ensure compliance with conditions (10) and (11).*
>
> *Records of any complaints relating to odour effects shall be logged and submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, on an annual basis."*

The pond is inspected during wet weather events when the holding pond is in use. Annual walkover inspections are undertaken to confirm there are no signs of deterioration of the pond banks or the liner. The holding pond is maintained and cleaned following use as required by the site management plan.

The system is monitored via SCADA to ensure compliance with conditions 10 and 11 (refer Section 3.3 above).

3.5. Summary of Compliance – CRC144561

A summary of compliance with consent CRC144561 is presented in Table 4 below.

Table 4: Summary if compliance for 2024/25 for consent CRC144561

Consent condition	Description	Compliance
Conditions 1, 2, 3, 4, 7, 8, 9, 10(b), 12(a), 15 and 16	Holding Pond Construction	Fully compliant
Conditions 10(a), 11, 12(b), and 13	Holding Pond Operation	Fully compliant
Conditions 5, 6 and 14	Holding Pond Maintenance and Monitoring	Fully compliant

4. CRC184787 – DISCHARGE TO LAND

4.1. Overview

This consent covers the discharge of contaminants into land at 470 Woodstock Road (i.e.: the irrigation disposal fields).

Consent compliance for the period 1 July 2025 through to 30 June 2026 ('the monitoring period'), has been assessed by WDC.

4.2. Conditions 1-2 and 6-9 – Treatment Process

Conditions 1, 2, 6, 7, 8 and 9, relate to the design and construction of the treatment process at the WWTP.

Condition 1 states:

> *"The discharge shall be domestic sewage effluent treated in an aerated activated sludge plant and disinfected by ultraviolet light, as described in the Royds Consulting Report entitled "Waimakariri District Council Oxford Sewage Treatment and Disposal System: Assessment of Effects on the Environment and Technical Support Document, September 1995" submitted with the application for this consent."*

The discharge consists only of domestic sewage effluent from the Oxford township and is treated in an aerated activated sludge plant and disinfected by ultraviolet light in accordance with the original Assessment of Effects on the Environment and Technical Support Document (refer TRIM 091005030296).

Environment Canterbury (ECan) raised concern during 2022 that the use of chlorine to remove algae from the irrigator spray distribution nozzles was not explicitly allowed by the consent conditions and requested WDC to cease this practice, pending a further investigation of environmental effects. However the use of chlorine to control algae has always been used at this plant and was included in the original Operations & Maintenance Manual (dated 2004).

Subsequently in a meeting on 21 June 2023 ECan agreed that WDC can recommence chlorine dosing into the treatment plant effluent holding tank moving forward. During that meeting ECan confirmed its understanding that dosing with chlorine is a common procedural requirement of operating wastewater treatment plants.

Condition 2 states:

> *"The treatment plant shall include an effluent storage facility that provides for the storage of wet weather flows as authorised by resource consent CRC144561. Effluent stored in the effluent storage facility shall receive secondary treatment via the aerated activated sludge plant and ultraviolet disinfection described in condition (1) post storage and prior to discharge."*

The holding pond provides storage of wastewater during wet weather events in accordance with CRC144561. After wet weather events, stored wastewater is pumped through to the plant for treatment in accordance with Condition 1 prior to discharge (refer Section 3.3 for further information on the holding pond operation).

Condition 6 states:

> *"The effluent holding pond shall be lined with an impermeable material such that there is no discharge of effluent into land through the base or walls of the pond."*

The holding pond has been constructed with a 1.5 mm thick High-Density Polyethylene (HDPE) membrane liner (refer Section 3.2 for further information on the holding pond construction and seepage rate testing).

Condition 7 states:

> *"Design plans for the sewage effluent treatment and disposal system shall be forwarded to the Canterbury Regional Council, prior to construction of the system. The design shall allow for samples of the effluent to be taken after treatment in the ultra-violet light disinfection unit and before discharge to the irrigation system."*

The design plans were issued to Environment Canterbury prior to 6 August 1998, as confirmed in the historical compliance report received for the original version of this consent (refer TRIM 050830031). The treatment process allows for samples to be taken post UV disinfection and prior to discharge to the irrigation disposal fields, for testing as required by Conditions 4 and 5 (refer Section 4.4).

Condition 8 states:

> *"A certificate signed by a registered civil engineer or environmental engineer to certify that the sewage treatment and disposal system is constructed in accordance with the design plans specified in condition (7) shall be provided to the Canterbury Regional Council within one month of the construction of the treatment and disposal system."*

A letter certifying that the treatment plant was constructed in accordance with the design plans, certified by Alan Hulley of MWH, was issued to Environment Canterbury on 23 May 2005 once the treatment plant had been fully commissioned. This was confirmed in the historical compliance report received for the original version of this consent (refer TRIM 050830031).

Condition 9 states:

> *"A management plan for the operation and maintenance of the sewage treatment and disposal system shall be provided to the Canterbury Regional Council prior to commencement of effluent discharge. The management plan shall specifically address the operational requirements for:*
>
> *(a) The aerated treatment plant;*
> *(b) The ultra-violet light disinfection unit;*
> *(c) Screening, storage and disposal of solids removed from the effluent;*
> *(d) Drying and disposal of sludge;*
> *(e). Irrigation of effluent onto land; and*
> *(f) An emergency power source to be used during loss of electricity."*

A copy of the Oxford Treatment Plant – Operations Manual (refer TRIM 150909129046), was issued to Environment Canterbury on 23 May 2005 as confirmed in the historical compliance report received for the original version of this consent (refer TRIM 050830031). An early version of the operations manual was developed during construction (refer TRIM 111110053282) but not issued as the modifications were undertaken to the plant during commissioning.

This manual was updated in 2009 (refer TRIM 090818024656) and also in 2014 to include the operation of the holding pond (refer TRIM 141219141903). A further update to the Oxford WWTP operations and maintenance manual was undertaken in 2023 and is attached to this report for reference (refer TRIM 230531080235 see APPENDIX G).

Conditions 3 and 10-16 – Plant Operation

Conditions 3, 10, 11, 12, 13, 14, 15 and 16, relate to the plant operation at the WWTP.

Condition 3 states:

"The volume of effluent discharged shall not exceed 1,382 cubic metres per day, and a maximum annual volume of 228,125 cubic metres between 1 July and the following 30 June."

The daily volume discharged from the WWTP to the irrigation disposal field during the 2025/26 monitoring period is shown in Figure 6 below (see Appendix A for raw data).

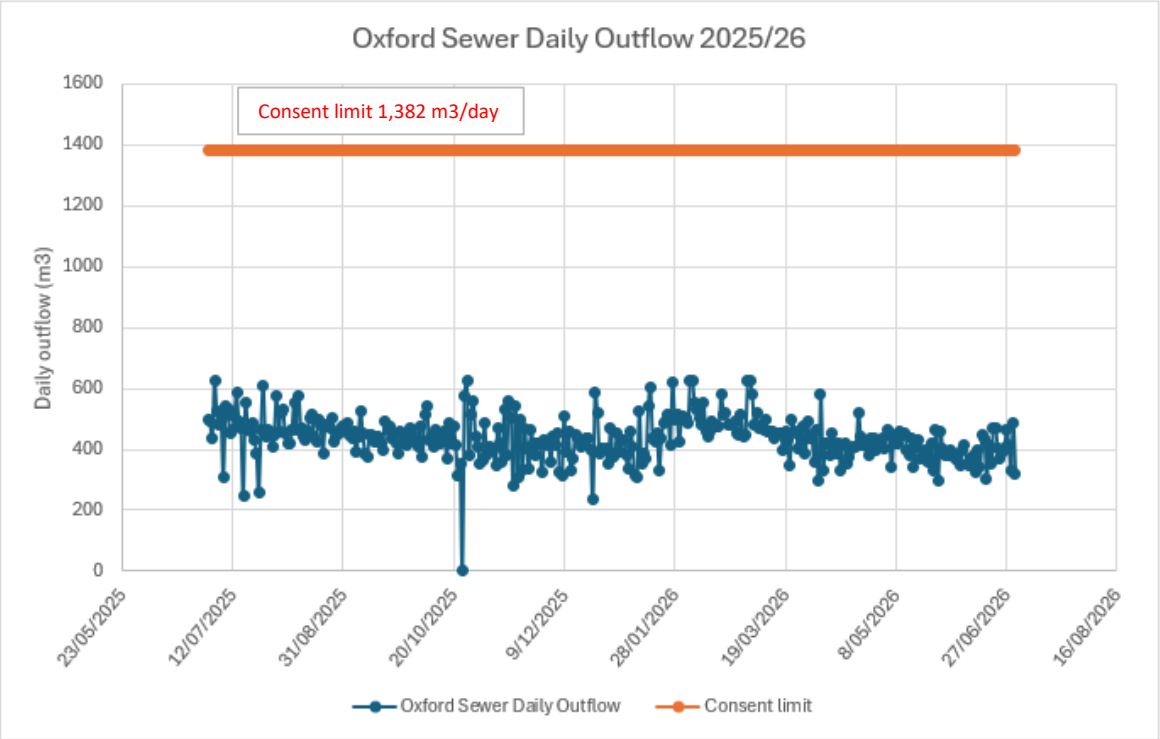


Figure 6: Daily volume (m3) discharged to the irrigation disposal field during 2025/26

The daily volume discharged was within the consent limit of 1,382 m3/day through the 2025/26 year. The annual volume discharged during 2025/26 was 159,762.7 cubic metres (see Appendix A) which is less than the annual limit of 228,125 cubic metres in any year.

Condition 10 states:

"There shall be no discharge of effluent onto land within 20 metres of any surface water."

There are no surface water bodies within 20 meters of the irrigation disposal fields. The Eyre River is the closest surface waterbody which is approximately 215m from the discharge area.

Condition 11 states:

"Effluent shall not be spray irrigated directly onto land within the drainage channel depression identified on Plan CRC184787A attached to this consent."

The drainage channel depression shown on Plan CRC184787A has been redirected to the south of the irrigation disposal fields, such that no treated effluent is discharged onto land within the drainage channel depression.

Condition 12 states:

"The rate at which effluent is applied onto land shall not exceed 200 kilograms of nitrogen per hectare per year."

The average annual nitrogen application to land concentration rate of 12.8g/m3 in 2025/26 compares with 10.1g/m3 in 2024/25, 11.04g/m3 in 2023/24, 12.9g/m3 in 2022/23 or 13.1g/m3 recorded in the 2021/22 year. All of these are less than the consent limit application rate of 14.1g/m3 (see Appendix E Oxford lab data– Total Nitrogen - Oxford tab for raw data). A fairly consistent trend in the average annual nitrogen concentration rate is apparent from 2021 until the present.

These results are tabulated for easy reference:

	2025/26	2024/25	2023/24	2022/23	2021/22	Consent Limit
Total Nitrogen average annual application rate to land (g/m3)	12.8	10.1	11.04	12.9	13.1	**14.1g/m3**

This equates to an estimated annual application rate of 127.1kg-N/ha/year in 2025/26, compared with 118.8kg-N/ha/year in the 2024/25 year, with 111.4kg-N/ha/year in the 2023/24 year and with 183 kg-N/ha in the 2022/23 year. This is less than the consent limit of 200 kilograms of nitrogen per hectare per year. This is a consistently low application rate over time and is a consistent trend in comparison with the previous years.

The annual application rate in kg/ha/yr is calculated by multiplying the average annual nitrogen application rate of 12.8g/m3 in 2025/26 (see APPENDIX E – Oxford Lab data Results) by the average annual daily flow rate (438m3/day – 437,706 l/day – see APPENDIX A), over 365 days and then divided by the total irrigable field area of 16.1 ha.

It is noted that sampling from 2023/24 onwards was undertaken weekly which is an increased frequency from the monthly sampling undertaken up until 2022/23. This means the average nitrogen application rate recorded will be more accurate than in previous years as it is based on an average derived from more regular sampling. This sampling frequency was recently increased to inform the Oxford wastewater treatment plant upgrade planning.

The nitrogen application rate is on average less than the consent limit and has been applied to the distribution fields through both irrigators throughout the year.

It is noted that during the 2025/26 year the nitrogen concentration rate sampled was higher than the consent limit of 14.1 g/m3 in only 13 out of 52 samples (see Appendix E – Total Nitrogen Oxford tab for raw data). Notwithstanding these occasional higher levels, the consent limit was met in a majority of weekly samples, showing an average low level of nitrogen loading to land from the Oxford plant.

Condition 13 states:

> *"The depth of effluent application on the primary block identified on Plan CRC184787B, attached to this consent shall not exceed 22 millimetres per day. The depth of effluent irrigation on the secondary and tertiary blocks identified on plan CRC184787B shall not exceed 10 millimetres per day."*

The attached spreadsheet APPENDIX C data set shows the daily application rates (mm) calculated from the flow and irrigator's positioning data. Note that the accuracy of the calculation is reliant on the position sensor on the irrigator's working correctly. The west irrigator application depth was fully compliant through the 2025/26 year, at a maximum of 12mm irrigation depth recorded.

The new irrigator flow meters did not start working until 22nd July 2025. The outflow from the WWTP flow meter was used for the first couple of weeks and was assigned to which ever irrigator appeared appropriate based on recorded movement.

The east irrigator application depth position sensor had faulty recordings between 9 July to 18 July 2025. The irrigator was recorded as not rotating (moving) in SCADA during these times. As a result, the calculated effluent application depth during this period appears to be grossly overstated.

Staff comment that on 9th July 2025 the system was actually moved onto the WEST irrigator, but the position sensor had not finished being installed at this stage, therefore the position for the west irrigator was showing as not changing. Then on July 18 it started working which is why correct information was received from that point onwards.

The data overstates the effluent depth applied during this period because there is no movement data at all, so the movement is assumed to be zero.

Similarly, several other apparent exceedances after these dates on the east irrigator are considered to have occurred because of the more limited recorded movement of this irrigator during this period which has distorted the calculation of application depths during this time. These are not considered accurate recordings as the discharge flow volumes were similar to the rest of the year.

On July 24th and 25th 2025, it appears that flow was being sent to both irrigators, but the largest proportion was sent to the west one, which showed movement on those days. Staff interpretation of the data is that there was a malfunction with the valves that allowed some flow to pass through the east irrigator while it was not rotating on those days. The discharge volumes are considered correct, rather, the interpretation of those volumes in terms of depth of irrigation from an irrigator that was stationary is overstated.

14th October 2025 shows a small movement of the irrigator of only 11 degrees, however this is because the rotation sensor was calibrated to match the compass directions on this day which made the movement appear smaller than it should have been. The actual movement on this day was 83 degrees.

The data from both irrigators is now being accurately reported and the data recording issues identified above appear to have been addressed. Longer term, accurate irrigator performance information should be able to be provided for future years.

Most of the “Depth of Area Irrigated” data for both irrigators had an application depth of less than 22mm per day over the 2025/26 year (see Appendix C– Irrigator Depths tabs) meaning the consent limit of 22mm application depth was met during the year, aside from the above recording errors which have now been addressed. The system is considered to now be generally performing as intended.

A bucket test of the eastern irrigator discharge rate was most recently conducted in November 2021. This found that the approximate application rate is 17.93mm in any 24 hour period which is within the consent limit. This bucket test estimate from 2021 is similar to most of the subsequent, actual on-line records of application depth from each irrigator during 2025/26, excluding the recording issues described above. However it is noted that lower rainfall and therefore lower system outflows in the 2025/26 year reduced actual irrigation depths.

Condition 14 states:

> *“There shall be no ponding of effluent.”*

Two reports of ponding were observed in the effluent disposal fields by Water Unit site operators during the 2025 /26 year, on 13 January 2026 and on 22 December 2025. These were recorded in field records from 7 August 2024 until 4 August 2026 and appear to have been promptly resolved as results on the following days were reported as satisfactory. These records are extracted from Infrastructure Data, which records and reports weekly irrigator observations and inspections by operators (see APPENDIX F for details). Operator comments explain the follow up maintenance undertaken after instances where ponding was observed. During this reporting year, it appears that the one off "unsatisfactory" reports were promptly resolved as indicated by satisfactory reports received during the following days / weeks.

Condition 15 states:

> *"There shall be no grazing of land by stock within 48 hours of irrigation of that land with effluent."*

The site was not used for grazing at any time during the 2025/26 monitoring period.

Condition 16 states:

> *"The hours and rate (in cubic metres per hour) of effluent discharged and the area of land to which effluent is applied shall be measured to within an accuracy of 10 percent and recorded daily in a log kept for that purpose. These records shall be provided to the Canterbury Regional Council, on request."*

The daily volume of effluent discharged is shown in Figure 8 below and the area of land to which the effluent was applied is tabulated in Appendix B and Appendix C. As SCADA information is now available for irrigator position and movement for both irrigators the Council is fully compliant with this condition.

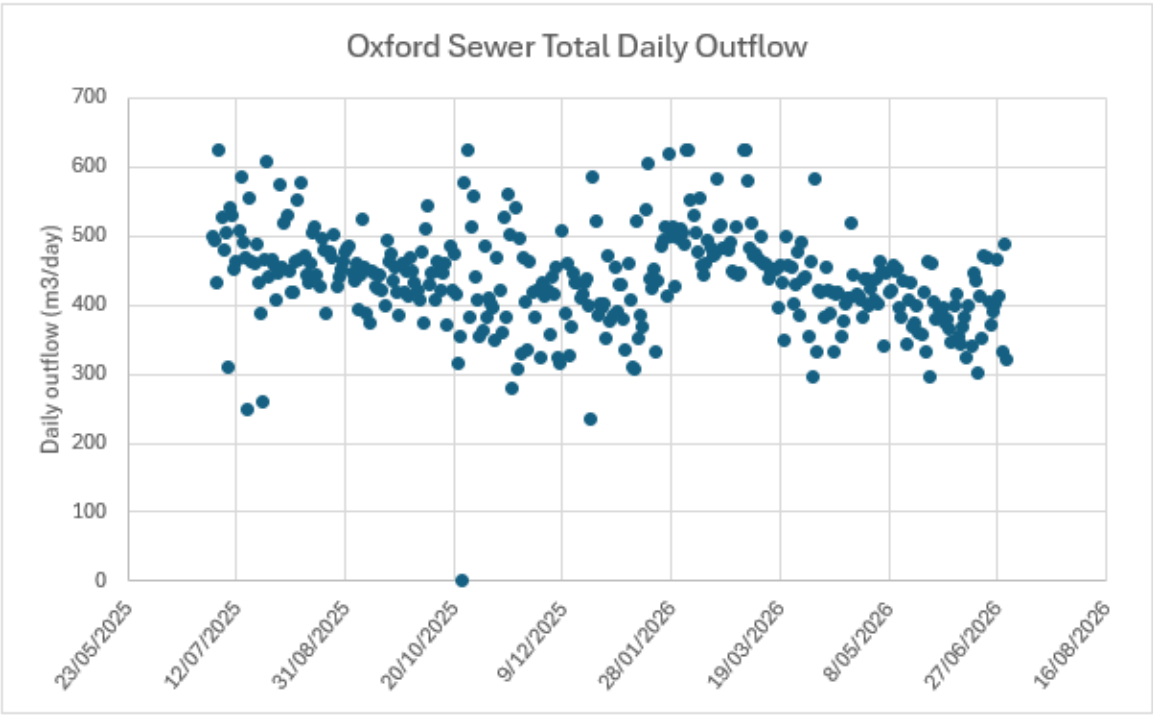


Figure 8: Daily volume of effluent discharged during 2025/26

4.3. Conditions 4 and 5 – Treatment Monitoring

Conditions 4 and 5, relate to the treatment monitoring at the WWTP.

Condition 4 states:

> *"The faecal coliform bacteria concentration in a representative sample of the effluent taken following ultra-violet light disinfection and before discharge to the irrigation system shall not exceed 500 per 100 millilitre sample."*

Condition 5 states:

> *"A representative sample of the discharge shall be taken at the sampling location specified in condition (4) within one month of the commencement of discharge and at least every six months thereafter. Each sample shall be analysed for faecal coliform bacteria (number per 100 millilitres) and total nitrogen concentration (grams per cubic metre). The laboratory carrying out the analyses shall be accredited to ISO Guide 25, for those analyses, either by TELARC or by an organisation with a mutual recognition agreement with TELARC established in accordance with ISO Guide 58. The results shall be provided to the Canterbury Regional Council within five working days of receipt of the results by the consent holder."*

Representative samples were taken from the plant, after UV disinfection and prior to discharge to the irrigation disposal fields on a weekly basis during 2025/26. The samples are tested by Hill Laboratories who are accredited to ISO Guide 25. Results from the daily volume discharge from the WWTP to the irrigation disposal field during the 2025/26 monitoring period are shown in Figure 9 below (see Appendix E – FaecalColi Post UV Oxford tab for raw data). The very high result of 70,000cfu/100mL on 26 August 2025 shown in the spreadsheet was adjusted to 1,000cfu/100mL in the graph below, in order for values below 500cfu/100mL to display clearly on the graph.

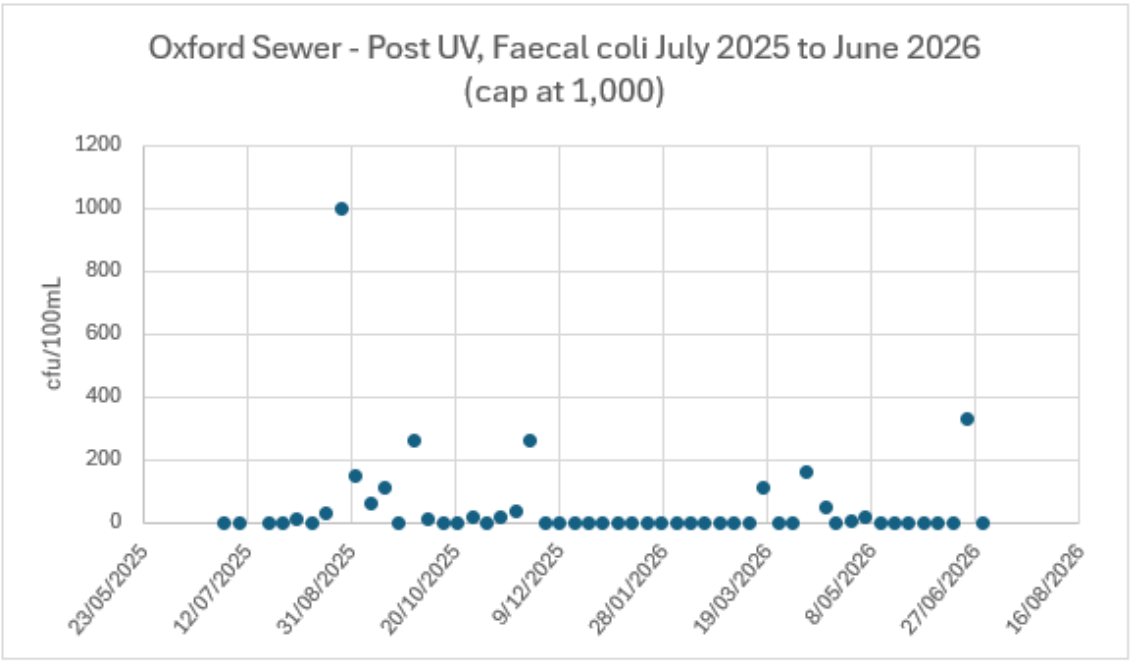


Figure 9: Weekly faecal coliform sample results during 2025/26

The graph shows all but one of the results during the year were below the consent limit of 500cfu/100ml. In addition, from the majority of weekly samples no coliforms were detected at all (see Appendix E – FaecalColi Post UV tab).

The results show that the discharge was compliant for the July 2025 to June 2026 year (only two samples were required to be taken for the 2025/26 year and all but one of the 52 weekly samples analysed were compliant). It is noted sampling is undertaken weekly for operational information purposes, although sampling is only required by the consent conditions once every six months.

Samples have been provided here on an annual basis, however Environment Canterbury have requested that these are sent through within 5 working days as per the consent condition. Systems have been put in place to ensure that these results are sent through to Environment Canterbury within 5 working days.

4.4. Summary of Compliance – CRC184787

A summary of compliance with condition CRC184787 is presented in Table 5 below.

Table 5: Summary if compliance for 2025/26 for consent CRC184787.

Consent condition	Description	Compliance
Conditions 1, 2, 6, 7, 8 and 9	Treatment Process	Fully compliant
Conditions 3, 10, 11, 12, 13, 14, 15 and 16	Plant Operation	Mostly compliant. An issue with SCADA data occurred on the east irrigator during July 2025 and on 14 October 2025 recording excessive effluent discharge application depths to land, which has been subsequently corrected. Recorded effluent application depths outside of these dates were compliant. Two reports of ponding were made from the irrigators during the 2025/26 year by Water Unit operators, which were promptly resolved.
Condition 4 and 5	Treatment Monitoring	Compliant. Total nitrogen application rates and faecal coliform sampling and results meet the consent requirements.

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR INFORMATION

FILE NO and TRIM NO:	WAT-03 / 261022343325
REPORT TO:	Utilities and Roading Committee
DATE OF MEETING:	17 November 2026
AUTHOR(S):	David Paz Lobon, 3 Waters Asset Analyst Craig Freeman, Asset Management Engineer – Water and Wastewater Caroline Fahey, Water and Wastewater Asset Manager Kalley Simpson, 3 Waters Manager
SUBJECT:	Network Environmental Performance Report 2024-25 and Network Environmental Performance Measures 2025-26
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager / Chief Executive

1. SUMMARY

1.1. The purpose of this report is to:

i. Present the findings of the Network Environmental Performance Report (NEPR) 2024-25 as published by the Water Services Authority – Taumata Arowai (the Authority) and highlight Waimakariri District Council's (Council's) performance.

ii. Present Council's Network Environmental Performance Measures (NEPM) for the 2025-26 reporting year.

1.2. The primary goal of the NEPR is to compare the performance of different councils and identify areas for improvement of drinking water supply and wastewater service delivery. The NEPR 2024-25 highlights three areas for improvement as below:

- Five key issues.
- Five key measures.
- Eight recommendations.

1.3. Based on the NEPR 2024-25, Waimakariri District Council performs well in the key issues, key measures and recommendations areas compared to other councils.

1.4. The NEPM for the 2025-26 reporting period are reported at an organisation and network level and grouped into five key outcomes.

1.5. Generally, Waimakariri District Council performs well in the key outcome areas of the NEPM compared to previous data.

1.6. There is room for continued improvement in the following areas for wastewater:

- Improve overflow measuring capability at WWTP overflow points and wastewater pump stations. This improves data quality, levels of service and consent compliance reporting.
- Develop an inflow and infiltration strategy to enhance network understanding, improve network performance and reduce wet-weather overflow risks.
- Expand the existing public education programme to reduce blockages and avoidable overflows thus improving network performance and levels of service.
- Review the CCTV Maintenance Contract for opportunities to expand CCTV coverage closer to the 30% inspections over a 5-year period international benchmark.

- Better understand process emissions. Further work is required to better understand and quantify process emissions leading to enhanced data quality.

1.7. There is room for continued improvement in the following areas for drinking water supply:

- Investigate the potential for implementation of pressure management across all drinking water supplies. This lowers stress on the network leading to a reduced likelihood of bursts, reduced water losses and an improvement in residential water usage and levels of service.
- Investigate the potential for implementation of district metered areas across all drinking water supplies. This improves data quality and network understanding supporting improved water loss management and future network planning.
- Consider transitioning to smart water meters. This improves data quality which supports improvements in water loss management, residential water use and future network planning.
- Implement targeted leakage intervention works across all drinking water supplies. This directly improves water loss management and positively impacts performance against key measures.
- Improve the fire hydrant testing procedure. This would incorporate all aspects of the Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008), specifically Appendix G, enabling better data quality.

Attachments:

i. NEPR 2024-25 (TRIM 261104358817).
ii. NEPM 2025-26 Waimakariri District Council (TRIM 261005301821).

2. RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 261022343325.

(b) **Notes** that overall, Waimakariri District Council performs well in areas identified by the Network Environmental Performance Report 2024-25 as key issues, measures and recommendations.

(c) **Notes** that this positive performance is also reflected in the key areas of focus identified in the 2025-26 Network Environmental Performance Measures.

(d) **Notes** that the following areas for improvement have been identified and will be progressed from existing budgets and where necessary additional budgets sought via the Annual Plan / Long Term Plan process:

- Improve overflow monitoring and measuring capability at wastewater treatment plant overflow points and wastewater pump stations. This improves data quality, levels of service and consent compliance reporting.
- Develop an inflow and infiltration strategy to improve wastewater network performance and reduce wet-weather overflow risks.
- Expand the existing public education programme to reduce wastewater overflows and improve levels of service.
- Review the CCTV Maintenance Contract for opportunities to expand CCTV inspection coverage towards the 30% inspections over a 5-year period international benchmark to improve asset condition understanding and inform planning decisions.
- Undertake further work to better understand and quantify wastewater process emissions for future reporting requirements.
- Investigate the potential for implementation of pressure management across all drinking water supplies to improve water loss management and levels of service.
- Investigate the potential for implementation of district metered areas across all drinking water supplies to improve water loss management and future network planning.
- Consider transitioning to smart water meters to improve data quality, water loss management, residential water use and future network planning.
- Implement targeted leakage intervention works across all drinking water supplies to improve water loss management.
- Improve the fire hydrant testing procedure to enhance data quality and compliance reporting.

(e) **Notes** that the Network Environmental Performance Measures provides numerous performance metrics which can be used for comparative purposes on specific matters nationwide.

(f) **Notes** that the Network Environmental Performance Report for the 2025-26 reporting year will be published by the Authority in 2027 and Council's performance will be reported through to the Utilities and Roading Committee.

3. BACKGROUND

3.1. The Water Services Act 2021 requires certain public water network operators to monitor and report on the environmental performance of their drinking water supply and wastewater networks against the Network Environmental Performance Measures (NEPM). The Network Environmental Performance Report (NEPR) is based on the NEPM and provides a valuable benchmarking tool, enabling local authorities and other organisations that deliver public drinking water supply and wastewater services to compare performance outcomes and identify areas for improvement. The Water Services Authority Taumata Arowai (the Authority) has undertaken this annual review since 2023, and Waimakariri District Council (Council) has consistently met its reporting obligations by submitting annual reports within the required timeframes.

3.2. The NEPM relates to the effects of water services networks, including the operation of infrastructure and associated processes, on the environment, covering:

- Ecosystems.
- Natural and physical resources, including their innate mauri and mana.
- People and communities, including the ability of mana whenua to exercise kaitiakitanga.
- Social, economic, aesthetic and cultural conditions that affect the above including matauranga Maori and tikanga Maori.

3.3. The NEPM cover a range of topics including resource consents, rates of water-take from source water and discharges from wastewater treatment plants, water losses and water restrictions, condition of assets, reliability and recovery of services including water security and emergency preparedness.

3.4. At present, reporting is required only for drinking water supplies and wastewater networks, as the Authority is still defining the requirements for stormwater. Stormwater network reporting is expected to become mandatory at a future date.

3.5. The primary goal of the NEPM and NEPR is to compare Councils' performance nationwide and identify opportunities to improve service delivery. Council's 2025-26 NEPM were submitted to the Authority on 30 September 2026, and the 2025-26 NEPR is expected to be published in 2027.

4. KEY ISSUES

NEPR 2024-25 performance against key issues.

4.1. The NEPR 2024-25 identified five key issues across the national drinking water supply and wastewater services as below:

- Wastewater networks are under pressure.
- Wastewater asset condition is poorly understood.
- Wastewater consenting and compliance are weak points.
- Drinking water performance remains uneven.
- Data quality limits confidence.

4.2. Overall, Council performs well in the areas identified as key issues at a national level. The following observations are summarised below:

4.3. *Wastewater networks are under pressure*. Council continues to deliver a programme of proactive network maintenance, supported by effective network planning and service request investigations. Council's proactive maintenance approach includes increased asset inspections, to reduce preventable overflows and maintain service levels. Council also delivers public education programmes in local schools, with opportunities to expand engagement across the wider community

to further assist in reducing wastewater network blockages. Council's wastewater networks perform well with 3 overflows recorded per 100km of wastewater pipe compared to the national median of 9 overflows/100km.

4.4. *Wastewater asset condition is poorly understood.* Council's wastewater asset condition is well understood, with 100% of pipes assessed proactively based on Council's internal criticality model. CCTV inspections are targeted using Council's risk-based criticality framework, ensuring critical pipelines are CCTV inspected by the midpoint of their expected useful life. Council has inspected 16% of all wastewater pipes in the last 5 years compared to the national median of 10% in the last 5 years.

4.5. *Wastewater consenting and compliance are weak points.* Council's wastewater consenting and compliance continues to perform well. 100% of Council's 15 consents are current compared to a national median of 78%. Additionally, 40% of Council's consents are due to expire within the next 10 years compared to a national median of 48%. Council also meets all applicable consent conditions, which is a significant achievement, compared to non-compliance with consent conditions being widespread nationally as stated by the NEPR 2024-25.

4.6. *Drinking water performance remains uneven.* Results for the 2024-25 reporting year show that 10 of the Council's 11 drinking water supplies achieved an Infrastructure Leakage Index band (ILI) of A or B. Council has no drinking water supply networks within the very inefficient ILI band D compared to 32% of local government operators having at least one in band D. Effective network planning and asset renewals contributed to this result.

4.7. While water metering coverage has increased as new service connections are fitted with meters, the Council remains below the national median, indicating that further work is required to close the gap. Council had a water meter coverage of 31% compared to 63% nationally. Council is also in the process of assessing a transition to smart water meters to improve accuracy and reliability of customer water-use data and support more efficient data collection and processing.

4.8. Council performs well operating its infrastructure within water extraction limits. All bores operated within their consent limits, except for the Davie Street bore in the Kaiapoi drinking water supply. The daily volume limit for Davie Street was exceeded on one day during peak summer demand by 48%. Overall compliance for Davie Street bore was 99.7%. Measures were subsequently implemented to improve compliance with water-take consent limits. Overall, Council achieved 99.94% compliance with volume consent limits compared to 99.90% nationally.

4.9. *Data quality limits confidence.* While no significant data completeness issues have been identified, data quality in service connection asset data, overflow data, and customer water-use data could be improved to increase confidence. Council completed 100% of responses required compared to 97% nationally.

4.10. Overall, Council's performance compares well at a national level on the key issues identified by the Authority, routinely exceeding median performance measures.

NEPR 2024-25 performance against key measures.

4.11. The NEPR 2024-25 highlighted five key measures for councils across drinking water supply and wastewater services as below:

- Wastewater overflows.
- Water supplied to the drinking water network.
- Current annual real loss (CARL).
- Residential water use.
- Drinking water combined capital and operational spend.

4.12. Overall, Council performs well in the key measures. The following observations are summarised below:

4.13. *Wastewater overflows per 100km of pipe*. This key measure was also highlighted as a national key issue by the Authority. As discussed previously, Council recorded 3 overflows per 100km of

wastewater pipe compared to the national median of 9 overflows/100km. Table 1 displays Council's performance alongside neighbouring councils.

4.14. Table 1 – Overflows per 100km of wastewater pipe.

Organisation	Wastewater Overflows (No./100 km pipe)
National Median	9
Waimakariri District Council	3
Hurunui District Council	2
Christchurch City Council	2
Selwyn District Council	1

4.15. *Water supplied to the drinking water network*. Waimakariri District Council supplies an average of 947 litres of water per connection per day, which is below the national median of 1,175 litres per connection per day. Table 2 displays Council's performance alongside neighbouring councils.

4.16. Table 2 – Daily water supplied to the drinking water network per connection.

Organisation	Water Supplied (L/connection/day)
Hurunui District Council	1,492
National Median	1,175
Waimakariri District Council	947
Selwyn District Council	945
Christchurch City Council	837

4.17. *Current annual real loss*. Council's CARL was 230 L/connection/day for the 2024-25 reporting year, slightly below the national median of 233 L/connection/day. Five councils with anomalous results were excluded from the calculation of the national median. Table 3 displays Council's performance alongside neighbouring councils.

4.18. Table 3 – Daily current annual real losses per connection

Organisation	CARL (L/connection/day)
Hurunui District Council	304
Christchurch City Council	240
National Median	233
Waimakariri District Council	230
Selwyn District Council	153

4.19. *Residential water use*. Council's residential water use was 639 L/connection/day for the 2024-25 reporting year, slightly below the national median of 689 L/connection/day. Table 4 displays Council's performance alongside neighbouring councils.

4.20. Table 4 – Daily residential water use per connection.

Organisation	Residential Water Use (L/connection/day)
National Median	689
Selwyn District Council	683
Waimakariri District Council	639
Christchurch City Council	440
Hurunui District Council	283

4.21. *Drinking water combined capital and operational spend*. Council's combined spend was $551/person for the 2024-25 reporting year which was the national median value. Table 5 displays Council's performance alongside neighbouring councils.

4.22. Table 5 – Drinking water combined capital and operational spend per person.

Organisation	Combined Capital and Operational Spend ($/person)
Hurunui District Council	1,515
Selwyn District Council	681
National Median	551
Waimakariri District Council	551
Christchurch City Council	255

NEPR 2024-25 recommendation from the Authority.

4.23. The NEPR 2024-25 identified eight recommendations across national drinking water supply and wastewater services as below:

4.23.1. Wastewater:

- Prioritise routine and preventative maintenance.
- Carry out public education programmes.
- Target investment to the areas of greatest need.
- Address poor asset condition.
- Strengthen data quality.

4.23.2. Water Supply:

- Reduce water loss.
- Plan for the future network.
- Strengthen data quality.

4.24. Overall, Council performs well in the areas identified as recommendations for improvement at a national level. The following observations are summarised below:

4.25. Wastewater:

4.26. *Prioritise routine and preventative maintenance,* to reduce wastewater overflow risk before issues arise. This practice is well underway within Council and is reflected in Council's overflow performance being better than the national median. Council will continue existing routine and preventative maintenance programmes and is seeking improvement to these processes to further enhance performance in this area.

4.27. *Carry out public education programmes,* where preventable blockages contribute to poor performance. Council already conducts public education programmes on an ongoing basis and is seeking to expand the programme to further improve performance in this area.

4.28. *Target investment to the areas of greatest need*, including meeting regulatory requirements such as discharge quality limits under the wastewater standards. Council has met 100% of consent compliance requirements including discharge quality of treated effluent. Investment into equipment and infrastructure that enable this performance continues to be prioritised to ensure future compliance.

4.29. *Address poor asset condition* and the wet weather, capacity, infiltration and ingress issues that increase overflow risk. Council's asset condition is better understood than the national median with 16% of pipes CCTV inspected compared to 10% nationally. This data helps inform pipe renewals which addresses wet weather, capacity, and infiltration and ingress issues. Council staff are further seeking to develop an Inflow and Infiltration Strategy to help improve performance in this area.

4.30. *Strengthen fit-for-purpose monitoring, inspection and data quality practices* across wastewater networks. This practice is underway, with 100% of wastewater pipes assessed proactively using

Council's risk-based criticality model and 16% CCTV inspected in the last 5 years compared to the national median of 10%. Council is seeking to improve overflow measuring capability at WWTP overflow points and wastewater pump stations. This improves data quality, levels of service and consent compliance reporting.

4.31. Water Supply:

4.32. *Continue to reduce water loss*, improve metering and pressure management where appropriate. Council continues to invest in water loss reduction efforts which include both an improvement in metering and pressure management understanding across the district.

4.33. *Plan for future water availability,* network renewal and growing demand. This practice is well underway within Council and is reflected in Council's consent compliance performance being better than the national median. Council will continue with existing planning and investment programmes to ensure performance in this area remains high.

4.34. *Strengthen fit-for-purpose monitoring, inspection and data quality* practices across drinking water networks. This practice is underway, with Council assessing a transition to smart water meters, given metering coverage of 31% compared to 63% nationally. Council is also seeking to implement district metered areas and improve the fire hydrant testing procedure, improving data quality, water loss management and compliance reporting.

NEPM 2025-26 key outcomes.

4.35. The NEPM are reported at either the organisation or network level and are grouped into the following five key outcomes:

- Environmental and public health is protected.
- Services are reliable.
- Resources are used efficiently.
- Services are resilient.
- Services are economically sustainable.

NEPM 2025-26 key wastewater outcomes.

4.36. <u>Environmental and public health is protected</u>

4.37. Council holds 15 resource consents with Environment Canterbury across 2 wastewater networks. Public health is protected by ensuring compliance with these consents and through ensuring appropriate network maintenance practices.

4.38. Whilst there are no consents for wastewater overflows, the following overflow events have been reported for the 2025-26 year:

- 5 overflows on public property caused by blockages in the network.
- One overflow at Rangiora WWTP on 26 November 2025. The overflow lasted 20 minutes and resulted in an estimated discharge of 1,148 cubic metres. The incident was caused by a valve being left closed during maintenance activities. An action plan has since been implemented to prevent a recurrence.
- 9 overflows on private property attributable to Council's network.

4.39. <u>Services are reliable</u>

4.40. Services are reliable, with very few interruptions, and faults are responded to and resolved promptly within stipulated Service Level Agreement timeframes. Over the past five years, the Council has CCTV inspected 16% of wastewater mains.

4.41. Overall, Council delivers reliable wastewater services that meet the Council's wastewater level of service.

4.42. Resources are used efficiently

4.43. The Authority will request further information in coming years regarding wastewater network operations and activities. A focus area for efficiency is process emissions and further work is required to better understand and quantify process emissions. This will provide a benchmark for determining how efficiently Council is using resources for wastewater treatment compared to other territorial authorities.

4.44. Services are resilient

4.45. Council has identified its critical assets and possesses a comprehensive understanding of their condition. This knowledge enables the prioritisation of resources and budget allocation, leading to timely interventions and a reduced risk of failures or disruptions to wastewater services. The recently completed inlet screen upgrade projects at several WWTPs illustrate this by ensuring future growth demand can be met.

4.46. Overall, Council's wastewater infrastructure is in good condition with an average age of 24 years. Only 3% of pipework is assessed as poor or very poor condition and replacement of this pipework is continuously addressed through renewals work.

4.47. Services are economically sustainable

4.48. This is not currently an outcome for wastewater services but is expected to be captured through the Commerce Commission mandatory Information Disclosure for water services.

NEPM 2025-26 key drinking water supply outcomes.

4.49. Environmental and public health is protected

4.50. Council holds 29 resource consents with Environment Canterbury across 11 drinking water supplies. Public health is protected by ensuring compliance with these consents and through ensuring appropriate network maintenance practices.

4.51. All consent conditions have been met except for:

- CRC970305 Davie Street bore where the daily water volume taken exceeded the limit of 3,010 cubic metres per day on 24 December 2025 by 55.4 cubic metres of water. This bore previously exceeded the same consent limit by 4,447 cubic metres in the 2024-25 reporting year. The previous changes implemented have reduced the volume of non-compliant water extraction by 98.8%. An additional operational change was implemented to further improve compliance with daily extraction limits at this bore.
- CRC251483 McPhedrons Bore 2 where the instantaneous flow rate taken exceeded the limit of 30 litres per second on multiple occasions between 13 October 2025 and 17 October 2025, and on 03 November 2025, totalling 332 cubic meters of water over the year. The exceedance was caused by operational issues shortly after commissioning this bore. Operational changes have been implemented at this site to assist in preventing future exceedances.

4.52. Services are reliable

4.53. Services are reliable, with very few interruptions, and faults are responded to and resolved promptly within stipulated Service Level Agreement timeframes. Over the past five years, the Council has inspected 75% of fire hydrants. Despite this effort, the current test method does not fully adhere to the Firefighting Water Supplies Code of Practice. An improvement to the Service Level Agreement between Water Services Unit and Water Unit to ensure fire hydrant test procedures align with the Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008), specifically Appendix G, is underway and due for completion in 2026.

4.54. Overall, Council delivers reliable drinking water supply services that meet the level of service standards.

4.55. Resources are used efficiently

4.56. Council has a water conservation strategy and a public education programme in place to promote the efficient use of water. However, consideration should be given to increasing the number of metered connections to support leakage reduction and more efficient water use. Although previous work indicated the cost of implementing metering would exceed the savings from reduced water use, metering technology has advanced since that assessment. Smart meters now provide an efficient means of understanding customer demand and identifying leakage on private property. They can also provide high-resolution data on water use and network pressure, supporting cost-effective, data-driven decisions on demand management, leakage reduction and network investment.

4.57. Council performs well in water-use efficiency with all but two supplies, Rangiora and Waikuku Beach, achieving an acceptable ILI below 4. Table 6 presents Council's drinking water network ILI results for 2025–26.

4.58. Table 6 – Council Drinking Water Network Infrastructure Leakage Index (ILI) 2024-25 and 2025-26.

Schemes	2024-25		2025-26		Comment
	ILI	Band	ILI	Band	
On-Demand					
Rangiora	3.3	B	4.2	C	Notable increase, further reduction is possible.
Kaiapoi	2.8	B	3.1	B	
Woodend - Pegasus	0.4	A	1.1	A	
Cust	0.8	A	0.8	A	
Waikuku Beach	3.4	B	5.9	C	Notable increase, further reduction is possible.
Semi Restricted					
Ohoka	1.0	A	1.9	A	
Oxford 2 and Urban	2.3	B	3.4	B	
Garrymere	1.5	A	0.8	A	
Restricted					
Oxford Rural No.1	2.3	B	2.5	B	
Summerhill, West Eyreton, Poyntzs	1.7	A	1.6	A	
Mandeville - Fernside	6.2	C	3.7	B	Large decrease due to improved methodology, further reduction is possible.
Council Total	2.6	B	2.9	B	Weighted average.

4.59. Overall, the Council maintained an ILI of 2.9 and a Band B rating in 2025-26. Most supplies remained in Bands A or B, with notable improvements at Mandeville–Fernside and Garrymere. However, Rangiora and Waikuku Beach moved from Band B to Band C, indicating opportunities for further leakage reduction.

4.60. Three schemes have been identified as having opportunities to improve water-use efficiency through further reductions in ILI. The schemes listed below will therefore be prioritised for leakage reduction.

- Mandeville – Fernside
- Waikuku Beach
- Rangiora

4.61. Services are resilient

4.62. Council has identified its critical assets and possesses a comprehensive understanding of their condition. This knowledge enables the prioritisation of resources and budget allocation, leading to timely interventions and a reduced risk of failures or disruptions to drinking water services. The recent new bore installation projects across the district, identified through planning, illustrate this by providing redundancy (N+1) and ensuring future growth demand can be met.

4.63. Overall, Council's drinking water supply infrastructure is in good condition with an average age of 21 years. Only 12% of pipework is assessed as poor or very poor condition and replacement of this pipework is continuously addressed through renewals work.

4.64. Services are economically sustainable

4.65. While OPEX increased by 4.8%, from $10.4 million in 2024-25 to $10.9 million in 2025-26, primarily due to upgrades to water treatment plants required to meet drinking water quality regulations, the Council continues to provide an economically sustainable service.

4.66. Upcoming requirements from the Commerce Commission for information disclosure will help provide a better benchmark for economic sustainability of drinking water services.

5. OPTIONS

5.1. The NEPR 2024-25 and NEPM 2025-26 highlight opportunities for improvement in wastewater and drinking water supply services.

Improvement opportunities for wastewater

5.2. The NEPR 2024-25 and NEPM 2025-26 highlight opportunities for improvement in overflow management, asset condition understanding, consent compliance and data quality. The following improvements have been identified to further strengthen current performance:

- Improve overflow monitoring and measuring capability at WWTP overflow points and wastewater pump stations. This improves data quality, levels of service and consent compliance reporting.
- Develop an inflow and infiltration strategy to enhance network understanding, improve network performance and reduce wet-weather overflow risks.
- Expand the existing public education programme to reduce blockages and avoidable overflows thus improving network performance and levels of service.
- Review the CCTV Maintenance Contract for opportunities to expand CCTV coverage closer to the 30% inspections over a 5-year period international benchmark.
- Better understand process emissions. Further work is required to better understand and quantify process emissions leading to enhanced data quality.

Improvement opportunities for drinking water supply

5.3. The NEPR 2024-25 and NEPM 2025-26 highlight opportunities for improvement in water loss management, residential water use, future network planning and data quality. The following improvements have been identified to further strengthen current performance:

- Investigate the potential for implementation of pressure management across all drinking water supplies. This lowers stress on the network leading to a reduced likelihood of bursts, reduced water losses and an improvement in residential water usage and levels of service.
- Investigate the potential for implementation of district metered areas across all drinking water supplies. This improves data quality and network understanding supporting improved water loss management and future network planning.
- Consider transitioning to smart water meters. This improves data quality which supports improvements in water loss management, residential water use and future network planning.
- Implement targeted leakage intervention works across all drinking water supplies. This directly improves water loss management and positively impacts performance against key measures.

- Improve the fire hydrant testing procedure. This would incorporate all aspects of the Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008), specifically Appendix G, enabling better data quality.

5.4. The Management Team has reviewed this report and supports the recommendations.

6. STRATEGIC ALIGNMENT AND COMMUNITY VIEWS

Mana Whenua Engagement

6.1. Mana Whenua have not been engaged regarding the subject matter and/or recommendations contained within this report.

Groups, Organisations and the Wider Community

6.2. There are no groups, organisations, or members of the wider community likely to be affected by, or to have an interest in, the subject matter of this report.

Implications for Community Wellbeing

6.3. There are no implications on community wellbeing by the issues and options that are the subject matter of this report.

6.4. The NEPR 2024-25 gives the community assurance that Waimakariri District Council is performing well relative to other territorial authorities in New Zealand while acknowledging there are opportunities to improve further.

Community Outcomes and Strategic Priorities

6.5. The Council's community outcomes are relevant to the actions arising from recommendations in this report, particularly:

- Land use is sustainable; biodiversity is protected and restored.
- The natural and built environment in which people live is clean, healthy and safe.
- Infrastructure and services are sustainable, resilient, and affordable.
- Our community has equitable access to the essential infrastructure and services required to support community wellbeing.

6.6. The Council's Strategic Priorities are relevant to the actions arising from recommendations in this report, particularly:

- Infrastructure Strategy.

7. OTHER IMPLICATIONS AND RISK MANAGEMENT

Financial Implications

7.1. There are no financial implications for the decisions sought by this report.

7.2. Identified improvement areas will be progressed from existing budgets and where necessary additional budgets will be requested via the Annual Plan / Long Term Plan process.

Community Resilience and Sustainability

7.3. The recommendations in this report do not have sustainability and/or climate change impacts.

Risk Management

7.4. There are no risks arising from the adoption/implementation of the recommendations in this report.

Health and Safety

7.5. There are no health and safety risks arising from the adoption/ implementation of the recommendations in this report.

8. CONTEXT

Consistency with Policy

8.1. This matter is not a matter of significance in terms of the Council's Significance and Engagement Policy.

Authorising Legislation

8.2. The Local Government (Water Services) Act 2025 and Water Services Act 2021 are relevant in the subject matter of this report.

Authorising Delegations

8.3. The Utilities & Roading Committee has delegated authority to receive this report.

Network Environmental Performance Report

2024/25



Water Services Authority
Taumata Arowai

Te Whakatauākī a Taumata Arowai

Ko te wai ahau, ko ahau te wai
He whakaaturanga tātou nō te wai
Ko te ora te wai, ko te ora o te tangata
He taonga te wai me tiaki
Ko wai tātou
Ko wai tātou

I am water, water is me
We are reflections of our water
The health of the water is the health of the people
Water is a treasure that must be protected
We are water
Water is us

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Executive summary and recommendations

The **Network Environmental Performance Report 2024/25** provides New Zealand's first complete national picture of public drinking water and wastewater network performance. It draws on data from 559 public drinking water networks and more than 320 public wastewater networks, enabling comparison across regions and tracking of performance over time.

Key issues

The report identifies five main issues across the national water services system.

- **Wastewater networks are under pressure.** Operators reported 11,535 wastewater overflows in the past year, around 31 each day. These are commonly linked to capacity constraints, blockages, wet weather, infiltration and ingress, and poor asset condition.
- **Wastewater asset condition is poorly understood.** CCTV inspection levels are well below best-practice levels. While only 17% of metropolitan wastewater pipe length is reported to be in poor or very poor condition, this is likely to be an underestimate.
- **Wastewater consenting and compliance are weak points.** About half of wastewater treatment plants will need a new resource consent within 10 years, and some are operating on expired consents. Non-compliance with consent conditions appears widespread.
- **Drinking water performance remains uneven.** More than 32% of local government operators have at least one network in the very inefficient band of the International Leakage Index. Metering coverage is increasing but still uneven, and some network operators are taking significant volumes of water above consented limits.
- **Data quality limits confidence.** Data completeness has improved but key measures of supply, water loss, consumption, asset condition, overflows and financial performance remain affected by weak measurement systems and inconsistent reporting.

Implications of the issues

Taken together, these findings point to potential systemic risks for public health, environmental outcomes, network resilience and long-term investment planning.

- **Wastewater overflows pose public health and environmental risk.** Wastewater overflows increase risks to communities and receiving environments, particularly during wet weather.
- **Infrastructure resilience is under strain.** Poor asset condition, urban growth, capacity constraints and increasingly intense rainfall are compounding pressure across wastewater and stormwater systems.
- **Freshwater resources face avoidable pressure.** Water loss and uneven demand management increase pressure on water sources, especially where demand is growing or consents are expired, nearing expiry, or being exceeded.
- **Planning and investment are less targeted than they need to be.** Weak data and limited asset-condition information make it harder for operators, regulators and other decision-makers to identify risk, prioritise investment and monitor improvement over time.

The Authority's response

The Authority is strengthening its system oversight role in response to the issues identified in the report. Its response includes progressing the wastewater environmental performance standards, developing new National Engineering Design Standards, improved stormwater monitoring and future regulatory tools.

Where the evidence points to significant issues, the Authority will use its oversight role to signal where attention is needed by the organisations best placed to respond. This may include supporting more nationally consistent monitoring, enforcement and reporting of non-compliance.

The sector is entering a period of significant change

As water organisations are established, new financing tools become available and greater standardisation is introduced, there is an opportunity to improve network performance over time. This report provides an important evidence base to help new and existing organisations better understand performance, target maintenance and investment and support better long-term outcomes. Strengthening these networks will help protect our environment, safeguard public health and build greater resilience for the future.

Recommendations

The Authority recommends that network operators:

- prioritise routine and preventative maintenance to reduce wastewater overflow risk before issues arise.
- carry out public education campaigns where preventable blockages contribute to poor performance.
- target investment to the areas of greatest need, including meeting regulatory requirements such as discharge quality limits under the wastewater standards.
- address poor asset condition and the wet weather, capacity, infiltration and ingress issues that increase overflow risk.
- continue to reduce water loss, improve metering and pressure management where appropriate, and plan for future water availability, network renewal and growing demand.
- strengthen fit-for-purpose monitoring, inspection and data quality practices across drinking water and wastewater networks.

Other organisations have a role in strengthening the oversight of the network.

- This report and its underlying data can support the Commerce Commission to investigate the quality, accuracy, and completeness of sector information in more detail. This including how providers are performing, how they invest in and manage their assets, and whether requirements are needed to improve transparency and accountability in a way that delivers reliable, high quality services for communities.
- Regional Councils and the Ministry for Cities, Environment, Regions and Transport provides policy advice and administers legislation related to drinking water, wastewater and stormwater services infrastructure.
- The Office of the Auditor General has a role in auditing the financial statements of public sector organisations including local councils and any council-controlled organisations.



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Part one:
Introduction

This report is a step towards better understanding of water networks

The Water Services Authority has an active role in system oversight, standard-setting and public transparency in relation to the environmental performance of drinking water, wastewater and stormwater networks.

This report provides a nationally consistent view of how New Zealand's water services are operating and performing across all publicly-owned (council and government) water networks.

Improving our understanding of New Zealand's water services through year on year reporting

Year 1 – Set foundations	Year 2 – Learn and improve	Year 3 – Embed and apply THIS REPORT	Future reports – Extend
Started measuring the unknown You cannot monitor and compare without consistent information. This first report established a nationally consistent reporting framework.	**Expanding our understanding** Built on the experience of the first report to introduce more consistency to how our networks are monitored and reported.	**Illustrate key system risks** Focus on insights on key measures where they provide valuable insights on drinking water and wastewater networks.	
Prioritising effort First compulsory measures aimed at understanding drinking water networks. Invited optional waste and stormwater reporting.	**Growing our understanding** Extended compulsory measures to one-off information about wastewater networks and signposted future continuous monitoring measures to advance our understanding of these networks.	**New wastewater information** Treatment plant discharges, consent expiry and compliance, overflow causes, and overflow monitoring methods.	Over time, build a comprehensive picture of performance across all networks – drinking water, wastewater and stormwater.
Recommended a focus on improving our understanding As this was the first time New Zealand's water operators had to consistently measure and report their performance, there were significant gaps in information and capacity.	**Recommended water loss strategies implemented** This report included findings of an external review on data quality on key drinking water measures and highlighted importance of continued improvements in operators data quality. It also drew insights from the data, and made recommendations addressing water loss.	**Evidence based recommendations** This report starts to make year-on-year comparisons and includes recommendations to network operators on preventing key issues affecting New Zealanders, such as wastewater overflows.	

New Zealand is building a more mature picture of water services performance. This is the third year the Authority has published this report, and the first to include a complete set of wastewater information. As network operators and the Authority continue to improve how performance information is monitored, collected and reported, the value of the insights and recommendations in this report will continue to grow.

This evidence base is particularly important as councils implement the Government's Local Water Done Well reforms, including the establishment of new water organisations in some regions, with different funding, planning and service delivery arrangements. The findings in this report provide an important baseline for new and existing service providers to identify priority risks, target investment and track performance over time.

Our legislative framework guides and informs our approach to how we consider, assess and meet Treaty of Waitangi obligations through our Treaty obligations Framework. The Authority, along with the Māori Advisory Group, continues to monitor and assess how these obligations apply to our oversight role within the regulatory framework and acknowledges the role of iwi/Māori across the country.

This report focuses on the state of network infrastructure and how its performance affects the environment. It complements the Authority's Drinking Water Regulation Report, which provides an annual overview of the safety of New Zealand's drinking water.

How to read this report

This report is structured into seven parts.

- **Executive summary** (above) outlines the key findings and recommendations.
- **Part One** – this introduction, covers how reporting is developing over time and the scope of this report.
- **Part Two** – provides insights across the water system, showing how networks are interconnected, how their performance affects the environment, the scale and condition of the national asset base and financial performance.
- **Part Three** – expands on last year's drinking water data to provide insights into drinking water network performance, across water taken, supplied and lost, and the coverage and role of metering. It also covers the extent to which drinking water operators have complied with water-take consents.
- **Part Four** – provides data collected on wastewater for the first time, covering discharge treatment and receiving environments, overflows, monitoring and consent compliance.
- **Part Five** – briefly covers stormwater systems, including how they work, the growing pressures and risks they face, and how stormwater performance affects wastewater and drinking water networks.
- **Part Six** – assesses the comprehensiveness and reliability of data reported to the Authority, what has improved, and where important gaps or reliability concerns remain.
- **Appendix 1** – provides a full list of network operators that submitted data for the 2024/25 reporting year
- **Appendix 2** – provides comparisons of local government network operators against key performance measures in the 2024/25 reporting year.

How we prepared this report

The Authority collects information on the environmental performance of drinking water, wastewater and stormwater networks, and network operators through self-reported data provided under the Network Environmental Performance Measures and Guide 2025.[1]

The data captured in this report represents information on public (council, water organisation and Crown-owned operator) drinking water and wastewater networks covering the 2024/25 financial year (ending 30 June 2025).

We have a complete dataset this year with all 71 network operators submitting data. This is a significant milestone for public transparency. Further commentary on data completeness is included in Part Six below. The full dataset underpinning this report is available on the Authority's website.[2]

As well as the self-reported information, the Authority has also drawn on desktop research, information from regional councils, and other sources where applicable.

1 Network Environmental Performance Measures and Guide 2025 Network environmental performance reporting | The Water Services Authority - Taumata Arowai

2 Water services insights and performance reports | The Water Services Authority - Taumata Arowai

Part two:
Insights across the water system

This section of the report summarises what we know about New Zealand's water networks, where they are located and how they are being operated. While improvements have been made by operators in reporting information about their network assets, there remains room for improvement in the way they assess and monitor their network condition.

As well as drinking water asset condition information provided in previous releases of the Network Environmental Performance Report, for the first time we include asset condition information on wastewater. The findings of this are concerning, showing that most wastewater operators are not carrying out an appropriate level of inspections.

Understanding the condition of a network helps identify risks. It also helps network operators plan how and when assets should be maintained or renewed. This section of the report demonstrates that network operators are responding to the need to renew or replace aging infrastructure and are expanding networks due to the increased demand coming from urban growth. Future reports will monitor progress as operators catch up on infrastructure deficits.

Our drinking water, wastewater and stormwater networks are interconnected

The drinking water network distributes water to people, households or businesses, while the wastewater and stormwater systems move water and waste away.

While this report includes separate chapters that delve deeper into the performance of drinking water, wastewater and stormwater networks, it is also helpful to consider them together as these networks can impact on each other. For example, too much stormwater can cause wastewater systems to overflow into the environment, or pollution from wastewater and stormwater can affect the quality of drinking water sources.



How network performance affects the environment

Increasing intensity of rainfall events and sea level rise put pressure on network capacity and drinking water quality and quantity.

Taking too much water can reduce water quality and quantity.

Water treatment, like filtration and disinfection protect us from viruses, protozoa and bacteria.

Treating and distributing drinking water use energy and contribute to greenhouse gas emissions.

Drinking water

The water distribution network carries safe drinking water to homes and businesses.

Excessive or poorly managed water use increases water take from the environment.

Small amounts of chlorine remain in the network protecting people from waterborne illness.

A wastewater system protects public health and the environment by safely collecting, treating, and disposing of wastewater.

Leaks or poor network condition increase water take from the environment.

Leak in drinking water pipes

Stormwater

Wastewater

Treated wastewater

Good data on pipe condition helps operators plan pipe repairs, preventing costly maintenance.

An effectively run stormwater network can reduce flooding risk and pollution.

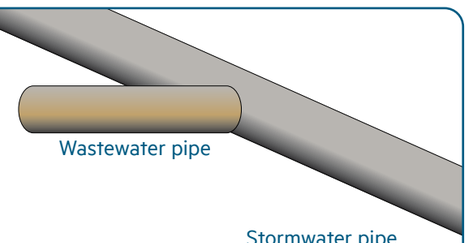
Rapid stormwater flows during heavy rain can result in flooding.

Stormwater and groundwater enters wastewater pipes through cracks, misaligned or damaged joints or manholes, or through connected drains or sections of pipe – especially during heavy rain.

Wastewater treatment processes use energy and produce greenhouse gas emissions.

Poor condition, insufficient capacity, and blockages contribute to overflows, impacting public health and the environment.

Stormwater and groundwater can enter wastewater pipes through cracks, misaligned or damaged joints or manholes. Stormwater can also enter directly through connected drains or sections of pipe.



Note: Water quality measures are reported in the Drinking Water Report.

What we know about New Zealand's water networks

Publicly owned services run by councils, water organisations and the Government cater for 84% of the population. This includes 331 wastewater and 559 drinking water networks. Table 1 shows that local government is the largest water services supplier and operator and these supplies tend to be more complex networks. Crown-owned operators generally treat and distribute water within a single property.

Table 1: Network operators that reported and the networks/populations they service

Network operator	Number responded	Drinking water		Wastewater	
		Total networks	Population servicing	Total networks	Population servicing
City and district councils (including council-controlled organisations)	66	427	4,686,500	326	4,477,000
Government departments	3	123	30,400	3	1,800
New Zealand Defence Force	1	7	10,500	2	N/A
Regional councils	1	2	600	0	0
Total	71	559	4,728,000	331	4,478,800

The scale of infrastructure varies depending on terrain and the population serviced

The scale of New Zealand's drinking water and wastewater networks is shown in Table 2. To meet the needs of New Zealand's dispersed population over difficult terrain, public drinking water supplies have a high number of reservoirs, pump stations and water treatment plants. Longer pipes are also needed to get drinking water further distances from sometimes multiple water sources in remote locations, compared to pipes to wastewater treatment plants that are often closer to population centres.

Table 2: Scope of drinking water and wastewater infrastructure in New Zealand

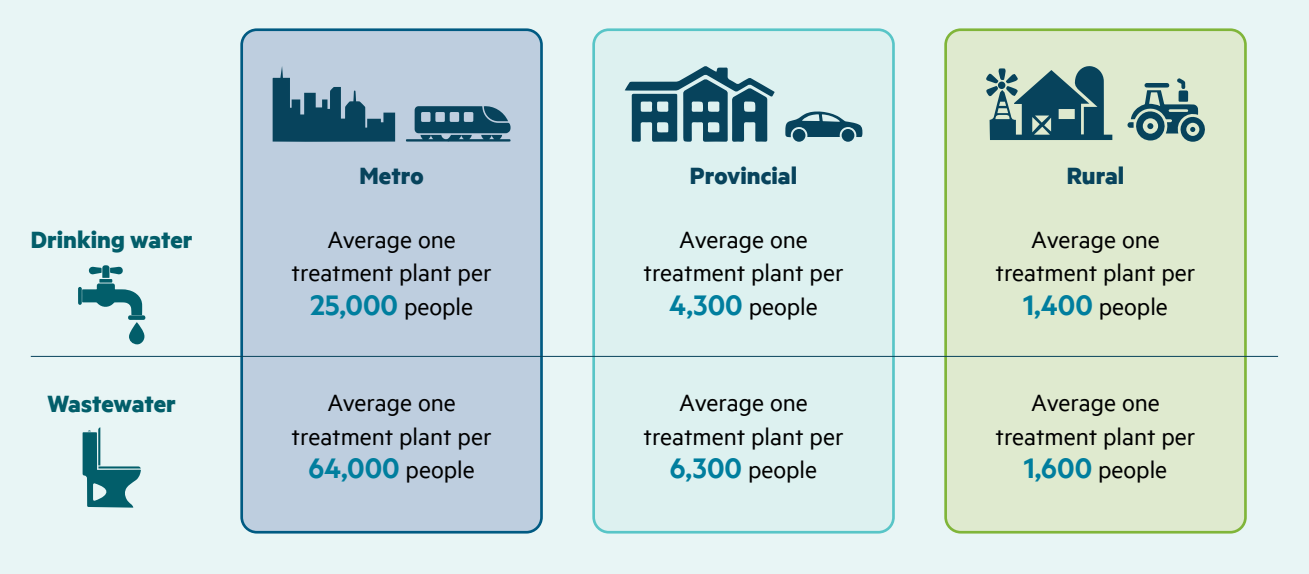
Type of water	# networks	# treatment plants	Length of pipes	Pump stations	# residential connections	# non-residential connections
Drinking water	559	687	56,000km	1,054	1,601,000	146,000
Wastewater	331	318	35,000km	6,317	1,568,000	103,000

As shown in Figure 1, treatment plants for metro urban areas service many more people than in rural areas. This means that network operators supplying urban areas will have costs spread over a larger number of ratepayers than those in provincial or rural areas.

Population density categories – metro, provincial and rural – used throughout this report are based on the list provided of councils by Local Government New Zealand and population size, as follows:

- Metropolitan (metro) – 90,000 or more
- Provincial – from 20,000 and less than 90,000
- Rural – less than 20,000.

Figure 1: Number of people per drinking water and wastewater treatment plants across different population densities[3]



Asset condition

Asset condition is often poor and not well understood, particularly for wastewater networks

Asset condition reflects the physical state or integrity of an asset at a specific moment in time. For the purposes of this report, the network assets are pipes, treatment plants, pumping stations and any other associated equipment. Understanding the condition of a network helps identify risks. It also helps asset managers plan how and when assets should be maintained or renewed.

Poor asset condition in drinking water networks may lead to pipes that leak, creating opportunities for contaminants to enter the drinking water. For wastewater networks, poor asset condition can result in potential for blockages and overflows.

Different network operators use different methods to assess asset condition depending on their funding and capability. Last year's external review undertaken as part of this reporting process identified nine different approaches to assessing condition – ranging from desktop research or modelling to physical inspections. Best practice is to combine different assessment methods, for example a desktop review, followed by performing field assessments on higher-risk assets to gain more information.

Analysis of the information provided by network operators shows that **15% of total drinking water and wastewater pipes are in poor condition**. While this implies most assets are in good condition, the results is likely limited given the reliability of assessment methods used and the relatively low levels of regular physical and/or CCTV inspections undertaken.

Drinking water condition gradings have improved but condition is still poor in many places

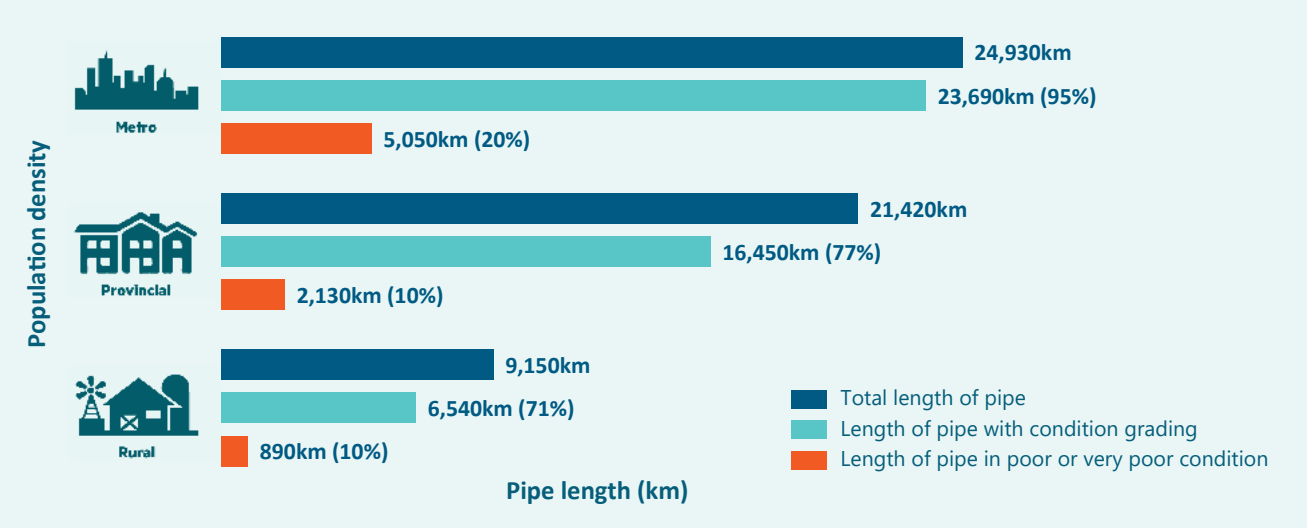
Figure 2 shows the differences across different types of local government network operators in the proportion of pipes they have been able to assign condition grades to, compared to the proportion they consider are in 'poor condition'. Compared to last year, councils reported that the total length of pipes that have had their condition graded has increased from 81% to 84%. This continued increase in the length of pipes with a grading (which was just 55% in 2022/23) is encouraging as condition grading will help network operators better target investment, prevent network failures and forecast their costs for renewing the network.

However, a sizeable proportion of the drinking water network is in poor condition – and we know this with greater certainty this year because of the greater extent graded.

3 Note: The Network Environmental Performance Report 2023/24 understated the number of people served by wastewater treatment plants in metro areas due to incomplete data from network operators. This has increased the number of people per wastewater treatment plant from 40,000 in 2023/24 to 64,000 in 2024/25.

Figure 2 also shows that network operators responsible for larger metro populations' drinking water pipes have generally assigned condition grades to more of their pipes (around 95%), compared to rural or provincial areas (between 71% and 77%).

Figure 2: Drinking water pipe condition



We hold relatively little information about the condition of drinking water supply networks owned by crown-owned operators. For those that reported:

- The Department of Corrections has indicated a full condition grading for water supply pipelines, with a low proportion (5%) in poor condition.
- The New Zealand Defence Force has reported that while most (92%) of its network is graded, over half (56%) of its network is in poor condition.
- The Department of Conservation (DoC) manages two networked supplies at Whakapapa and Aoraki. DoC did not report for Aoraki, as pipe condition assessments were not at that stage underway. Reporting on Whakapapa shows pipes are fully graded with 72% in poor or very poor condition, and an average age of 82 years

Insufficient inspections of wastewater pipes are carried out and condition is poor in many places

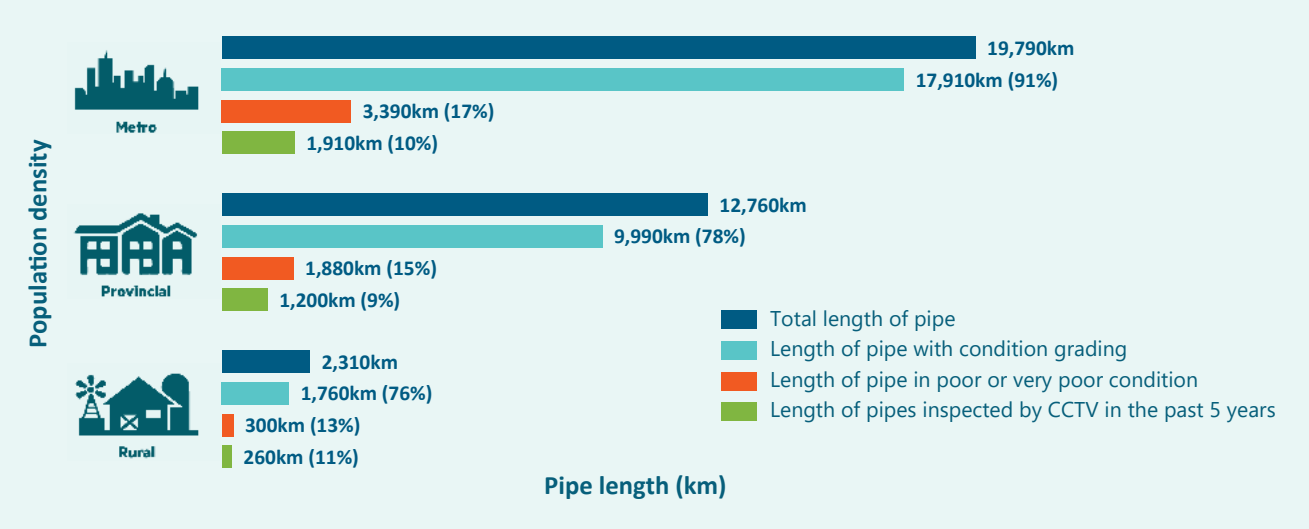
The reliability of the asset condition information for wastewater assets is of concern given that most councils do not adequately inspect their pipes. International benchmarking indicates CCTV inspection should be completed for 30% of pipe infrastructure every five years.[4] However, only 10% (3,370km) of the total wastewater network (34,890km) has been CCTV inspected in the last five years.

When broken down by population density, metro councils reported that 17% of their wastewater pipes – representing 3,390km of the network – are in poor or very poor condition (see Figure 3). Metro areas have the greatest volumes of wastewater and also the greatest levels of overflows.

The absence of good information on asset condition may mean that assets in poor condition are not prioritised for repair or replacement. The information we have received on wastewater overflows demonstrates that poorly maintained wastewater networks are vulnerable when put under pressure during periods of heavy rainfall.

4 New Zealand Gravity Pipe Inspection Manual: Water New Zealand

Figure 3: Wastewater pipe condition



Lower proportion of above-ground assets have been assessed

Above-ground assets are easier to access, and we would expect a higher proportion of these assets to have received an asset condition grading; this is not the case. Across all network operators, a slightly higher portion of pipes had been graded compared to their above-ground assets. On average, 75% of above-ground assets were assessed compared to 78% of pipes.

The information provided by network operators shows that asset condition assessments for above-ground assets have been completed by 23 councils for drinking water and 24 councils for wastewater, out of a total of 67 councils. This indicates that most councils may not have assessed the condition of their above-ground assets. The median of above-ground assets reported to be in poor condition is 4% – down from 5% last year.

Financial performance of drinking water networks

Network operators need to plan and budget for the expenditure required to operate, maintain and improve network performance. This includes timely maintenance, renewals and repairs to keep assets fit for purpose and to protect the integrity of drinking water, wastewater and stormwater networks.

Network operators have provided financial information on the actual operating and capital cost for the provision of drinking water networks for the year ended 30 June 2025.

Spending on operational and capital expenditure can vary year-to-year and be driven by different factors. For example, older infrastructure may require more operational maintenance or repair, while fast-growing areas may need more capital to respond to growth. The councils that spent the most on capital and operational costs were large network operators.

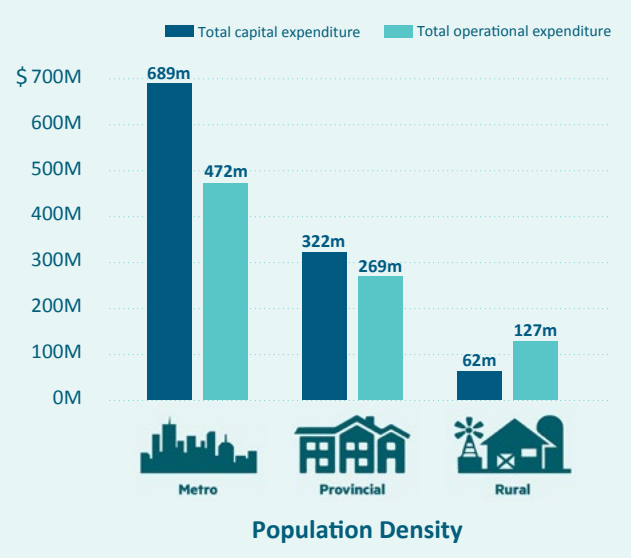
As shown in Table 4, 74% of drinking water capital expenditure across network providers is going towards renewing and replacing existing assets, compared to 26% targeted at meeting extra demand.

Table 3: Drinking water network capital expenditure

Capital Expenditure	July 2023 – June 2024	July 2024 – June 2025
Additional demand	$285m (27%)	$290m (26%)
Renewal and replacement	$782m (73%)	$826m (74%)
Total capital expenditure	$1,067m	$1,116m

Figure 4 shows that metro network operators spend about 1.5 times as much on capital expenditure as on operating costs, while provincial operators spend about 1.2 times as much. In contrast, rural network operators spend less on capital than on operating costs, with capital expenditure at about 0.5 times operating expenditure. Investment by metro councils is likely to help large urban areas begin addressing historical underinvestment in infrastructure, whereas rural operators may not be investing enough in renewing and replacing existing assets to address poor performing networks.

Figure 4: Drinking water network actual total operating and capital expenditure 2024/25

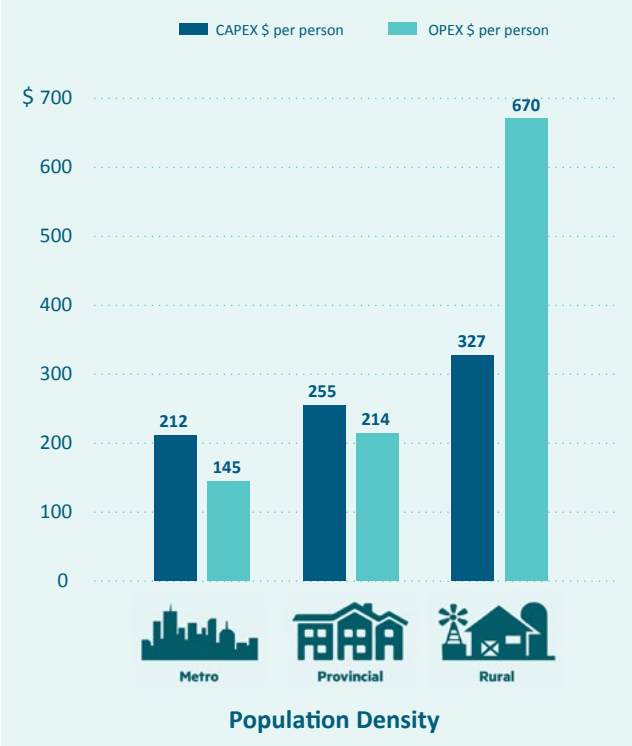


The funding challenge is greater in rural areas; the annual cost per person is 2.9 times higher than in metro areas, and smaller populations mean network performance is likely to improve more slowly.

Figure 5 shows the capital and operating costs per person per year by councils of different population density, and this information shows the significantly high cost per person in rural areas.

As new water organisations are established with ringfenced funding for water services, we expect to see investment in water infrastructure increased in coming years.

Figure 5: Drinking water network median actual operating and capital cost per person per year



The financial data for drinking water capital and operating expenditure is not reliable

For a breakdown of capital and operational expenditure council by council see Appendix 2.

When we look at capital and operating expenditure information supplied by individual organisations we see anomalies in the data. We continue to find examples where the quality of the data provided by network operators is either incomplete, has data entry error, or has significantly changed from year-to-year. We have shared the financial data in this report with the Commerce Commission, so they can support the improvement in data quality as the economic regulator for water services.

The Office of the Auditor general plays a role in auditing financial statements of public organisations including CCOs. The Deputy Auditor General's observations from audits of councils' 2024-34 Water Service Delivery Plans (long-term plans), noted that "The documents show that reporting on financial information for capital and operating expenditure across drinking water, wastewater, and stormwater is improving in scale and visibility, but remains uneven in quality, comparability, and usefulness for decision-making."[5]

We are only able to report on one year of data due to the quality of the financial data provided by network operators.

While we are seeing improvements in the quality of the financial information provided, there is a need for further improvement so that it is standardised and complete, and so the public can have confidence in the information being published in the Network Environmental Performance Report. For this reason, the financial information should only be used to provide an indication of the amount of actual spend on drinking water at a high level.

Commerce Commission and the Authority's complementary roles

The complementary roles of the **Water Services Authority** and the **Commerce Commission** support a more effective and efficient regulatory system for water services. The Authority works with, regulates and provides system oversight, to improve outcomes for drinking water safety and the environmental performance of wastewater, drinking water and stormwater networks.

The Commerce Commission's role is to regulate the economic performance of water services in the long-term interests of consumers. It does this by increasing transparency, monitoring performance, and using regulatory tools – to incentivise efficient investment, good asset management, and delivery of services that reflects consumer demands.



5 Controller and Auditor General 2025. Observations from our audits of councils' 2024-34 long-term plans.



Part three:
Drinking water network performance

A well-performing drinking water network is supported through timely asset renewals and appropriate pressure management. Effective network management ensures consumer safety and reduces the volume of water taken from the environment by reducing the volume of treated water required. It also lowers operational costs over time by shifting expenditure from costly reactive work to planned maintenance and renewal programmes.

Keeping good records of network repairs and maintenance activities is an essential part of understanding how the system performs and where to prioritise renewals. Network performance tools (such as water metering and pressure monitoring) can also help operators to better understand their network and intervene before failures occur. Drinking water performance depends on a multi-barrier approach, with multiple safeguards needed to make water safe and keep it safe from source to tap.

In this part, we review New Zealand's public drinking water networks based on data reported by network operators. We include an analysis of water-take consent data, and expand on last year's report by including data on the number and volume of exceedances of drinking water-take consents.

This section focuses on the extent to which drinking water-take stays within consented limits, how much drinking water is supplied, used and lost, and tools to manage and monitor drinking water flows across the network.

Drinking water abstraction and resource consent limits

Regional councils issue resource consents for water take and use

Water taken from the environment for the treatment and supply of drinking water, along with other uses, can affect the water quality and temperature of the water source, as well as the surrounding habitats and the stability of their ecosystems.[6]

While most of the volume of our water comes from surface water, around 71% of networks source their water from groundwater (i.e. from bores and springs).[7] The high volume of surface water is the result of the Auckland supply (AUC003), which supplies 1.37 million people with water abstracted from surface water sources.

To sustainably manage source water resources, network operators are generally required to hold resource consents for water take. These consents typically contain limits as to how much water can be abstracted within a given timeframe. Many water abstraction consents include conditions that reduce allowable water takes when surface water flow rates or groundwater levels are low. While the Authority does not collect data on the volume of water abstracted (taken) from the environment by water suppliers, information can be found through Stats NZ reports on water takes.[8]

Data on actual water takes is typically collected by the regional councils that are responsible for issuing, monitoring and enforcing consents. Regularly taking more water than allowed can reduce downstream flow rates of streams and rivers, as well as the sustainability of aquifers. The impacts of abstraction can be exacerbated by sustained periods of dry weather, particularly droughts and especially in summer. During dry periods, source water levels and flow rates decrease, while treated water use typically increases. This means that suppliers are more likely to exceed their water-take limits during droughts and periods of high demand.

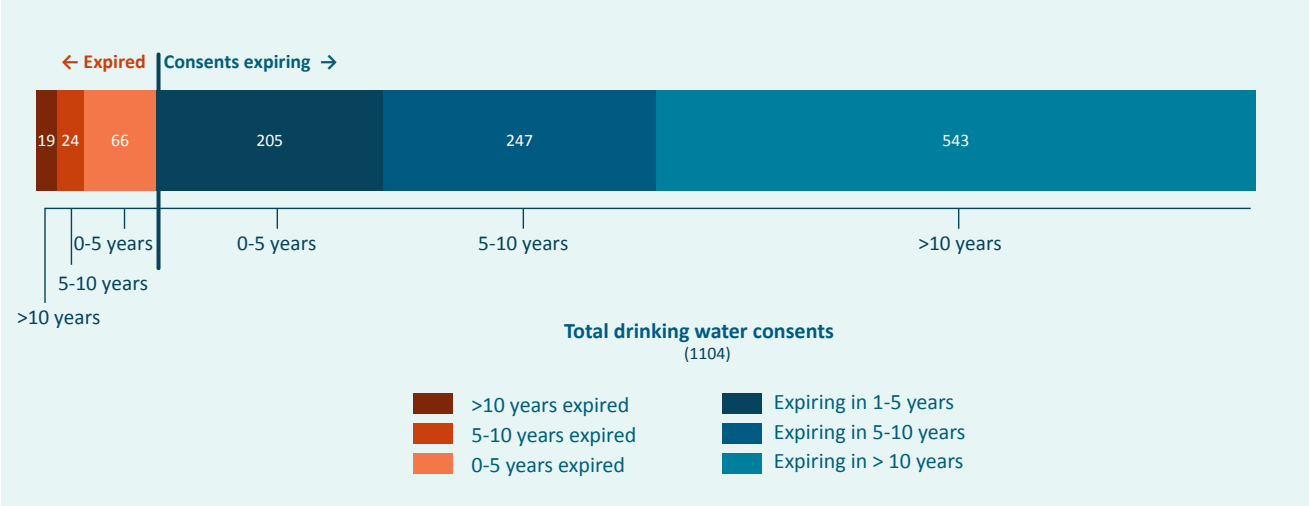
A large proportion of water-take consents have either expired or are due to expire over the next decade, as shown in Figure 6. Expiring abstraction consents represent a system risk for network operators, as they will need to consider whether to renew these consents or replace them with abstraction from alternative water sources. Consent renewals may include more conditions around environmental standards, and alternative water sources are likely to require significant investment requirements. As these consents come up for renewal, forward planning for future water use becomes increasingly important in the context of climate change, population growth and intensifying pressure on freshwater sources.

6 Issue 3: Changing water flows affect our freshwater | Ministry for the Environment

7 Network Environmental Performance Report 2023/24.

8 Maximum volume that can be taken annually, and the maximum rate of water take by primary use, primary source and region for consents that involve consumptive water takes. Consented freshwater takes | Stats NZ

Figure 6: Drinking water consent expiry



Consent non-compliances decreased slightly but some high-volume exceedances reported

There are two main types of consent conditions: abstraction flow rate at a given instance; and total abstraction volume within a certain timeframe. An instance of non-compliance with these consent conditions may be minor and technical, or more serious regarding potential harm. Both non-compliances and exceedances are reported here, noting that multiple exceedance events can occur within a single non-compliance event.

During the 2024/25 reporting period, operators reported that 8% of consents were not complied with, a decrease from 13% in 2023/24. This year, there were 77 consent non-compliances across 28 suppliers. Of the consent non-compliances, 30 were related to an exceedance in the total volume of water abstracted, and 47 to an exceedance in the allowable rate of water take. Thames Coromandel District Council had 14 non-compliances, the highest number of any operator (TCDC advises that they are minor and associated with population influx during the summer period).

The number of exceedances has remained similar to the previous year's reporting. In 2023/2024, operators reported 123 exceedances relating to abstraction consents, and in 2024/2025 there were 121 exceedances reported. Of these 121 exceedances, most (98) were from rural or provincial suppliers.

For the first time, operators reported the volume of water taken above consented limits. Twenty-one network operators reported a combined total of 644,810 m³ of water abstracted beyond what consents allow. Although this is approximately 0.1% of the total water supplied to distribution networks in this reporting year, it is a similar volume equivalent to approximately 281 Olympic swimming pools. The largest exceedances were recorded by Hauraki District Council, with 302,435 m³ or 43% of the total exceedance volume, and Ashburton District Council, with 258,374m³ or 38% of the total exceedance volume.[9]

Drinking water supplied, used and lost

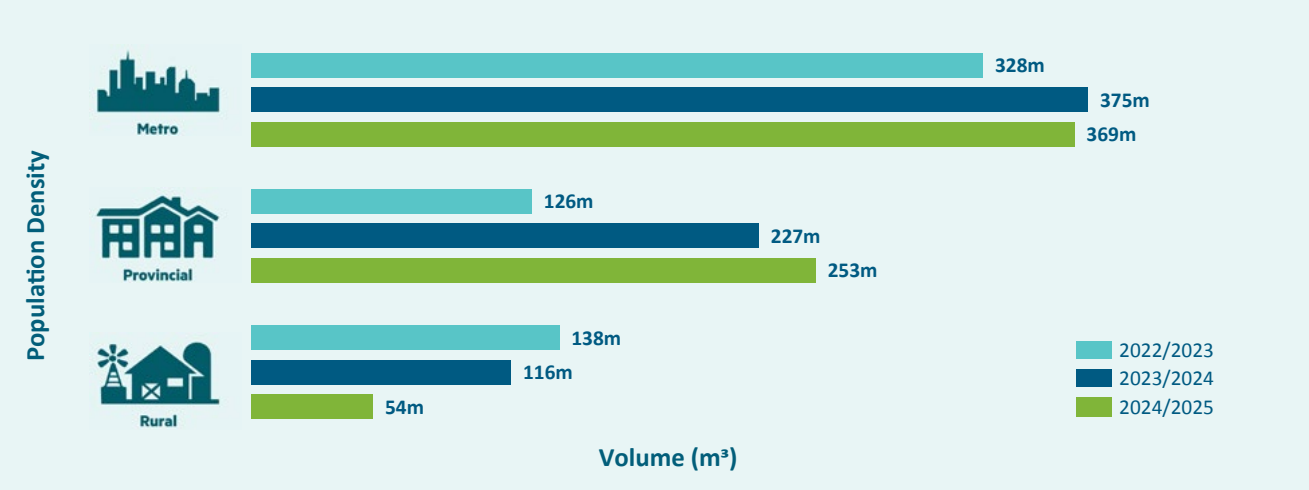
The volume of water supplied to distribution networks has decreased

The amount of water supplied from water treatment plants to consumers via distribution networks is dependent on a range of factors, including population growth, network management, pipe leakage, consumer behaviour and climate conditions. With only three years of data, the analysis in this section is limited to the short-term trends that we have been able to observe to date.

9 Hauraki District Council noted that the district was impacted by drought conditions. Hauraki Plains is supplied by the Kerepēhi and Waitakaruru water treatment plants. During drought conditions, abstraction limits at Waitakaruru meant Kerepēhi supplied most of the area's demand. Ashburton District Council advised that the Methven exceedance related to one of two linked sources supplying the same water system, including a mixed-use rural network. Water take from the other source fell below the consented limit.

Figure 7 shows the volume of water supplied to networks by reporting year and population density. In comparing the volume of water supplied in the 2023/24 reporting year with the current 2024/25 year, 220 supplies saw a decrease in the amount of water supplied to distribution networks. Of the 172 supplies that recorded an increase in supply, 25 had an increase of at least 50% from the 2023/24 year. In particular, we noted that there were large fluctuations in the reported amount of water supplied for rural and provincial networks. The response rate for data on drinking water supplied to networks was relatively high at 98% compared with 79% last year. Overall, the total amount of water supplied to drinking water supplies across New Zealand in 2025 was 677,926,163 m^3 – a 6.8% decrease from the previous reporting year.

Figure 7: Volume of water supplied to networks

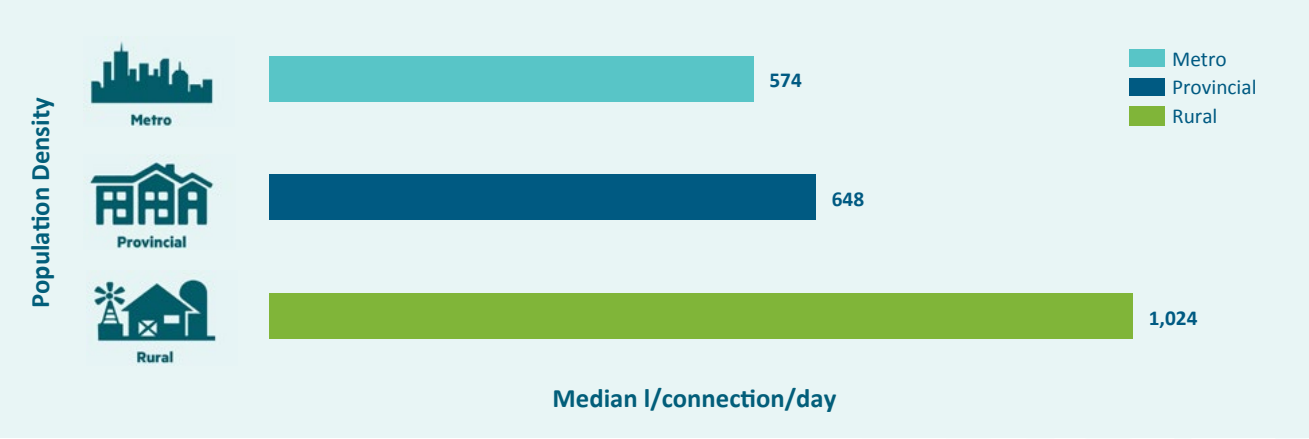


Median household water consumption per connection has increased

The overall median water use per household connection was calculated as 678 litres per connection per day in 2024 /25 compared with 604 litres per connection per day in 2023/24. Figure 8 provides a breakdown by population density.

We saw a significant increase in the number of network operators providing residential water consumption data – from 59% in 2023/24 to over 96% in 2024/25. However, there remain concerns around the accuracy of reported results from networks that have either limited or no automated water monitoring systems in place.

Figure 8: Water consumption for 2024/25



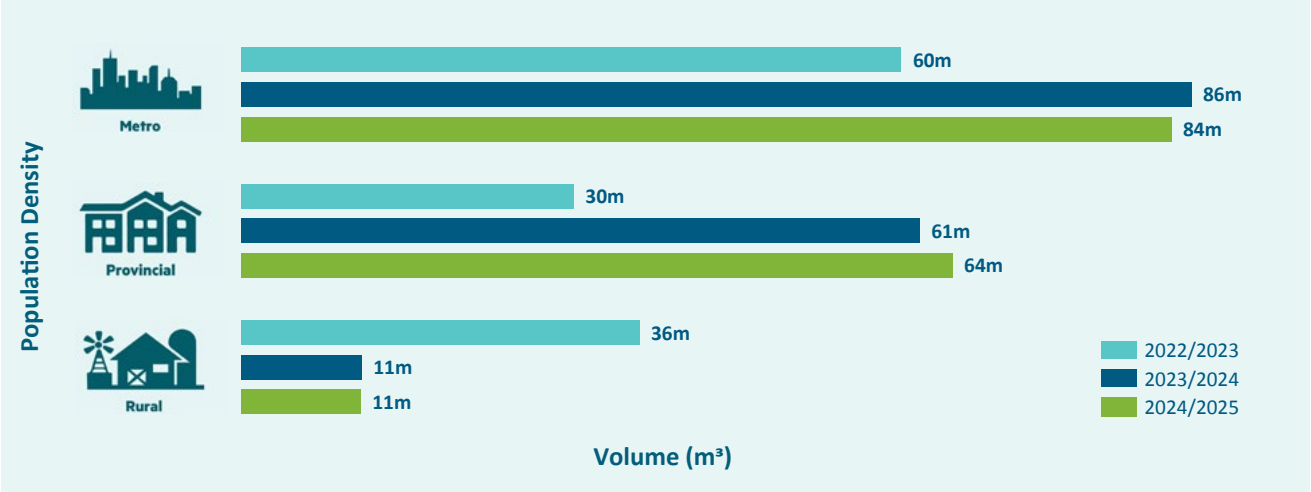
Estimating water loss in drinking water networks

Ensuring that we take no more water than is necessary helps to reduce pressure on the environment, as well as the costs associated with maintaining and operating the networks. However, some water loss is unavoidable as no network is perfect, so some seepage of water will occur through service connections and valves. Where networks are in poor condition, the volume of water lost through leaks and mains breaks is likely to be higher than in well-maintained networks.

The Authority is exploring options for reporting on water loss in the future, including reporting on "non-revenue water", which includes unbilled use by consumers. An example of non-revenue water is when water use is estimated in networks without metered connections.

The estimated volume of water loss by population density is provided in Figure 9. While this may look like an increase in reported water losses, we note that in many cases it instead reflects better, more accurate reporting methods rather than an actual rise in water loss. As more water meters are installed across drinking water networks, the data on residential water use will rely less on estimates and more on data that shows how much water is actually being used. As organisations improve their reporting each year, the accuracy of the information should also improve.

Figure 9: Estimated volume of water loss



Using the Infrastructure Leakage Index (ILI) to analyse network performance

Comparing the percentage of water loss should be treated with care as estimating water loss can be complex and will vary depending on different factors (such as the amount of water used).[10] As residential water meters are installed in networks across New Zealand, we will start to build a national-level view of this data. For the 2024/25 reporting year, we have reviewed water loss data in the context of infrastructure-related losses.

The ILI was developed by the International Water Association to consider the characteristics of network infrastructure that can affect water loss (such as the number of connections, pipeline length and pressure).[11] Because the ILI is a ratio, it can be used to compare water loss between operators, if the same calculation method is used. The ILI provides a high-level indication of network efficiency, and alongside condition assessments, it can help to identify the extent of maintenance, renewals or replacement work that may be needed.[12]

10 Water loss is a part of non-revenue water, which includes unbilled consumption by consumers. An example of non-revenue water is when water use is estimated in networks without metered connections.

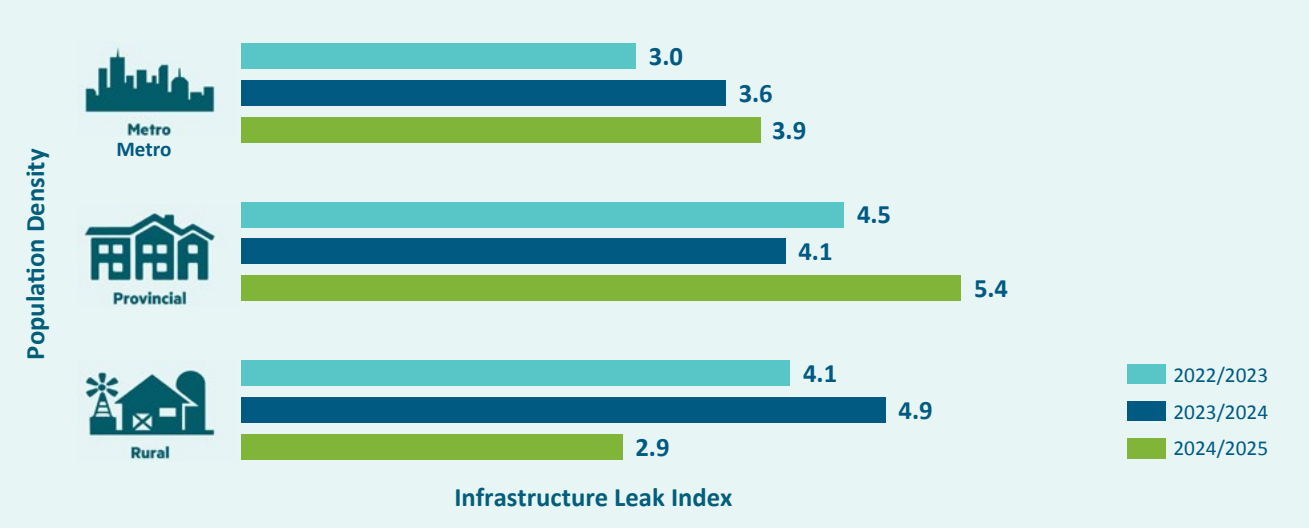
11 The ratio of the current loss (CARL) to unavoidable loss (UARL) is used to calculate the ILI. CARL measures the leakage from the network due to failures in the network like broken mains, leaking valves or overflows from reservoirs. This excludes water loss that was likely to be avoidable. UARL is the proportion of water loss considered to be unavoidable. This measure recognises there will always be some level of loss due to water moving through the network under pressure, even in a well-maintained and good-quality network.

12 The Infrastructure Leakage Index (ILI) is included in this report as an internationally recognised indicator of drinking water network leakage performance. However, there may be other suitable performance measures that we may focus on in future. The Authority will continue to review the use of ILI, alongside other measures of water loss and network performance, for future editions of this report.

An ILI greater than 4 and less than 8 indicates poor leakage management, and an ILI of 8 or higher indicates very inefficient use of resources.

Figure 10 provides a summary of council performance on the ILI, and Figure 11 shows the ILI by district on a map. Of the 271 council networks that reported data in both 2023/24 and 2024/25, 60% showed a decrease in the ILI from the previous reporting year. While 27 % of networks reported an ILI below 2, 36% had an ILI of 4 or higher. The average Metro ILI is based on reporting networks only, with one outlier excluded because it disproportionately skewed the average and was considered not to be a credible result. Although a significant decrease in the ILI for rural networks was observed – from 4.99 in 2023/24 to 2.99 in 2024/25 – we note that this may not represent a substantial lift in network management capability and asset condition. Instead, it shows an increase in the quality of data being captured and reported.

Figure 10: Average ILI 2023-2025



Trends in drinking water network management

Good network management helps to reduce water loss

Effective network management involves monitoring, operating, controlling, planning and maintaining the drinking water system to ensure water is delivered at the correct pressure, in the right quantity and at a safe quality. Good practice includes monitoring flows to identify leaks, ensuring pipes are correctly sized and flushed to maintain water quality, and managing pressure to reduce wear on the network and extend asset life.

Poor pressure management can affect the supply of water to consumers

Pressure management refers to the continuous monitoring and control of water pressure within the network. Because pressure varies as households and businesses use water, monitoring provides essential information on how the system performs under different conditions. Managing pressure is also important for managing water loss – as it will increase or decrease in line with the amount of pressure applied.

Good pressure management of networks can help to reduce the number of unplanned interruptions, and ensures that the condition of network assets aligns with their expected lifespans. On the other hand, poor pressure management can create significant risks:

- **low pressure** can result in inadequate supply to consumers and increase the likelihood of backflow, which may allow contaminants to enter the network
- **high pressure** can increase the likelihood of pipeline failures, particularly where pipes already have defects, deterioration or are subject to pressure fluctuations, leading to service disruptions, water loss and costly repairs.

Accurate pressure control relies on well maintained and calibrated equipment. The Fire and Emergency (FENZ) Code of Practice requires a minimum of **100 kPa**.

This year's data shows that of the 306 network operators with reported pressure data, only 14 are operating at their reference level. Eighty-four percent are operating at pressures above their reference level and 11% below reference. Table 5 below shows the average system pressures by population density.

Figure 11: ILI by district

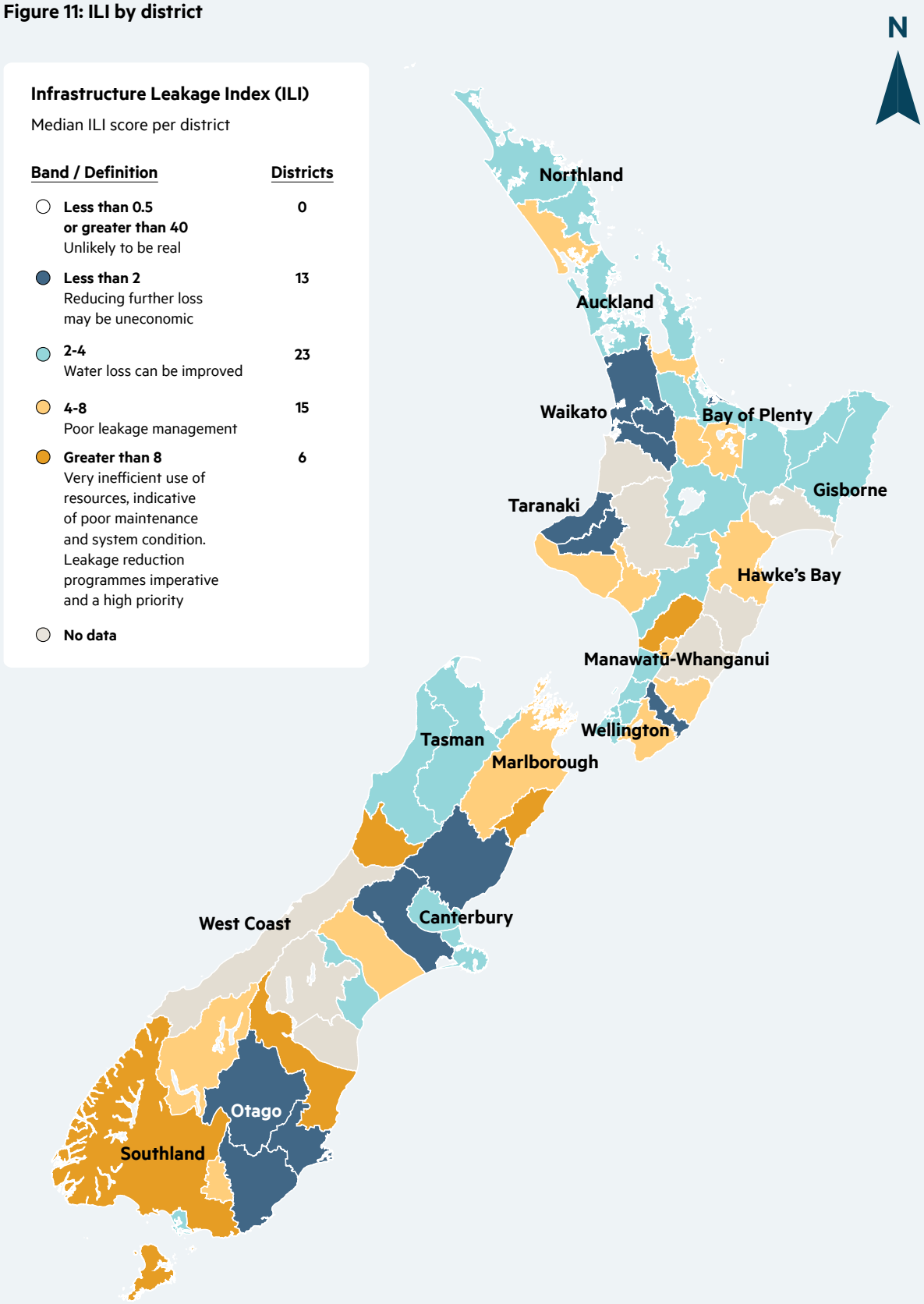


Table 4: Average system pressure compared with reference levels

Population density	# Supplies	Average System Pressure (kPa)	Average Reference Level (kPa)	# Supplies Above Reference	# Supplies Below Reference	# Supplies At Reference
Metro	33	542.7	263.5	33	0	0
Provincial	203	458.6	222.7	180	15	8
Rural	58	422.9	242.8	39	15	4
Government	10	352	356.3	6	4	0
Regional	2	300	300	0	0	2

Notably, all 33 of the metro suppliers are operating at pressures above their reference levels. This ranged from the Longburn supply in Palmerston North operating at 37 kPa above reference, through to the West Taieri supply in Dunedin operating at 900 kPa to 600 kPa above this network's reference.

Metering can help reduce demand and manage networks but coverage remains uneven

Implementing water meters provides network operators with a more accurate measure of the water supplied and consumed. By understanding the actual water consumed, network operators can put in place initiatives to manage the amount of water supplied to networks. Volumetric charging – where consumers are charged for water based on the volume of water used – can provide an incentive to consumers to reduce their use.

Meter data can also help operators identify how much water people use and an indication of where leaks may be occurring. This information supports better prioritisation and repair of leaks, targeted initiatives to reduce demand, more effective analysis of network performance, and allocation of costs to users where charging arrangements are in place.

Metering is a key enabler of better network management, and when implemented along with volumetric charging can help to reduce demand. However, coverage of water meters across New Zealand remains uneven.

Of the 69 councils and crown-owned operators, 25 have water meters fitted on at least 50% of the residential connections in their drinking water networks, and 19 have them on at least 90% of residential connections. Overall, there are 980,273 residential meters in drinking water networks across New Zealand.

Table 5 shows that for metro and provincial organisations that fall within this category, the estimated water consumed per connection is in most cases below the median level of water consumed per connection for the network as a whole (678 litres per connection per day for residential areas). This is an indication of the value of implementing water meters in reducing water consumption.

Table 5: Organisations with water meters installed on at least 90% of residential network connections

Population Density	Residential connections with meters	Estimated use (L/ connection/ day)
Metro		
Christchurch City Council	94%	440
Tauranga City Council	100%	448
Watercare	100%	568
Whangarei District Council	100%	441
Provincial		
Central Otago District Council	100%	793
Kāpiti Coast District Council	100%	495
Marlborough District Council	100%	521
Masterton District Council	94%	863
Nelson City Council	100%	455
South Wairarapa District Council	100%	590
Tasman District Council	95%	564
Waikato District Council	100%	557
Waipā District Council	100%	548
Western Bay of Plenty District Council	100%	426
Whakatāne District Council	100%	656
Rural		
Carterton District Council	100%	586
Hauraki District Council	100%	1,781
Kaipara District Council	100%	1,322
Rangitikei District Council	100%	1,104

Table 7 shows there was only a 5% increase in metro residential water meters from 2023/24 and 2024/25, with small increases in provincial and rural networks.

Table 6: Number of water meters installed

	2023/24		2024/25	
Population Density	Residential Meters	Non-Residential Meters	Residential Meters	Non-Residential Meters
Metro	64% (527,600)	86% (56,700)	69% (705,000)	91% (68,300)
Provincial	49% (235,600)	72% (38,400)	49% (240,600)	81% (42,000)
Rural	40% (30,500)	38% (5,000)	40% (34,700)	42% (6,500)
Total	57% (793,700)	75% (100,100)	61% (980,300)	82% (116,800)

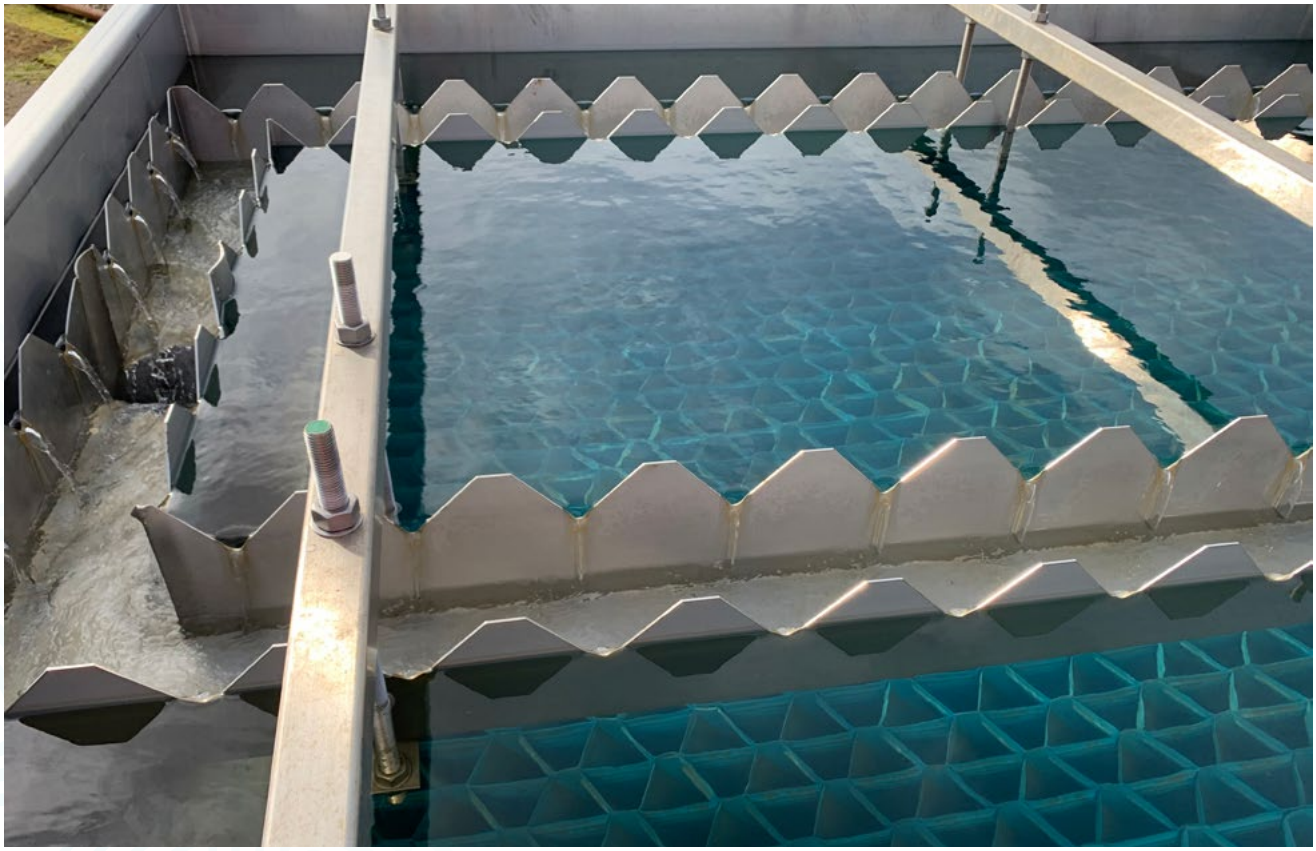
Planning ahead for future impacts to water infrastructure

There are a growing number of challenges facing water operators that are placing pressure on the supply and delivery of drinking water. These include climate change and extreme weather events affecting source water supplies, as well as population growth and increased demand from consumers. To ensure a sufficient and reliable water supply, planning to respond to future growth and risks is an important part of network management.

With over 240 water-take consents due to expire in the next 10 years, water operators will need to consider whether the existing abstraction limits will be sufficient for future population changes, or if new water sources may be required to meet the demands of the network.

Managing the volume of water consumed is a key part of supporting the sustainable management of water sources. Network management tools (such as metering and volumetric charging) can help operators to understand consumer behaviour by providing accurate usage data.

Network operators can also reduce the volume of water abstracted from their sources by managing water loss in distribution networks. The ILI provides operators with an understanding of how the condition of their network affects the rate of water lost. Some factors (such as high operating pressures) can result in shorter lifespans of network assets, resulting in more frequent mains breaks and service disruptions. By understanding the ILI of their networks, operators can identify where preventative maintenance work may be required to reduce the volume of water lost.



Part four:
Wastewater network environmental performance

A well-performing wastewater network protects public health and the environment by safely collecting, treating and disposing of wastewater. However, the performance of network infrastructure has been facing ongoing challenges as a consequence of poor asset condition, consent compliance and a range of other factors. This has resulted in patchy and sometimes poor environmental outcomes over time, together with ongoing risks to public health. These risks have affected water quality, recreational activities and food gathering and production, including the ability of iwi/Māori to engage in tikanga practices.

The Water Services Authority has prioritised an ongoing work programme to respond to these challenges. In 2025, the first set of wastewater environmental performance standards came into force, targeting wastewater treatment plant consent conditions, risk management for network overflows, and beneficial reuse of the biosolids from wastewater treatment.

As the standards are progressively implemented through the upgrade and re-consenting of network infrastructure, it will result in improved environmental performance, better assessment and reduction of public health risks, increased compliance with consents, and benchmarking of performance through higher-quality information.

This section profiles the environmental performance of New Zealand's public wastewater networks based on data reported to us by network operators against our first set of wastewater performance measures, including:

- discharges from wastewater treatment plants, including treatment levels and receiving environments
- compliance with resource consent conditions, including patterns of enforcement over the past three years
- wastewater overflows – their drivers, impacts and implications for network management
- overflow monitoring and calculation methodologies – how operators detect, estimate and report on overflows.

Discharges from wastewater treatment plants

Wastewater treatment plants are the primary mechanism through which wastewater is treated and discharged to the environment. There are a broad range of different treatment arrangements servicing cities, towns and small communities throughout New Zealand, discharging to a broad range of environments, including the ocean, estuaries, freshwater bodies and to land.

Conditions in resource consents set the requirements for treatment. There is very high variability in existing consent conditions, with some treatment plants having few or no treatment requirements, and others having strict requirements for certain measures. This variability compounds the challenges facing the overall system and management of environmental performance and public health outcomes, and means we do not have a nationally-consistent picture of performance.

Expiry and re-consenting of wastewater treatment plants

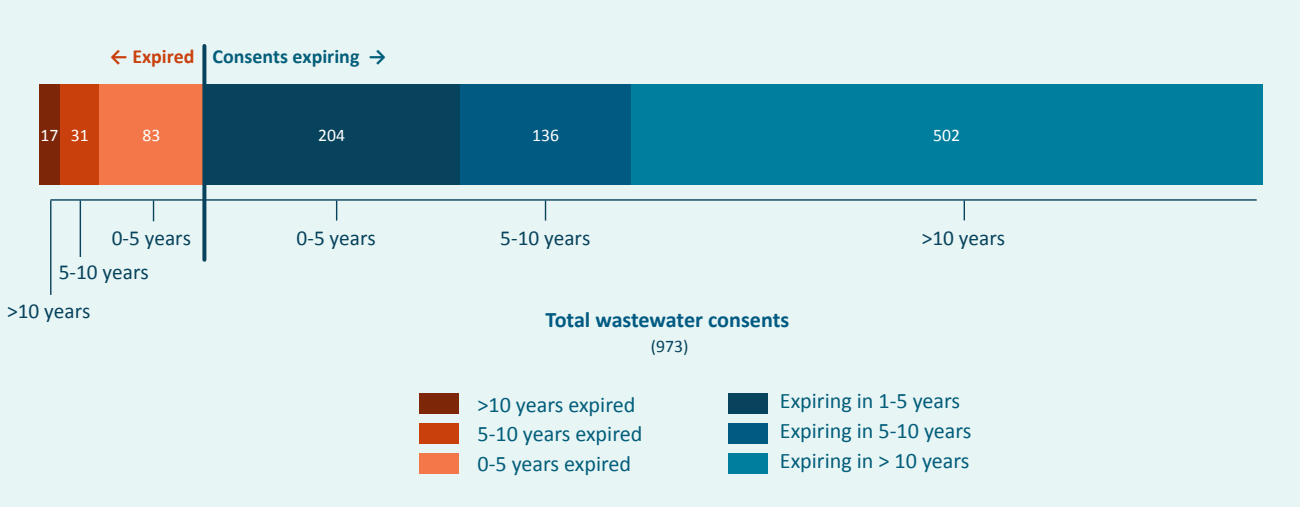
The re-consenting of wastewater treatment plants is a significant challenge for New Zealand. A large proportion of plants are currently operating on expired consents. Alongside this, there is a bow wave of consents expiring over the next decade, with a significant proportion of publicly owned treatment plants requiring re-consenting over this time.

In total, network operators provided data on 973 consents held for wastewater treatment plants. Figure 12 shows the range of expiry dates for wastewater consents. Approximately 22% of wastewater treatment plants are operating on expired consents, with approximately 48% of plants requiring re-consenting within 10 years.

Wastewater treatment plants are operating on expired consents for an average of 5.5 years – some for more than 20 years. In some cases, the original consents were granted prior to the enactment of the Resource Management Act 1991. Where plants have been operating on expired consents for a long time, there are greater risks to public health or the environment because performance requirements were significantly lower at the time the consent was originally granted.

New national wastewater environmental performance standards will bring certainty and consistency to the sector and set limits on the timeframes for re-consenting of wastewater treatment plants – a new consent must be issued within two years of its expiry.[13] Alongside this, where a consent is granted that complies with the wastewater environmental performance standards framework it must be issued for 35 years.

Figure 12: Wastewater consent expiry



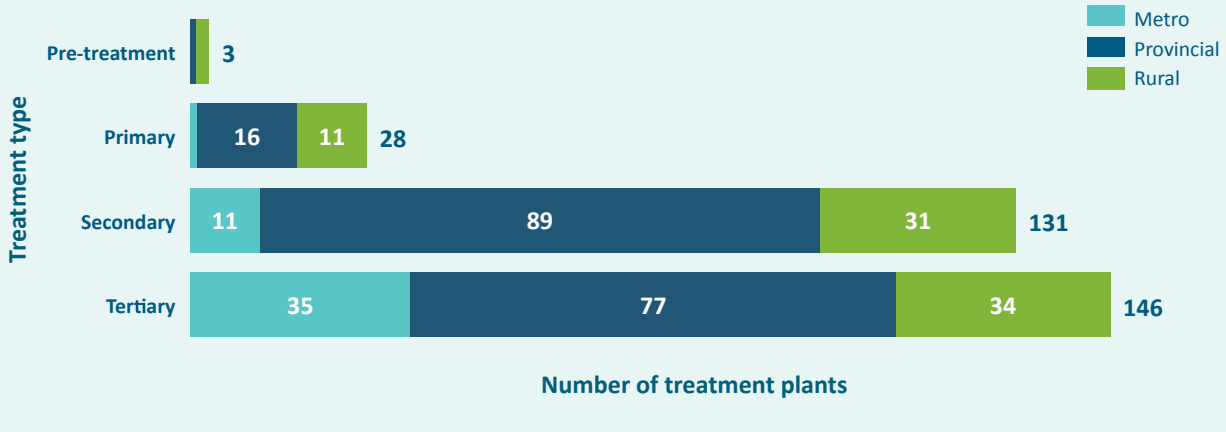
Levels of treatment

Wastewater treatment varies widely across New Zealand and ranges from the basic screening of particles through to advanced biological treatment, nutrient reduction or pathogen treatment (e.g. via ultraviolet treatment).

Wastewater treatment is broadly categorised into three stages: **primary** treatment (physical removal of solids and settleable material), **secondary** treatment (biological removal of organic contaminants), and **tertiary** treatment (advanced polishing processes such as filtration, nutrient removal and ultraviolet disinfection to achieve higher effluent quality).

Most of the wastewater plants that are servicing New Zealand's cities have tertiary treatment in place. By volume, a significant proportion of wastewater that is produced in metro areas is treated to a tertiary level (>99.6% of discharge volume).

Figure 13: Number of wastewater treatment plants by treatment level



13 From December 2028 onwards per section 2 of the regulations.

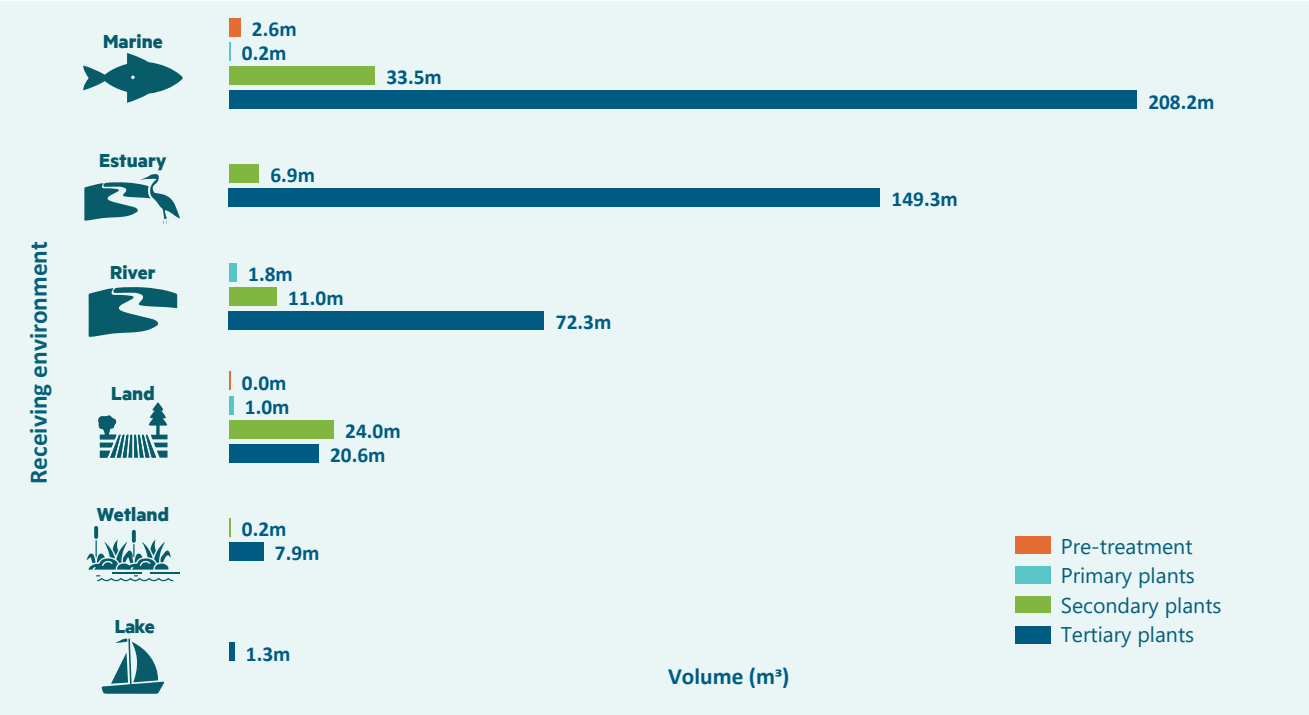
Discharge location

The coastal environment is the main receiving environment for wastewater

Figure 14 shows the volume of discharge for wastewater treatment plants in relation to different types of receiving environments (such as marine environments, freshwater bodies or land). This data illustrates the points below.

- The bulk of discharges from treatment plants goes into the coastal environment, with 74.1% of all wastewater volume discharged to marine and estuarine areas. This is consistent with the geographic distribution of many of New Zealand's cities and towns on the coast, with discharge arrangements to open ocean, nearshore, river mouths or estuaries.
- River-based receiving environments account for 15.1% of discharge volume.
- Discharge to land (8.4%) is low relative to other discharge locations. This is consistent with this type of treatment and discharge being employed primarily for smaller communities.
- Only 0.2% of treated wastewater is discharged to lakes. This is consistent with the vulnerability of lakes to all types of discharges, including from wastewater treatment plants.

Figure 14: Discharge volume by receiving environment



Compliance with resource consent conditions for discharges

Non-compliance with consent conditions is widespread and compliance action is variable

Compliance of wastewater treatment plants with consent conditions over previous years, together with compliance action taken by regional councils, has been an ongoing focus. This includes work commissioned by the Department of Internal Affairs into regulatory compliance, and technical advice commissioned by the Water Services Authority as part of the development of wastewater environmental performance standards.

Following a number of high-profile incidents[14] relating to publicly owned wastewater treatment plants and networks, the Authority requested information from all regional councils about regulatory compliance and enforcement levels over the past three years (2022 to 2025). National-level information indicates non-compliance with wastewater resource consent conditions is widespread across the three-year period, with the practice varying substantially between regions in how non-compliance is recorded and what enforcement action is taken. This information does not form part of the data collated as part of the Network Environmental Performance Measures and is too inconsistent to report this year.

14 These incidents included the Moa Point wastewater treatment plant incident in February 2026, ongoing non-compliance of the Bromley treatment plant, and regular overflows from the Warkworth wastewater network into Mahurangi harbour.

However, in line with its system oversight role, the Authority intends to increase its focus on how compliance is monitored and enforced by regional councils for future reports.

Wastewater overflows and bypasses

Overflows happen when untreated wastewater is discharged from the reticulated network to land or water.[15] Overflows can be caused by a range of factors, including those below.

- **Volume of water exceeding network capacity** – this can occur during heavy rainfall when there is more water than pipes can carry.
- **Blockages** – such as build-up of fat and oil, tree roots or flushing inappropriate products, which can prevent wastewater from flowing properly.
- **Plant or equipment failures** – including broken pipes and pump breakdowns, or failures arising from inadequate equipment or maintenance.
- **Combined capacity exceedance** – combined wastewater and stormwater pipes can overflow during heavy rain because both systems use the same pipe network – this only occurs in a small number of areas in New Zealand.

Wastewater overflows can pose a significant risk to public health and the environment and can result in communities not being able to swim or collect seafood in particular areas. The discharge of untreated wastewater in public places (e.g. onto a road or park) can pose a high risk to human health.

Bypasses happen when untreated or partially treated wastewater is temporarily and intentionally diverted from a wastewater treatment plant and is discharged into the environment. For example, this can occur during maintenance or during heavy rainfall events.[16] Bypasses are built into the wastewater network to prevent sensitive treatment plant equipment from being damaged.

This is the first year we have received information on the number of wastewater overflows and the factors that contribute to them. This information enables us to identify the most common drivers of overflows, and what they imply for network management and reducing environmental risks.

While data on bypasses was collected and is available through the public dataset released on the website, detailed commentary on them is not included in this report because of reliability concerns with the data. There may not be a sufficiently clear understanding of the definition of bypass, which is something that requires particular focus in future years.

Note: The February 2026 Moa Point wastewater treatment plant incident, where high volumes of untreated wastewater were discharged to the sea, fell outside the reporting period for this report. This incident is subject to an ongoing inquiry. Only overflows or bypasses that occurred during the 2024/25 reporting period are included in the data reported here.

Capacity constraints are a key driver of overflows

A national look at wastewater overflows reveals a clear pattern in metro areas: capacity constraints are a leading driver of overflows, especially in our largest urban centres. Figure 15 covers the contributing factors leading to overflows broken down by population density. At first glance, blockages appear to dominate in metro areas, with 17.9 blockages per 100km of pipe, but a closer examination tells a different story.

A large share of overflows in metro areas appear to fall into the multiple causes category, recorded at 12.6 overflows per 100km. This is because almost all of these come from Watercare, which reported 2,433 overflows attributed to 'other' factors. A high proportion of these overflows reportedly occurred in locations where capacity is constrained and there are combined wastewater and stormwater connections, indicating that capacity and network design are underlying drivers.[17]

When extreme outliers are removed, rural areas consistently show the lowest numbers of overflow rates across most categories.[18] This may be reflective of lower population density, reduced pressure on infrastructure, fewer large-scale stormwater interactions and reduced monitoring due to a lack of resources. It also reinforces a key point: urban networks face the greatest strain, both from population demand and from the increasing intensity of rainfall events.

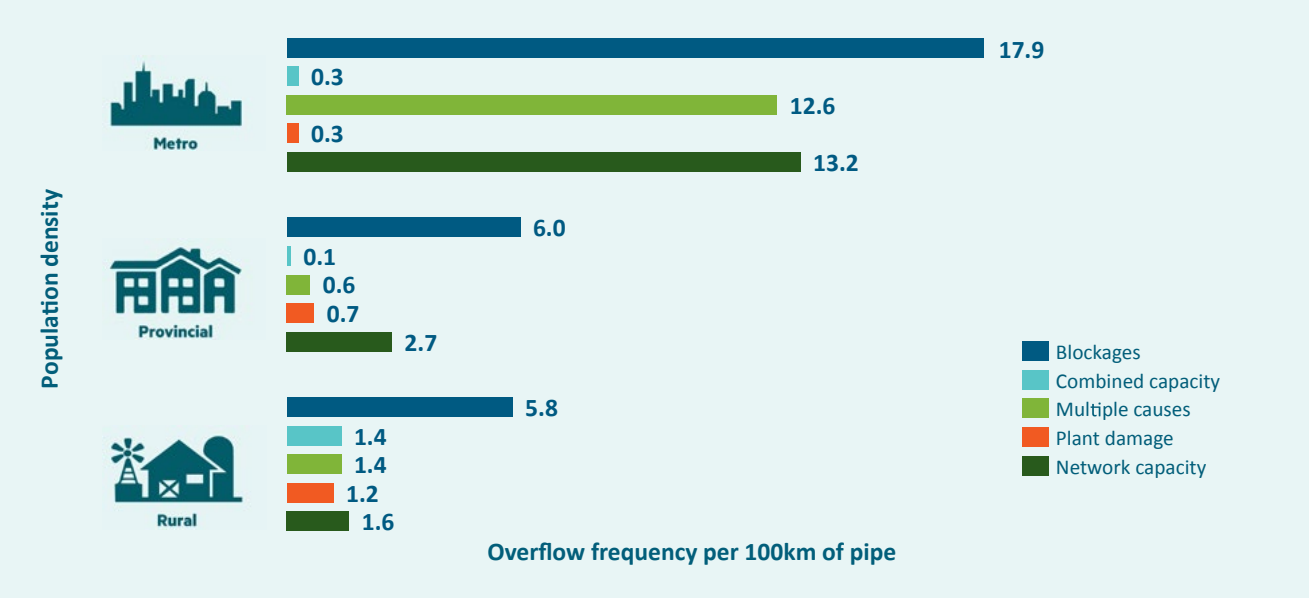
15 Overflows can also occur within the network, impacting connected properties and contaminating land and buildings. See also: Management of overflows and bypasses standard | The Water Services Authority – Taumata Arowai

16 A full definition is provided here: Water Services (Wastewater Environmental Performance Standards) Regulations 2025 | New Zealand Legislation

17 Watercare reported 2,433 overflows attributed to "other" factors. Many of these overflows are likely associated with blockages where field crews were unable to recover the debris to determine the underlying cause. A significant proportion of these incidents reportedly occurred in locations where capacity is constrained and there are combined wastewater and stormwater connections, indicating that capacity and network design could be contributing factors.

18 Buller District Council reported 1,041 per 100 km overflows compared to an average of 12.5 overflows per 100 km for rural networks excluding Buller District Council. Buller District Council's result has been excluded from the summary graph so that the result for the wider rural network is clear. The Council advised that the high number of reported wastewater overflows is largely attributable to stormwater ingress and the characteristics of the wastewater networks. The Council further advised that fluctuations in rainfall intensity may result in multiple short-duration overflow events being recorded during a single rainfall event.

Figure 15: Wastewater overflows per 100km of pipe, cause and population density



Blockages are also a leading contributor to overflows and they are preventable

While capacity is the dominant issue, blockages remain a significant and avoidable contributor to overflows. Metro areas experience 17.9 blockages per 100km of pipe, nearly three times the rate of provincial (6) and rural (5.8) areas.

Many blockages are caused by inappropriate items being flushed, including wet wipes and cooking fats. Unlike capacity constraints, which cannot be addressed through public behaviour change alone, some blockages can be reduced through changes at the household level. This highlights the importance of ongoing public education alongside infrastructure investment.



Extreme weather exposes infrastructure vulnerabilities

The concentration of capacity-related overflows in metro areas reflects how storms can act as a stress test for urban wastewater systems. In heavy rain, groundwater and stormwater can enter wastewater through directly connected pipework, or through leaks or breaks. This results in wastewater systems exceeding their designed capacity. Failures cascade across the network resulting in overflow into receiving environments.

This pattern highlights the combined challenges associated with insufficient network capacity in the face of increasing urban populations, while rainfall intensity increases in a changing climate. As well as operators' maintenance and renewal programmes – set up to improve capacity and to upgrade aged and deteriorated sections of the network – there is an important role for public education in preventing stormwater from being discharged directly into the wastewater network. For example, through incorrectly plumbed roof gutters or inadequately protected gully traps.

Monitoring and reporting of overflows

Requirements for monitoring and reporting wastewater overflows and bypasses are provided in regional plans or through consent conditions. When an overflow or bypass occurs, network operators are generally required to document and report on it.

Wastewater environmental performance standards will require the operators of public wastewater networks to conduct a comprehensive risk assessment of overflows from a network as part of consent conditions, and publicly report on those overflows based on risk. These requirements will come into force on 1 July 2028, unless a council operator chooses to implement the approach sooner.



This sign provides an example of public health signage in relation to a wastewater discharge point.

How do wastewater operators understand overflow risk in their networks?

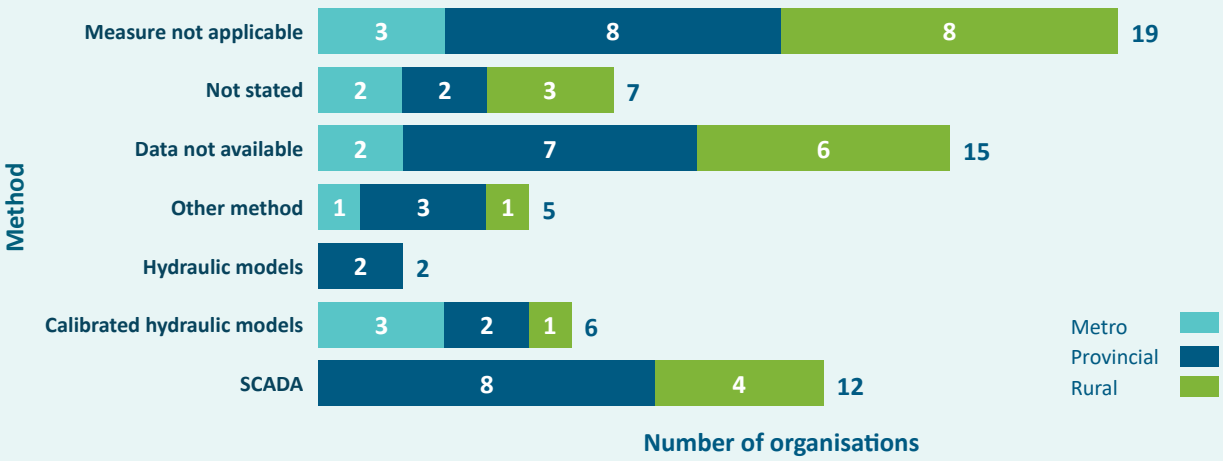
The accuracy of wastewater overflow reporting depends on the type of monitoring that takes place. Network operators use multiple methods to calculate overflows. Some of the most reliable methods are described below.

Supervisory Control and Data Acquisition (SCADA) Some wastewater overflows are monitored using telemetry systems that transmit level, flow, and alarm data from remote assets to the central SCADA system for real-time monitoring, alarming, reporting, and operational response.

A **calibrated hydraulic model** is a predictive tool – essentially a computer simulation of a wastewater network – that has been tuned to match actual operation. They use real data, including wastewater flow and rainfall, to show how the wastewater system works under different conditions. Engineers compare the model's predictions with reality, then make adjustments to the model (calibration). Models can be a reliable tool that help to predict wastewater system capacity and how it will perform during storms, including for overflows. Hydraulic models often make use of SCADA to improve the accuracy of the model's predictions.

We asked network operators to tell us whether and how they monitor and record overflow events, including the methods described in Box 1, and others including other hydraulic models or instances where data is not available, another method was used, or it was not stated. Operators reported on the primary method they used for monitoring (summarised in Figure 16).

Figure 16: Wastewater overflows by monitoring and calculation method



Some metro councils did not specify an overflow calculation method

Results of the analysis of overflow calculation methodologies among network operators (Figure 16) show that some metro councils, accounting for the greatest number of overflows, employ more sophisticated methods. Others have not specified a method.

Metro councils: Of 11 metro councils, three (27%) reported using calibrated hydraulic models, including Watercare. Several others reported that data was not available. While most of these data gaps may be associated with low overflow numbers, Wellington Water Ltd reported 2,011 wastewater overflows and uses a mixed model to measure overflows, noting it was not appropriate to attribute a single measurement method to each overflow.

Provincial councils: Methods varied across the 32 provincial operators. Eight reported using SCADA and nine that data was not available, with the remainder using a range of other methods. Although provincial operators make up the largest group, they account for only 11% of total overflows.

Rural councils: They reported having little data about overflows – with only four reporting using SCADA and nine that this measure was not applicable or data was not available.



Part five:
Stormwater

This section covers stormwater systems and how they function across urban catchments, as well as the growing pressures and risks they face.

The performance of stormwater systems has an impact on the other water services covered in this report and, as national-level data becomes available, will be an increasing focus of future reports.

The Authority is developing tools to monitor and improve stormwater performance over time. These include setting performance measures, developing standards and guidance, and working with operators to improve planning, monitoring and risk management.

Stormwater is the water that runs off surfaces when it rains. The term 'stormwater network' refers to the infrastructure and processes that enable stormwater management in urban areas.[19] In a natural environment, rainwater runoff is absorbed into soil, flows into natural waterways, or recharges aquifers and eventually flows to sea.

In most urban areas, runoff is collected by stormwater networks and carried to rivers, lakes or the sea These networks are typically comprised of pipes, drains, green infrastructure (such as rain gardens) and overland flow paths (such as channels and depressions) in the landscape where water can flow. Stormwater networks can help to manage both the volume of runoff – reducing flood risk – and the quality of runoff (minimising the discharge of harmful contaminants into the environment).

The Authority intends to set Network Environmental Performance Measures for stormwater, but until then, the data available is limited. There is no nationally consistent set of stormwater performance measures, and data capability and maturity are uneven across the sector. The issue is not only that information is incomplete, but that operators have different levels of monitoring, asset knowledge and analytical capability. This limits the ability to form a reliable national picture of stormwater performance and risk.

The Water Services Authority has tools to help improve stormwater performance over time. These include setting future stormwater performance measures, developing standards and guidance, and working with operators to improve planning, monitoring and risk management. Together, these tools are intended to support more consistent stormwater management and better environmental outcomes.

Stormwater networks are dynamic and interconnected systems

Stormwater networks are complex and dynamic systems that consist of both piped and open infrastructure. Open infrastructure includes overland flow paths (such as channels and depressions) in the landscape where water can flow, waterbodies like streams or ponds, and blue/green devices, including raingardens or bioretention areas. In contrast, drinking water and wastewater are contained within a closed engineered system.

Well-managed stormwater networks have widespread benefits, protecting public infrastructure, private property, the environment, and managing impacts on wastewater and drinking water networks. Management of stormwater can also be mātauranga-informed, considering the principle of ki uta ki tai (from the mountains to the sea), with a focus on long-term intergenerational wellbeing.[20]

Ownership, management and financing of stormwater systems varies across the country with some new water organisations taking responsibility for stormwater networks, while in other cases councils will continue to deliver stormwater services in-house.

Local decisions about how stormwater should be managed were required in mid-2025 via Water Services Delivery Plans, including requirements around ring-fencing (to spend revenue and funding received for water services on water services) and transparency of revenue, funding and expenses.

As part of our growing role in system oversight to stormwater, we will monitor delivery arrangements for urban networks.

19 Water Services Act 2021 – New Zealand legislation.

20 Report on Wastewater Treatment Arrangements that Respond to Māori Values Case-studies-report-final.pdf

Stormwater networks face increasing pressure and are a growing system risk

Stormwater networks are under increasing pressure from urban development, more hard surfaces and more intense rainfall.[21] These changes increase the volume and speed of runoff, placing greater demand on pipes, drains, overland flow paths and receiving environments. Where stormwater networks cannot manage this volume effectively, the impacts can be immediate and visible, including flooding of homes and properties, disruption to roads and communities, and contamination of waterways used for recreation or food gathering.

Stormwater can also directly carry contaminants into rivers, lakes and coastal waters, not only by contributing to wastewater overflows. In urban areas, stormwater usually bypasses treatment plants and can wash nutrients, sediment, heavy metals, hydrocarbons, pathogens and other contaminants from roads, roofs and other hard surfaces into receiving environments. This means unmanaged stormwater can affect water quality in its own right, as well as increasing pressure on wastewater networks.

Stormwater systems are also more difficult to monitor than drinking water and wastewater networks because they are open, catchment-driven systems. Their performance depends not only on built infrastructure, but also on land use, topography, ground conditions, receiving environments and how rainfall moves across the catchment. This makes it harder to isolate faults, measure performance consistently and compare results between operators.

Even with these limitations, the evidence in this report and related Authority work indicates that pressures on stormwater systems are increasing over time. As rainfall patterns shift and urban catchments continue to intensify, stormwater is becoming a growing system risk that affects environmental outcomes, infrastructure resilience and the performance of other parts of the water system.

The performance of stormwater and wastewater networks are interconnected

Stormwater and wastewater networks are designed for different purposes, but their performance is closely linked, particularly during wet weather events. Effective stormwater management helps reduce pressure on wastewater systems by limiting unwanted inflows and reducing the risk of wastewater overflows. Improving stormwater outcomes is therefore an important contributor to overall three waters environmental performance.

During rainfall events, stormwater can enter wastewater networks through damaged pipes and joints, groundwater infiltration, joint wastewater and stormwater pipes, and inappropriate or illegal connections. These extra flows can exceed the capacity of pipes, pump stations and treatment plants, resulting in overflows of untreated wastewater to the environment. As outlined in Part Four, most wastewater overflows nationally occur during peak wet weather flows when network capacity is exceeded.

Where stormwater networks are unable to manage rainfall volumes effectively, flooding of streets and properties can occur. Flooding can disrupt wastewater operations, increase inflow and infiltration, accelerate asset deterioration, and place extra stress on aging infrastructure. Excessive stormwater entering wastewater systems can also reduce treatment effectiveness, increasing the discharge of contaminants to rivers, streams and coastal waters, with associated risks to public health and the environment.

Climate change and urban growth place extra pressure on networks

Climate change is placing increasing pressure on stormwater networks. Although consistent national data on stormwater performance is limited, insurance data and recent severe weather events indicate that storms are becoming more frequent and intense. Heavier rainfall and rising sea levels are increasing flood risks, particularly in coastal areas.

As rainfall patterns change, the interdependence between stormwater and wastewater networks becomes more significant. Poor performance in one part of the system can quickly affect the other, particularly during extreme weather events, increasing the likelihood of flooding, wastewater overflows and environmental impacts.

Urban development is adding to these pressures. The expansion of hard, impervious surfaces causes rainfall to run off more quickly and in greater volumes than many existing networks were designed to manage. In areas where stormwater, wastewater and drinking water infrastructure already has limited capacity, urban growth can further increase the risk of wastewater overflows and drinking water contamination during heavy rainfall events.

21 Stormwater – an introduction | Earth Sciences New Zealand | NIWA

Part six:
Continuous improvement in data quality

Reporting improvements, particularly in key drinking water measures, are an encouraging sign of increasing network operator maturity. However, in some areas persistent issues with data quality continues to constrain our ability to assess trends. Strengthened data management is integral to effective network operation and should remain a priority. Where poor data quality is evident, this raises concerns about the extent to which operators understand their networks because it suggests limitations in the information they hold about their assets.

This section of the report focuses on data quality, including completeness and confidence in operator-reported data. This is important context for those who wish to undertake their own analysis and conclusions utilising the full data release that underpins this report.

To evaluate environmental performance, we rely on good quality data from network operators. Robust and reliable data and evidence is also required for **effective operation, maintenance, renewal and investment**. Robust information enables network operators to accurately identify where improvements are required, and to measure the effectiveness of action taken to improve the performance of the network.

Due to the importance of good data and its value to both network management and transparency, data quality has been a focus of the Authority since taking on the role of network environmental performance reporting.

First two years: drinking water data quality issues and improvements

The Network Environmental Performance Report 2022/2023 found that network operators did not hold good information about their drinking water networks. To provide greater insight, we undertook an external review in advance of the publication of Network Environmental Performance Report 2023/2024, with a focus on key measures of the performance of the drinking water network. The review found data reported was accurate for only around 35-40% of sampled councils for in-scope measures. Consequences of the lack of accurate data may include a lack of visibility over network risks, limitations identifying where investment is required, or challenges in tracking whether actions are improving performance.

As a result, we recommended that operators improve their understanding of their assets and key risks to their networks.[1] This can be done by investing in the appropriate equipment and systems, and ensuring staff capability and capacity is appropriate for the data management task required.

We also committed to improving our own data collection systems and processes. So, to support improvement in data quality for this year's report, we have implemented the following changes:

- improved the data collection spreadsheet with clearer guidance on required data and formats, simplifying the template for operators
- changed the methodology for confidence rating from a rating being required for each datapoint to requiring a rating for the performance measure at both the organisation and network levels[22]
- checked high-priority data with operators, investigating and correcting likely inaccuracies by identifying outliers (values well above or below comparable operators.[23]

This year's report assesses drinking water data quality for the third year and includes new wastewater information

This year's report looks at the completeness and accuracy of the data of the third year of information collected under the Network Environmental Performance Measures and provides some commentary around developments. This year's report also reports on an increased number of performance measures, including now a full suite of wastewater measures. This year's data quality assessment makes some findings about the quality of wastewater information provided by the sector.

22 Memo

23 Need a definition of high priority data that was verified

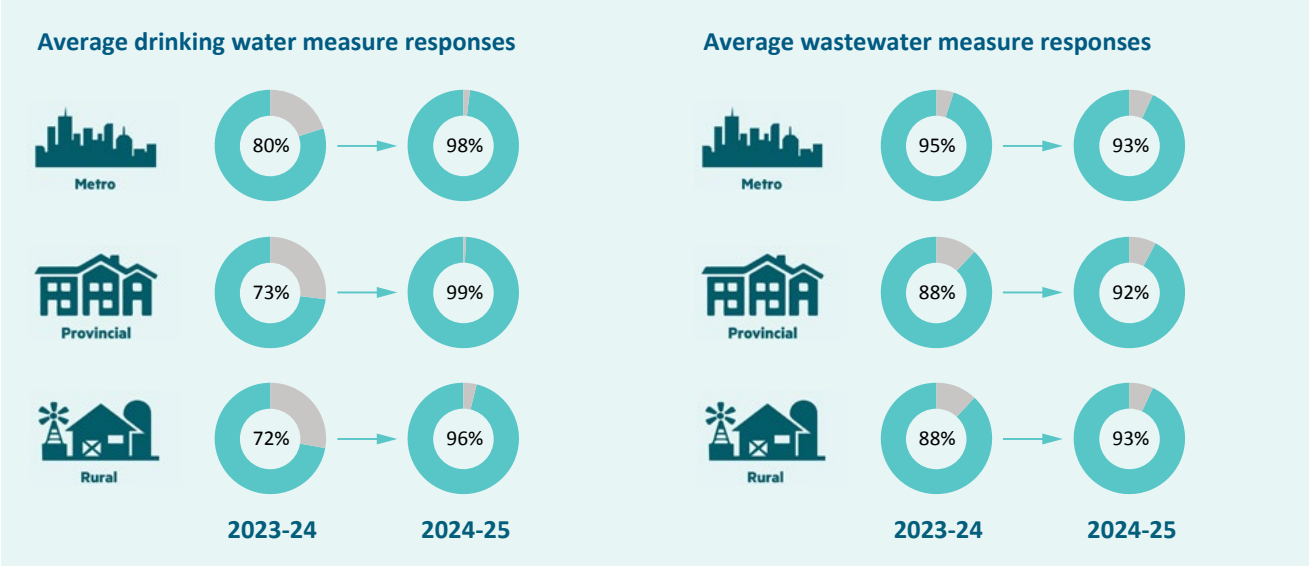
Data completeness assessment

Data completeness has improved but quality requires further improvement

Figure 17 provides a breakdown of the completeness of the information provided by metro, provincial and rural councils for drinking water and wastewater networks over the last two years. It shows the percentage of performance measures that received a complete response. The number of performance measures network operators have been required to complete has increased each year.

While there are still gaps in the information we receive, the level of completeness has improved markedly since last year and this year, particularly for drinking water. Notably, there has been a big jump in the completeness of provincial council results for drinking water – increasing from 73% to 99% completeness. A large increase is also noted for rural drinking water results – increasing from 72% to 96% – and all wastewater network results are now above 90%.

Figure 17: Completeness of drinking water and wastewater performance measure responses



Data quality assessment

We have found that while **most network operators** rated the quality of their data as reliable, there are significant areas where there are **data reliability concerns**.

When we look at the data provided by network operators, we see areas where there is insufficient evidence that the data provided is reliable. In many cases the data provided is based on a desktop analysis or historical data. Key examples include:

1. The assessment of asset condition of wastewater pipes without physical evidence (such as CCTV evidence) within the last five years. Most network operators rated the asset condition data for wastewater as reliable, while also reporting low proportion having been assessed using CCTV footage in the last five years (see page 14).
2. Difficulties calculating water loss across the networks because of a lack of appropriate monitoring equipment (see also Part 3).
3. The absence of reporting on wastewater bypasses – possibly indicating mixed levels of understanding of the differences between overflows and bypasses.

Taken together, these limitations mean the report's findings are best understood as a robust high-level picture of national system performance, while confidence in some network-level results and year-on-year trend analysis remains constrained.

With the introduction of information disclosure requirements by the Commerce Commission and the continuing focus by the Authority on data quality, we expect to see ongoing improvements in the reliability and comprehensiveness of data.

Appendix 1:
Network operators that submitted data for 2024/25

Ashburton District Council
Auckland Council
Buller District Council
Carterton District Council
Central Hawke's Bay District Council
Central Otago District Council
Chatham Islands Council
Christchurch City Council
Clutha District Council
Department of Corrections
Dunedin City Council
Far North District Council
Gisborne District Council
Gore District Council
Greater Wellington Regional Council
Grey District Council
Hamilton City Council
Hastings District Council
Hauraki District Council
Horowhenua District Council
Hurunui District Council
Invercargill City Council
Kaikōura District Council
Kaipara District Council
Kāpiti Coast District Council
Kawerau District Council
Mackenzie District Council
Manawatū District Council
Marlborough District Council
Masterton District Council
Matamata Piako District Council
Ministry of Education
Napier City Council
Nelson City Council
New Plymouth District Council
New Zealand Defence Force
Ōpōtiki District Council
Ōtorohanga District Council
Palmerston North City Council
Papakura
Queenstown Lakes District Council
Rangitikei District Council
Rotorua Lakes Council
Ruapehu District Council
Selwyn District Council
South Taranaki District Council
South Waikato District Council
South Wairarapa District Council
Southland District Council
Stratford District Council
Tararua District Council
Tasman District Council
Taupō District Council
Tauranga City Council
Thames Coromandel District Council
Timaru District Council
Waikato District Council
Waimakariri District Council
Waimate District Council
Waipā District Council
Wairoa District Council
Waitaki District Council
Waitomo District Council
Watercare
Wellington Water Ltd.
Western Bay of Plenty District Council
Westland District Council
Whakatāne District Council
Whanganui District Council
Whangarei District Council



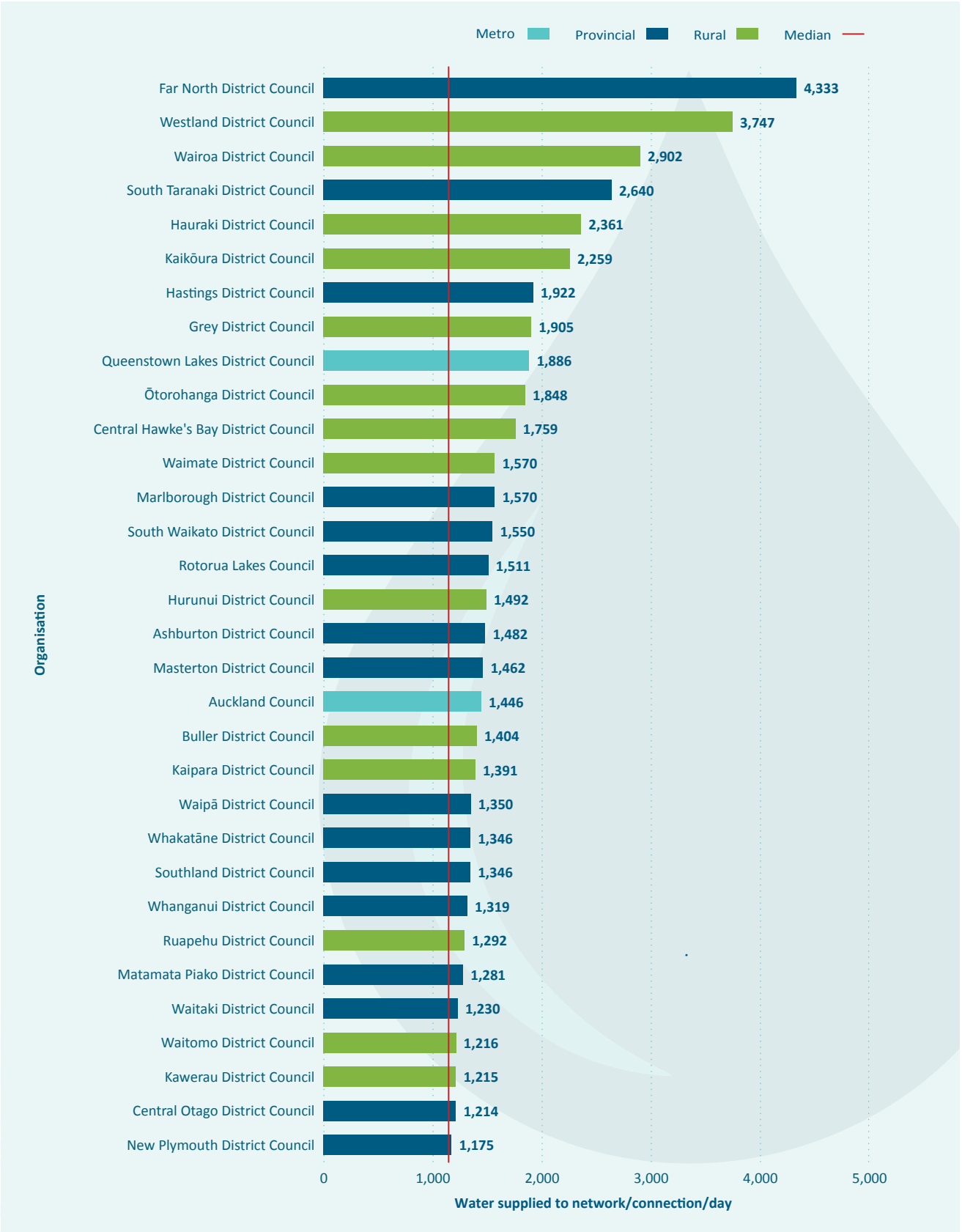
Appendix 2:
Individual council performance on key measures

The following graphs provide an overview of data for each council, or water organisation for some key measures. The graphs do not include Government or regional council operators as these operators supply water for different purposes and are not directly comparable.

Some councils have not provided a response to some key performance measures

Where a specific network operator is not listed within the figures in this appendix , this indicates this organisation may not have submitted on an element required or the data did not meet the quality thresholds required to identify their performance against that key measure.

Figure 18: Water supplied to the drinking water network (L/connection/day) per council[24]



24 The key response rate for the data that contributes to the calculation of this measure is:

- 75.2% D-EH4 water sent to network
- 99.5% D-EH1.1 number of residential connections
- 98.9% D-EH2.1 number non-residential connections

Figure 18: Water supplied to the drinking water network (L/connection/day) per council[22]

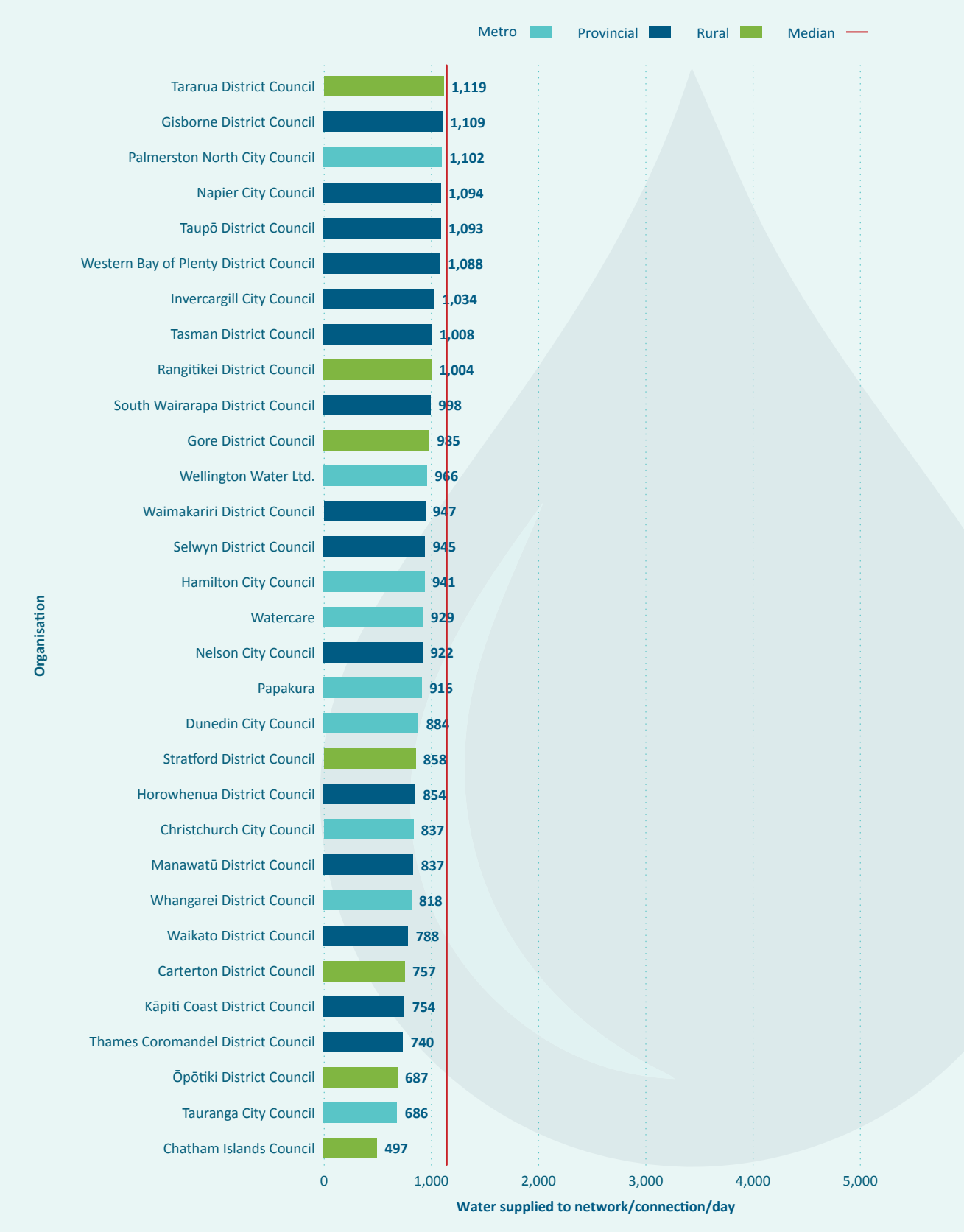
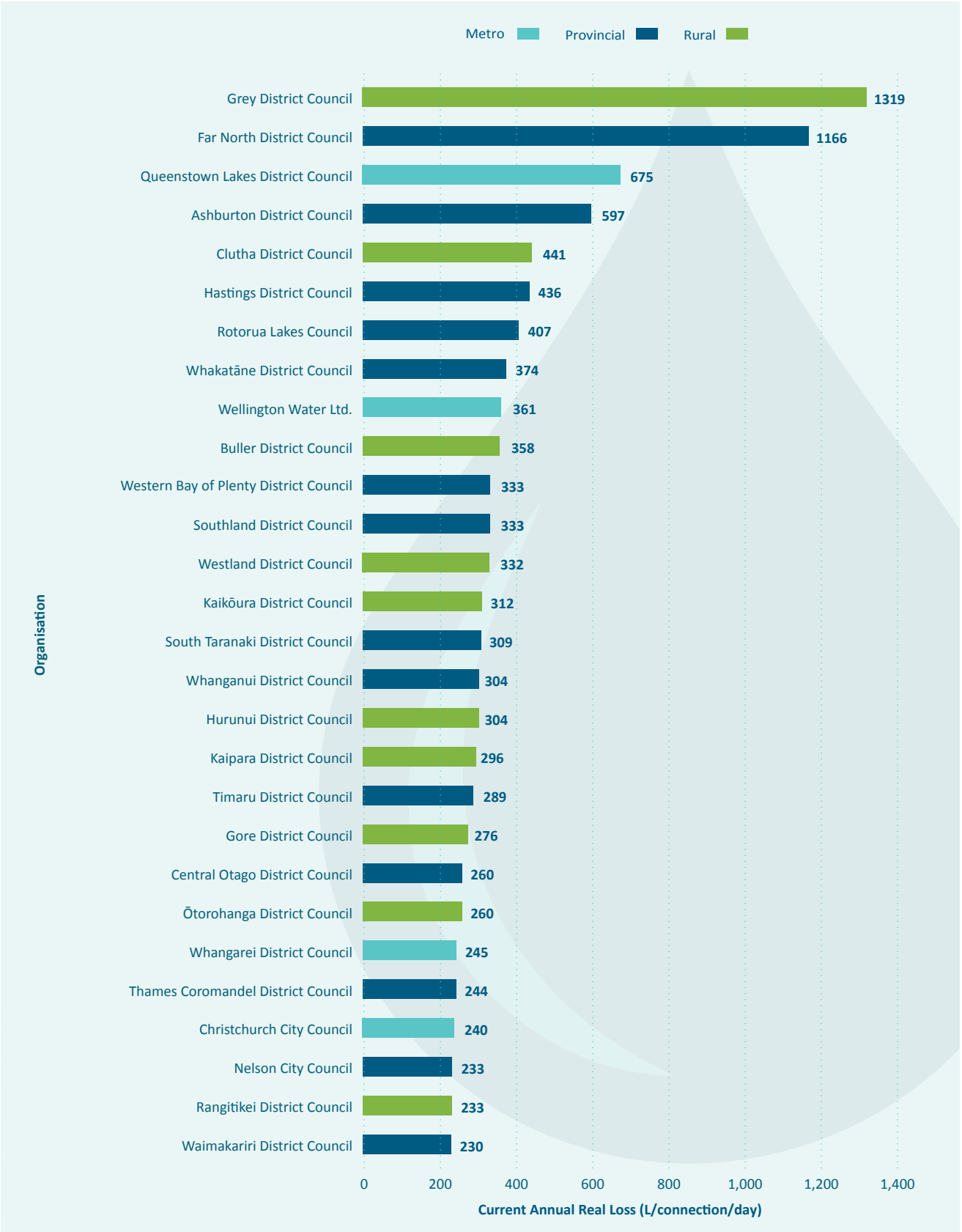


Figure 19: Current Annual Real Loss (L/connection/day) per council[25]



25 The response rate for the data that contributes to the calculation of this measure is:

- 97.2% D-RE2.1 CARL
- 99.5% D-EH1.1 number residential connections
- 98.9% D-EH2.1 number non-residential connections

Figure 19: Current Annual Real Loss (L/connection/day) per council[23]

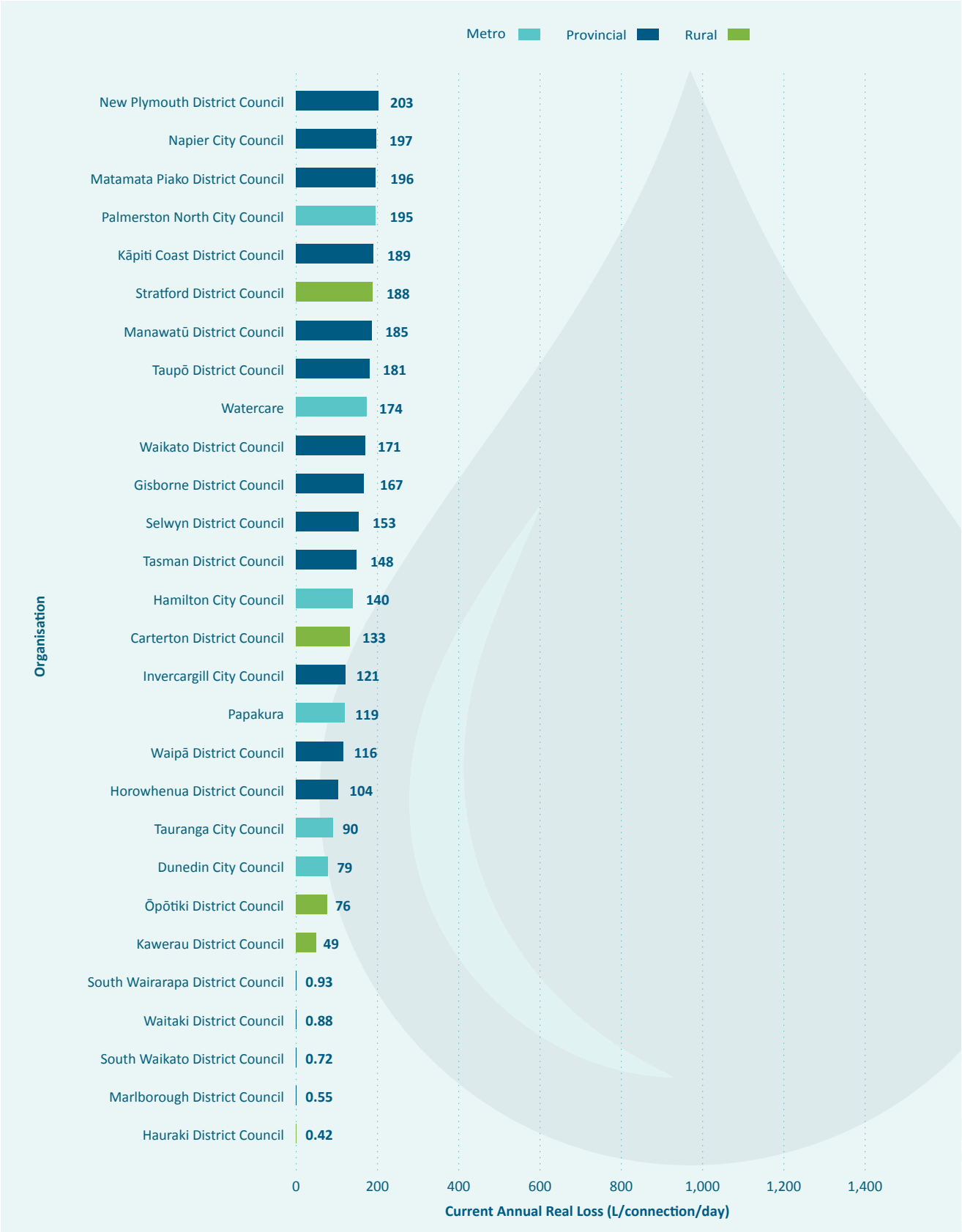
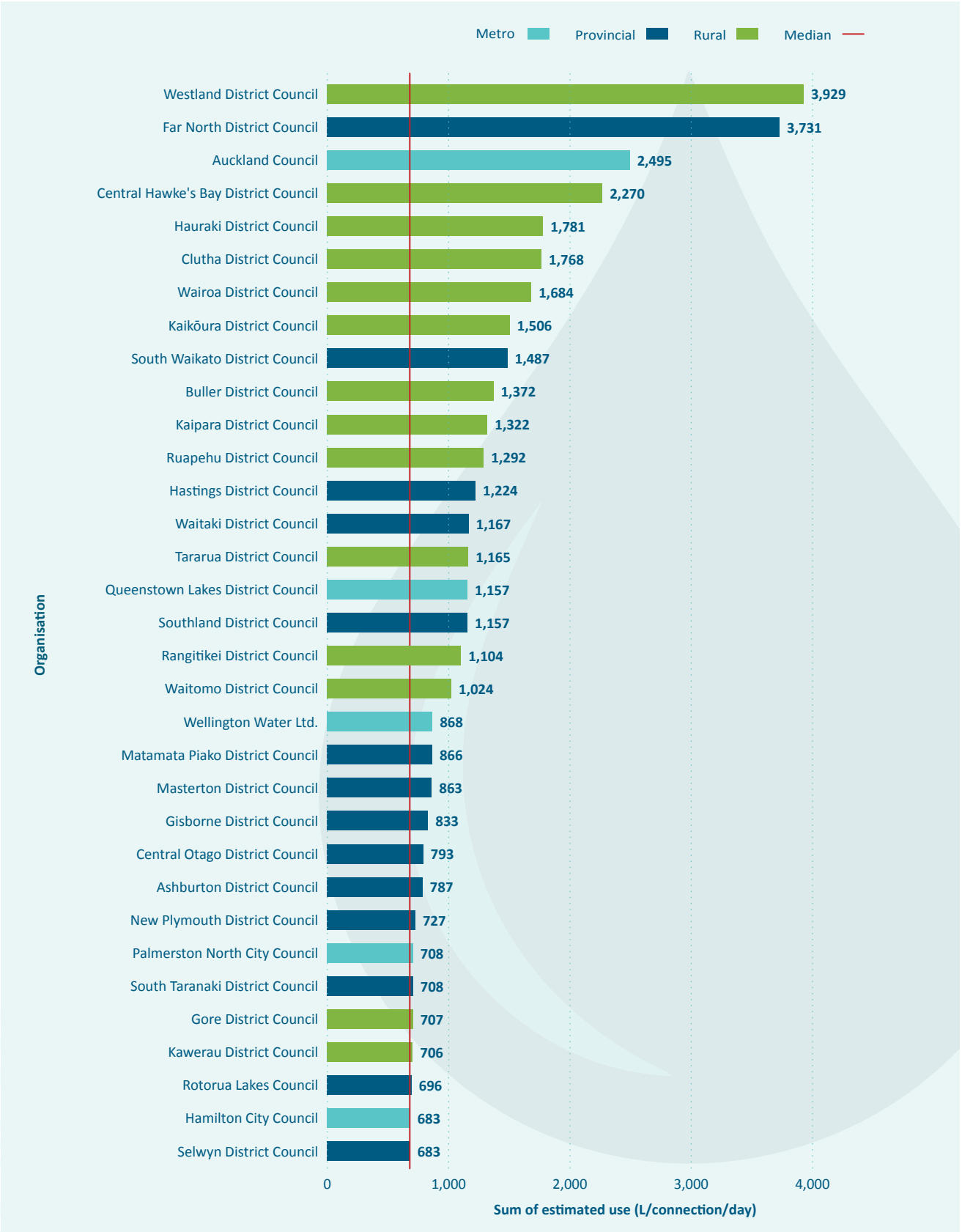


Figure 20: Residential water use per connection per day[26]



26 The response rate for the data that contributes to the calculation of this measure was:

- 97.9% D-EH7 non-residential water use 97.9%
- 75.2% D-EH4 water sent to network
- 97.2% D-RE2.1 CARL
- 96.8% D-RE2.2 UARL
- 96.8% D-RE1 Estimated loss

Figure 20: Residential water use per connection per day[24]

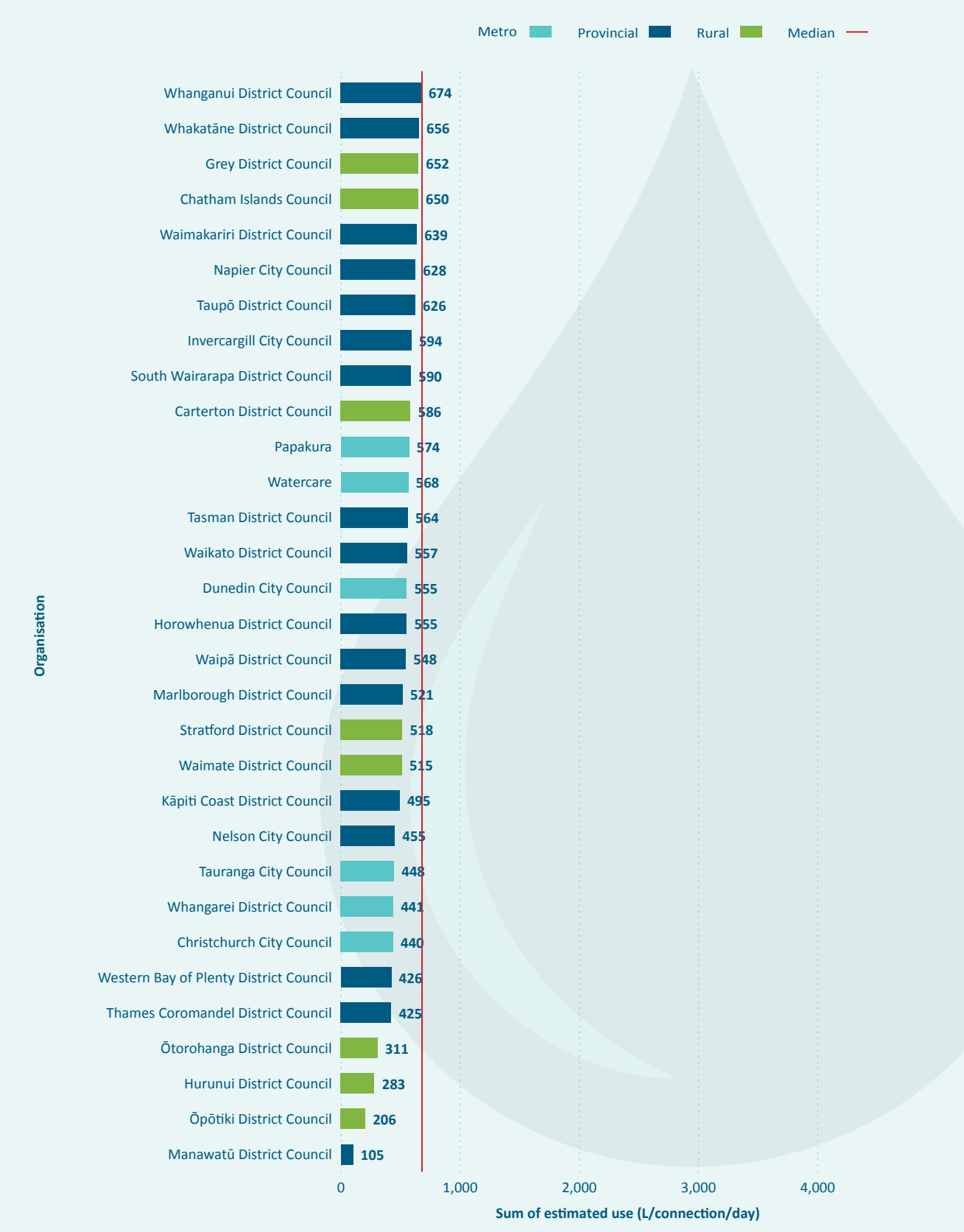
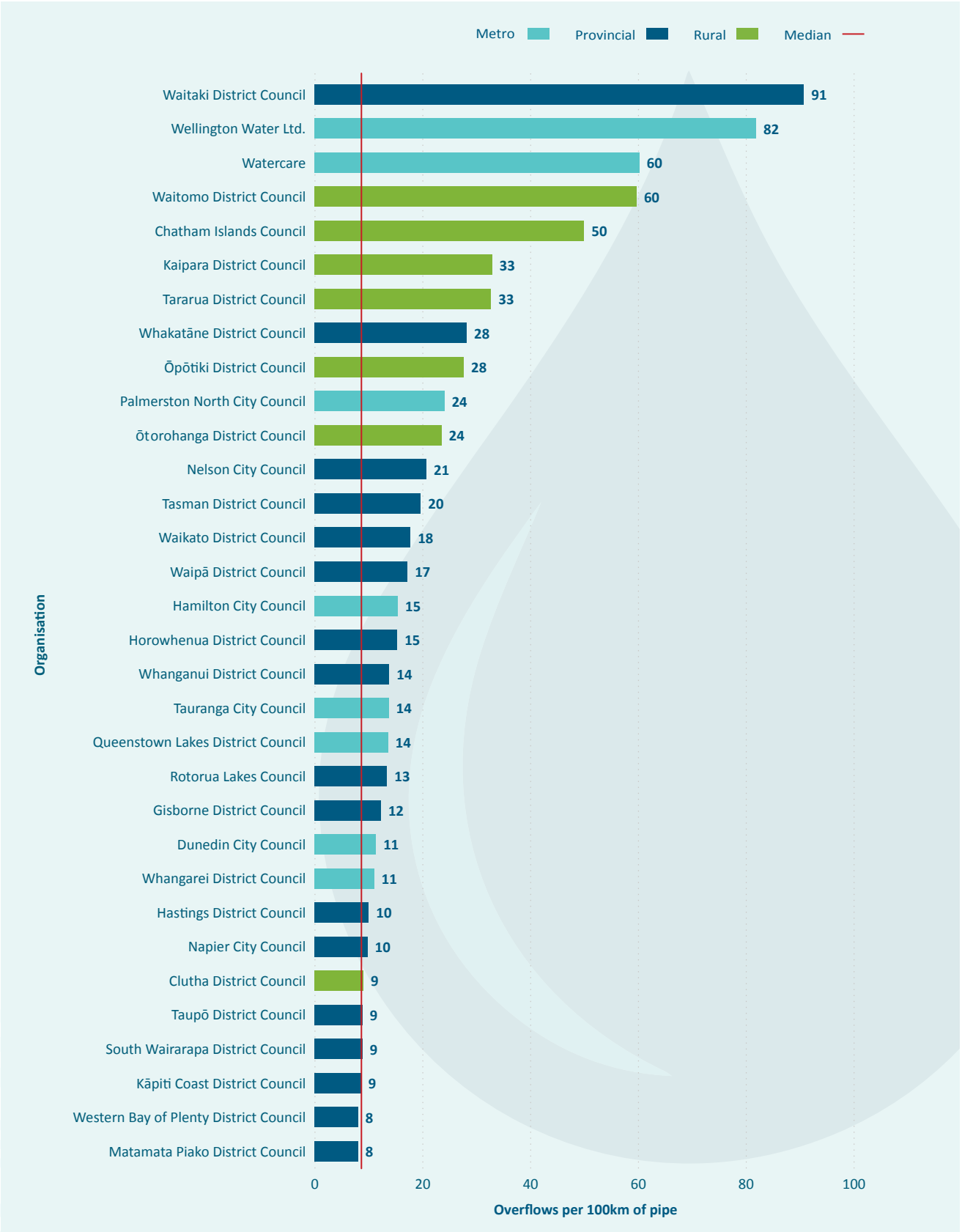


Figure 21: Overflows per 100km of wastewater pipe (new for 2025)[27]



27 The response rate for the data that contributes to the calculation of these figures ranged from 85.9% to 94.4% for overflow cause and from 83.1% to 95.8% for length of pipe.

Figure 21: Overflows per 100km of wastewater pipe (new for 2025)[25]

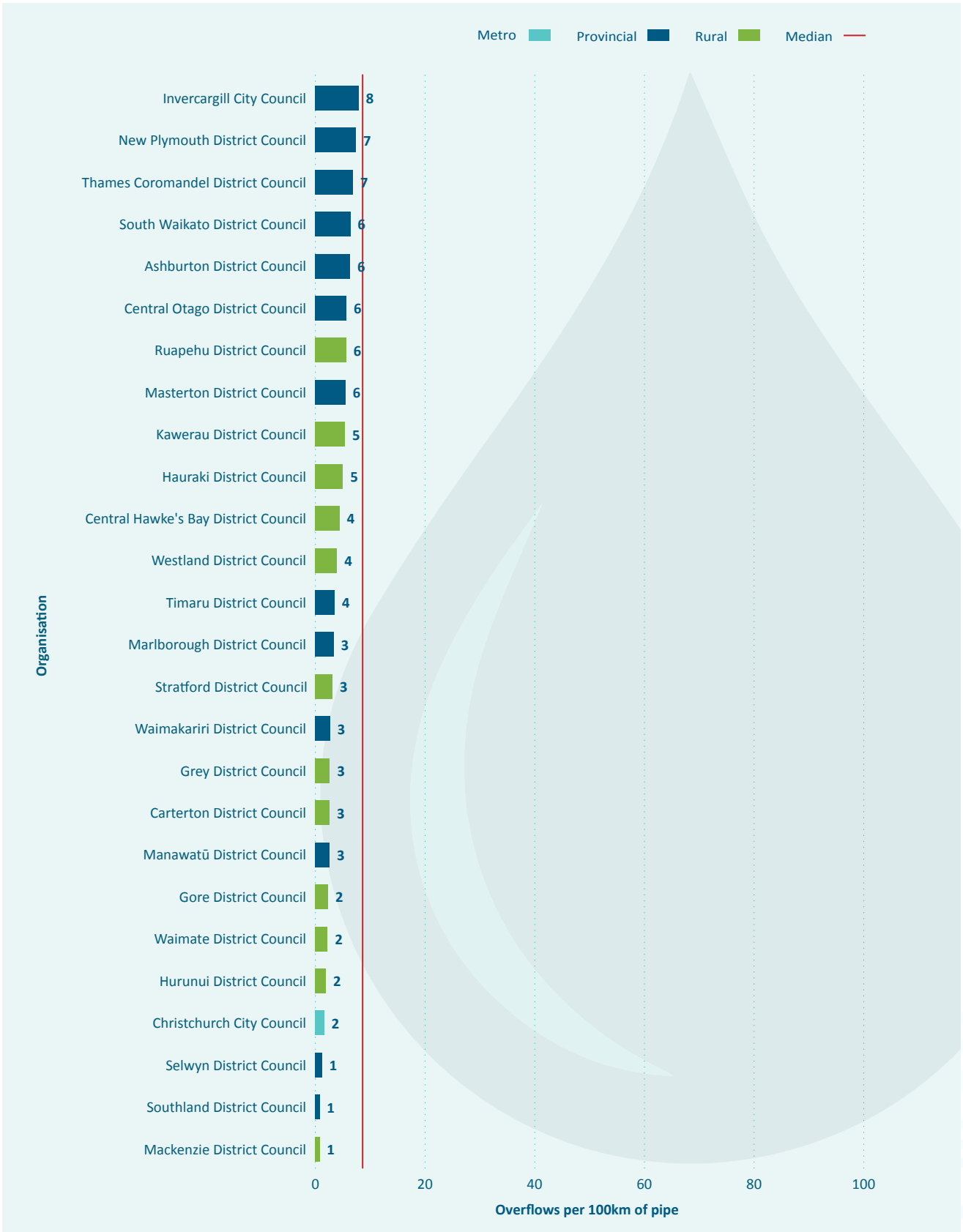
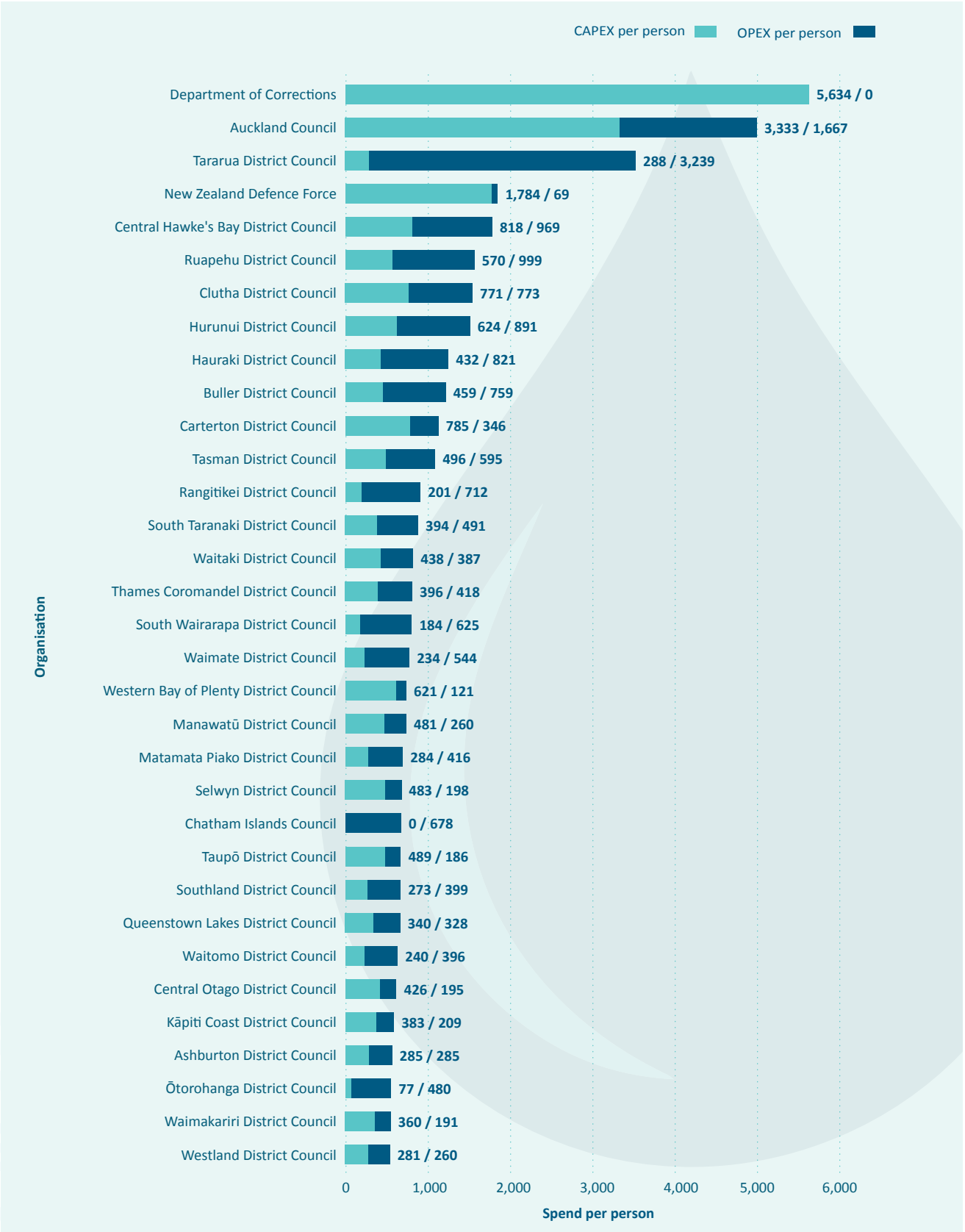


Figure 22: Drinking Water Capital (CAPEX) and Operational (OPEX) spend per person per year[28]



28 The response rate for the data that contributes to the calculation of this measure was:
94.3% D-ES2 total OPEX
97.1% Response rate D-E3 total forecast CAPEX
99.5% Response rate D-EH3 population served

Figure 22: Drinking Water Capital (CAPEX) and Operational (OPEX) spend per person per year[26]

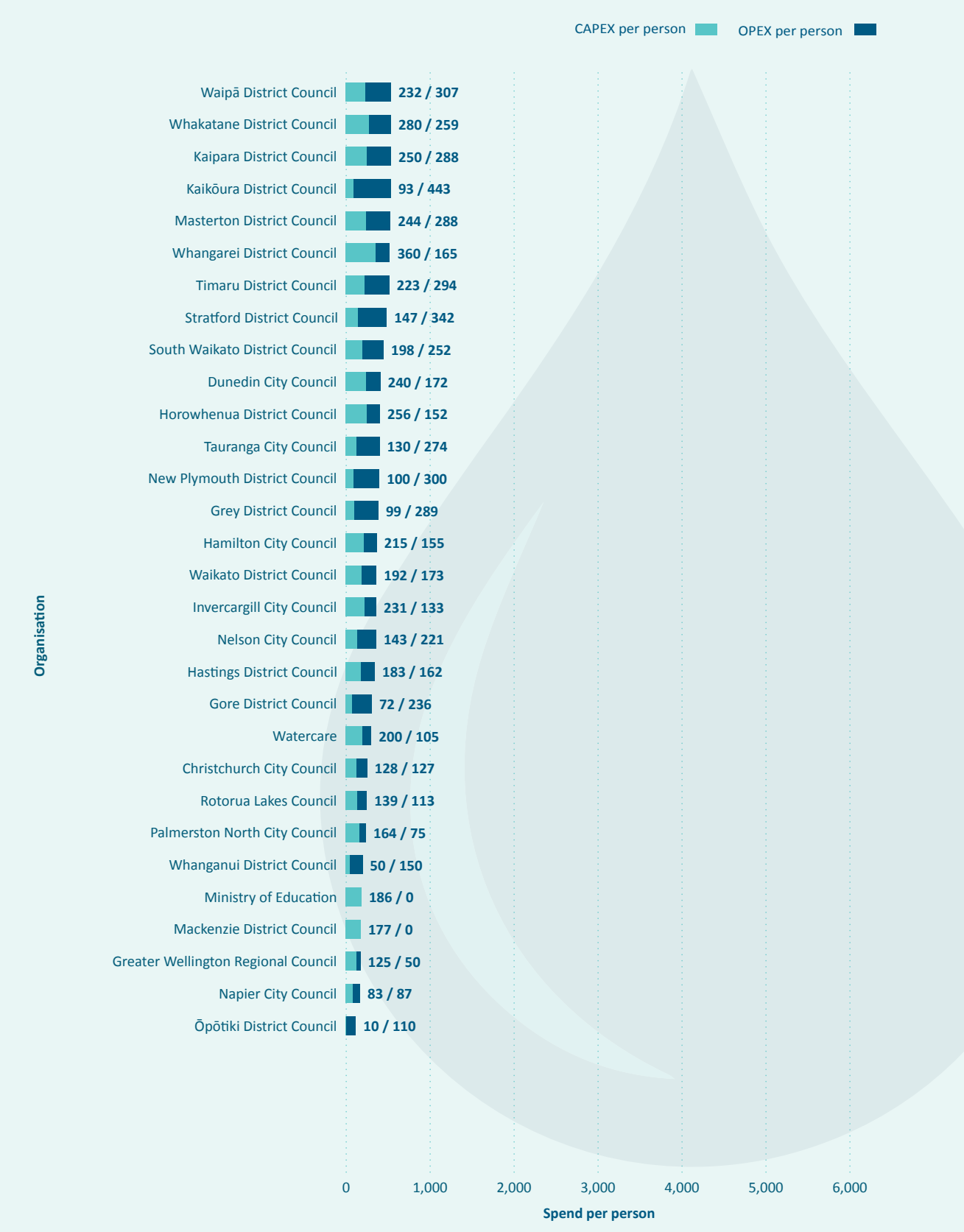






Photo supplied by Tiaki Wai

NETWORK ENVIRONMENTAL PERFORMANCE REPORTING

2025/26 Readable Submission

Field	Value
Organisation	Waimakariri District Council
Drinking Water Account ID	ACC-00008589
Submitted by	David Paz Lobon
Email	david.pazlobon@wmk.govt.nz

Prepared from the submitted NEPM workbook. Blank template rows, hidden lookup sheets and guidance definitions have been omitted. Reported values, reasons, confidence ratings and explanatory comments have been retained.

Contents

- Submission overview
- Drinking water organisation measures
- Drinking water networks
- Drinking water resource consents
- Drinking water abstraction points
- Wastewater organisation measures
- Wastewater networks
- Wastewater resource consents
- Operator feedback

Submission overview

Measure area	Drinking water	Wastewater
Organisation-level measures	100%	100%
Network-level measures	100%	n/a
Resource consents	100%	89%
Overall completion	81%	n/a

Drinking water organisation measures

Reference	Data point	Result	Units	Reason if unavailable
D-A1	Number of drinking water networks	11	-	
D-A2	Number of drinking water treatment plants	13	-	
D-A3	Number of reservoirs	31	-	
D-A4	Number of pump stations	8	-	
D-EH5	Water imported from other suppliers	0	m3/year	
D-EH6	Water exported to other suppliers	6000	m3/year	
D-R1	Median time to attend to an urgent fault	0.4	hours	
D-R2	Median time to attend to a non-urgent fault	1	hours	
D-R3	Median time to resolve an urgent fault	1	hours	
D-R4	Median time to resolve a non-urgent fault	3	hours	
D-R5	Number of planned interruptions	29	-	
D-R6	Number of third-party incidents	1	-	
D-R7	Number of unplanned interruptions	16	-	
D-R8	Number of urban service connections that experience an unplanned interruption for longer than eight hours	0	-	
D-R9.1	% of pipes that have received a condition grading	100	%	
D-R9.2	What methodology was used to assess the condition grade?	Renewals model	-	
D-R10	% of pipes in poor or very poor condition	10	%	
D-R12	Average age of water pipes	21	years	
D-R13.1	% of above-ground assets that have received a condition grading	100	%	
D-R13.2	What methodology was used to assess the condition grade?	Renewals model		
D-R14	% of above-ground assets in poor or very poor condition	12	%	
D-R19	Number of days when water restrictions were applied across some or all networks	0	days	
D-R20	% of connections affected by water restrictions	0	%	
D-R21	Have you adopted the FENZ Code of Practice (SNZ PAS 4509:2008)?	Yes	Yes/No	
D-R22	% of fire hydrants tested in the previous five years	0	%	
D-RE5	Do you have a water conservation education programme in place?	Yes	Yes/No	
D-RE6	Number of residential connections with water meters	6676	-	
D-RE7	Number of non-residential connections with water meters	688	-	
D-RE8	Number of abstraction points with water meters installed	29	-	
D-RE9	Frequency that water abstraction meters are calibrated/verified	5	years	
D-RE10	Number of water abstraction meters connected to telemetry systems	29	-	
D-RE11	Number of days for which a complete telemetry dataset has been recorded	365	days	
D-RE12	Electricity use	3900900	kWh/year	
D-RE13	Energy use from other fuels	16	GJ/year	
D-RE14	Energy generated		kWh/year	Measure not applicable
D-RE15	Volume of recycled water supplied to residential customers		m3/year	Measure not applicable
D-RE16	Volume of recycled water supplied to non-residential customers		m3/year	Measure not applicable
D-RE17	Volume of recycled water supplied to managed aquifer recharge		m3/year	Measure not applicable
D-RE18	Volume of urban stormwater reused in network		m3/year	Measure not applicable
D-RL1	Have you undertaken an assessment to identify critical assets?	Yes	Yes/No	
D-RL1	What methodology was used to determine criticality?	Internal criticality assesment framework	-	
D-RL2	Has an emergency response plan been developed?	Yes	Yes/No	
D-RL3	Has a business continuity plan been developed?	Yes	Yes/No	

Reference	Data point	Result	Units	Reason if unavailable
D-RL4	Date the emergency response plan was last reviewed.	25/06/2025	dd/mm/yyyy	
D-RL5	Date the business continuity plan was last reviewed.	10/12/2024	dd/mm/yyyy	
D-RL6	Date when an emergency response exercise was last conducted.	01/05/2025	dd/mm/yyyy	
D-RL7	Date when a business continuity plan exercise was last conducted.	07/11/2024	dd/mm/yyyy	
D-RL8	Do you have a strategic plan to address future changes in water supply demand?	Yes	Yes/No	
D-RL9	Number of days that outdoor water use was restricted.	0	-	
D-RL10	Number of days that outdoor water use was banned.	0	-	
D-RL11	Were other water restrictions imposed?	No	Yes/No	
D-ES1.1	Total capital expenditure (during the reporting period) to meet additional demand for drinking water services	3900000	$	
D-ES1.2	Total capital expenditure (during the reporting period) to replace existing assets or improve the levels of service for drinking water	5500000	$	
D-ES2	Total operating expenditure (during the reporting period) relating to drinking water services	10900000	$	
D-ES3	Total forecast capital expenditure (for the next one year reporting period) for drinking water	11400000	$	
D-ES4	Total forecast operational expenditure (for the next one year reporting period) for drinking water	11300000	$	
D-ES5	Total revenue received (for the reporting period) relating to drinking water	19100000	$	

Data collection notes

How have you collected your Drinking water organisation data?

Drinking water organization data was sourced from the Enterprise Resource Planning system (including the asset register, financial data, faults, and system interruptions), SCADA telemetry (flow and pressure), the Engineering Code of Practice, and the criticality and asset renewals model. Additional information on disaster response planning and business continuity was obtained from relevant reports.

How have you verified your Drinking water organisation data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Drinking water organisation data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Drinking water networks

11 reported records. Confidence ratings are shown for each applicable measure block.

CUS001 - Cust

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	12	km
D-A6 - No. of drinking water abstraction points [D-A6]	1	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	137	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	137	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	6	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	6	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	343	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	66,225.6	m3/year
D-EH7 - Volume of Non-residential water use [D-EH7]	3888	m3/year
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	1	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	376	kPa

Measure / confidence block	Reported value	Unit / scale
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	250	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	3,468.96	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	3,468.96	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	4,237.944	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	0.819	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	1,177.255	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

GAR001 - Garrymere

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	5	km
D-A6 - No. of drinking water abstraction points [D-A6]	1	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	42	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	42	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	0	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	0	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	105	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	50,457.6	m3/year
Reason information not available [D-EH7]	Measure not applicable	--
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	1	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	642	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	150	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	2,317.342	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	2,317.342	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	2,866.272	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	0.808	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	3,140.265	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

KAI003 - Kaiapoi

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	187	km
D-A6 - No. of drinking water abstraction points [D-A6]	7	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	5686	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	5850	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	193	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	199	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	14625	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	1,671,408	m3/year
D-EH7 - Volume of Non-residential water use [D-EH7]	128952	m3/year
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	7	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	400	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	250	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	356,749.114	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	356,749.114	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	116,298.61	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	3.068	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	555.301	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

MAN009 - Mandeville

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	90	km
D-A6 - No. of drinking water abstraction points [D-A6]	3	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	966	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	992	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	0	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	0	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	2480	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	460,425.6	m3/year
Reason information not available [D-EH7]	Measure not applicable	--
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	3	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	488	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	150	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	150,552.775	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	150,552.775	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	40,996.042	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	3.672	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	855.813	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

OHO001 - Ohoka

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	9	km
D-A6 - No. of drinking water abstraction points [D-A6]	2	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	139	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	139	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	0	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	0	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	348	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	50,457.6	m3/year
Reason information not available [D-EH7]	Measure not applicable	--
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	2	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	401	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	150	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	7,025.52	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	7,025.52	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	3,665.544	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	1.917	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	856.058	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

OXF101 - Oxford Rural 1

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	148	km
D-A6 - No. of drinking water abstraction points [D-A6]	3	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	439	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	439	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	0	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	0	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	1098	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	558,187.2	m3/year
Reason information not available [D-EH7]	Measure not applicable	--
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	3	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	850	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	150	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	215,706.24	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	215,706.24	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	85,230.364	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	2.531	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	2,137.367	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

OXF103 - Oxford Urban - Rural 2

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	135	km
D-A6 - No. of drinking water abstraction points [D-A6]	3	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	1278	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	1278	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	33	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	33	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	3195	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	671,716.8	m3/year
D-EH7 - Volume of Non-residential water use [D-EH7]	21384	m3/year
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	3	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	690	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	250	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	239,868.365	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	239,868.365	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	69,758.23	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	3.439	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	879.937	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

PEG001 - Woodend-Pegasus

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	177	km
D-A6 - No. of drinking water abstraction points [D-A6]	3	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	4368	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	4368	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	74	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	74	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	10920	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	1,204,675.2	m3/year
D-EH7 - Volume of Non-residential water use [D-EH7]	47952	m3/year
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	3	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
D-EH18 - Amount of backwash water used [D-EH18]	15106	m3/year
D-EH20.2 - Disposal route for backwash water [D-EH20.2]	Other	Selection
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	453	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	250	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	120,506.006	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	120,506.006	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	110,421.016	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	1.091	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	649.943	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

RAN001 - Rangiora

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	273	km
D-A6 - No. of drinking water abstraction points [D-A6]	2	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	7903	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	7994	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	369	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	373	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	19985	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	2,847,700.8	m3/year
D-EH7 - Volume of Non-residential water use [D-EH7]	241704	m3/year
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	2	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	492	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	250	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	851,779.795	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	851,779.795	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	204,665.41	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	4.162	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	601.21	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

WAI011 - Waikuku Beach

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	17	km
D-A6 - No. of drinking water abstraction points [D-A6]	1	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	484	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	484	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	3	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	3	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	1210	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	214,444.8	m3/year
D-EH7 - Volume of Non-residential water use [D-EH7]	1944	m3/year
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	1	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	417	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	250	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	59,822.951	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	59,822.951	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	10,129.547	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	5.906	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	864.247	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

WES004 - West Eyreton

Measure / confidence block	Reported value	Unit / scale
D-A5 - Length of pipe in network [D-A5]	87	km
D-A6 - No. of drinking water abstraction points [D-A6]	3	--
D-A7 - Main drinking water network source type [D-A7]	Bore	Selection
D-EH1.1 - No. of residential connections in the drinking water network [D-EH1.1]	406	--
Method of determining No. connections [D-EH1.1]	Number of connections known	--
D-EH1.2 - No. of residential units in the drinking water network [D-EH1.2]	406	--
Method of determining No. units [D-EH1.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH1.2]	Rating database	Comments
D-EH2.1 - No. of non-residential connections in the drinking water network [D-EH2]	0	--
Method of determining No. connections [D-EH2.1]	Number of connections known	--
D-EH2.2 - No. of non-residential units in the drinking water network [D-EH2.2]	0	--
Method of determining No. units [D-EH2.2]	Other	--
If selecting "Other" for method, please provide comment [D-EH2.2]	Rating database	Comments
D-EH3 - Total population served by the drinking water network [D-EH3]	1015	--
Confidence (D-A5 to D-EH3)	4 - Reliable	1 to 5
D-EH4 - Total volume of water supplied to the drinking water network [D-EH4]	214,444.8	m3/year
Reason information not available [D-EH7]	Measure not applicable	--
Confidence (D-EH4 & D-EH7)	1 - Very Uncertain	1 to 5
D-EH8 - Number of resource consents that are held [D-EH8]	3	--
Confidence (D-EH8)	5 - Highly Reliable	1 to 5
Reason information not available [D-EH17]	Measure not applicable	--
Reason information not available [D-EH20.1]	Measure not applicable	--
Reason information not available [D-EH18]	Measure not applicable	--
Reason information not available [D-EH20.2]	Measure not applicable	--
Reason information not available [D-EH19]	Measure not applicable	--
Reason information not available [D-EH20.3]	Measure not applicable	--
Confidence (D-EH17 to D-EH20.3)	5 - Highly Reliable	1 to 5
D-EH21 - Have you assessed if fish passage is impeded? (Not applicable for non-surface sources) [D-EH21]	Measure not applicable	Selection
D-EH22 - Are processes in place to prevent fish ingress? (Not applicable for non-surface sources) [D-EH22]	Measure not applicable	Selection
Confidence (D-EH21 & D-EH22)	5 - Highly Reliable	1 to 5
D-R15 - Average system pressure [D-R15]	672	kPa
D-R16 - Has a reference level for water pressure been set? [D-R16]	Yes	Selection
D-R17 - Reference level for water pressure (if set) [D-R17]	150	kPa
D-R18 - Number of properties below reference level of pressure [D-R18]	0	--

Measure / confidence block	Reported value	Unit / scale
Confidence (D-R15 to D-R18)	4 - Reliable	1 to 5
D-RE1 - Total drinking water loss across network [D-RE1]	68,503.2	m3/year
Does this include private water loss? [D-RE1]	No	Yes/No
D-RE2.1 - Current annual real loss for network (CARL) [D-RE2.1]	68,503.2	m3/year
D-RE2.2 - Unavoidable annual real losses (UARL) [D-RE2.2]	41,621.209	m3/year
D-RE3 - Infrastructure leakage index for network (ILI) [D-RE3]	1.646	--
Confidence (D-RE1 to D-RE3)	3 - Less Reliable	1 to 5
D-RE4 - Median residential water consumption [D-RE4]	984.828	L/day/unit
Confidence (D-RE4)	3 - Less Reliable	1 to 5

Data collection notes

How have you collected your Drinking water network data?

Water Losses and Water Resource Use: Data were collected from the Calculated Losses spreadsheet, which uses the night-flow method to estimate water losses. Flow meter and pressure sensor data from SCADA, together with network information from GIS, are entered into the spreadsheet to generate estimates of water loss and water usage.

How have you verified your Drinking water network data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Drinking water network data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Drinking water resource consents

Supply	Type	Reference	Purpose	Grant	Expiry	Exercised	Status	Issue	Comment	Confidence
CUS001	Water permit (water take)	CRC990930.1	to take and use groundwater	07/03/2008	27/08/2034	Yes	Active			5 - Highly Reliable
GAR001	Water permit (water take)	CRC971822	to take and use groundwater	08/04/1997	02/04/2032	Yes	Active			5 - Highly Reliable
KAI003	Water permit (water take)	CRC253378	to take and use groundwater	03/03/2025	10/05/2037	Yes	Active			5 - Highly Reliable
KAI003	Water permit (water take)	CRC021737	to take and use groundwater	13/05/2002	10/05/2037	Yes	Active			5 - Highly Reliable
KAI003	Water permit (water take)	CRC970304	to take and use groundwater	09/09/1996	04/09/2031	Yes	Active			5 - Highly Reliable
KAI003	Water permit (water take)	CRC970305	to take and use groundwater	09/09/1996	04/09/2031	Yes	Active	Exceeded volume	Exceeded on 24/12/2025 due to high summer demand. This was resolved by changing the bore pump configuration so it alternates with other bores during periods of high demand.	5 - Highly Reliable
KAI003	Water permit (water take)	CRC970306	to take and use groundwater	09/09/1996	04/09/2031	Yes	Active			5 - Highly Reliable
KAI003	Water permit (water take)	CRC990929	to take and use groundwater	24/12/1998	23/12/2033	Yes	Active			5 - Highly Reliable
KAI003	Water permit (water take)	CRC990933	to take and use groundwater	15/01/1999	13/01/2034	No	Active			5 - Highly Reliable
MAN009	Water permit (water take)	CRC111974	to take and use groundwater	13/10/2011	22/12/2039	No	Active			5 - Highly Reliable
MAN009	Water permit (water take)	CRC990925	to take and use groundwater	26/04/1999	24/04/2034	No	Active			5 - Highly Reliable
MAN009	Water permit (water take)	CRC255334	to take and use groundwater	24/12/2004	22/12/2039	Yes	Active			5 - Highly Reliable
OHO001	Water permit (water take)	CRC990932	to take and use groundwater	04/04/2006	31/03/2041	No	Active			5 - Highly Reliable
OHO001	Water permit (water take)	CRC166054	to take and use groundwater	17/03/2016	17/03/2051	Yes	Active			5 - Highly Reliable
OXF101	Water permit (water take)	CRC144773	to take and use groundwater	14/12/2015	14/12/2050	No	Active			5 - Highly Reliable
OXF101	Water permit (water take)	CRC990926.1	to take and use groundwater	04/08/1999	04/08/2034	No	Active			5 - Highly Reliable
OXF101	Water permit (water take)	CRC251483	to take and use groundwater	06/07/2018	06/07/2053	Yes	Active	Exceeded flow rate	Exceeded on multiple occasions between 13/10/2025 and 17/10/2025, and again on 03/11/2025, due to operational issues shortly after commissioning. This was resolved by revising the operating procedures to prevent exceedances during bore flushing operations.	5 - Highly Reliable
OXF103	Water permit (water take)	CRC063540.1	to take and use groundwater	02/11/2006	13/06/2041	Yes	Active			5 - Highly Reliable
OXF103	Water permit (water take)	CRC253241	to take and use groundwater	05/11/2015	05/11/2025	Yes	Active			5 - Highly Reliable
OXF103	Water permit (water take)	CRC166592	to take and use groundwater	21/05/2001	18/05/2036	No	Active			5 - Highly Reliable
RAN001	Water permit (water take)	CRC252680	to take and use groundwater	02/10/2009	02/10/2044	Yes	Active			5 - Highly Reliable

Supply	Type	Reference	Purpose	Grant	Expiry	Exercised	Status	Issue	Comment	Confidence
RAN001	Water permit (water take)	CRC160704	to take and use groundwater	11/02/1998	11/12/2032	No	Active			5 - Highly Reliable
WES004	Water permit (water take)	CRC186214	to take and use groundwater	15/12/2009	10/12/2044	Yes	Active			5 - Highly Reliable
WES004	Water permit (water take)	CRC990927	to take and use groundwater	04/04/2006	24/04/2034	No	Active			5 - Highly Reliable
WES004	Water permit (water take)	CRC990953	to take and use groundwater	01/12/2000	11/06/2034	No	Active			5 - Highly Reliable
WAI011	Water permit (water take)	CRC190900	to take and use groundwater	21/04/1997	16/04/2032	Yes	Active			5 - Highly Reliable
PEG001	Water permit (water take)	CRC074057	to take and use groundwater	07/03/2008	28/02/2043	Yes	Active			5 - Highly Reliable
PEG001	Water permit (water take)	CRC167260	to take and use groundwater	14/12/2007	12/12/2042	Yes	Active			5 - Highly Reliable
PEG001	Water permit (water take)	CRC167262	to take and use groundwater	26/10/2010	21/11/2043	Yes	Active			5 - Highly Reliable

Data collection notes

How have you collected your Drinking water consent data?

Data were collected by querying the ECan Consent Search website using the resource consent inventory dataset.

How have you verified your Drinking water consent data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Drinking water consent data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Drinking water abstraction points

Supply	Point	Consent	Met	Exceedance	Rate	Daily	Weekly	Annual	Confidence
CUS001	1401 Oxford Road, CUST	CRC990930.1	Yes		22	1900		338000	5 - Highly Reliable
GAR001	545 Birch Hill Road, LOBURN	CRC971822	Yes		4.5	389			5 - Highly Reliable
KAI003	Cass Street, Kaiapoi	CRC253378	Yes		60		60480	1896976	5 - Highly Reliable
KAI003	11 Ashley Place, KAIAPOI	CRC021737	Yes		60			1886976	5 - Highly Reliable
KAI003	Porter Place, KAIAPOI	CRC970304	Yes		76	3010			5 - Highly Reliable
KAI003	15a Cass Street, KAIAPOI	CRC970305	No	55.4	76	3010			5 - Highly Reliable
KAI003	10 Smith Street, KAIAPOI	CRC970306	Yes		100	5760			5 - Highly Reliable
KAI003	Peraki Street, KAIAPOI	CRC990929	Yes		100	8640			5 - Highly Reliable
KAI003	2 Beach Road, PINES/KAIRAKI	CRC990933	Yes		26	2246			5 - Highly Reliable
MAN009	1121 Tram Road, MANDEVILLE NORTH	CRC111974	Yes		10	864		25920	5 - Highly Reliable
MAN009	252 Swannanoa Road, RANGIORA	CRC990925	Yes		5	432			5 - Highly Reliable
MAN009	937 Two Chain Road, Swannanoa	CRC255334	Yes		35		30845	618310	5 - Highly Reliable
OHO001	352a Bradleys Road, OHOKA	CRC990932	Yes		18			248030	5 - Highly Reliable
OHO001	Part RS 2899	CRC166054	Yes		18			248030	5 - Highly Reliable
OXF101	Western end of Rockford Road, Rockford	CRC144773	Yes		7	2600		660000	5 - Highly Reliable
OXF101	Rockford Rd, VIEW HILL	CRC990926.1	Yes		23	1987			5 - Highly Reliable
OXF101	Road Reserve adj. 342 McPhedrons Road, View Hill, Oxford	CRC251483	No	332.2	30	2592		800000	5 - Highly Reliable
OXF103	Domain Road, OXFORD	CRC063540.1	Yes		55	4760		714000	5 - Highly Reliable
OXF103	3719 South Eyre Road, Oxford	CRC253241	Yes		60		54432	965000	5 - Highly Reliable
OXF103	Sladdens Farm Road, OXFORD	CRC166592	Yes		12	1,987.2			5 - Highly Reliable
RAN001	Raven Street North, Kaiapoi	CRC252680	Yes		425	36720		6328400	5 - Highly Reliable
RAN001	Dudley Park, Ayers Street and River Road, Rangiora	CRC160704	Yes		300	25920			5 - Highly Reliable
WES004	North Eyre Road, West Eyreton	CRC186214	Yes		37		15120	445000	5 - Highly Reliable
WES004	185 Worlingham Road, WEST EYRETON	CRC990927	Yes		11			239258	5 - Highly Reliable
WES004	5 Earlys Road, CUST	CRC990953	Yes		8	691			5 - Highly

Supply	Point	Consent	Met	Exceedance	Rate	Daily	Weekly	Annual	Confidence
									Reliable
WAI011	Kings Avenue, Waikuku	CRC190900	Yes		52	3456		518400	5 - Highly Reliable
PEG001	202 Gladstsone Road, WOODEND	CRC074057	Yes		80	6912		1200000	5 - Highly Reliable
PEG001	Main North Road, RANGIORA	CRC167260	Yes		50	4320		576000	5 - Highly Reliable
PEG001	Gladstone Road, PEGASUS TOWN	CRC167262	Yes		142	12288		1756015	5 - Highly Reliable

Data collection notes

How have you collected your Drinking water abstraction data?

Data were collected by querying the ECan Consent Search website using the resource consent inventory dataset.

How have you verified your Drinking water abstraction data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Drinking water abstraction data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Wastewater organisation measures

Reference	Data point	Result	Units	Confidence	Reason if unavailable
W-A1	Number of wastewater pump stations	58	-	4 - Reliable	
W-A2.1	Total length of gravity wastewater pipes	403	km	4 - Reliable	
W-A2.2	Total length of pressured wastewater pipes	191	km	4 - Reliable	
W-A2.3	Total length of vacuum wastewater pipes		km	4 - Reliable	Measure not applicable
W-A3	Total length of combined wastewater and stormwater pipes		km	4 - Reliable	Measure not applicable
W-A4	Wastewater imported for treatment from other wastewater networks		m3/year	4 - Reliable	Measure not applicable
W-A5	Wastewater exported for treatment by another wastewater network		m3/year	4 - Reliable	Measure not applicable
W-A6	Number of wastewater treatment plants	3	-	5 - Highly Reliable	
W-EH1.1	Number of residential connections in the wastewater network to gravity sewers	17489	-	3 - Less Reliable	
W-EH1.2	Number of residential connections in the wastewater network to pressure sewers	1740	-	3 - Less Reliable	
W-EH1.3	Number of residential connections in the wastewater network to vacuum sewers		-	3 - Less Reliable	Measure not applicable
W-EH2.1	Number of non-residential connections in the wastewater network to gravity sewers	675	-	3 - Less Reliable	
W-EH2.2	Number of non-residential connections in the wastewater network to pressure sewers	3	-	3 - Less Reliable	
W-EH2.3	Number of non-residential connections in the wastewater network to vacuum sewers		-	3 - Less Reliable	Measure not applicable
W-EH10	Number of overflows caused by blockages	5	-	4 - Reliable	
W-EH11	Number of times that wastewater overflows were caused by plant failure or equipment damage	0	-	4 - Reliable	
W-EH12	Number of times that wastewater overflows were caused by capacity being exceeded in the wastewater network	0	-	4 - Reliable	
W-EH13	Number of times that wastewater overflows were caused by capacity being exceeded in combined wastewater and stormwater pipes/networks		-	4 - Reliable	Measure not applicable
W-EH14	Number of wastewater overflows resulting from causes not identified above	1	-	4 - Reliable	
W-EH15	Number of wastewater overflows on private properties attributable to service provider.	9	-	4 - Reliable	
W-EH16	How are overflows reported to the network operator?	Both	Verbal/ Written/ Both/ None	4 - Reliable	
W-EH17	Are overflows recorded through SCADA?	Yes	Yes/No	4 - Reliable	
W-EH18	If overflows are calculated, what methodology is used?		Selection	4 - Reliable	Measure not applicable
W-EH19	Number of hours where the wastewater treatment plant processes are fully bypassed	0	-	4 - Reliable	
W-EH23	Number of trade waste consents	2	-	4 - Reliable	
W-EH24	Number of times that Trade waste consents were breached	321	-	4 - Reliable	
W-EH25	Describe any actions undertaken due to trade waste consent holders breaching consent conditions	A penalty fee was applied when the consented condition threshold was exceeded.	comment	4 - Reliable	
W-R1	Median time to attend to a fault	1	hours	3 - Less Reliable	
W-R2	Median time to resolve a fault	3	hours	3 - Less Reliable	
W-R7	Number of planned maintenance activities	0	-	3 - Less Reliable	
W-R8	Number of third-party incidents	6	-	3 - Less Reliable	
W-R9.1	% of wastewater pipes that have received a condition grading	100	%	4 - Reliable	
W-R9.2	What methodology was used to assess the condition grade?	Renewals model	selection	4 - Reliable	

Reference	Data point	Result	Units	Confidence	Reason if unavailable
W-R10	% of wastewater pipes in poor or very poor condition	3	%	4 - Reliable	
W-R11	Average age of wastewater pipes	24	years	4 - Reliable	
W-R12	% of the wastewater pipes that have had CCTV inspections carried out in the last five years	16	%	4 - Reliable	
W-R13.1	% of above-ground assets that have received a condition grading	100	%	4 - Reliable	
W-R13.2	What methodology was used to assess the condition grade?	Renewals model	selection	4 - Reliable	
W-R14	% of above-ground assets in poor or very poor condition	9	%	4 - Reliable	
W-RE1	Grid electricity use	4432595	kWh/year	4 - Reliable	
W-RE2	Energy use from other fuels	7	GJ/year	4 - Reliable	
W-RL1.1	Have you undertaken an assessment to identify critical wastewater assets?	Yes	Yes/No	4 - Reliable	
W-RL1.2	What methodology was used to determine criticality?	Internal criticality assesment framework	selection	4 - Reliable	

Data collection notes

How have you collected your Wastewater organisation data?

General Information: Data was collected from GIS and Pipe and Instrument Diagrams.
Environmental and public health: Data was exported from the service request and work order system.
Services are reliable: Data was exported from the asset criticality and renewals model. Energy efficiency was sourced from the power meter readings and Diesel Generators usage from Scada.

How have you verified your Wastewater organisation data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Wastewater organisation data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Wastewater networks

3 reported records. Confidence ratings are shown for each applicable measure block.

WWN-00357 - Oxford

Measure / confidence block	Reported value	Unit / scale
W-A2 - Total length of wastewater pipes [W-A2]	30	km
Confidence (W-A2)	4 - Reliable	1 to 5
W-A7 - Wastewater treatment processes - select the highest treatment level that applies [W-A7]	Tertiary	Selection
W-A8 - Receiving environment for treated wastewater [W-A8]	Land	Selection
W-A9 - Volume of wastewater treated at treatment plant [W-A9]	164815	m3/year
W-A9.1 - Volume of wastewater treated at treatment plant - Average nominal flows [W-A9.1]	6	L/s
W-A9.2 - Volume of wastewater treated at treatment plant - Average peak flows [W-A9.2]	20	L/s
W-A9.3 - Reason for peak flow? [W-A9.3]	Significant Weather Events	selection
Reason information not available [W-A10]	Measure Not Applicable	--
Reason information not available [W-A11]	Measure not applicable	--
W-A12 - Volume of treated wastewater applied to land [W-A12]	160332	m3/year
Confidence (W-A7-W-A12)	4 - Reliable	1 to 5
W-EH1 - Number of residential connections in wastewater network [W-EH1]	886	--
Method of determining No. connections [W-EH1]	Other	--
W-EH2 - Number of non-residential connections in wastewater network [W-EH2]	36	--
Method of determining No. connections [W-EH2]	Other	--
W-EH3 - Total population served by Wastewater network [W-EH3]	2215	--
Confidence (W-EH1 to W-EH3)	4 - Reliable	1 to 5
W-EH4 - Number of resource consents that are held for wastewater treatment plant [W-EH4]	3	--
W-EH9 - Wastewater overflow regulation approach(s) under local regional plan [W-EH9]	Other	Selection
Confidence (W-EH4 to W-EH9)	4 - Reliable	1 to 5
W-EH20 - Wastewater treatment plant peak flow / nominal flow ratio [W-EH20]	3.6	--
W-EH21 - What design standards do you use for calculating the capacity of wastewater network? [W-EH21]	Internal code of practice	Selection
W-EH22 - Levels of service for preventing wastewater overflows due to stormwater ingress [W-EH22]	18	%
Confidence (W-EH21 to W-EH23)	5 - Highly Reliable	1 to 5
Reason information not available [W-RE3]	Measure Not Applicable	--
W-RE4 - Wastewater effluent disposal emissions [W-RE4]	12	tCO2e/year
Reason information not available [W-RE5]	Measure not applicable	--
Reason information not available [W-RE6]	Measure not applicable	--
Confidence (W-RE3to W-RE6)	4 - Reliable	1 to 5
W-RE7 - Production of biosolids [W-RE7]	157.638	m3/year

Measure / confidence block	Reported value	Unit / scale
W-RE8 - % of dry solids in biosolids [W-RE8]	3.4	%
Reason information not available [W-RE9]	Measure not applicable	--
Reason information not available [W-RE10]	Measure not applicable	--
Reason information not available [W-RE11]	Measure not applicable	--
W-RE12 - Disposal of biosolids to other routes [W-RE12]	157.638	tonnes/year
Reason information not available [W-RE13]	Measure not applicable	--
Confidence (W-RE7 to W-RE13)	4 - Reliable	1 to 5

WWN-00356 - Eastern Districts

Measure / confidence block	Reported value	Unit / scale
W-A2 - Total length of wastewater pipes [W-A2]	423	km
Confidence (W-A2)	4 - Reliable	1 to 5
W-A7 - Wastewater treatment processes - select the highest treatment level that applies [W-A7]	Tertiary	Selection
W-A8 - Receiving environment for treated wastewater [W-A8]	Marine	Selection
W-A9 - Volume of wastewater treated at treatment plant [W-A9]	4,574,038.388	m3/year
W-A9.1 - Volume of wastewater treated at treatment plant - Average nominal flows [W-A9.1]	145	L/s
W-A9.2 - Volume of wastewater treated at treatment plant - Average peak flows [W-A9.2]	299	L/s
W-A9.3 - Reason for peak flow? [W-A9.3]	Significant Weather Events	selection
W-A10 - Volume of trade waste treated at treatment plant [W-A10]	132401	m3/year
W-A11 - Volume of septage imported for treatment [W-A11]	9770	m3/year
Reason information not available [W-A12]	Measure not applicable	--
Confidence (W-A7-W-A12)	4 - Reliable	1 to 5
W-EH1 - Number of residential connections in wastewater network [W-EH1]	13858	--
Method of determining No. connections [W-EH1]	Other	--
W-EH2 - Number of non-residential connections in wastewater network [W-EH2]	566	--
Method of determining No. connections [W-EH2]	Other	--
W-EH3 - Total population served by Wastewater network [W-EH3]	34645	--
Confidence (W-EH1 to W-EH3)	4 - Reliable	1 to 5
W-EH4 - Number of resource consents that are held for wastewater treatment plant [W-EH4]	8	--
W-EH9 - Wastewater overflow regulation approach(s) under local regional plan [W-EH9]	Other	Selection
Confidence (W-EH4 to W-EH9)	4 - Reliable	1 to 5
W-EH20 - Wastewater treatment plant peak flow / nominal flow ratio [W-EH20]	2.1	--
W-EH21 - What design standards do you use for calculating the capacity of wastewater network? [W-EH21]	Internal code of practice	Selection
W-EH22 - Levels of service for preventing wastewater overflows due to stormwater ingress [W-EH22]	18	%
Confidence (W-EH21 to W-EH23)	5 - Highly Reliable	1 to 5
Reason information not available [W-RE3]	Measure Not Applicable	--
W-RE4 - Wastewater effluent disposal emissions [W-RE4]	223	tCO2e/year
Reason information not available [W-RE5]	Measure not applicable	--
W-RE6 - Wastewater sludge disposal emissions [W-RE6]	631	tCO2e/year
Confidence (W-RE3to W-RE6)	4 - Reliable	1 to 5
W-RE7 - Production of biosolids [W-RE7]	541	m3/year
W-RE8 - % of dry solids in biosolids [W-RE8]	36	%
W-RE9 - % disposal of biosolids to onsite stockpile ratio [W-RE9]	100	%
Reason information not available [W-RE10]	Measure not applicable	--

Measure / confidence block	Reported value	Unit / scale
Reason information not available [W-RE11]	Measure not applicable	--
Reason information not available [W-RE12]	Measure not applicable	--
W-RE13 - Last year plant/pond was desludged (if applicable) [W-RE13]	2016	yyyy
Confidence (W-RE7 to W-RE13)	4 - Reliable	1 to 5

WWN-00356 - Eastern Districts

Measure / confidence block	Reported value	Unit / scale
W-A2 - Total length of wastewater pipes [W-A2]	141	km
Confidence (W-A2)	4 - Reliable	1 to 5
W-A7 - Wastewater treatment processes - select the highest treatment level that applies [W-A7]	Tertiary	Selection
W-A8 - Receiving environment for treated wastewater [W-A8]	Marine	Selection
W-A9 - Volume of wastewater treated at treatment plant [W-A9]	1,525,640.489	m3/year
W-A9.1 - Volume of wastewater treated at treatment plant - Average nominal flows [W-A9.1]	48	L/s
W-A9.2 - Volume of wastewater treated at treatment plant - Average peak flows [W-A9.2]	139	L/s
W-A9.3 - Reason for peak flow? [W-A9.3]	Significant Weather Events	selection
Reason information not available [W-A10]	Measure Not Applicable	--
Reason information not available [W-A11]	Measure not applicable	--
Reason information not available [W-A12]	Measure not applicable	--
Confidence (W-A7-W-A12)	4 - Reliable	1 to 5
W-EH1 - Number of residential connections in wastewater network [W-EH1]	4485	--
Method of determining No. connections [W-EH1]	Other	--
W-EH2 - Number of non-residential connections in wastewater network [W-EH2]	76	--
Method of determining No. connections [W-EH2]	Other	--
W-EH3 - Total population served by Wastewater network [W-EH3]	11,212.5	--
Confidence (W-EH1 to W-EH3)	4 - Reliable	1 to 5
W-EH4 - Number of resource consents that are held for wastewater treatment plant [W-EH4]	4	--
W-EH9 - Wastewater overflow regulation approach(s) under local regional plan [W-EH9]	Other	Selection
Confidence (W-EH4 to W-EH9)	4 - Reliable	1 to 5
W-EH20 - Wastewater treatment plant peak flow / nominal flow ratio [W-EH20]	2.9	--
W-EH21 - What design standards do you use for calculating the capacity of wastewater network? [W-EH21]	Internal code of practice	Selection
W-EH22 - Levels of service for preventing wastewater overflows due to stormwater ingress [W-EH22]	18	%
Confidence (W-EH21 to W-EH23)	5 - Highly Reliable	1 to 5
Reason information not available [W-RE3]	Measure Not Applicable	--
W-RE4 - Wastewater effluent disposal emissions [W-RE4]	131	tCO2e/year
Reason information not available [W-RE5]	Measure not applicable	--
W-RE6 - Wastewater sludge disposal emissions [W-RE6]	203	tCO2e/year
Confidence (W-RE3to W-RE6)	4 - Reliable	1 to 5
W-RE7 - Production of biosolids [W-RE7]	125	m3/year
W-RE8 - % of dry solids in biosolids [W-RE8]	36	%
W-RE9 - % disposal of biosolids to onsite stockpile ratio [W-RE9]	100	%
Reason information not available [W-RE10]	Measure not applicable	--

Measure / confidence block	Reported value	Unit / scale
Reason information not available [W-RE11]	Measure not applicable	--
Reason information not available [W-RE12]	Measure not applicable	--
W-RE13 - Last year plant/pond was desludged (if applicable) [W-RE13]	2018	yyyy
Confidence (W-RE7 to W-RE13)	4 - Reliable	1 to 5

Data collection notes

How have you collected your Wastewater network data?

General Asset Information: Data were collected from GIS and Pipe and Instrument Diagrams (P&IDs).

Treatment: Data were collected from flow meters with telemetry in SCADA.

Network Connections: Data were collected from the wastewater rating report.

Resource Consents: Data were collected from the resource consent inventory.

Inflow and Infiltration: Data were collected from flow meters with telemetry in SCADA.

Emissions and Biosolids: Data were collected from flow meters with telemetry in SCADA, in conjunction with the 2020 emissions baseline assessment and laboratory sampling data.

How have you verified your Wastewater network data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Wastewater network data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Wastewater resource consents

Network	Type	Reference	Purpose	Grant	Expiry	Exercised	Status	Confidence
WWN-00357	Discharge to air	CRC961013	to contaminants into air at or about map references L35:447-655 and L35:458-663 from a sewage effluent treatment and disposal system.	16/08/1996	08/08/2031	Yes	Active	5 - Highly Reliable
WWN-00357	Land-use consent	CRC144561	land use consent for the establishment of a storage basin to store sewage and for associated earthworks	31/03/2014	08/08/2031	Yes	Active	5 - Highly Reliable
WWN-00357	Discharge to land	CRC184787	To discharge contaminants into land.	27/08/2019	08/08/2031	Yes	Active	5 - Highly Reliable
WWN-00356	Coastal permit	CRC041162.2	To discharge treated sewage effluent into the coastal marine area from a sub aqueous ocean outfall.	12/03/2009	12/07/2039	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to air	CRC962560	to discharge contaminants into air at or about map reference M35:868-678 from two oxidation ponds and a wetland.	20/11/1996	14/11/2031	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to air	CRC950610	to discharge contaminants (including odours) to air from the Kaiapoi sewage treatment and disposal system at or about map reference M35:848-576.	02/06/1995	25/05/2030	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to water	CRC031724	To discharge groundwater from subsoil drains and toe drains around infiltration wetland into the coastal marine area of Jockey Baker Creek, a tributary of the Waimakariri River.	13/07/2004	12/07/2039	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to land	CRC041049	To discharge treated sewage effluent from the Kaiapoi Sewage Treatment Plant and the Rangiora Sewage Treatment Plant to the infiltration wetland at the Kaiapoi Sewage Treatment Plant; and to discharge treated sewage effluent to groundwater via seepage from the base of the oxidation ponds, infiltration wetlands, and sand filters at the Kaiapoi Sewage Treatment Plant.	13/07/2004	25/05/2030	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to land	CRC154176	To discharge contaminants to land.	30/01/2015	30/01/2050	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to land	CRC030917	to discharge contaminants, via seepage, from Rangiora STP to land.	26/08/2003	26/08/2038	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to land	CRC145027	to discharge dewatered sludge removed from a wastewater pond to land	22/10/2014	22/10/2049	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to air	CRC173124	To discharge contaminants (odour) to air	16/02/2017	26/08/2038	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to air	CRC168388	To discharge odour and aerosols into air.	26/08/2016	28/10/2040	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to land	CRC168391	To discharge treated sewage effluent via seepage onto land.	26/08/2016	28/10/2040	Yes	Active	5 - Highly Reliable
WWN-00356	Discharge to land	CRC168390	To use land for storing, treating and discharging human effluent.	26/08/2016	28/10/2040	Yes	Active	5 - Highly Reliable

Data collection notes

How have you collected your Wastewater consent data?

Data were collected by querying the ECan Consent Search website using the resource consent inventory dataset.

How have you verified your Wastewater consent data?

Data were verified by checking for missing fields, duplicate entries, logical inconsistencies, and outliers. Data were also compared with previous NEPR reports as a quality assurance measure.

How have you compiled your Wastewater consent data?

Data were compiled by exporting source datasets to Excel files, standardising their format to align with the TA NEPR report template, and transferring the resulting data into the TA NEPR report spreadsheet.

Operator feedback

Question	Response
On a scale of 1-4 how easy was The 2025/26 NEPR Template to complete:	2- Hard
The associated guidance helped to answer any questions or clarifications I needed during the reporting period:	Disagree
The FAQs document was helpful in assisting me to complete the data collection template:	Disagree
Optional Free text Questions:	Answer
How many people in your organisation were involved with the completion of this template? (Include those gathering data, those filling out the template, reviewers and so on)	6
Please provide feedback on how Taumata Arowai might improve NEPM reporting as a whole	Restricted Connections and Water Demand Assessment Introduce a set of measures to assess restricted connections and their associated water demand. These rural users often represent a mix of residential and non-residential consumption, and their demand can be significant. Implementing specific measures will help differentiate their usage patterns from those of on-demand urban users and improve overall understanding. Wastewater Network Reporting Structure Enhance the reporting framework for wastewater networks. The current dropdown box with prepopulated network options is not intuitive, particularly when multiple treatment plants exist within a single network. Introducing unique identifiers for each treatment plant and enabling users to group them under a network would streamline reporting and improve data structure logic. Water Extraction Consent Reporting The water extraction consent section is a promising start, especially in capturing consent at the condition level—evident when exceedances across different volume units were requested. To improve reporting, restructure the consent input to allow users to provide details at the consent condition level. Standardized units in dropdowns will be more effective if users have the flexibility to match them with specific consent conditions. Further work is needed to understand combined flows within consent conditions. Allowing users to specify whether a condition applies to a single or multiple bores, and to select the relevant bore IDs, would significantly enhance clarity and usability.

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	WAT-10-36-08 / 260821248507
REPORT TO:	Woodend-Sefton Community Board
DATE OF MEETING:	13 October 2026
AUTHOR(S):	Rob Rankin, Project Engineer Caroline Fahey, Water and Wastewater Asset Manager
SUBJECT:	Proposal for New Water Supply Bore and Site Upgrades at Gladstone Park
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager / Chief Executive

1. SUMMARY

1.1. The purpose of this report is to seek approval from the Woodend Sefton Community Board to construct a new water supply bore at Gladstone Park.

1.2. A new water supply bore is required to provide redundancy and allow for future growth on the Woodend-Pegasus water supply. The proposed location for the bore is on Gladstone Park. This location is supported by hydrogeological assessment and consideration of surface-level restrictions, consenting and property acquisition requirements.

1.3. Additional upgrades are required to the existing electrical and control system infrastructure on site, both because of the additional bore and because the existing infrastructure is nearing the end of its service life. These upgrades include the construction of a new control building and generator pad in the southwest corner of the park, adjacent to existing Gladstone Bore 1.

1.4. Gladstone Bore 2, which is currently buried below ground on the southern side of the park, will need to be reconstructed above ground in the future to meet the Drinking Water Quality Assurance Rules (DWQAR) sanitary borehead requirements. However, this is currently not planned as part of this project and is presented to the Community Board for information only.

Attachments:

i. Woodend-Pegasus Source Capacity Upgrade – Unsuccessful Drilling of Equestrian Bore 4 (TRIM 260311073671)
ii. Aqualinc Hydrogeological Assessment (TRIM 260703159849)
iii. Woodend-Pegasus New Source Well – Proposed Drilling Location Memo to GM U&R (TRIM 260618145237)

2. RECOMMENDATION

THAT the Woodend-Sefton Community Board:

(a) **Receives** Report No. 260821248507.

(b) **Approves** Option 1: Approve the construction of a new water supply bore and central electrical / control upgrades at Gladstone Park for the new Gladstone Bore 3.

(c) **Notes** that the existing Gladstone Bore 2 will need to be reconstructed above-ground in the future to meet the Drinking Water Quality Assurance Rules (DWQAR) sanitary borehead requirements, however this is currently not planned as part of this project.

(d) **Circulates** this report to the Utilities and Roading Committee for their information.

3. BACKGROUND

3.1. The Woodend-Pegasus Source Capacity Upgrade project is required to provide "n+1" redundancy and support future growth in the area. This means that a new water supply source is required so that the Woodend-Pegasus water supply will always have sufficient source capacity, with any one primary source unavailable at any given time. The target yield for the new source is 38 L/s additional capacity.

3.2. The initial approach to achieve the project objective was to complete the drilling of Equestrian Well 4 (EQ4), which was partially drilled in 2014 by the Pegasus Town Development. However, upon completion of the drilling, EQ4 was found to be unfit for purpose as a public water supply due to unacceptably low yield and high levels of sand and turbidity. In April 2026 the Utilities and Roading Committee directed staff to abandon EQ4 and identify a location for a new bore (Attachment i).

3.3. External consultant Aqualinc has completed a hydrogeological assessment (Attachment ii) considering existing bores and known aquifer locations in the vicinity of the raw water delivery main supplying the Pegasus Water Treatment Plant.

3.4. Staff have further assessed the recommended drilling locations proposed by Aqualinc (Attachment iii), considering factors including existing surface-level restrictions, consenting and property acquisition requirements. The General Manager Utilities and Roading has reviewed the assessment and supports the proposed drilling location.

4. KEY ISSUES

4.1. Proposed New Wellhead Location

4.1.1. The proposed site for the new water supply bore is on the western edge of Gladstone Park, as per Figure 1 below. Reasons for selecting this site include:

- Proximity to the existing raw water main supplying the Pegasus Water Treatment Plant minimises the length and cost of connecting pipework.
- Good separation from existing bores minimises interference effects.
- Good separation from existing dwellings and septic waste disposal fields, which would be affected by water source protection rules for the new bore.
- Based on these factors, the paper road between Gladstone Road and Infinity Drive is considered suitable. The gap in the Gladstone Park shelter belt provides the preferred opportunity to construct the wellhead without obstructing any future formation of the paper road.

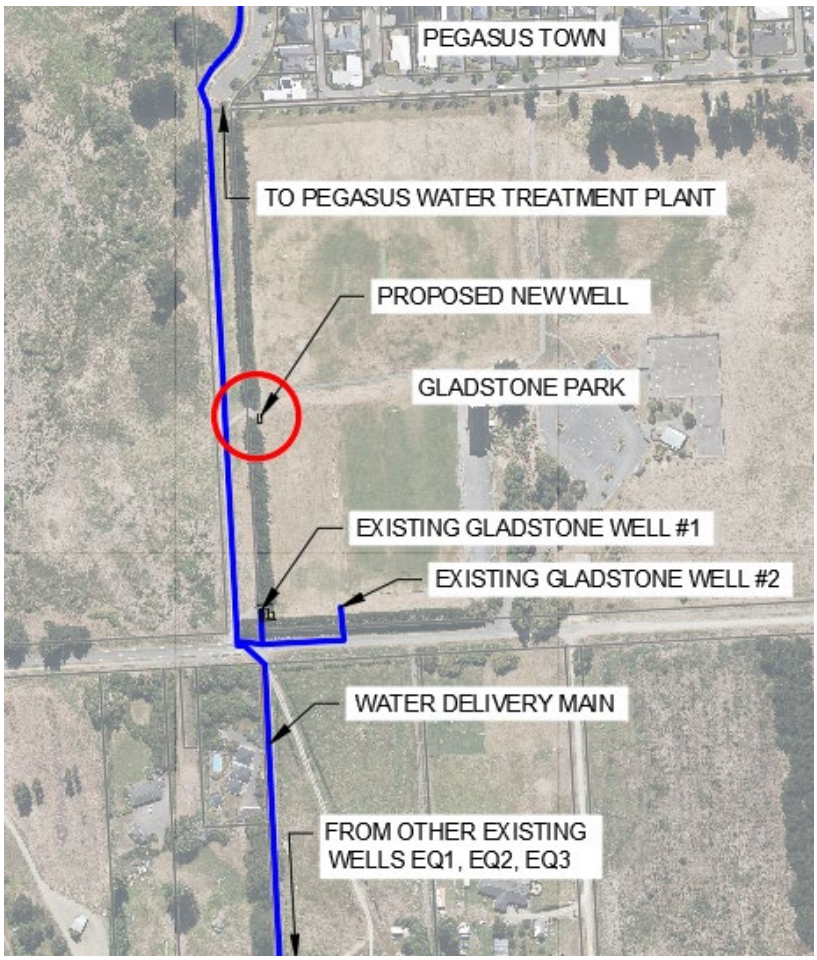


Figure 1. Proposed new bore location at Gladstone Park.

4.1.2. The new bore will be housed within a chain-link enclosure similar to other Council public water supply bores. The enclosure would measure approximately 2.4 m x 5.2 m. Figure 2 shows an example of this design.

4.1.3. While the exact position of the bore and wellhead is not yet confirmed, the intention is to position it close to the shelter belt, as far as practicable from the adjacent playing field and footpath to reduce visual and physical impacts on park users.



Figure 2. Indicative appearance of wellhead enclosure.

4.2. Central Electrical / Control System Upgrades

4.2.1. It is proposed to locate the electrical and control system infrastructure for the new bore in a new control building adjacent to Gladstone Bore 1, for the following reasons:

- Centrally locating the control infrastructure for all Gladstone bores creates operational and maintenance efficiencies and is expected to minimise cost.
- The control infrastructure for both existing Gladstone Bores 1 and 2 is already located in a cabinet at Gladstone Bore 1.
- The control infrastructure for the new bore cannot occupy the same cabinet due to size constraints and lack of ventilation.
- Housing control infrastructure of this criticality and value in a building is preferable for security, durability and longevity.

4.2.2. This also presents an opportunity for Council to renew the existing control infrastructure for Gladstone Bores 1 and 2, which is reaching the end of its service life. Replacement control infrastructure would also be installed in the new control building. This would enable the removal of the existing cabinet, and would not affect the size of the proposed control building.

4.2.3. The control building is estimated to measure approximately 3.0 m x 3.0 m internally. In line with similar structures elsewhere in the district, it would be built of concrete blockwork to provide durability and security. Specific design has not yet been undertaken.

4.2.4. Furthermore, due to the criticality of the Gladstone bores, allowance must be made for the future installation of a permanent backup generator to provide resilience against power failure.

4.2.5. The generator would be installed on a concrete pad approximately 3.5 m x 5.5 m. Similar to other Council generators installed recently, it would be protected by a steel housing and metal roof similar to the wellhead. Specific design has not yet been undertaken.

4.2.6. It is recognised that the control building and generator may constrain access through the southwest corner of Gladstone Park. However, based on the need to centralise electrical and control infrastructure near Gladstone Bore 1, there is no practicable alternative location that would achieve the same operational benefits.

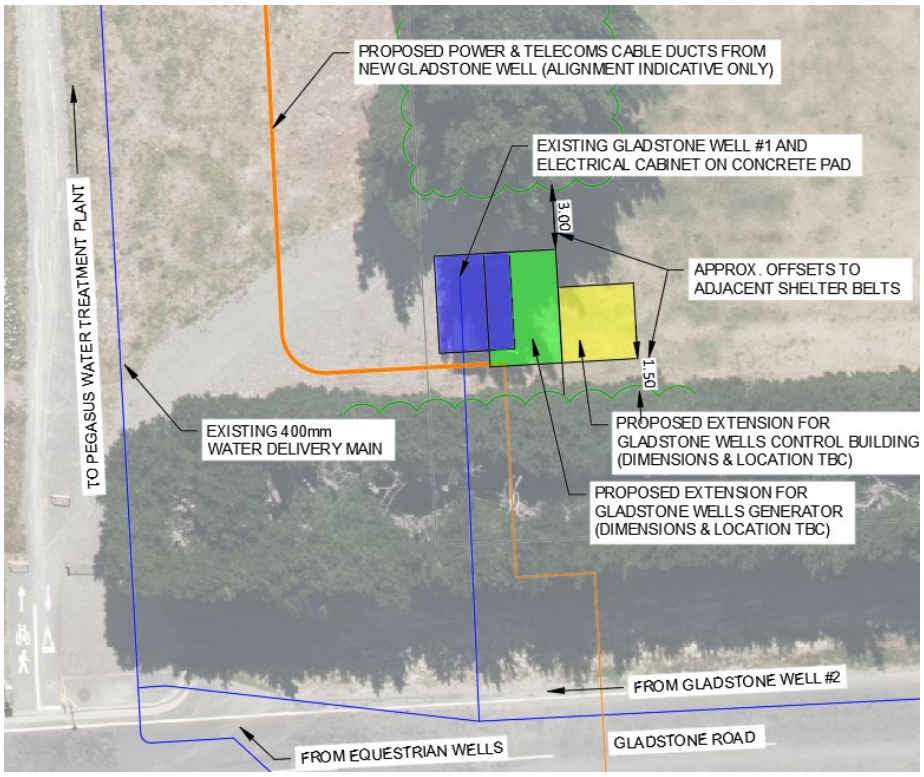


Figure 3. Indicative control building and generator layout at southwest corner of Gladstone Park.

4.3. Future Gladstone Bore 2 Upgrades

4.3.1. The Gladstone Bore 2 wellhead is currently below ground, which means it does not meet the requirements for a sanitary bore head under the Drinking Water Quality Assurance Rules (DWQAR). In the future, Bore 2 will need to be raised above ground to meet DWQAR requirements. Its new enclosure is likely to look similar to Figure 2.

4.3.2. No approval for future Gladstone Bore 2 works is sought from the Community Board at this time, as these works are not part of the scope to construct the new bore. Details will be communicated separately closer to the time; however, it is prudent to advise the Board of this future requirement.

4.4. Impacts during Construction

4.4.1. Upon approval, the new bore and electrical and control system infrastructure would be constructed in two 6-8 week periods between November 2026 and May 2027. The construction areas would be fenced off, however the adjacent playing fields would not be affected. Access along the footpath next to the new bore would be maintained, however access through the southwest corner of the park cannot be guaranteed during construction.

4.4.2. It is recognised that construction activities, particularly noise, may be disruptive to park users. The contractor will be required to reduce these impacts as far as reasonably practicable, potentially by reducing construction hours or using sound-mitigation measures. The project team will liaise with the park's user groups to ensure they are aware of progress and any changes to construction activities and impacts ahead of time.

4.5. Visual and Physical Impacts

4.5.1. Physical impacts on the site will be mitigated where practicable by locating the new structures to minimise obstruction to park users.

4.5.2. Landscape design may be undertaken to soften the visual impact of the new control building and generator, with input from the park's user groups. This will be consulted with the stakeholders prior to the design being finalised.

4.6. Property Purchase and Consenting Requirements

4.6.1. Gladstone Park is held in record of Titles CB8A/1274 and CB45C/1287 as a Freehold Title with no stated purpose (Recreation Reserve. etc), and is therefore not subject to The Reserves Act 1977. Because of this, there are no existing requirements to create an easement or separate land parcel for the new wellhead as may otherwise be required under The Reserves Act 1977.

4.6.2. However, to avoid creating a legacy property ownership problem should water services functions being removed from Council in the future, the wellhead site will be subdivided from Gladstone Park once the bore has been successfully drilled and confirmed as a viable source of water. The same may be done to the other two Gladstone bores at the same time.

4.6.3. Investigations have concluded that there are no consent requirements to drill the bore. However, a resource consent will be required to construct the wellhead, and building consent will also be required for the control building and generator housing. Staff will seek to obtain the consents required as part of the design process for the relevant pieces of infrastructure.

5. OPTIONS

5.1. The Woodend-Sefton Community Board has the following options available to them:

5.1.1. Option 1: Approve the proposed location for the new bore, control building and generator

This option involves the Woodend-Sefton Community Board granting their approval of the proposed indicative locations of all new infrastructure as detailed in the sections above.

This is the recommended option for the following reasons:

- A new bore is required to provide redundancy and allow for growth in the Woodend-Pegasus drinking water supply scheme.
- The proposed location at Gladstone Park is the preferred location for the new bore for the operational reasons set out in section 4.1.1.
- The water supply electrical and control system infrastructure at Gladstone Park is critical to the Woodend-Pegasus drinking water supply scheme. A central control building and generator at Gladstone Bore 1 would be strategically advantageous to the scheme, providing greater durability, security and resilience.

5.1.2. Option 2: Reject the proposed location for the new bore

This option involves the Woodend-Sefton Community Board rejecting the proposed location for the new bore. If the new bore does not proceed in this location, the strategic advantage of a new control building and generator in this location would need to be reassessed.

This is not the recommended option for the following reasons:

- A new bore is required to provide redundancy and allow for growth in the Woodend-Pegasus drinking water supply scheme.
- The proposed location at Gladstone Park is the preferred location for the new bore for the operational reasons set out in section 4.1.1.

5.2. The Gladstone Park Advisory Group has been consulted on the proposed new wellhead, control building and Bore 2 above-grounding and is supportive of the works. The Advisory Group has not been consulted on the generator because staff were not aware of the requirement for a generator at the time of presentation.

5.3. The Greenspace Team has reviewed and is supportive of the proposed drilling location.

5.4. The General Manager Utilities and Roading has reviewed and is supportive of the proposed drilling location.

5.5. The Management Team has reviewed this report and supports the recommendations.

6. STRATEGIC ALIGNMENT AND COMMUNITY VIEWS

Mana Whenua Engagement

6.1. The subject matter and/or recommendations contained within this report are not likely to be of interest to mana whenua.

Groups, Organisations and the Wider Community

6.2. There are groups, organisations, or members of the wider community likely to be affected by, or to have an interest in, the subject matter of this report. The proposed new bore and control building will have a visual and physical impact on Gladstone Park, and the various community groups and members of the public who use the park.

6.3. The Gladstone Park Advisory Group has been consulted on the proposed new bore and control building and is supportive of the proposal. The Advisory Group has not been consulted on the generator because staff were not aware of the requirement for a generator at the time of presentation.

Implications for Community Wellbeing

6.4. There are implications for community wellbeing arising from the issues and options that are the subject matter of this report.

6.5. Community wellbeing is supported by the consistent supply of safe and compliant drinking water through the Council's drinking water supplies. The proposal in this report will help to achieve this by providing redundancy and allowing for future growth within the Woodend-Pegasus water supply scheme.

Community Outcomes and Strategic Priorities

6.6. The Council's community outcomes are relevant to the actions arising from recommendations in this report.

- Infrastructure and services are sustainable, resilient and affordable.
- Our community has equitable access to the essential infrastructure and services required to support community wellbeing.

6.7. The Council's Strategic Priorities are relevant to the actions arising from recommendations in this report.

- Protect and enhance the resilience of our natural and built environment.

7. OTHER IMPLICATIONS AND RISK MANAGEMENT

Financial Implications

7.1. There are no financial implications for the decisions sought by this report. The purpose of this report is to gain approval from the Community Board for the location of the infrastructure on Gladstone Park.

7.2. Funding is currently provided within the Annual Plan for the construction of a new water supply bore in the Woodend-Pegasus water supply. The estimate to complete this work is $993,040.

Community Resilience and Sustainability

7.3. The recommendations in this report do have sustainability and/or climate change impacts.

7.4. One of the forecast impacts of climate change is extended drought periods, and having greater redundancy with water supply sources will assist Council's water supplies to continue to operate despite these potential impacts.

Risk Management

7.5. As with the drilling of any new water supply bore, there is a risk that the aquifer encountered may not provide water of sufficient quality or quantity for potable water supply. This risk is mitigated by engaging reputable hydrogeological consultants to recommend drilling locations and depths based on their expert knowledge. While this does not remove the inherent uncertainty associated with bore drilling, the risk has been managed to the extent practicable.

Health and Safety

7.6. There are no health and safety risks arising from the adoption / implementation of the recommendations in this report. Health and safety risks during construction will be managed by the contractor under an approved Site-Specific Safety Plan. Health and safety risks to the public once construction is complete will be addressed during design through a Safety in Design process.

8. CONTEXT

Consistency with Policy

8.1. This matter is not a matter of significance in terms of the Council's Significance and Engagement Policy.

Authorising Legislation

8.2. The Water Services Act 2021, Local Government (Water Services) Act 2024 and Local Government Act 2002 are relevant in this matter.

Authorising Delegations

8.3. The Woodend-Sefton Community Board has the delegated authority to approve, on behalf of the Council as landowner, proposed developments and activities on parks, reserves and waterways and within existing budgets.

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	WAT-10-36-01 / 260311073671
REPORT TO:	Utilities & Roading Committee
DATE OF MEETING:	14 April 2026
AUTHOR(S):	Rob Rankin, Project Engineer Caroline Fahey, Water and Wastewater Asset Manager
SUBJECT:	Woodend-Pegasus Source Capacity Upgrade – Unsuccessful Drilling of Equestrian Bore 4
ENDORSED BY: (for Reports to Council, Committees or Boards)	Department Manager Chief Executive

1. SUMMARY

1.1. This report presents information on the Woodend-Pegasus Source Capacity Upgrade project to date and seeks approval to abandon the EQ4 bore, on the basis that the water quality achieved from the source is not suitable to meet the Drinking Water Quality Assurance Rules (DWQAR) requirement under the Water Services Act 2021.

1.2. The Woodend-Pegasus Source Capacity Upgrade project is required to provide “n+1” redundancy and support future growth in the area by commissioning a new water supply well. This means that a new source is required so that the scheme will always have enough source capacity, with any one primary source unavailable at any given time. The target yield for this project is 38 L/s additional capacity.

1.3. The first stage of this project was to drill and consent a new bore. In this case, instead of drilling a new bore it was decided to complete the drilling of Equestrian Bore 4 (EQ4), which was partially drilled in 2014 by the Pegasus Town development. This approach was expected to minimise the cost of the physical drilling works.

1.4. Upon completion of the drilling, EQ4 was found to be unfit for purpose for the following reasons:

1.4.1. The bore capacity is limited to 10 L/s as pumping at higher flow rates draws through unacceptably high levels of sand. Sand has the potential to damage the pump impeller and downstream pipework.

1.4.2. The bore experiences unacceptably high turbidity on startup, persisting for up to 12 hours. Water with elevated turbidity is unsuitable for UV and chlorine treatment, hence the water from this bore does not comply with the DWQAR.

1.5. There are no further avenues to improve the quality of EQ4 to a satisfactory condition, and as such it is recommended that the bore be abandoned, and a new bore must be drilled to achieve the project objectives.

1.6. Given the completion of EQ4 was unsuccessful, additional budget will be required to establish a new bore at another location to achieve the project objectives. It is anticipated that an additional budget of $212,000 is required. This will be requested by way of a staff submission to the 2026/27 Annual Plan.

2. RECOMMENDATIONS

THAT the Utilities and Roading Committee:

(a) **Receives** Report No. 260311073671.

(b) **Notes** that the completion of the drilling and development of the EQ4 bore (which was planned as the next capacity upgrade for the Woodend-Pegasus scheme) was unsuccessful due to poor quality water that was obtained from the bore, which does not meet the required water quality standards under the Water Services Act.

(c) **Approves** Option 1: staff to proceed with decommissioning EQ4 and begin investigations into a new water supply bore for the Woodend-Pegasus drinking water supply.

(d) **Notes** that this project is considered essential to provide redundancy for the Woodend-Pegasus drinking water supply and provide additional capacity for the network based on predicted growth projections. Without the additional bore, there is a risk of Council not being able to meet the peak summer water demand for the Woodend-Pegasus drinking water supply should one of the existing primary bores be taken out of service.

(e) **Notes** that while there is sufficient budget to fund the investigations and drilling of a new bore, there is insufficient budget to complete the project, and as a result a staff submission will be made to request $212,000 additional budget for this project as part of the 2026/27 Annual Plan.

3. BACKGROUND

3.1. A capacity upgrade for the Woodend–Pegasus drinking water supply was identified through the 2021 Activity Management Plan process. The upgrade is required both to support continued growth in the area and to provide “n+1” redundancy, ensuring Council can maintain full supply even with the highest-capacity production bore offline.

3.2. During the development of Pegasus Town (around 2010-2014) four water supply bores were drilled at 217 Gladstone Road, but only three were required to meet demand at the time. Equestrian Bore 4 (EQ4) was drilled to a depth of 194m, approximately 20m short of the aquifer utilised by the EQ1 and EQ3 bores. It was then temporarily capped with the intention to complete the well later to accommodate future growth in the area. EQ4 was consented for a take of 38L/s, comparable to EQ1 and EQ3.

3.3. When the current need for a new source was identified, consideration was given to utilising EQ4 and completing the drilling of that source, versus drilling an entirely new bore. The completion of EQ4 was considered more desirable than drilling a new well elsewhere for the following reasons:

- It is located in a proven wellfield adjacent to three other water supply bores.
- It is located on a land parcel owned by Council.
- Consent had already been granted for a water take of 38L/s. Given the performance of EQ1 and EQ3, this yield was considered achievable if the bore were to be advanced to the same aquifer.
- The delivery main from EQ1 and EQ2 runs adjacent to EQ4, minimising expenditure on downstream delivery pipework.
- Most importantly from a cost perspective, the cost to advance the bore to the same aquifer utilised by EQ1 and EQ3 was expected to be much lower than fully drilling a bore to the same depth (approx. $98,000 vs $327,000).

3.4. Investigations undertaken by hydrogeological consultant Aqualinc Ltd and drilling contractor McMillan Drilling Ltd in 2024 confirmed EQ4 was likely to be suitable for use and could be advanced to the target aquifer.

3.5. In April 2025, Council approved McMillan Drilling Ltd to complete the drilling of EQ4 as a variation to Contract 23/75 Source Upgrade Package 2 Mandeville Drilling Contract.



Figure 1: EQ4 Site Location Plan

3.6. EQ4 was advanced to the target aquifer by mid-August 2025. Aquifer development indicated yields up to 44L/s. However, the formation destabilised during testing, resulting in unacceptable sand migration and turbidity.

3.7. McMillan Drilling Ltd undertook several unsuccessful attempts to improve the water quality issues, by methods including additional development, partially shielding the screen, and multi-screening. In each case, the methodology, risk and cost implications were reviewed and accepted by Council staff.

3.8. Finally, in February 2026, McMillan Drilling Ltd advised that in their professional opinion, all avenues to achieve an acceptable yield and quality of water had been exhausted, and the bore was unfit for use as a municipal water supply.

3.9. The maximum yield available is sand-limited at 10L/s. Higher flows will induce unacceptable levels of sand migration into the bore, causing wear to the pump impeller and downstream pipework. Treatment downstream to remove sand is not considered viable because by the time the sand has passed through the pump, the damage has been done.

3.10. Additionally, EQ4 experiences high turbidity on startup which requires it to be flushed to waste for up to 12 hours before it clears to acceptable levels. Water with elevated turbidity

is unsuitable for UV and chlorine treatment, hence the water from this bore does not comply with the DWQAR. Treatment to remove turbidity by means other than flushing to waste is not considered viable.

3.11. Given both the poor yield before sand is introduced, as well as the high levels of turbidity that does not comply with the required quality rules, the bore is not considered suitable.

3.12. In order to establish the new source capacity that the drinking water supply needs, the project budget will need to be increased to allow for the drilling of a new bore in a new location, and the decommissioning and abandoning of EQ4. The specific location of the new bore will be informed by hydrogeological advice that staff will obtain prior to proceeding.

4. ISSUES AND OPTIONS

4.1. The Utilities and Roading Committee have the following options available to them:

4.1.1. Option 1 – Approve staff to proceed with decommissioning EQ4 and begin investigations into a new water supply bore for the Woodend-Pegasus drinking water supply.

This option would effectively return Council to the beginning of the project. The same steps would be undertaken to identify and drill a bore, install a pump, and construct wellhead infrastructure.

There is currently sufficient budget to identify and drill the new bore, but not to complete the later stages of the project should this option be approved. Staff would utilise existing budget to begin hydrogeological investigations, and in parallel prepare a submission to the Annual Plan to request the budget required to complete the project.

This is the recommended option for the following reasons:

- EQ4 does not produce water of suitable quality to meet the DWQAR, and there are no further steps that can be taken to improve this.
- The supply still needs a new source, to allow for growth and maintain the required level of “n+1” redundancy for the scheme whereby the scheme can meet target peak flows with any one source unavailable at any given time.

4.1.2. Option 2 – Abandon bore and cancel project

This option would involve decommissioning EQ4 to mitigate potential future contamination of the aquifer, and cancelling of the project.

This is not the recommended option for the following reason:

- The supply still requires additional capacity to cater for growth and to maintain the required level of “n+1” redundancy, and without a new source being established, this will not be achieved.

5. Implications for Community Wellbeing

5.1. There are implications on community wellbeing by the issues and options that are the subject matter of this report.

Community wellbeing is supported by the consistent supply of safe and compliant drinking water through the Council’s drinking water supplies. The recommendations in this report help achieve this by providing redundancy to the scheme.

6. COMMUNITY VIEWS

6.1. **Mana whenua**

Te Ngāi Tūāhuriri hapū are not likely to be affected by or have an interest in the subject matter of this report.

It is noted that Te Ngāi Tūāhuriri hapū have previously expressed some reservations about the abstraction of water from this general area. However, the proposal to investigate and identify locations for a new water supply bore is considered an extension of the current water management strategy, and not a new strategy.

6.2. **Groups and Organisations**

There are not groups and organisations likely to be affected by, or to have an interest in the subject matter of this report.

6.3. **Wider Community**

The wider community is not likely to have an interest in the subject matter of this report, however the Woodend-Pegasus community are likely to be affected by decisions regarding the provision of safe and compliant water to their drinking water supply.

7. OTHER IMPLICATIONS AND RISK MANAGEMENT

7.1. **Financial Implications**

7.1.1. There are financial implications of the decisions sought by this report.

7.1.2. To date $196,190 has been spent on this project from a total budget of $785,000. To complete this project an addition $212,000 is required bringing the total required project budget to $997,000.

7.1.3. The available budget versus the Engineer's Estimate for each option is summarised in the table below:

Table 1. Financial implications by option

Budget Name & PJ	Equestrian Bore4 Development, PJ 102529.000.5105	
Total Budget	**$785,245**	
PDU Fees to date	$35,005	
Hydrogeological fees to date	$3,411	
Drilling contract payments to date	$151,479	
Property purchase costs to date	$6,295	
Total Cost to Date	**$196,190**	
Option	**Option 1 Drill new bore**	**Option 2 Cancel project**
Forecast PDU Fees	$58,063	$2,989
Decommissioning	$10,454	$10,454
Property Purchase	$28,000	$0
Hydrogeological Consultation	$30,500	$0
Drilling Contract + contingency	$326,659	$0
Wellhead Contract + contingency	$346,825	$0
Total Forecast Cost	**$996,691**	**$209,633**
Budget Remaining	**($211,446)**	**$575,612**
Additional Budget to be sought	**$212,000**	**$0**
Budget Remaining	**$554**	**$575,612**

7.1.4. As is evident above, the total project cost to date is $196,190.29, while the final forecast cost of the recommended option (Option 1) is $996,700 against a total project budget of $785,000.

7.1.5. Therefore, the recommended option will result in a total budget deficit of $211,446. There is sufficient existing budget in the current financial year to fund the investigation and bore drilling, but additional budget will be required to fund the wellhead construction contract.

7.1.6. In parallel with the hydrogeological investigation, staff will prepare a submission to the Annual Plan requesting an additional budget of **$212,000**, which is required to complete the project.

7.2. **Sustainability and Climate Change Impacts**

The recommendations in this report do have sustainability and/or climate change impacts. One of the forecast impacts of climate change is extended drought periods, and having greater redundancy with water supply sources will assist Council's water supplies to continue to operate despite these potential impacts.

7.3. **Risk Management**

As with the drilling of any new water supply bores there are always risks associated with encountering aquifers which do not have water of sufficient quality and quantity for potable water purposes. This is mitigated by engaging reputable hydrogeological consultants who are able to recommend drilling locations and depths based on their expert knowledge. This does not remove this risk due to the inherent level of uncertainty associated with bore drilling, but the risk has been managed to the extent that is possible.

7.4. **Health and Safety**

Physical works will be undertaken through two contracts for drilling and wellhead construction. Health and Safety for these works will be assessed as part of the tender evaluations for those contracts.

8. CONTEXT

8.1. **Consistency with Policy**

This matter is not a matter of significance in terms of the Council's Significance and Engagement Policy.

8.2. **Authorising Legislation**

The Water Services Act and Local Government Act are relevant in this matter.

8.3. **Consistency with Community Outcomes**

The Council's community outcomes are relevant to the actions arising from recommendations in this report:

- Infrastructure and services are sustainable, resilient, and affordable.
- Our community has equitable access to the essential infrastructure and services required to support community wellbeing.

8.4. **Authorising Delegations**

The Utilities and Roading Committee has the authority to accept this report and approve the recommendations.

Memorandum

To:	Robert Rankin	**Of:**	Waimakariri District Council
From:	Rose Edkins	**Date:**	2 July 2026
Reviewed by:	Nicole Calder-Steele	**Job no:**	PRJ-2600277
Subject:	**Woodend Pegasus Water Supply Scheme - New Well**		

1 Summary

Waimakariri District Council (WDC) wants to increase the number of wells supporting the Pegasus water supply. Following failure to develop WDC well EQ4 (already consented), Aqualinc was asked to complete hydrological assessment to identify sites to install a new well. Three sites have been identified. Assuming pump depths are greater than 70 m in all wells, a new well at any of these sites is not expected to create problematic interference. WDC will need to apply for a change of conditions to the existing consent CRC167262 to enable supply from this well.

2 Introduction

Aqualinc previously provided Waimakariri District Council (WDC) with an initial assessment of the feasibility of using the existing EQ4 well for the Pegasus water supply (memorandum dated 3 May 2024[1]). Key findings from that assessment were:

- The EQ4 log identified a 5 m thick water-bearing gravel layer at 182.2–187.4 m bgl, which is shallower than the screened intervals of the other WDC wells (generally 200–214 m bgl, with EQ2 deeper at 245–251 m bgl).
- Existing wells (EQ1–EQ3) perform well, with specific capacities ranging from 1.4 to 4.7 l/s/m. EQ3 performs best, with less than 10 m drawdown at 40 l/s, while EQ1 and EQ2 experience higher drawdowns.
- The inclusion of EQ4 was not expected to result in problematic interference, provided pump depths exceed 60 m in all wells.
- EQ4 is already authorised under consent CRC167262 (Appendix A). Therefore, no consent changes are required. The total abstraction rate of 141 l/s remains within the consented limit.

Based on these findings, further investigation of EQ4 was recommended to confirm its suitability for inclusion in the Equestrian well field.

In August 2025, EQ4 was screened between 209.6 to 215.6 m bgl and development commenced. While initial results were promising; high turbidity was experienced during step testing. Attempts to

[1] Aqualinc (2024). Woodend Pegasus Water Supply Scheme – New Well. Memorandum dated 3 May 2024.

mitigate sediment by driving the casing down to partially shield the upper part of the screen resulted in screen damage. Attempts to salvage and remediate the well were unsuccessful.[2]

WDC has requested Aqualinc undertake a hydrological assessment to identify suitable options for drilling a new well, targeting a flowrate of 37 l/s.

3 Existing WDC Woodend / Pegasus Consents CRC074057 and CRC167262

Table 1 provides details of existing consents CRC074057 and CRC167262 (Appendix A).

Table 1: Details of consent CRC167262

Details	CRC074057	CRC167262
Wells	M35/11693 (GW2) (210 m deep) M35/7542 (GW1) (205.8 m deep) M35/0225 (22.7 m deep) M35/0471 (30.2 m deep) (a)	M35/10908 (PW1) (142.8 m deep) M35/11713 (PW2) (146.5 m deep) (a) M35/17679 (PW3) (138 m deep) (b) M35/18017 (EQ1) (214.2 m deep) M35/18018 (EQ2) (250.7 m deep) M35/18019 (EQ3) (200 m deep) M35/18020 (EQ4) (200.8 m deep)
Consented flowrate (l/s)	80	142
Daily volume (m^3/day)	6,912 (average flowrate of 80 l/s)	12,288 (average flowrate of 142 l/s)
Annual volume (m^3/day)	1,200,000	-
Consent expiry	28/02/2043	21/11/2043
Note: (a) Capped (semi-permanent). (b) Not used.		

4 Hydrological Assessment

The assessment included:

- Review of well construction detail.
- Review of well logs and well depth distribution to conceptualise the aquifer.
- Consideration of previous aquifer testing and aquifer parameters.
- Evaluation of well performance in the vicinity of the wellfield.
- Review of groundwater quality.

Hydrological assessment found the aquifer system comprises multiple semi-confined to confined

[2] This included redriving the casing to the bottom of the well, backfilling with gravel to above the upper aquifer (where silt was being drawn through and causing turbidity), and install a narrower multi-screen to target both aquifers.

gravel aquifers. Well performance varies spatially and with depth. High yields cannot be assured. Aquifer parameters derived from testing EQ3 are representative of the Equestrian wellfield. Groundwater quality sampling of WDC wells shows that it is generally of a high standard.

Figure 1 shows the locations of the existing WDC deep wells and their CDWPZ.[3]



Figure 1: Location of the deep WDC wells

4.1 WDC Well Construction Details

Table 2 provides construction details of the existing WDC wells.

[3] PW2, PW3 and EQ4 do not have CWSPZ as they are no currently operational (Table 2).

Table 2: Details of existing WDC wells

Well Details	GW1 (M35/7542)	GW2 (M35/11693)	EQ1 (M35/18017)	EQ2 (M35/18018)	EQ3 (M35/18019)	EQ4 [a] (M35/18020)	PW1 (M35/10908)	PW2 [b] (M35/11713)	PW3 [c] (M35/17679)
Easting NZTM	1574614	1574663	1574737	1574655	1574716	1574640	1574355	1574501	1574067
Northing NZTM	5203284	5203286	5202789	5202771	5203051	5202953	5204190	5203817	5204519
Status	Active	Active	Active	Active	Active	Capped	Active	Capped	Not used
Depth (m)	205.8	205.4	218.8	250.7	210.0	194.4	145.8	146.5	166.0
Diameter (mm)	200	300	300	250	300	400	250	250	250
Drilling date	06/02/1998	2/07/2007	1/10/2009	30/03/2010	29/01/2014	09/01/2014	12/03/2007	26/10/2007	16/02/2009
Initial static water level (m bgl)	2.88	4.25 [d]	3.93 [e]	3.9 [e]	4.68 [e]	7.15	4.85	5.72	7.59
Screen (m)	201.8-205.8	200.7-205.4	212.2-214.2	244.7-250.7	208-212	209.6-215.6	142.8-145.8	142.5-145.5	131.2-137.2

Notes:
(a) Screen damaged and unable to be remediated.
(b) Possibly capped due to high arsenic levels. No documentation to confirm.
(c) No documentation why not used. However, likely due to poor performance (Table 3).
(d) Listed as above ground level. Inconsistent with surrounding wells.
(e) EQ3 pump test (URS 2017).[6]

4.2 Aquifer Conceptualisation

The drillers log for wells GW1, GW2, EQ1, EQ2 and EQ3 and EQ4 are provided in Appendix B.

The logs indicate alternating layers of sand/gravels and clay and peat. A shallow unconfined aquifer (sandy gravels) is present at a depth of approximately 20-30 m. Below this, the logs identify multiple semi-confined to confined aquifers (sandy gravels) separated by clay and pug layers. These aquifers typically occur at depths of 60-67 m, 95-120, 202-215 m and 243-251 m.

Figure 2 presents the well depths and screen locations for the wellfield wells.

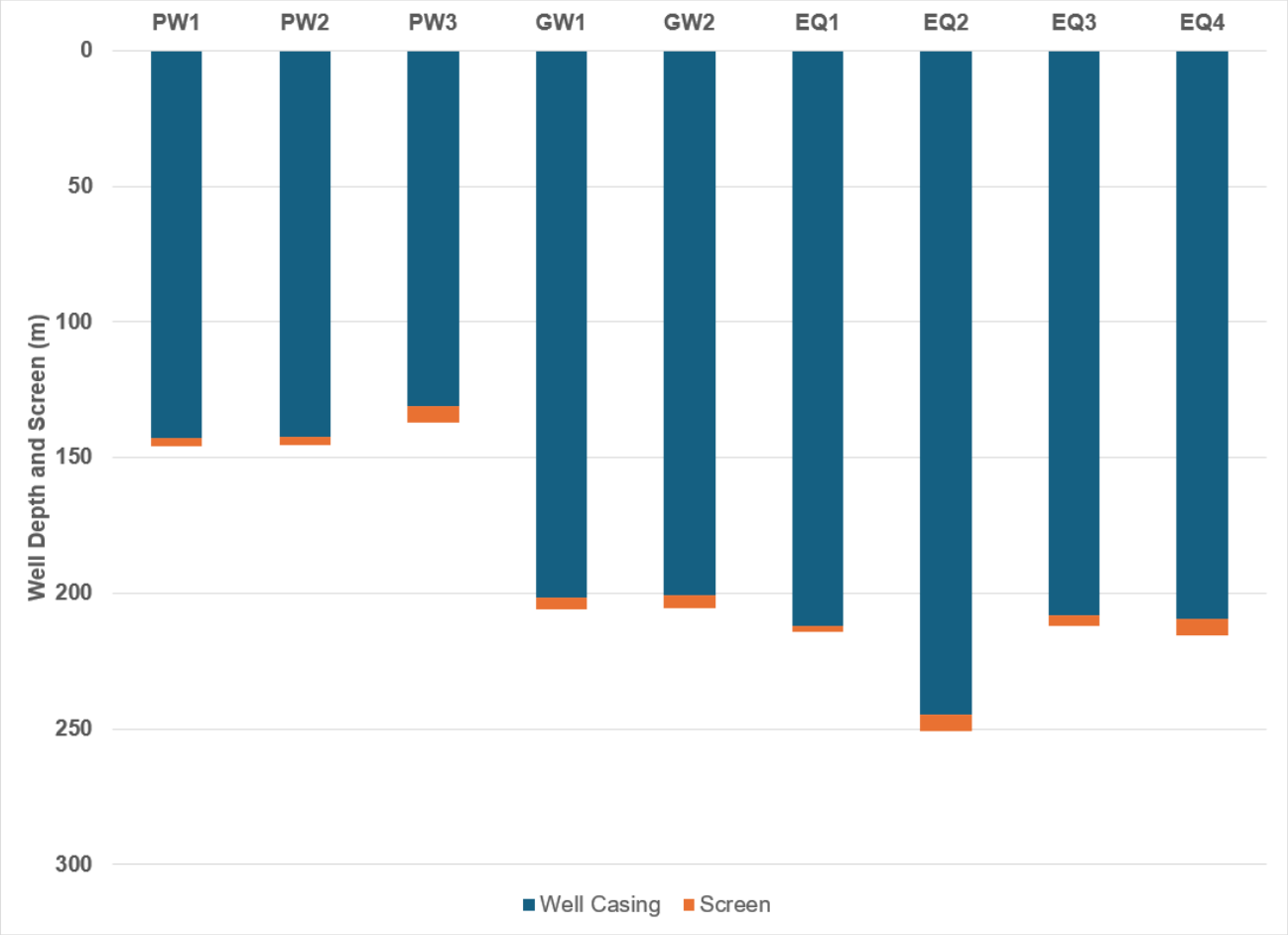


Figure 2: Wellfield well depths and screen locations

Figure 3 shows the depth distribution of active wells within a 1 km radius of the wellfield. The depth distribution indicates aquifers present at 0-30 m, 60 m, 100-115 m, 145-147 m, and 182-218 m and 250 m.

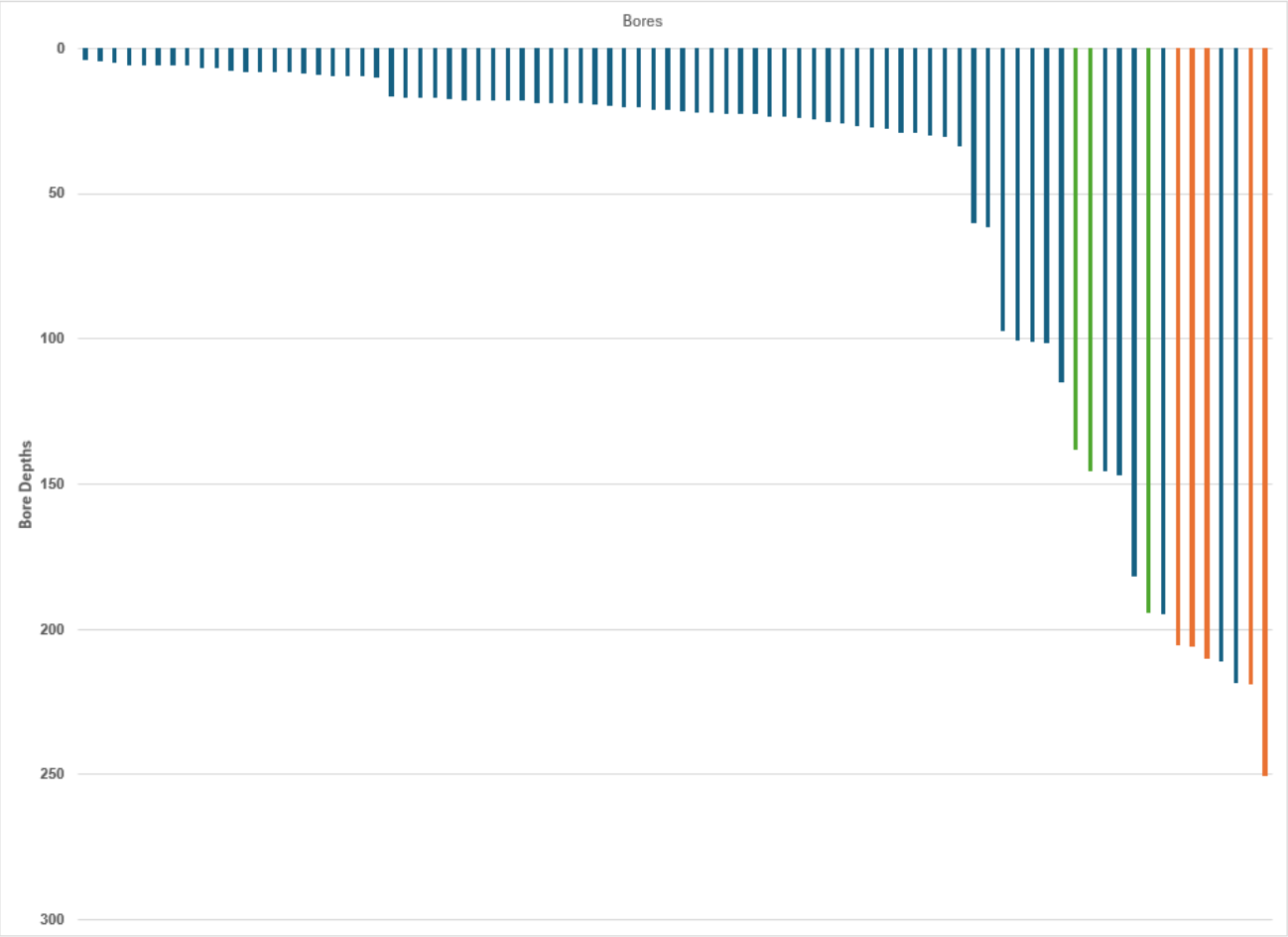


Figure 3: Well depth distribution within 1 km (WDC active wells in orange and inactive wells in green)

4.3 Aquifer Testing and Well Performance of Existing WDC Wells

Step testing provides drawdown data for controlled flowrates, which can be used to evaluate well performance and estimate aquifer transmissivity. Constant rate testing provides further insight into aquifer properties through pumping for a longer timeframe and monitoring groundwater levels in observation wells.

4.3.1 Well Performance

Step testing was carried out on wells GW1, GW2, EQ1, EQ2, EQ3, PW1, PW2 and PW3 at the time of drilling, and more recently on EQ4.[4] Figure 4 shows the flowrates and corresponding drawdown recorded during the step tests.

Specific capacity (l/s/m) is used to assess well performance. A higher specific capacity indicates good well performance (low drawdown with high flowrate), and a low specific capacity indicates poor well performance (high drawdown with low flowrate), see below:

[4] Although the well is not operational the step test data still provides useful information on the aquifer and site.

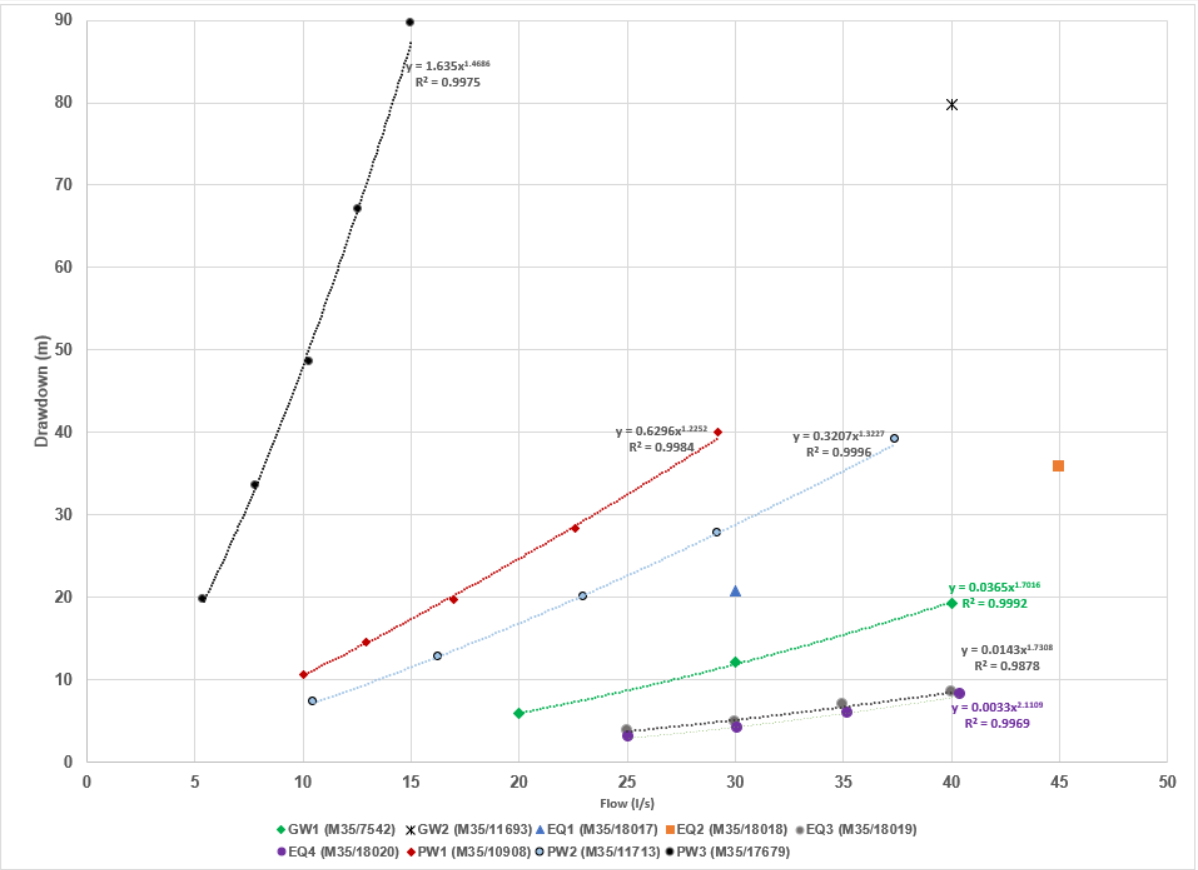


Figure 4: Drawdown vs. flow rate for WDC wells

Table 3 presents the specific capacity and assessed well performance for the WDC wells.

Table 3: Specific capacity and assessed well performance

Well	Screen (m bgl)	Max. Flow (l/s)	Max. Drawdown (m)	Specific Capacity (l/s/m)	Performance [a]
GW1	201.8-205.8	40	21	1.9	Good
GW2	200.7-205.4	40	80	0.5	Poor
EQ1	212.2-214.2	30	21	1.4	Moderate
EQ2	244.7-250.7	45	36	1.3	Moderate
EQ3	208-212	40	9	4..7	Good
EQ4	209.56-215.56	40	8	4.9	Good
PW1	142.8-145.8	30	48	0.6	Moderate
PW2	142.5-145.5	37	39	0.9	Moderate
PW3	131.2-137.2	15	90	0.2	Poor

Note:
(a) Good >1.5 l/s/m. Moderate 0.5-1.5 l/s/m. Poor <0.5 l/s/m.

WDC has provided the following performance details on the WDC wells:

- EQ1 - Operationally, flowrate is limited to 30 l/s to ensure that it does not draw sand through.
- EQ2 - Pump sized to supply 45 l/s. Reported as yielding approximately 37 l/s when running concurrently with EQ1 and EQ3 as part of original commissioning.

- EQ3 - Pump sized to supply 41 l/s. Reported as yielding approximately 37 l/s when running concurrently with EQ1 and EQ2 as part of original commissioning.

4.3.2 Testing on EQ3

Both a step test and a constant rate test were completed on well EQ3[5] (screened at 208-212 m), which were analysed to derive aquifer parameters[6] in Table 4. Interpretation of both the step test and constant rate test was complicated by the tidal and pumping effects of the Gladstone wells.

- Step test resulted in a derived aquifer transmissivity of approximately 1,000 m^2/day[7].
- Constant rate test completed at a flow rate of 40 l/s for 24 hours, while monitoring water levels in wells EQ1 and EQ2.
    - Interference drawdown of approximately 1.5 m in EQ1, located 250 m from EQ3 (screened at 212-214 m).
    - Interference drawdown of approximately 0.2 m in EQ2, located 270 m from EQ3 (screened at 245-251 m).
    - Although EQ1 and EQ2 are located a similar distance from EQ3, interference observed in EQ2 is markedly less due to being screened within a deeper aquifer.

Table 4: EQ4 Aquifer parameters as supplied by URS[6]

Transmissivity (m^2/day)	Storativity	K'/B'	Leakage (m)
300	0.0013	0.0022	286

The results of the EQ3 constant-rate aquifer test are regarded as representative of the Equestrian wellfield, given the well's location and depth, the longer pumping period undertaken, and the monitoring of groundwater level responses in observation wells.

4.3.3 Testing on PW1

A constant rate test was completed on well PW1 (Appendix C) (screened at 143-145 m), which were analysed to derive aquifer parameters in Table 5.

- Constant rate test completed at a flow rate of 31 l/s for 97 hours, while monitoring water levels in wells M35/10910 (220 m deep).
    - Interference drawdown of approximately 3.32 m in M35/10910, located 265 m from pump well.

PW1 is located north of the Equestrian wellfield (Figure 1) and screened at a shallower depth, thus the aquifer test results are less likely to be representative of the Equestrian wellfield.

[5] Undertaken by Clemence Well Drillers.
[6] URS (2014): Equestrian 2 Potable Well – Aquifer Test Analysis. 24 October 2014. 42190980/R001/A. Prepared for Todd Property Pegasus Town Ltd. Prepared by URS New Zealand Ltd.
[7] Theis recovery solution. Given external interference effects and uncertainty regarding a recharge source (uncertainty on whether boundary effects are present given short duration of test), URS consider this provides the best estimate.

Table 5: PW1 Aquifer parameters

Transmissivity (m^2/day)	Storativity	K'/B'	Leakage (m)	Storativity Overlying Aquifer
166	0.000118	0.00037	673	0.004

4.4 Performance of Wells in the Wider Area

In addition to assessing the performance of the well field wells, we reviewed well performance in the wider area to provide additional context.

Within 1 km, there are no other wells deeper than 140 m that have flow and yield data available (in addition to the WDC wells).

4.5 Groundwater Quality

Recent groundwater quality samples taken in wells GW1, GW2, EQ1, EQ2 and EQ3 have been reviewed and are summarised in Appendix D. The results show that the groundwater quality is generally of a high standard and shows that the water quality parameters sampled are within or below the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 Maximum Acceptable Values (MAV) and Aesthetic Values for Drinking Water 2022 (AV).

4.6 Key Findings

- The aquifer system comprises multiple semi-confined to confined gravel aquifers present at 0-30 m, 60 m, 100-115 m, 145-147 m, and 182-218 m and 250 m.
- Assessed well performance for the WDC wells:
    - EQ3 and EQ4 have high performance.
    - GW1, EQ1, EQ2, PW1 and PW2 have moderate performance.
    - GW2 and PW3 perform poorly.
    - Well performance varies across the area, and aquifer depths, and high yields cannot be assured. This is illustrated by GW1 and GW2, which are located about 50 m apart and drilled to a similar depth, yet GW2 performs worse than GW1.
- Aquifer parameters derived from testing on EQ3 are representative of the Equestrian wellfield.
- Groundwater quality sampling of WDC wells show that it is generally of a high standard.

5 Possible New Well Locations

Five potential new locations were identified based on (Table 6 and Figure 5):

- Proximity to existing infrastructure.
- Existing landowner concerns.
- Maximising separation from waste disposal fields.
- Minimising visibility and operational impacts on landowners in vicinity.

Table 6 summarises the advantages and disadvantages of each option. Based on this preliminary

assessment, we have narrowed the selection to options 1, 4 and 5 for further assessment of the effect that pumping the proposed well may have on wellfield performance.

WDC will need to apply for a change of conditions to the existing consent CRC167262 to include the new well (this applies to all options).

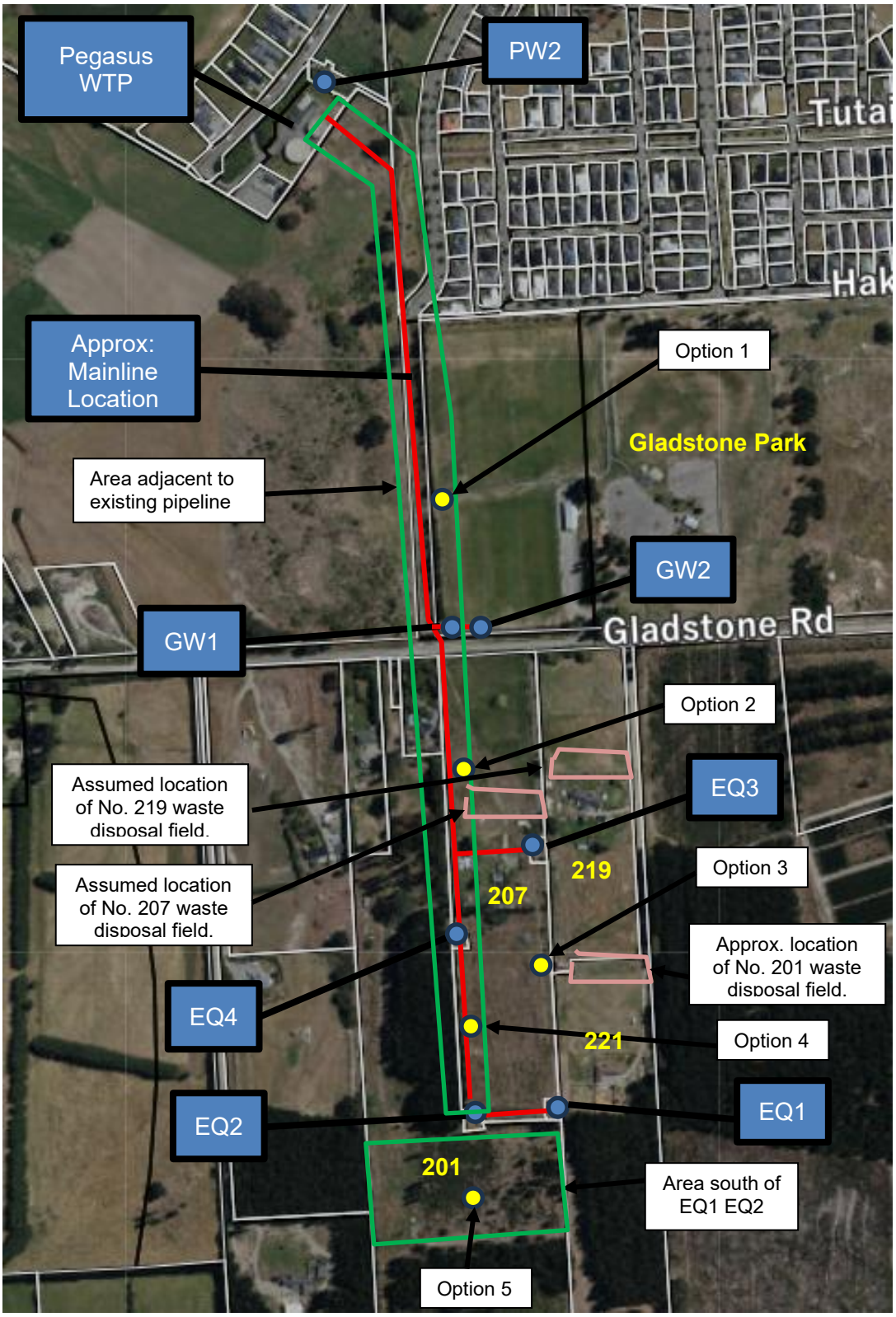


Figure 5: Possible new well locations

Table 6: Advantages and disadvantages of Options

Option	Advantages	Disadvantages
1	• Adjacent to existing mainline. • Located between GW1 and PW2, which have moderate to good performance. • Likely reduced impact on wellfield interference. • CDWPZ - away from nearby dwellings and possible waste disposal fields.	• Uncertainty regarding whether new well may have similar performance as GW2.
2	• Adjacent to existing mainline. • Located between EQ1, EQ2, EQ3 and EQ4 which have moderate to good performance. • CDWPZ - away from nearby dwellings and possible waste disposal fields.	• Well may have risk of sand ingression and care will be required with screening. • Uncertainty on location of waste disposal field. • High visibility to owner of No. 207. • Wellfield interference likely to affect closest four existing wells.
3	• Located between EQ1, EQ2, EQ3 and EQ4, which have moderate to good performance.	• Increased cost with required extension of mainline. • Well may have risk of sand ingression and care will be required with screening. • CDWPZ - well close to known waste disposal field on No. 221. • Property owner doesn't like WDC operating on this part of property. • Wellfield interference likely to affect closest four existing wells.
4	• Adjacent to existing mainline. • Located between EQ1, EQ2, EQ3 and EQ4, which have moderate to good performance. • CDWPZ - away from nearby dwellings and possible waste disposal fields.	• Well may have risk of sand ingression and care will be required with screening. • Wellfield interference likely to affect closest four existing wells.
5	• Located south of EQ1 and EQ2, which have moderate performance. • Likely reduced impact on wellfield interference. • CDWPZ - away from nearby dwellings and possible waste disposal fields.	• Well may have risk of sand ingression and care will be required with screening. • Increased cost with required extension of pipeline.

6 Interference from Pumping New and Effect on Wellfield Performance

Wellfield performance is influenced by groundwater levels, the relationship between pump rate and drawdown in each well, and interference from nearby pumping wells. To assess the potential impact of the proposed new well on wellfield performance, it is first necessary to understand the current performance of the existing wellfield wells.

Section 4.3 discusses the flow drawdown relationship for the wellfield wells. Groundwater levels in the vicinity of the wellfield have been reviewed to determine likely lowest water levels in the wellfield wells (Appendix F).

6.1 Well Interference

The potential interference of pumping the new well at WDC's target flowrate of 37 l/s on existing WDC wells (GW1, GW2, EQ1, EQ2, EQ3 and PW1) has been calculated for each of the three recommended location options. We assumed that the lowest groundwater levels already account for the effects of pumping the existing wells.

Well interference effects have been calculated using the Hunt Scott Drawdown method. We used aquifer parameters derived from testing on EQ3 (212 m deep) (see Table 4):

Transmissivity: 300 m^2/d
Storativity: 0.0013
K'/B': 0.00022

Table 7 presents the well interference on existing well field wells resulting from pumping the new well for the three location options.

Table 7: Well field distances and interference resulting from pumping new well for a period of 365 days

Well		New Well Option 1	New well Option 4	New well Option 5
PW1	Distance (m)	800	1,357	1,527
	Interference (m)	3.0	2.4	2.2
GW1	Distance (m)	146	421	593
	Interference (m)	5.4	3.9	3.4
GW2	Distance (m)	155	422	593
	Interference (m)	5.3	3.9	3.4
EQ1	Distance (m)	654	119	125
	Interference (m)	3.3	5.7	5.7
EQ2	Distance (m)	661	94	78
	Interference (m)	3.3	6.1	6.4
EQ3	Distance (m)	395	200	363
	Interference (m)	4.0	4.9	4.1

Table 7 shows that the expected total well field interference (maximum) for each well ranges from 2.2 to 6.4 m after pumping for 365 days. If the distance between wells is reduced to 50 m, the interference increases to 7.2 m.

The available water in the existing WDC wells has been calculated (Table 8). This shows that there is greater than 100 m of water available (i.e. water above the pump – assuming that the pump is as low as possible in the well) taking into account groundwater levels and self-induced drawdown. It is expected that a new well would have a similar value in terms of available head.

Therefore, interference from the new well is unlikely to constrain operation of the wellfield as long as the pump depths are greater than 70 m in all wells.

Table 8: Wellfield performance with addition interference from a new well

Well Details	PW1	GW1	GW2	EQ1	EQ2	EQ3
Depth (m)	145.8	205.8	205.4	218.8	250.7	210.0
Top of screen (m)	142.8	201.8	200.7	212.2	244.7	208
Top of pump (m) (a)	138.8	197.8	196.7	208.2	240.7	204
Allowance of 2 m above pump (m)	136.8	195.8	194.7	206.2	238.7	202
Lowest water level (m bgl)	7.7	6.9	6.9	4.8	4.8	4.8
Available water (m)	129.1	188.9	187.8	201.4	233.9	197.2
Well flow (l/s) (b)	20	31	31	30	37	38
Well drawdown (m)	25.10	12.52	53.09	20.73	26.16	7.73
Remaining water available for interference (m)	104.00	176.38	134.71	180.67	207.74	189.47
Interference from pumping new well after 365 days (m)	3.0	5.4	5.3	5.7	6.4	4.9
Is interference from new well < remaining water available	Yes	Yes	Yes	Yes	Yes	Yes

Note:

(a) Pump assumed to be installed as low as possible in the well. A pump length of 4 m has been assumed.
(b) Well capacity when operating independently[8].

7 Summary

- The aquifer system comprises multiple semi-confined to confined gravel aquifers present at approximate depths, 0-30 m, 60 m, 100-115 m, 145-147 m, and 182-218 m and 250 m.
- Groundwater quality sampling of WDC wells show that it is generally of a high standard.
- Existing wells demonstrate high variability in performance, introducing uncertainty in new well yields.
- Three viable replacement well sites (Options 1, 4, and 5) have been identified. Option 1 appears to be the preferred location, although both Options 4 and 5 are expected to provide satisfactory outcomes. However, Options 4 and 5 may present a greater risk of elevated turbidity. Option 4 is likely to experience higher interference effects while Option 5 would incur additional costs associated with the required pipeline extension.
- The additional interference as a result of pumping the new well is not expected to be problematic as long as the pump depths are greater than 70 m in all wells.
- WDC will need to apply for a change of conditions to the existing consent CRC167262 to include the new well (this applies to all options).

[8] WDC (2021): Activity Management Plan 2021 Woodend-Pegasus Water Supply Scheme. Waimakariri District Council. July 2021.

8 Recommendations

- Proceed with a new well targeting a depth of approximately 200 to 215 m.
- Recommend proceeding with Option 1, due to:
    - Proximity to infrastructure.
    - Good separation from existing wells.
    - Lower interference effects.
    - CDWPZ - away from nearby dwellings and possible waste disposal fields.
- During drilling and design, use conservative screen design to reduce turbidity risk.

Appendix A – Consent CRC167262

RESOURCE CONSENT CRC167262

Pursuant to Section 104 of the Resource Management Act 1991

The Canterbury Regional Council (known as Environment Canterbury)

GRANTS TO:	Waimakariri District Council
A WATER PERMIT:	to take and use groundwater
TRANSFER DATE:	23 Mar 2016
EXPIRY DATE:	21 Nov 2043
LOCATION:	Gladstone Road, PEGASUS TOWN

SUBJECT TO THE FOLLOWING CONDITIONS:

1 Water may be taken only from:

a. bore M35/10908, 250 millimetres diameter and 142.8 metres deep, at map reference NZMS 260 M35:8436-6581
b. bore M35/11713, 250 millimetres diameter and 146.5 metres deep, at map reference NZMS 260 M35:8450-6544
c. bore M35/17679, 250 millimetres diameter and 138 metres deep, at map reference NZMS 260 M35:8407-6614
d. bore M35/18017, 300 millimetres diameter and 214.2 metres deep, at map reference NZMS 260 M35:8474-6441
e. bore M35/18018, 250 millimetres diameter and 250.7 metres deep, at map reference NZMS 260 M35:8465-6439
f. bore M35/18019, 300 millimetres diameter and 200 metres deep, at map reference NZMS 260 M35:8463-6465
g. bore M35/18020, 300 millimetres diameter and 200 metres deep, at map reference NZMS 260 M35:8462-6486.

2 Water may be taken at a rate not exceeding 142 litres per second, with a volume not exceeding 12,288 cubic metres in any one day, and 1,756,015 cubic metres between 1 July and the following 30 June.

3 Water shall only be used for community supply purposes as described in the application.

4 The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system.

5 The consent holder shall before the first exercise of this consent:

a.

i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken to within an accuracy of plus or minus five percent as

part of the pump outlet plumbing, or within the mainline distribution system, at a location(s) that will ensure the total take of water is measured; and

ii. install a tamper-proof electronic recording device such as a data logger(s) that shall time stamp a pulse from the flow meter at least once every [specify time period - default = 15 minutes for takes with a "high" degree of hydraulic connection, 60 minutes for all others], and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).

b. The recording device(s) shall:
   i. be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and
   ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
   iii. shall be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted.

c. The water meter and recording device(s) shall be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.

d. The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.

e. All practicable measures shall be taken to ensure that the water meter and recording device(s) are fully functional at all times.

6 The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.

7 Within one month of the installation of the measuring or recording device(s), or any subsequent replacement measuring or recording device(s), and at five-yearly intervals thereafter, and at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

a. The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and

b. Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (5).

8 The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.

9 a. The system used in association with taking water in terms of this permit shall not be used to distribute any added contaminant, unless:
   i. a reduced pressure zone (RPZ) backflow preventer; OR
   ii. an air gap backflow preventer

is installed within the pump outlet plumbing.

b. The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
c. The backflow preventer must be installed downstream of the water meter.
d. The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
e.
    i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
    ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;
    OR
f.
    i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
    ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.
g. A copy of:
    i. the most recent test report required under (e)(ii); OR
    ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:
This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

10 The consent holder shall take all practicable steps to:
a. Avoid leakage from pipes and structures, and
b. Promote the efficient use of water by end users.

11 Resource consent CRC084654 shall be surrendered before the first exercise of this consent.

12 The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.

13 The lapsing date for the purposes of section 125 shall be 31 December 2018.

Issued at Christchurch on 31 March 2016

Canterbury Regional Council

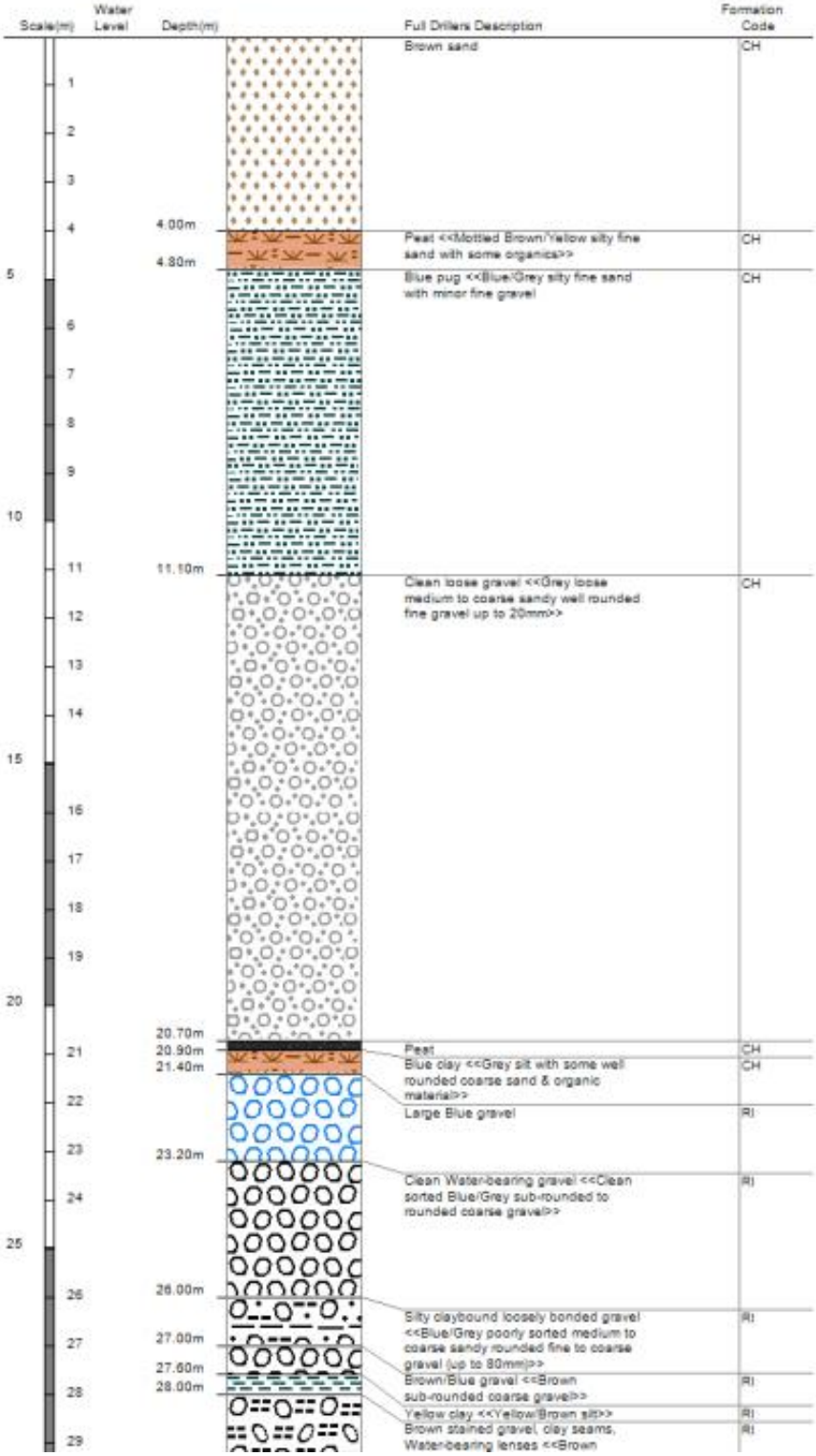
Appendix B – Well Logs

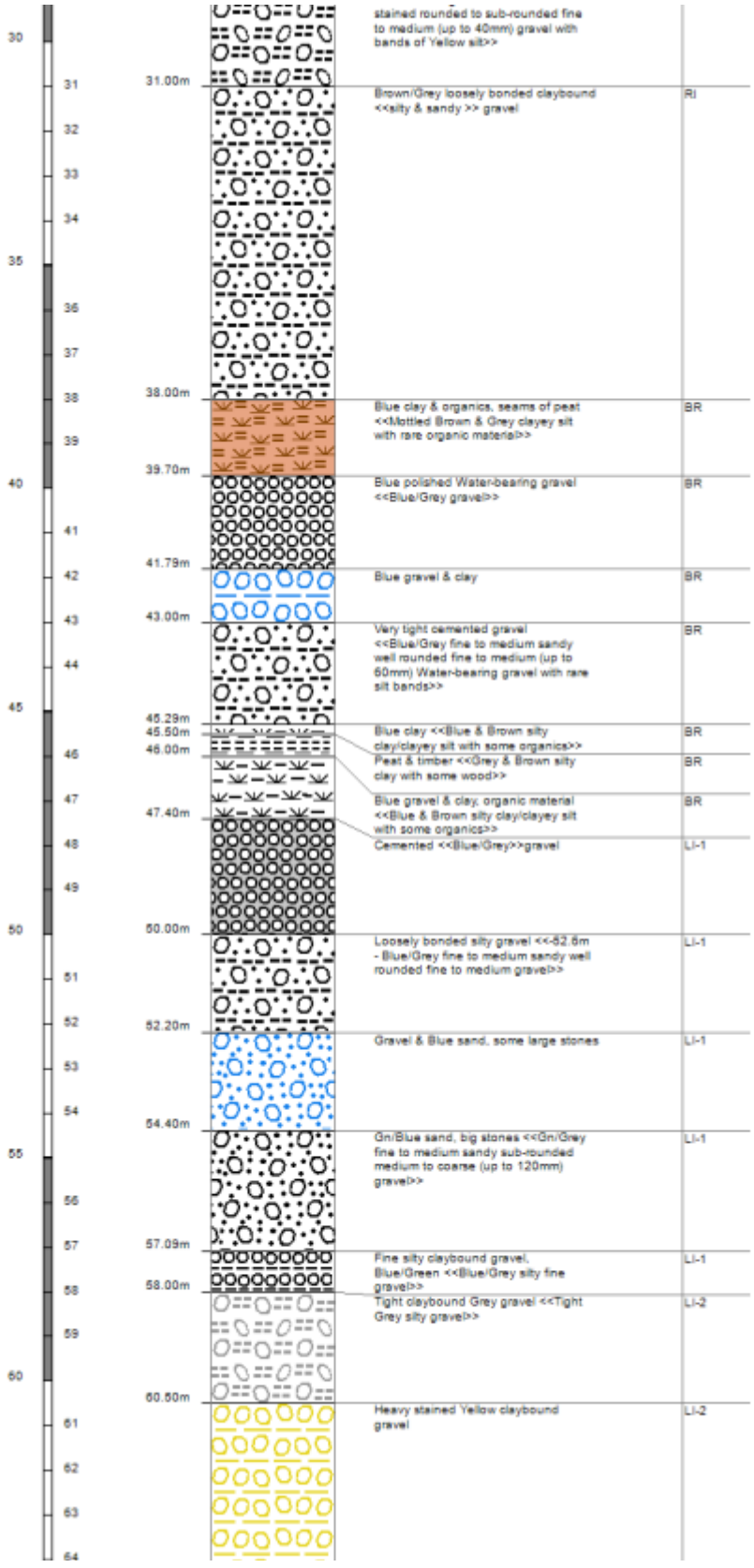
GW1 (M35/7542)

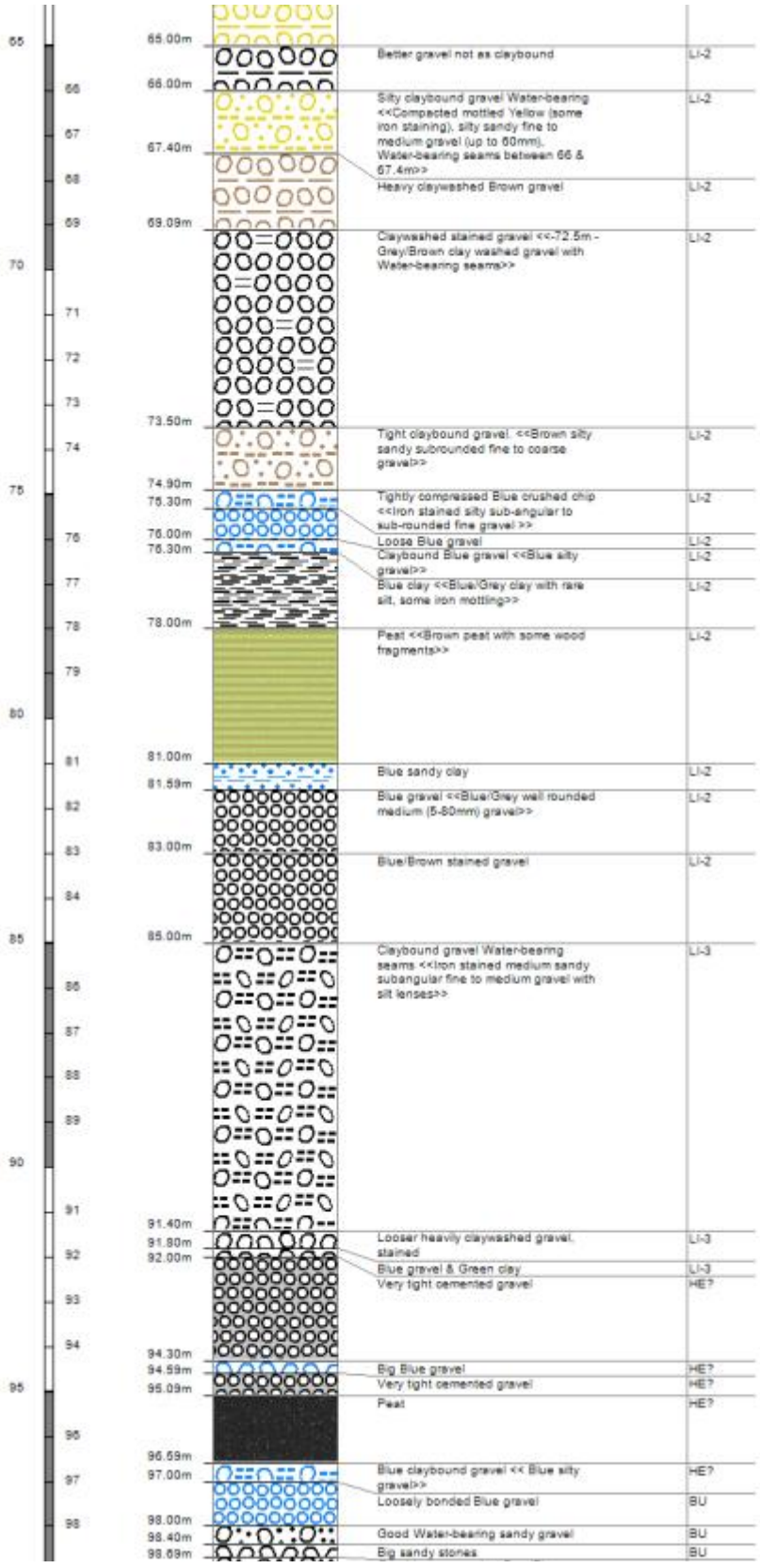
Borelog for well M35/7542

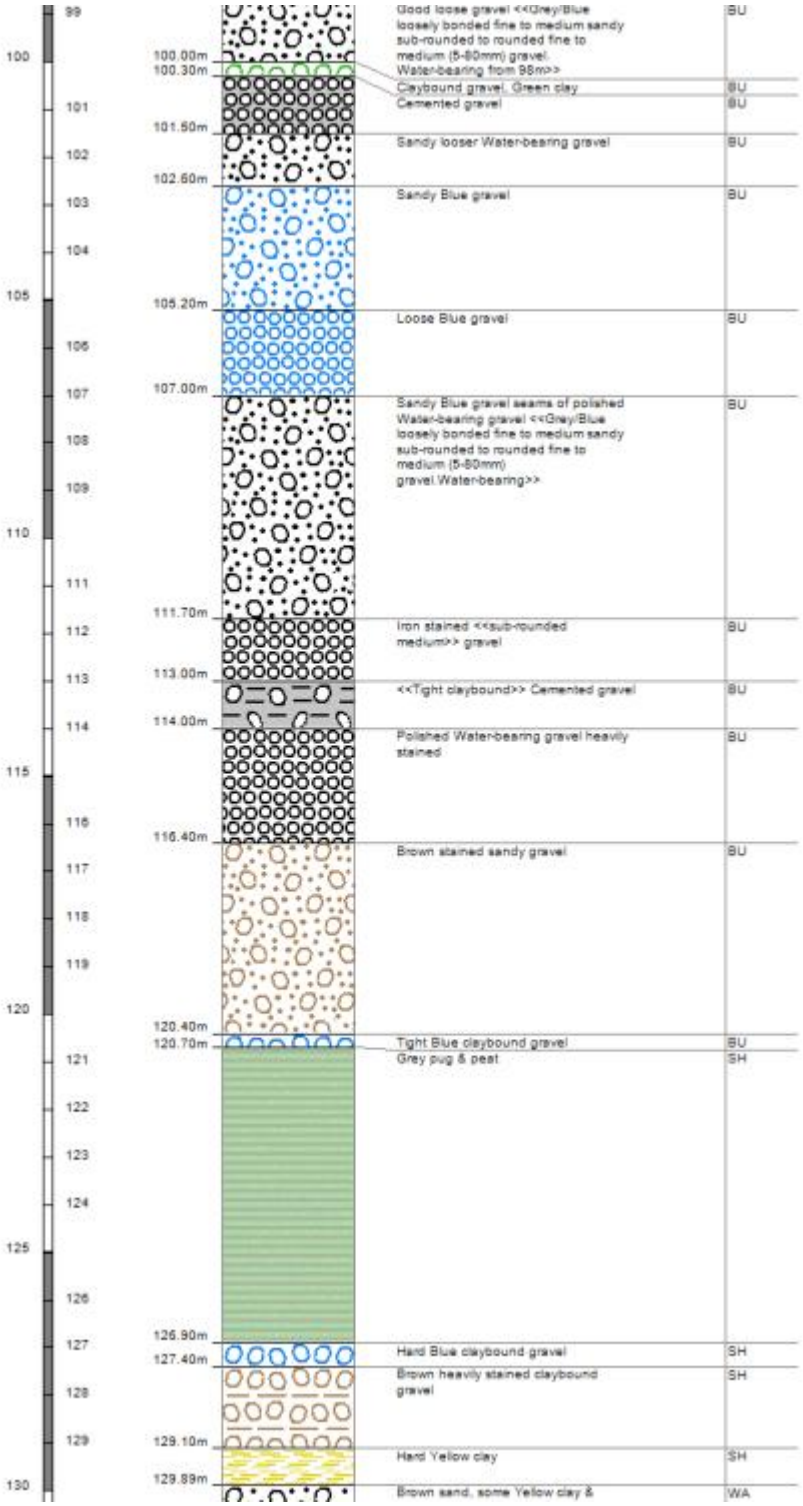
Grid Reference (NZTM): 1574614 mE, 5203285 mN
Location Accuracy: 2 - 15m
Ground Level Altitude: 7.9 m +MSD Accuracy: < 0.5 m
Driller: Clemence Drilling Contractors
Drill Method: Cable Tool
Borelog Depth: 210.6 m Drill Date: 06-Feb-1998

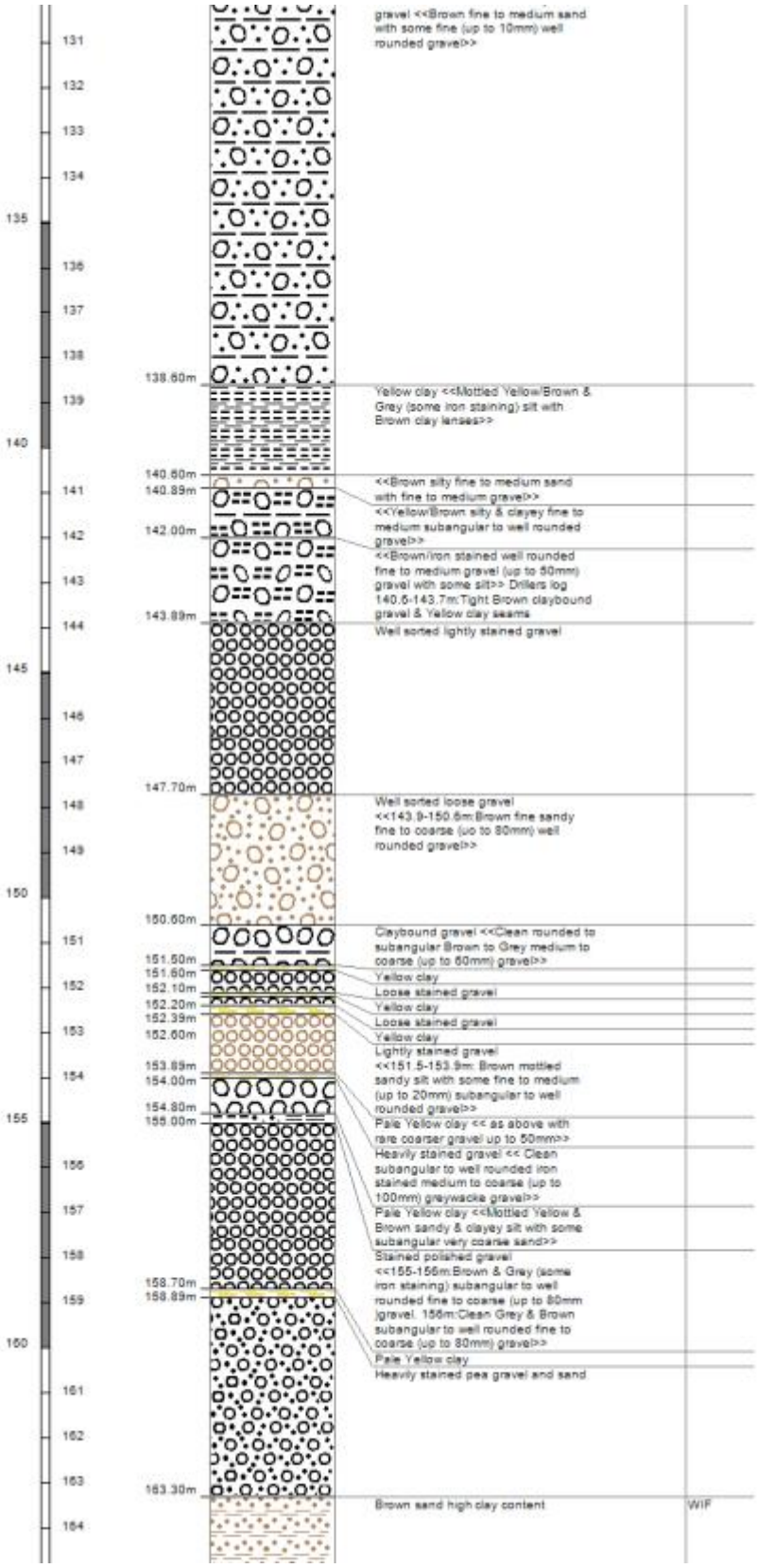
Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

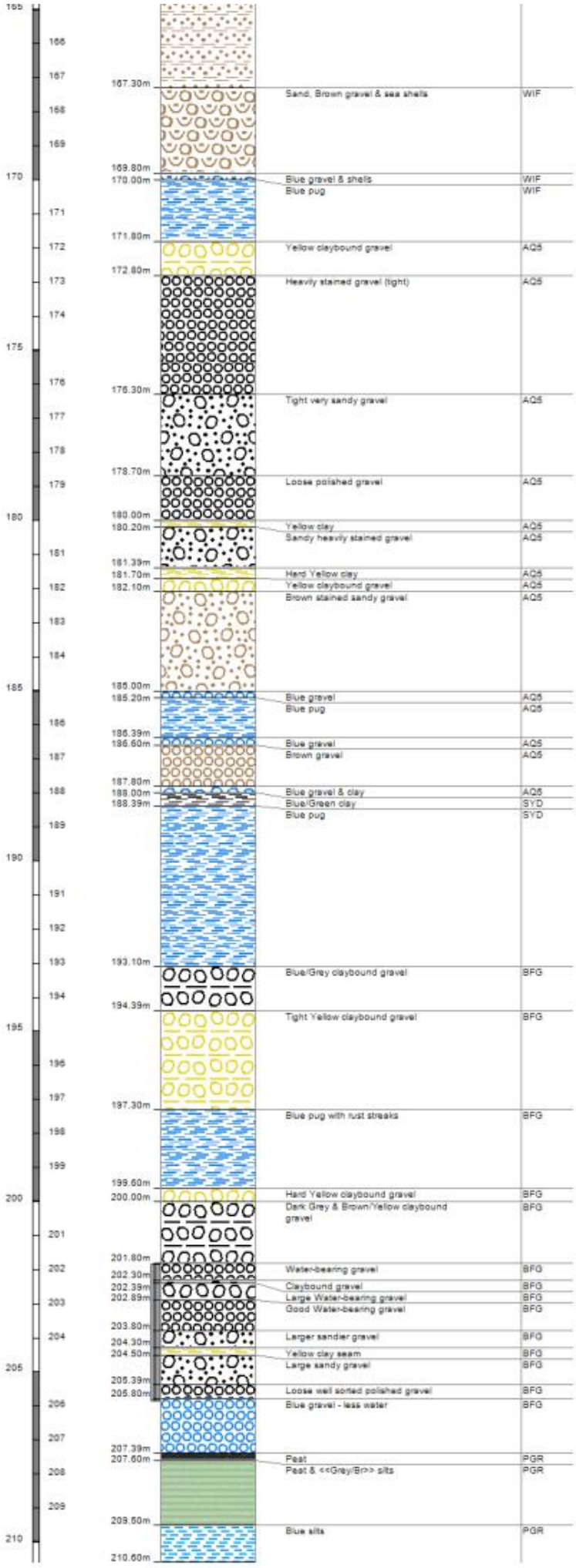



stained rounded to sub-rounded fine to medium (up to 40mm) gravel with bands of Yellow silt>>
31.00m
Brown/Grey loosely bonded claybound <<silty & sandy >> gravel
RI
38.00m
Blue clay & organics, seams of peat <<Mottled Brown & Grey clayey silt with rare organic material>>
BR
39.70m
Blue polished Water-bearing gravel <<Blue/Grey gravel>>
BR
41.79m
Blue gravel & clay
BR
43.00m
Very tight cemented gravel <<Blue/Grey fine to medium sandy well rounded fine to medium (up to 60mm) Water-bearing gravel with rare silt bands>>
BR
45.29m
45.50m
Blue clay <<Blue & Brown silty clay/clayey silt with some organics>>
BR
46.00m
Peat & timber <<Grey & Brown silty clay with some wood>>
BR
47.40m
Blue gravel & clay, organic material <<Blue & Brown silty clay/clayey silt with some organics>>
BR
Cemented <<Blue/Grey>>gravel
LI-1
50.00m
Loosely bonded silty gravel <<-52.6m - Blue/Grey fine to medium sandy well rounded fine to medium gravel>>
LI-1
52.20m
Gravel & Blue sand, some large stones
LI-1
54.40m
Gn/Blue sand, big stones <<Gn/Grey fine to medium sandy sub-rounded medium to coarse (up to 120mm) gravel>>
LI-1
57.09m
Fine silty claybound gravel, Blue/Green <<Blue/Grey silty fine gravel>>
LI-1
58.00m
Tight claybound Grey gravel <<Tight Grey silty gravel>>
LI-2
60.50m
Heavy stained Yellow claybound gravel
LI-2


65.00m
Better gravel not as claybound
LI-2
66.00m
Silty claybound gravel Water-bearing <<Compacted mottled Yellow (some iron staining), silty sandy fine to medium gravel (up to 60mm). Water-bearing seams between 66 & 67.4m>>
LI-2
67.40m
Heavy claywashed Brown gravel
LI-2
69.09m
Claywashed stained gravel <<-72.5m - Grey/Brown clay washed gravel with Water-bearing seams>>
LI-2
73.50m
Tight claybound gravel. <<Brown silty sandy subrounded fine to coarse gravel>>
LI-2
74.90m
76.30m
Tightly compressed Blue crushed chip <<Iron stained silty sub-angular to sub-rounded fine gravel >>
LI-2
76.00m
Loose Blue gravel
LI-2
76.30m
Claybound Blue gravel <<Blue silty gravel>>
LI-2
Blue clay <<Blue/Grey clay with rare silt, some iron mottling>>
LI-2
78.00m
Peat <<Brown peat with some wood fragments>>
LI-2
81.00m
Blue sandy clay
LI-2
81.59m
Blue gravel <<Blue/Grey well rounded medium (5-60mm) gravel>>
LI-2
83.00m
Blue/Brown stained gravel
LI-2
85.00m
Claybound gravel Water-bearing seams <<Iron stained medium sandy subangular fine to medium gravel with silt lenses>>
LI-3
91.40m
91.80m
Looser heavily claywashed gravel, stained
LI-3
92.00m
Blue gravel & Green clay
LI-3
Very tight cemented gravel
HE?
94.30m
94.59m
Big Blue gravel
HE?
95.09m
Very tight cemented gravel
HE?
Peat
HE?
96.59m
97.00m
Blue claybound gravel << Blue silty gravel>>
HE?
Loosely bonded Blue gravel
BU
98.00m
98.40m
Good Water-bearing sandy gravel
BU
98.69m
Big sandy stones
BU


99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
100.00m
100.30m
101.50m
102.60m
105.20m
107.00m
111.70m
113.00m
114.00m
116.40m
120.40m
120.70m
126.90m
127.40m
129.10m
129.89m
Good loose gravel <<Grey/Blue loosely bonded fine to medium sandy sub-rounded to rounded fine to medium (5-60mm) gravel. Water-bearing from 98m>>
Claybound gravel. Green clay
Cemented gravel
Sandy looser Water-bearing gravel
Sandy Blue gravel
Loose Blue gravel
Sandy Blue gravel seams of polished Water-bearing gravel <<Grey/Blue loosely bonded fine to medium sandy sub-rounded to rounded fine to medium (5-60mm) gravel Water-bearing>>
Iron stained <<sub-rounded medium>> gravel
<<Tight claybound>> Cemented gravel
Polished Water-bearing gravel heavily stained
Brown stained sandy gravel
Tight Blue claybound gravel
Grey pug & peat
Hard Blue claybound gravel
Brown heavily stained claybound gravel
Hard Yellow clay
Brown sand, some Yellow clay &
BU
BU
BU
BU
BU
BU
BU
BU
BU
BU
BU
SH
SH
SH
SH
WA


gravel <<Brown fine to medium sand with some fine (up to 10mm) well rounded gravel>>
138.60m
Yellow clay <<Mottled Yellow/Brown & Grey (some iron staining) silt with Brown clay lenses>>
140.60m
140.89m
<<Brown silty fine to medium sand with fine to medium gravel>>
<<Yellow/Brown silty & clayey fine to medium subangular to well rounded gravel>>
142.00m
<<Brown/iron stained well rounded fine to medium gravel (up to 50mm) gravel with some silt>> Drillers log 140.6-143.7m:Tight Brown claybound gravel & Yellow clay seams
143.89m
Well sorted lightly stained gravel
147.70m
Well sorted loose gravel <<143.9-150.6m:Brown fine sandy fine to coarse (uo to 80mm) well rounded gravel>>
150.60m
Claybound gravel <<Clean rounded to subangular Brown to Grey medium to coarse (up to 60mm) gravel>>
151.50m
151.60m
Yellow clay
152.10m
Loose stained gravel
152.20m
Yellow clay
152.39m
Loose stained gravel
152.60m
Yellow clay
153.89m
Lightly stained gravel <<151.5-153.9m: Brown mottled sandy silt with some fine to medium (up to 20mm) subangular to well rounded gravel>>
154.00m
154.80m
155.00m
Pale Yellow clay << as above with rare coarser gravel up to 50mm>>
Heavily stained gravel << Clean subangular to well rounded iron stained medium to coarse (up to 100mm) greywacke gravel>>
Pale Yellow clay <<Mottled Yellow & Brown sandy & clayey silt with some subangular very coarse sand>>
Stained polished gravel <<155-156m:Brown & Grey (some iron staining) subangular to well rounded fine to coarse (up to 80mm)gravel. 156m:Clean Grey & Brown subangular to well rounded fine to coarse (up to 80mm) gravel>>
158.70m
158.89m
Pale Yellow clay
Heavily stained pea gravel and sand
163.30m
Brown sand high clay content
WIF

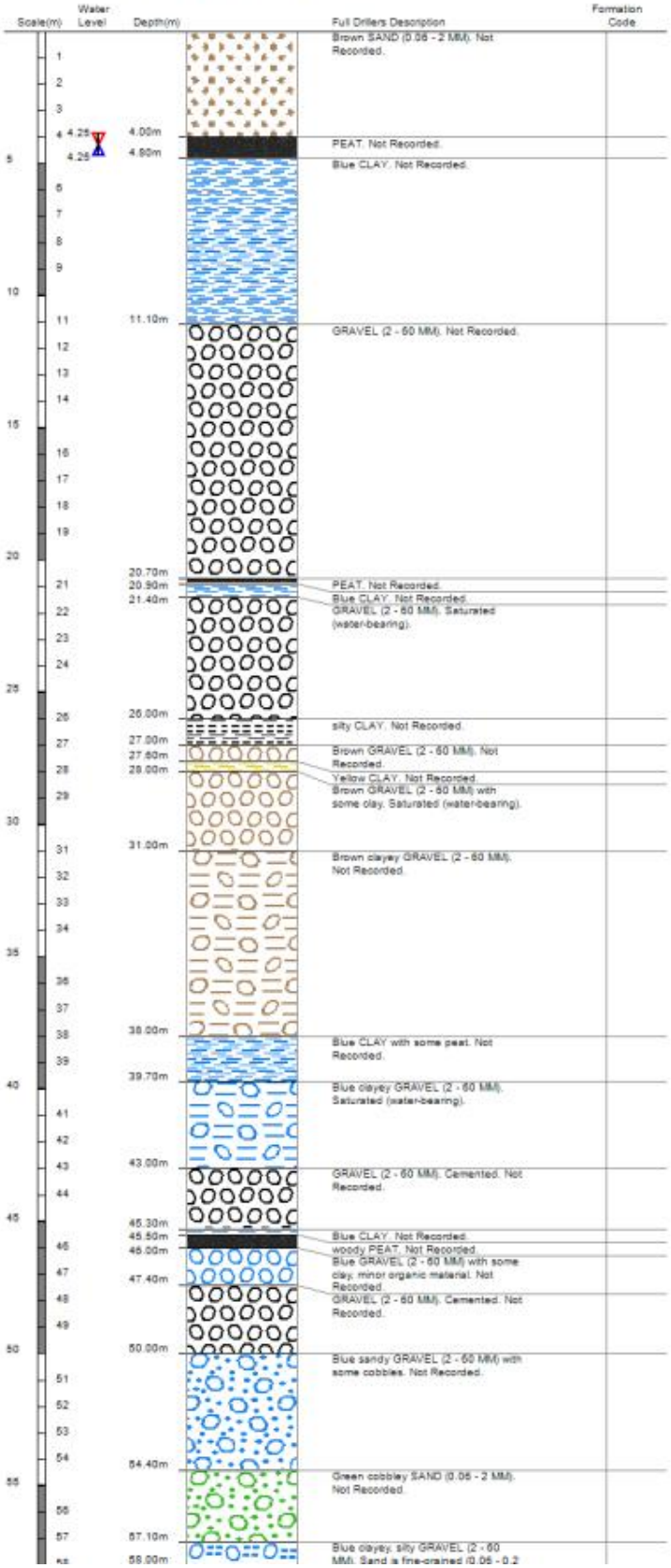

167.30m
Sand, Brown gravel & sea shells
WIF
169.80m
170.00m
Blue gravel & shells
WIF
Blue pug
WIF
171.80m
Yellow claybound gravel
AQ5
172.80m
Heavily stained gravel (tight)
AQ5
176.30m
Tight very sandy gravel
AQ5
178.70m
Loose polished gravel
AQ5
180.00m
180.20m
Yellow clay
AQ5
Sandy heavily stained gravel
AQ5
181.39m
181.70m
Hard Yellow clay
AQ5
182.10m
Yellow claybound gravel
AQ5
Brown stained sandy gravel
AQ5
185.00m
185.20m
Blue gravel
AQ5
Blue pug
AQ5
186.39m
186.60m
Blue gravel
AQ5
Brown gravel
AQ5
187.80m
188.00m
Blue gravel & clay
AQ5
188.39m
Blue/Green clay
SYD
Blue pug
SYD
193.10m
Blue/Grey claybound gravel
BFG
194.39m
Tight Yellow claybound gravel
BFG
197.30m
Blue pug with rust streaks
BFG
199.60m
200.00m
Hard Yellow claybound gravel
BFG
Dark Grey & Brown/Yellow claybound gravel
BFG
201.80m
202.30m
Water-bearing gravel
BFG
202.39m
Claybound gravel
BFG
202.89m
Large Water-bearing gravel
BFG
Good Water-bearing gravel
BFG
203.80m
204.30m
Larger sandier gravel
BFG
204.50m
Yellow clay seam
BFG
Large sandy gravel
BFG
205.39m
205.80m
Loose well sorted polished gravel
BFG
Blue gravel - less water
BFG
207.39m
207.60m
Peat
PGR
Peat & <<Grey/Br>> silts
PGR
209.60m
Blue silts
PGR
210.60m

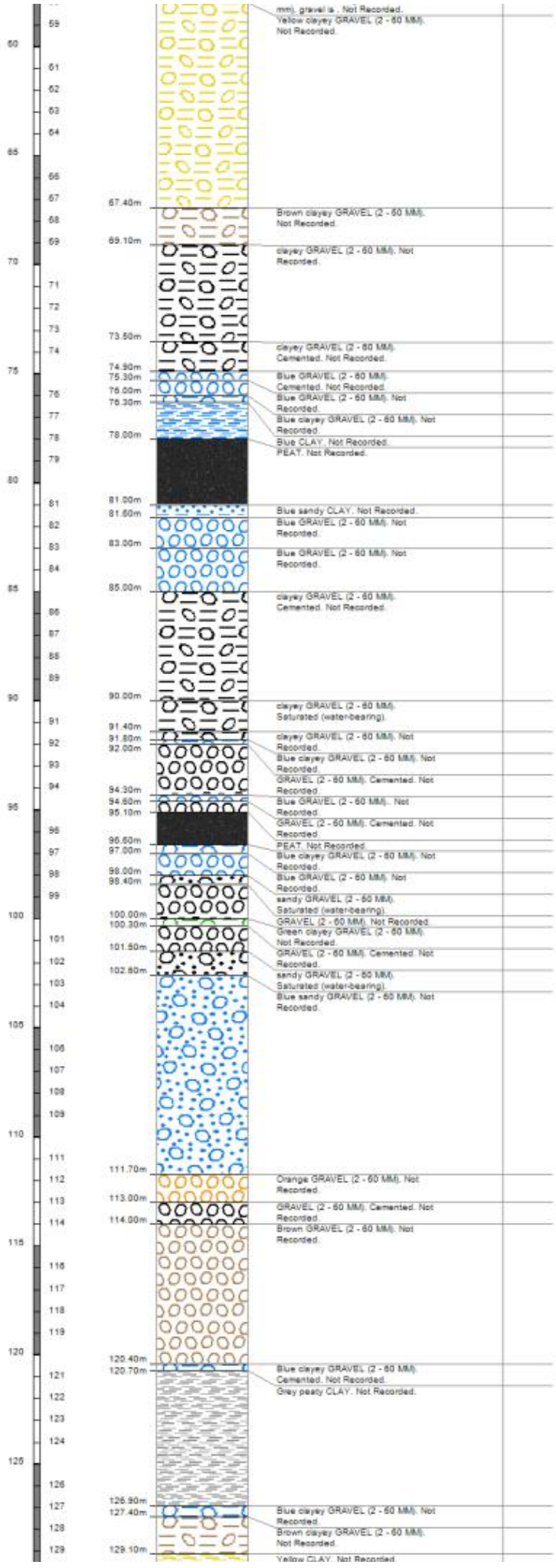
GW2 (M35/11693)

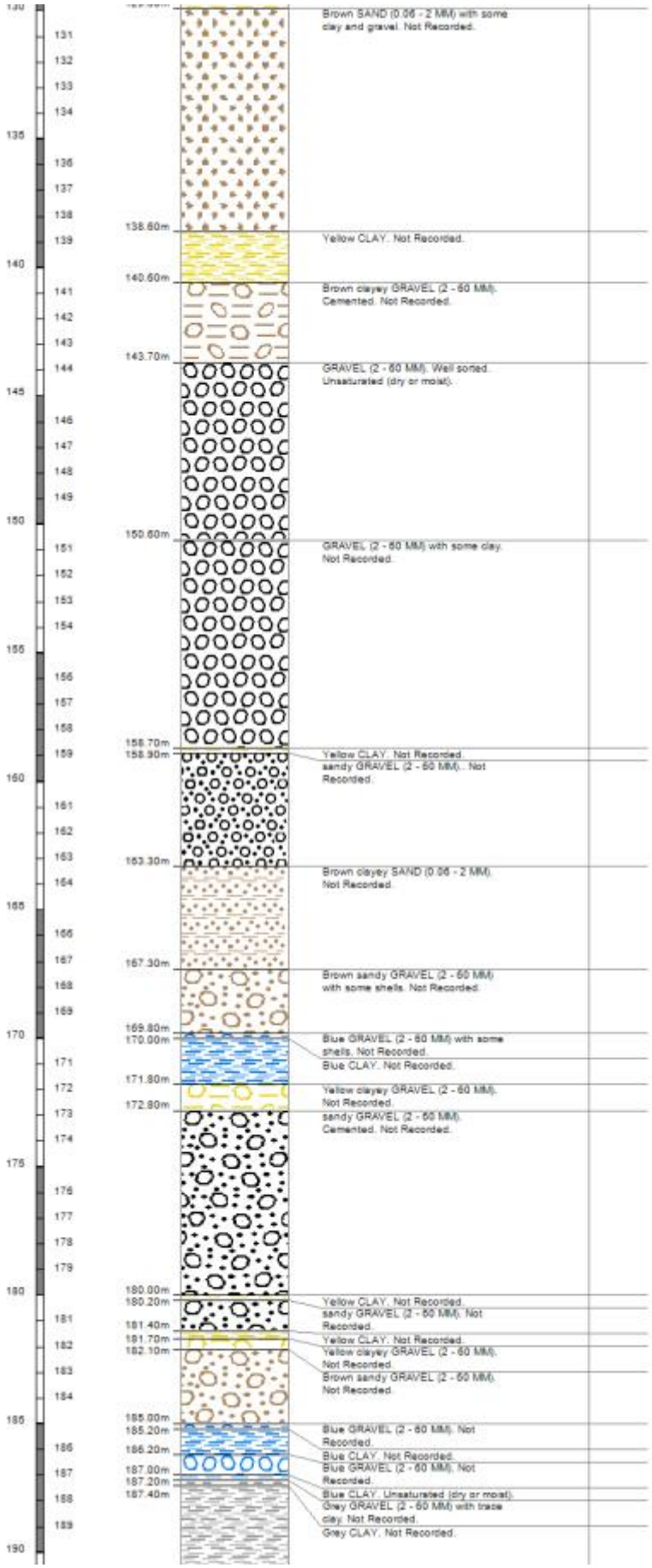
Borelog for well M35/11693

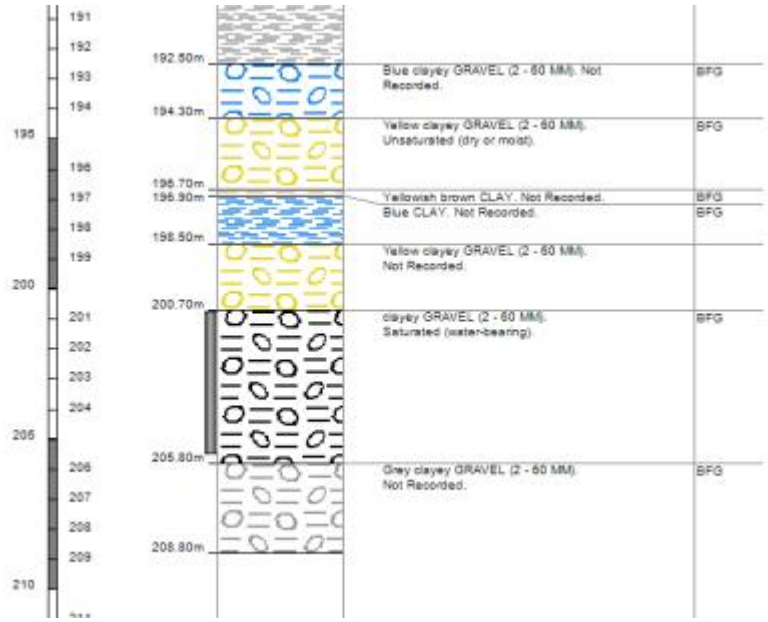
Grid Reference (NZTM): 1574664 mE, 5203287 mN
Location Accuracy: < 50m
Ground Level Altitude: 7.4 m +MSD Accuracy: < 2.5 m
Driller: Clemence Drilling Contractors
Drill Method: Rotary/Percussion
Borelog Depth: 208.8 m Drill Date: 23-Jul-2007

Environment Canterbury Regional Council
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mm), gravel is , Not Recorded.
Yellow clayey GRAVEL (2 - 60 MM). Not Recorded.
67.40m
Brown clayey GRAVEL (2 - 60 MM). Not Recorded.
69.10m
clayey GRAVEL (2 - 60 MM). Not Recorded.
73.50m
clayey GRAVEL (2 - 60 MM). Cemented. Not Recorded.
74.90m
75.30m
Blue GRAVEL (2 - 60 MM). Cemented. Not Recorded.
76.00m
76.30m
Blue GRAVEL (2 - 60 MM). Not Recorded.
Blue clayey GRAVEL (2 - 60 MM). Not Recorded.
78.00m
Blue CLAY. Not Recorded.
PEAT. Not Recorded.
81.00m
81.60m
Blue sandy CLAY. Not Recorded.
Blue GRAVEL (2 - 60 MM). Not Recorded.
83.00m
Blue GRAVEL (2 - 60 MM). Not Recorded.
85.00m
clayey GRAVEL (2 - 60 MM). Cemented. Not Recorded.
90.00m
clayey GRAVEL (2 - 60 MM). Saturated (water-bearing).
91.40m
91.80m
clayey GRAVEL (2 - 60 MM). Not Recorded.
92.00m
Blue clayey GRAVEL (2 - 60 MM). Not Recorded.
GRAVEL (2 - 60 MM). Cemented. Not Recorded.
94.30m
94.60m
Blue GRAVEL (2 - 60 MM). Not Recorded.
95.10m
GRAVEL (2 - 60 MM). Cemented. Not Recorded.
96.60m
PEAT. Not Recorded.
97.00m
Blue clayey GRAVEL (2 - 60 MM). Not Recorded.
98.00m
98.40m
Blue GRAVEL (2 - 60 MM). Not Recorded.
sandy GRAVEL (2 - 60 MM). Saturated (water-bearing).
100.00m
100.30m
GRAVEL (2 - 60 MM). Not Recorded.
Green clayey GRAVEL (2 - 60 MM). Not Recorded.
101.50m
GRAVEL (2 - 60 MM). Cemented. Not Recorded.
102.80m
sandy GRAVEL (2 - 60 MM). Saturated (water-bearing).
Blue sandy GRAVEL (2 - 60 MM). Not Recorded.
111.70m
Orange GRAVEL (2 - 60 MM). Not Recorded.
113.00m
GRAVEL (2 - 60 MM). Cemented. Not Recorded.
114.00m
Brown GRAVEL (2 - 60 MM). Not Recorded.
120.40m
120.70m
Blue clayey GRAVEL (2 - 60 MM). Cemented. Not Recorded.
Grey peaty CLAY. Not Recorded.
126.90m
127.40m
Blue clayey GRAVEL (2 - 60 MM). Not Recorded.
Brown clayey GRAVEL (2 - 60 MM). Not Recorded.
129.10m
Yellow CLAY. Not Recorded.


Brown SAND (0.06 - 2 MM) with some clay and gravel. Not Recorded.
138.60m
Yellow CLAY. Not Recorded.
140.60m
Brown clayey GRAVEL (2 - 60 MM). Cemented. Not Recorded.
143.70m
GRAVEL (2 - 60 MM). Well sorted. Unsaturated (dry or moist).
150.60m
GRAVEL (2 - 60 MM) with some clay. Not Recorded.
158.70m
158.90m
Yellow CLAY. Not Recorded.
sandy GRAVEL (2 - 60 MM).. Not Recorded.
163.30m
Brown clayey SAND (0.06 - 2 MM). Not Recorded.
167.30m
Brown sandy GRAVEL (2 - 60 MM) with some shells. Not Recorded.
169.80m
170.00m
Blue GRAVEL (2 - 60 MM) with some shells. Not Recorded.
Blue CLAY. Not Recorded.
171.80m
Yellow clayey GRAVEL (2 - 60 MM). Not Recorded.
172.80m
sandy GRAVEL (2 - 60 MM). Cemented. Not Recorded.
180.00m
180.20m
Yellow CLAY. Not Recorded.
sandy GRAVEL (2 - 60 MM). Not Recorded.
181.40m
181.70m
Yellow CLAY. Not Recorded.
182.10m
Yellow clayey GRAVEL (2 - 60 MM). Not Recorded.
Brown sandy GRAVEL (2 - 60 MM). Not Recorded.
185.00m
185.20m
Blue GRAVEL (2 - 60 MM). Not Recorded.
186.20m
Blue CLAY. Not Recorded.
187.00m
Blue GRAVEL (2 - 60 MM). Not Recorded.
187.20m
Blue CLAY. Unsaturated (dry or moist).
187.40m
Grey GRAVEL (2 - 60 MM) with trace clay. Not Recorded.
Grey CLAY. Not Recorded.

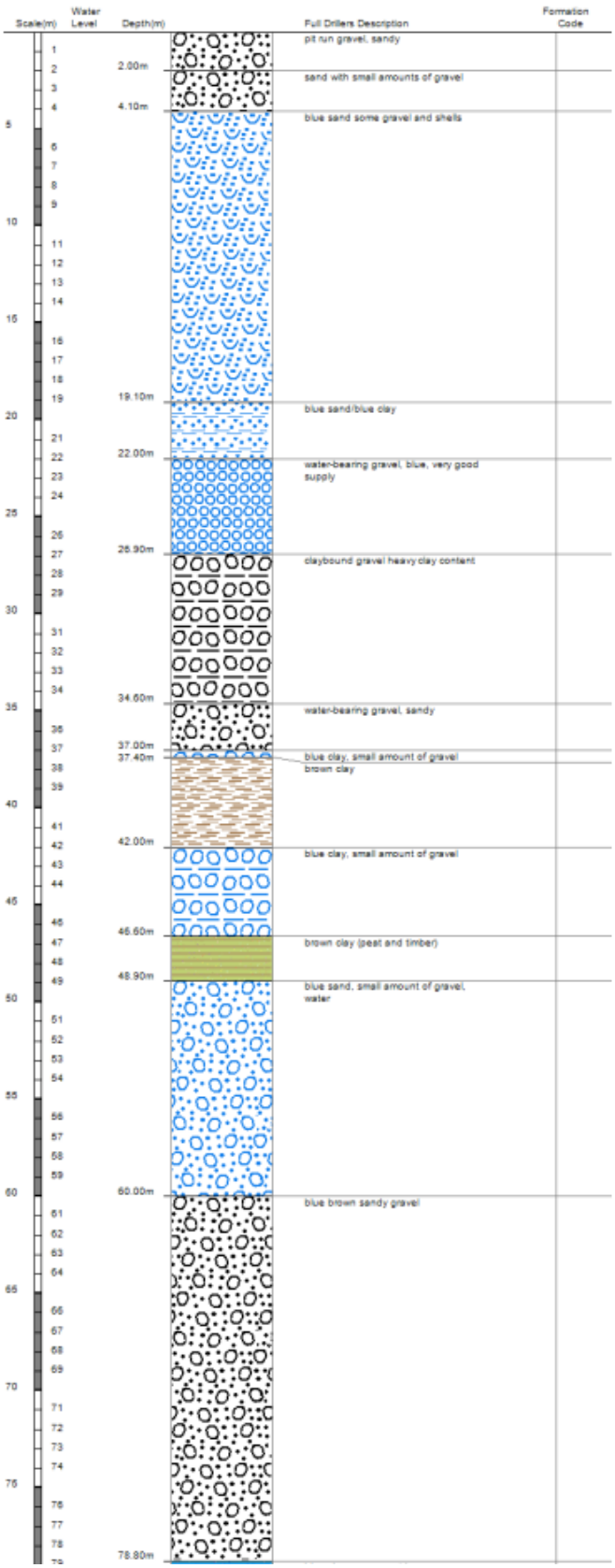

191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
192.50m
194.30m
196.70m
196.90m
198.50m
200.70m
205.80m
208.80m
Blue clayey GRAVEL (2 - 60 MM). Not Recorded.
Yellow clayey GRAVEL (2 - 60 MM). Unsaturated (dry or moist).
Yellowish brown CLAY. Not Recorded.
Blue CLAY. Not Recorded.
Yellow clayey GRAVEL (2 - 60 MM). Not Recorded.
clayey GRAVEL (2 - 60 MM). Saturated (water-bearing).
Grey clayey GRAVEL (2 - 60 MM). Not Recorded.
BFG
BFG
BFG
BFG
BFG
BFG

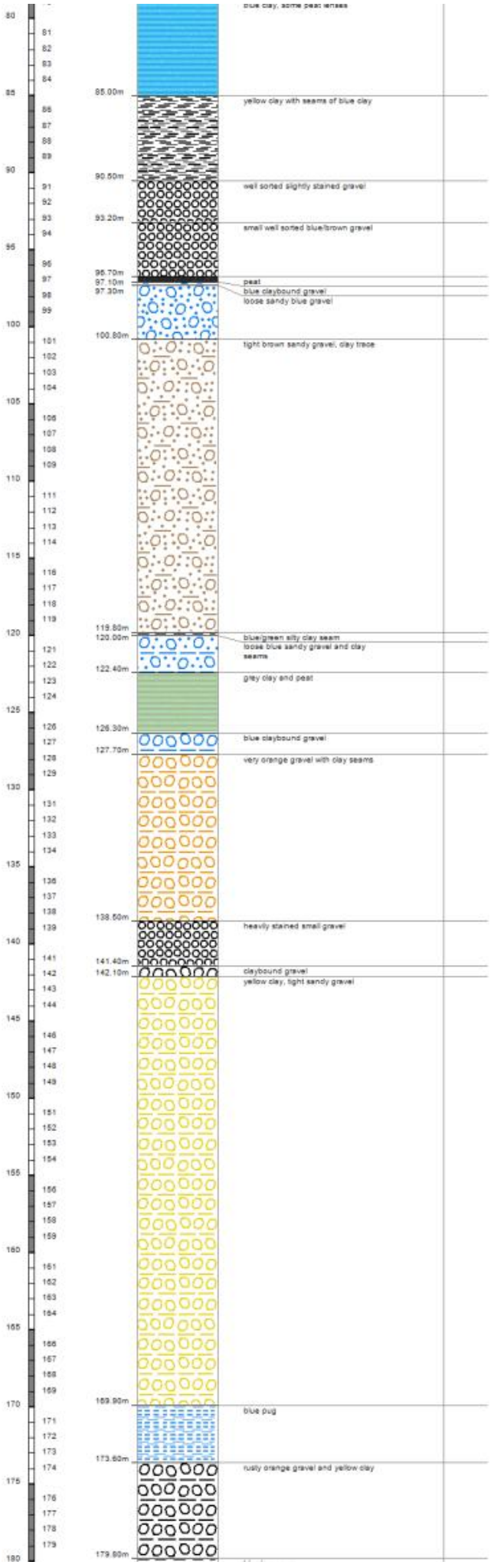
EQ1 (M35/18017)

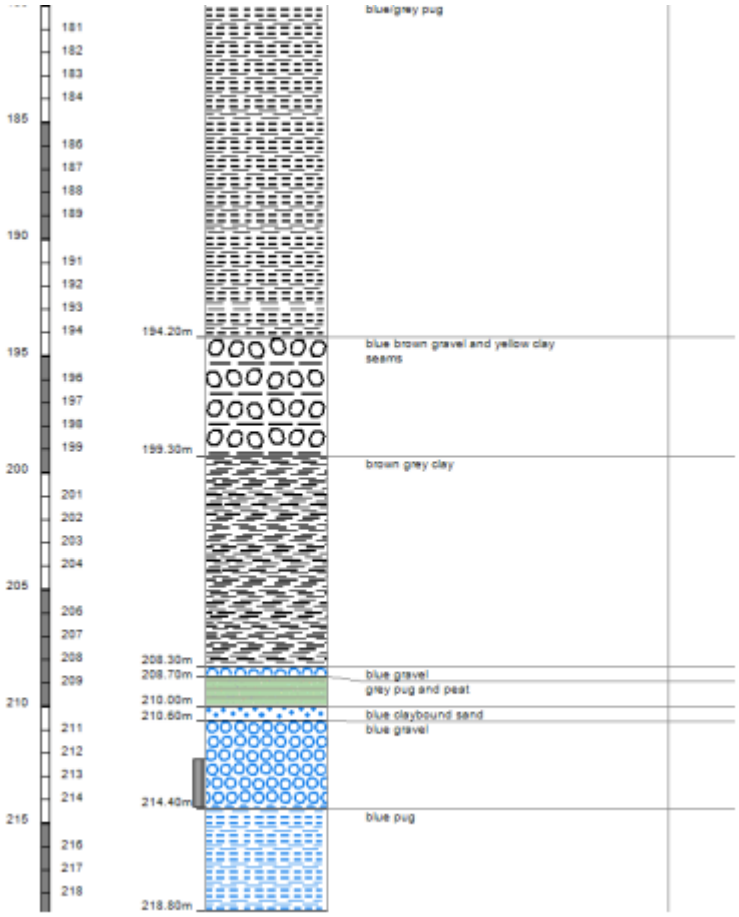
Borelog for well M35/18017

Grid Reference (NZTM): 1574737 mE, 5202790 mN
Location Accuracy: 2 - 15m
Ground Level Altitude: 7.0 m +MSD Accuracy: < 0.5 m
Driller: Clemence Drilling Contractors
Drill Method: Rotary/Percussion
Borelog Depth: 218.8 m Drill Date: 01-Oct-2009

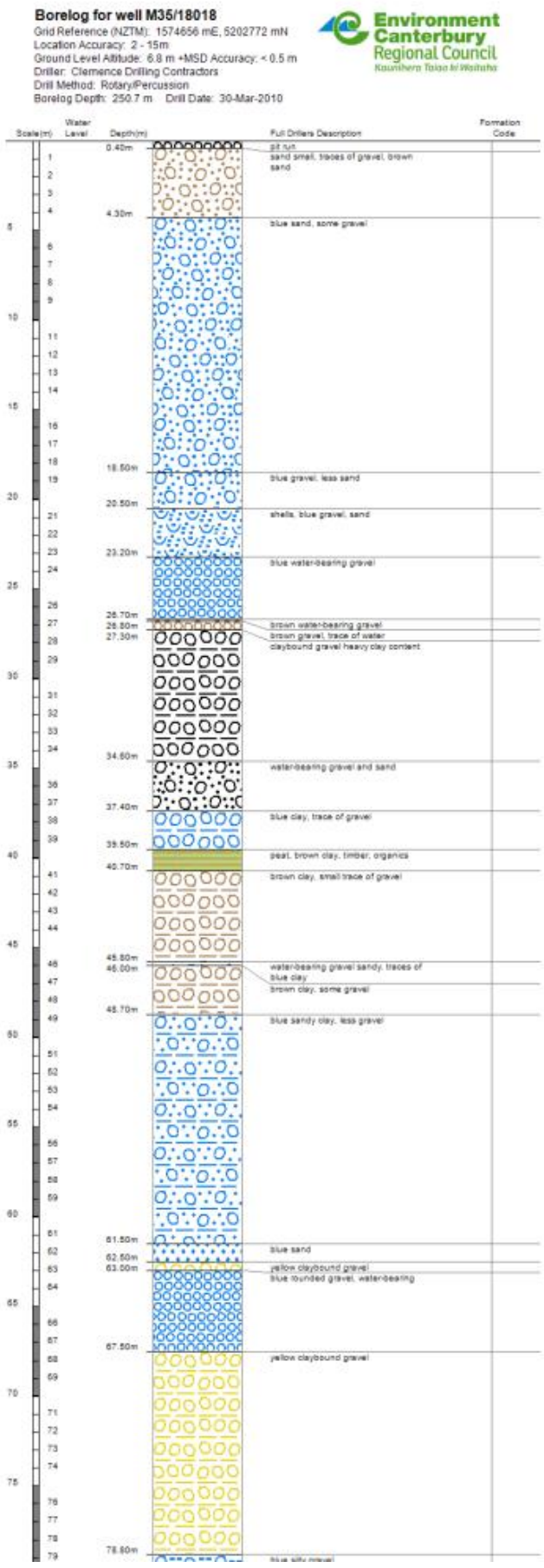
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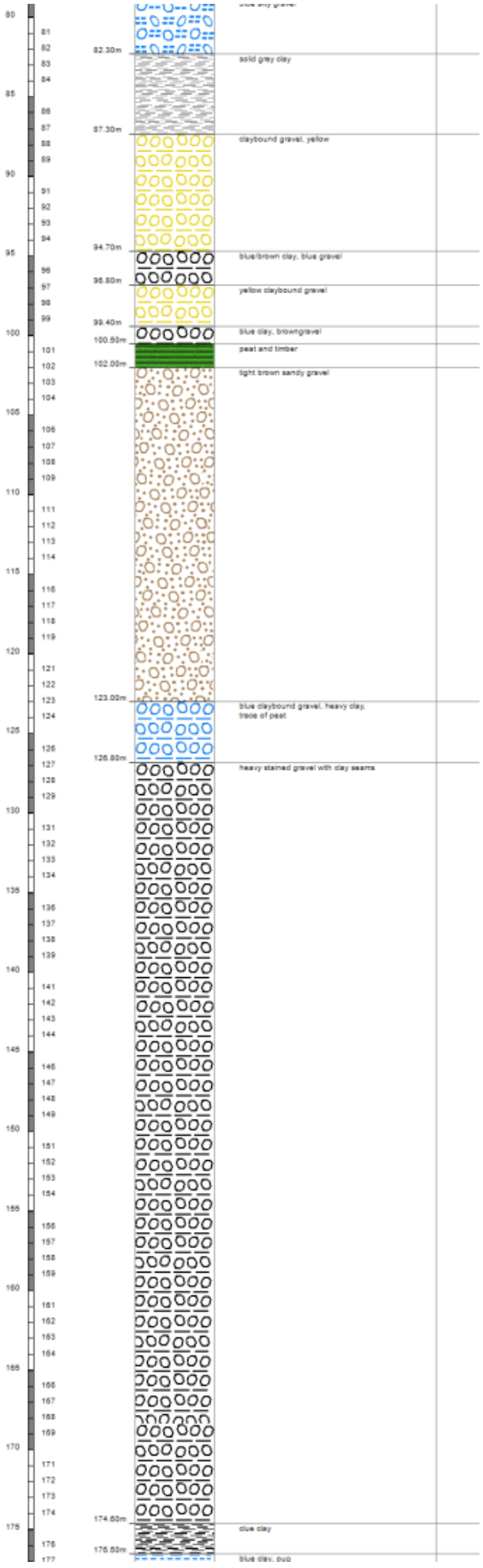


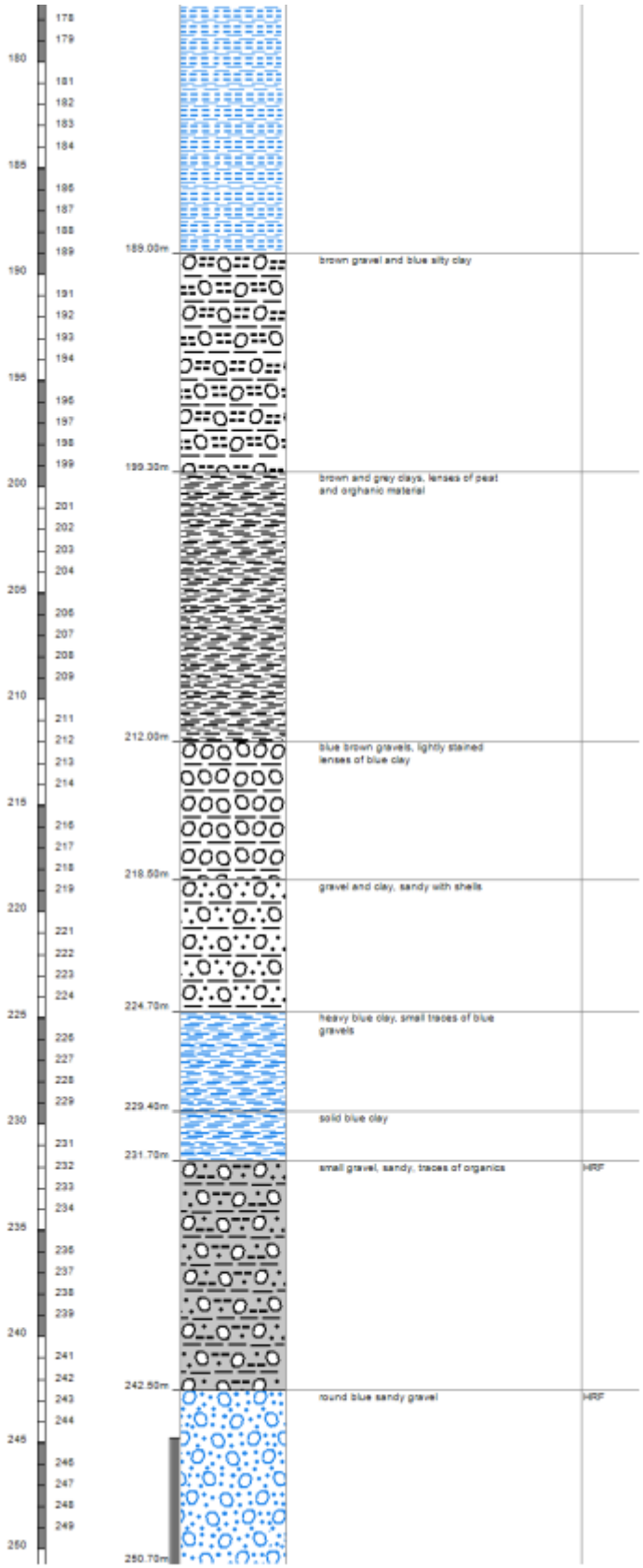

blue clay, some peat lenses
85.00m
yellow clay with seams of blue clay
90.50m
well sorted slightly stained gravel
93.20m
small well sorted blue/brown gravel
95.70m
97.10m
peat
97.30m
blue claybound gravel
loose sandy blue gravel
100.80m
tight brown sandy gravel, clay trace
119.80m
120.00m
blue/green silty clay seam
loose blue sandy gravel and clay seams
122.40m
grey clay and peat
126.30m
blue claybound gravel
127.70m
very orange gravel with clay seams
138.60m
heavily stained small gravel
141.40m
142.10m
claybound gravel
yellow clay, tight sandy gravel
169.90m
blue pug
173.60m
rusty orange gravel and yellow clay
179.80m


blue/grey pug
194.20m
blue brown gravel and yellow clay seams
199.30m
brown grey clay
208.30m
208.70m
blue gravel
grey pug and peat
210.00m
210.60m
blue claybound sand
blue gravel
214.40m
blue pug
218.80m

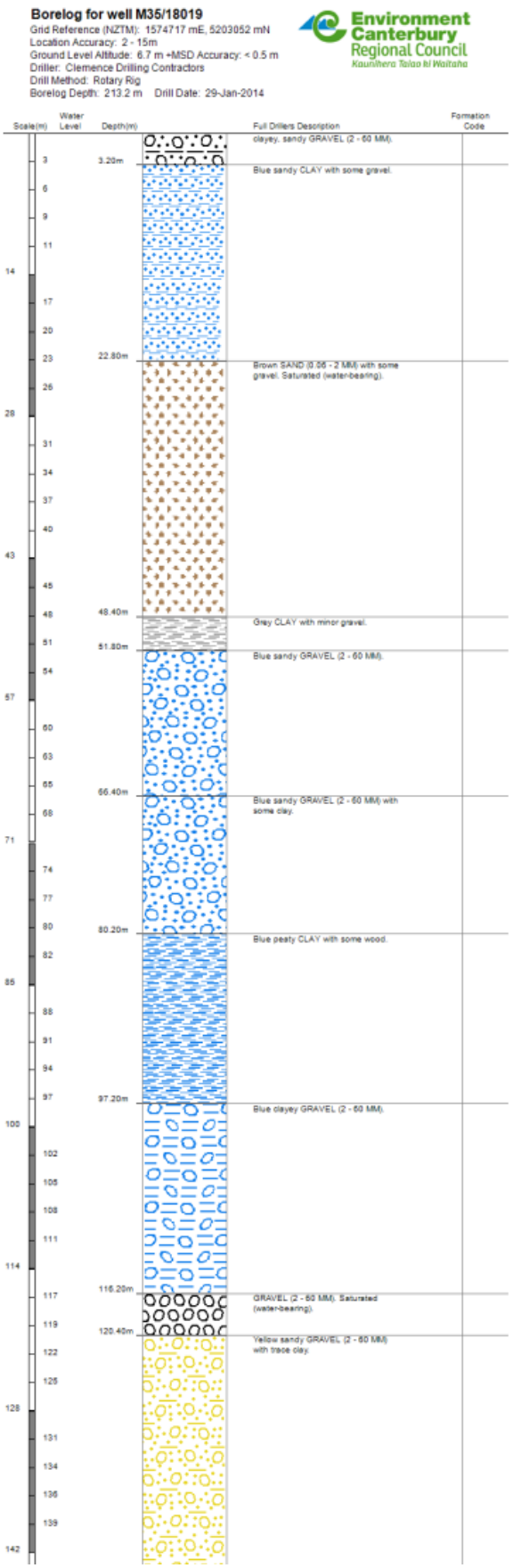
EQ2 (M35/18018)

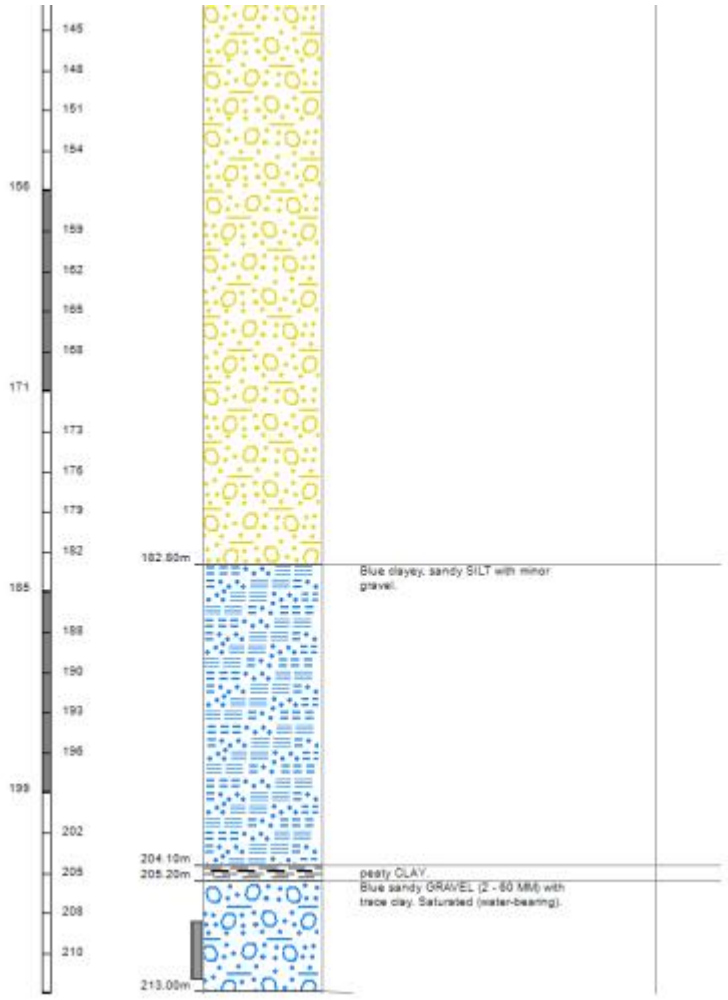



82.30m
solid grey clay
87.30m
claybound gravel, yellow
94.70m
blue/brown clay, blue gravel
96.80m
yellow claybound gravel
99.40m
blue clay, browngravel
100.50m
peat and timber
102.00m
tight brown sandy gravel
123.00m
blue claybound gravel, heavy clay, trace of peat
126.80m
heavy stained gravel with clay seams
174.60m
clue clay
176.50m
blue clay, bue


189.00m
brown gravel and blue silty clay
199.30m
brown and grey clays, lenses of peat and orghanic material
212.00m
blue brown gravels, lightly stained lenses of blue clay
218.50m
gravel and clay, sandy with shells
224.70m
heavy blue clay, small traces of blue gravels
229.40m
solid blue clay
231.70m
small gravel, sandy, traces of organics
HRF
242.50m
round blue sandy gravel
HRF
250.70m

EQ3 (M35/18019)




145
148
151
154
156
159
162
165
168
171
173
176
179
182
182.60m
185
188
190
193
196
199
202
204.10m
205
205.20m
208
210
213.00m
Blue clayey, sandy SILT with minor gravel.
peaty CLAY.
Blue sandy GRAVEL (2 - 60 MM) with trace clay. Saturated (water-bearing).

EQ4 (M35/18020)

McMILLAN Drilling

Client:	Waimakariri District Council
Project:	Deepen Existing 16" (400mm) Well
Bore No.:	**BW24/0817**
Job No.:	**22636**

Site Location: Gladstone Road, PEGASUS
Date:
Grid Reference: 1574640m E, 5202953m N (NZTM) Handheld GPS
Rig Operator: Z. Luxton
Lot Number: Lot 3 DP 483411
Method / Rig: Cable Tool

Material Description	Graphic Log	Depth (m)	Casing & Screen Installation
Fine to coarse SAND with some gravel; bluish grey. Poorly sorted.			
Sandy fine to coarse GRAVEL with some shells; bluish grey. Poorly sorted. (5.30m)		10, 20	
Silty CLAY with some sand & peat; yellowish brown. (28.80m)		30, 40	ø400mm Steel Casing (82.48m)
Fine to coarse SAND with minor gravel; bluish grey. Saturated, poorly sorted. (43.80m)		50	

Preliminary data

Remarks:
Deepening of existing well M35/18020 from 194.40m
Geology and casing data based upon historical records

Bore Diameter: 400mm
Static Water Level: -
Total Bore Depth: 216.60m bgl
Total Depth Drilled: 216.60m bgl

Development Duration (hr):
Pumping Duration (hr):

Flow Rate (gpm)	Flow Rate (l/sec)	Draw Down (m)	Duration (hr)

McMILLAN Drilling

Client: Waimakariri District Council		**Bore No.:** BW24/0817
Project: Deepen Existing 16" (400mm) Well		**Job No.:** 22636

Site Location: Gladstone Road, PEGASUS
Date:
Grid Reference: 1574640m E, 5202953m N (NZTM) Handheld GPS
Rig Operator: Z. Luxton
Lot Number: Lot 3 DP 483411
Method / Rig: Cable Tool

Material Description	Graphic Log	Depth (m)	Casing & Screen Installation
[CONT] Fine to coarse SAND with minor gravel; bluish grey. Saturated, poorly sorted.		60	
Gravelly CLAY with some sand & silt; bluish grey. 67.50m		70	
Sandy fine to coarse GRAVEL; bluish grey. Poorly sorted. 87.40m		80	82.48m
Peat CLAY with some organics; yellowish brown. 91.20m		90	
Sandy fine to coarse GRAVEL; bluish grey. Poorly sorted. 101.80m		100	ø300mm Steel Casing (209.50m)

Preliminary data

Remarks:
Deepening of existing well M35/18020 from 194.40m
Geology and casing data based upon historical records

Development Duration (hr):

Pumping Duration (hr):

Flow Rate (gpm)	Flow Rate (l/sec)	Draw Down (m)	Duration (hr)

Bore Diameter: 400mm
Static Water Level: -
Total Bore Depth: 216.60m bgl
Total Depth Drilled: 216.60m bgl

McMILLAN Drilling

Client:	Bore No.:
Waimakariri District Council	BW24/0817
Project:	**Job No.:**
Deepen Existing 16" (400mm) Well	22636

Site Location: Gladstone Road, PEGASUS
Date:
Grid Reference: 1574640m E, 5202953m N (NZTM) Handheld GPS
Rig Operator: Z. Luxton
Lot Number: Lot 3 DP 483411
Method / Rig: Cable Tool

Material Description	Graphic Log	Depth (m)	Casing & Screen Installation
[CONT] Sandy fine to coarse GRAVEL; bluish grey. Poorly sorted.		120	
CLAY; bluish grey. 123.60m		130	
Gravelly CLAY; yellowish brown. 141.40m		140	
		150	
		160	
Gravelly CLAY with some sand; bluish grey. 163.80m			

Preliminary data

Remarks:
Deepening of existing well M35/18020 from 194.40m
Geology and casing data based upon historical records

Development Duration (hr):

Pumping Duration (hr):

Flow Rate (gpm)	Flow Rate (l/sec)	Draw Down (m)	Duration (hr)

Bore Diameter: 400mm
Static Water Level: -
Total Bore Depth: 216.60m bgl
Total Depth Drilled: 216.60m bgl

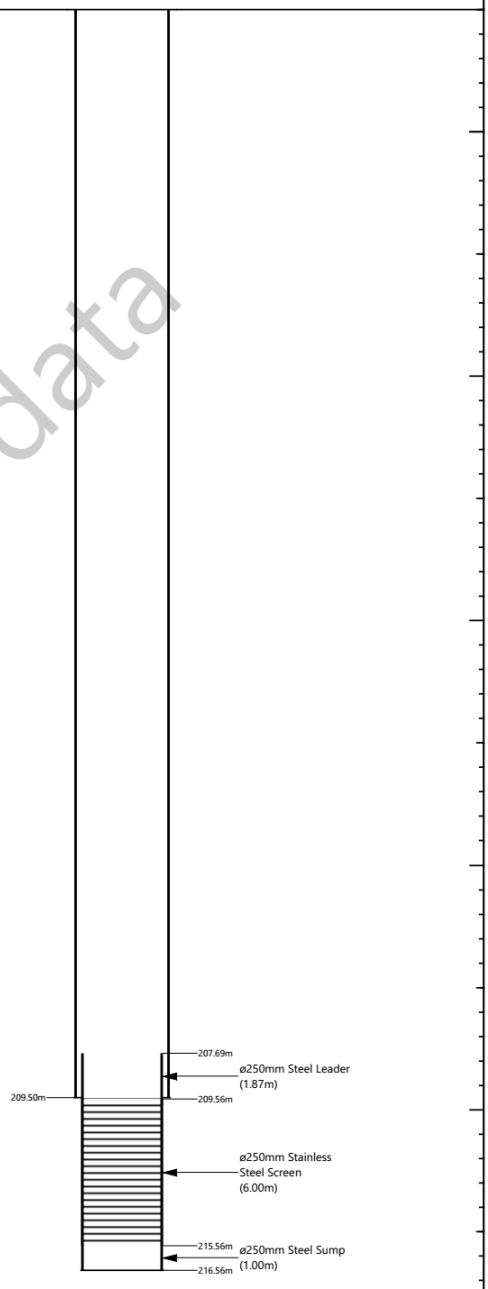
McMILLAN Drilling

Client: Waimakariri District Council		**Bore No.:** BW24/0817
Project: Deepen Existing 16" (400mm) Well		**Job No.:** 22636

Site Location: Gladstone Road, PEGASUS
Grid Reference: 1574640m E, 5202953m N (NZTM) Handheld GPS
Lot Number: Lot 3 DP 483411
Date:
Rig Operator: Z. Luxton
Method / Rig: Cable Tool

Material Description	Depth (m)
[CONT] Gravelly CLAY with some sand; bluish grey.	
Fine to coarse GRAVEL; brown. Saturated, poorly sorted. 182.20m	
CLAY; bluish grey. 187.40m	
Clayey fine to coarse GRAVEL; bluish grey. Poorly sorted. 189.20m	
SILT; bluish grey. 194.40m	
Clayey GRAVEL. 197.00m	
Sandy GRAVEL with trace clay; yellowish brown. 197.20m	
SAND; bluish grey. 197.50m	
CLAY; yellowish brown. 197.80m	
Sandy GRAVEL; bluish grey. 197.90m	
Sandy GRAVEL; bluish grey. Loosely packed, saturated. 198.50m	
SILT with some peat; grey. Firm. 199.70m	
Sandy GRAVEL; bluish grey. 199.90m	
SILT with trace peat; grey. 200.20m	
Sandy GRAVEL with trace silt; bluish grey. 201.40m	
Sandy GRAVEL; bluish grey. Loosely packed. 203.00m	
SAND with some gravel. 203.50m	
Sandy GRAVEL; bluish grey. 204.50m	
Sandy GRAVEL; greyish brown. 205.80m	
Clayey GRAVEL; yellowish brown. 206.30m	
Fine to coarse GRAVEL with minor sand; brown. Poorly sorted. 206.40m	
Sandy GRAVEL; greyish brown. 207.50m	
SAND with some gravel; grey. 207.90m	
SILT with trace sand; grey. 208.10m	
CLAY; yellowish brown. 209.80m	
GRAVEL with some sand; brown, stained. 209.90m	

Casing & Screen Installation



Preliminary data

Remarks:
Deepening of existing well M35/18020 from 194.40m
Geology and casing data based upon historical records

Bore Diameter: 400mm
Total Bore Depth: 216.60m bgl
Static Water Level: -
Total Depth Drilled: 216.60m bgl

Development Duration (hr):
Pumping Duration (hr):

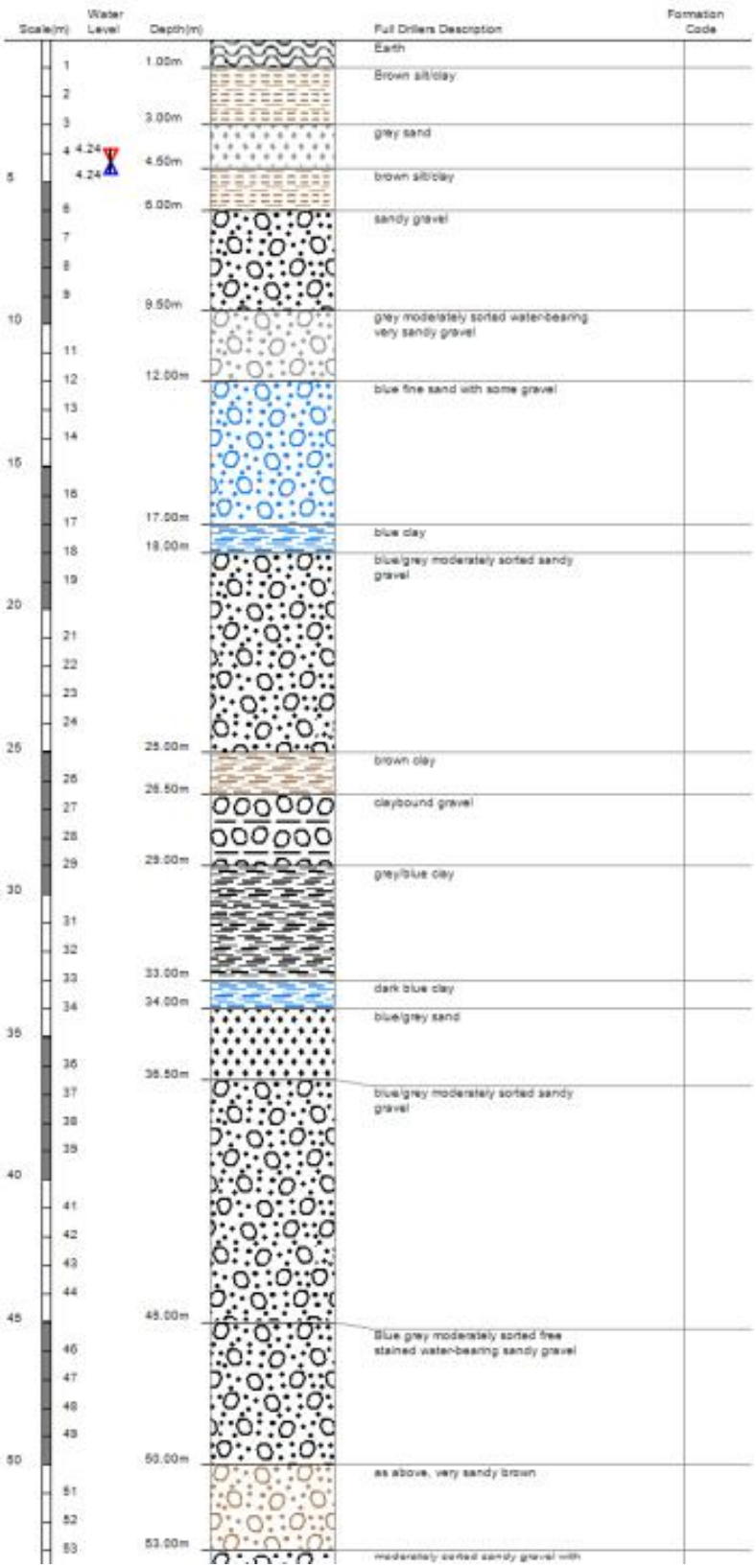
Flow Rate (gpm)	Flow Rate (l/sec)	Draw Down (m)	Duration (hr)

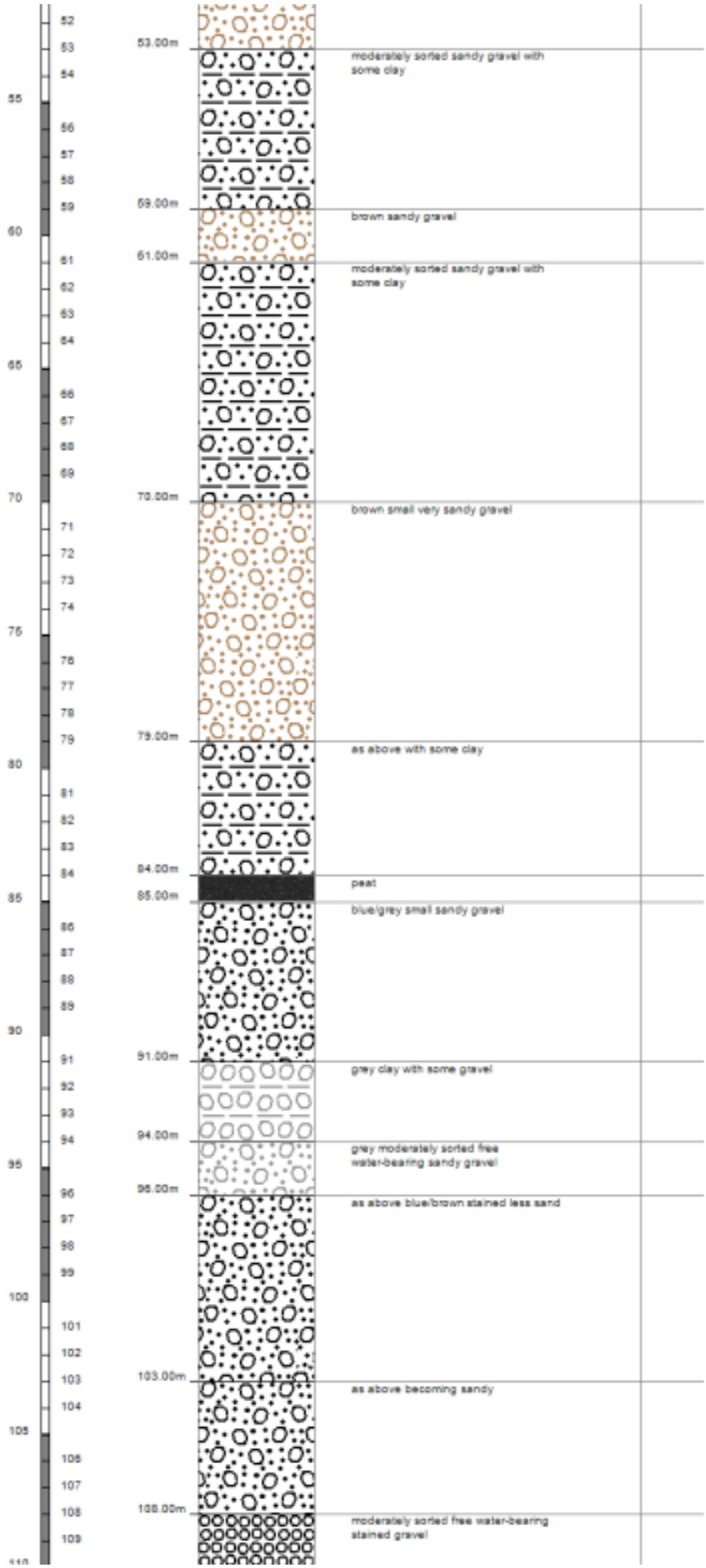
PW1 (M35/10908)

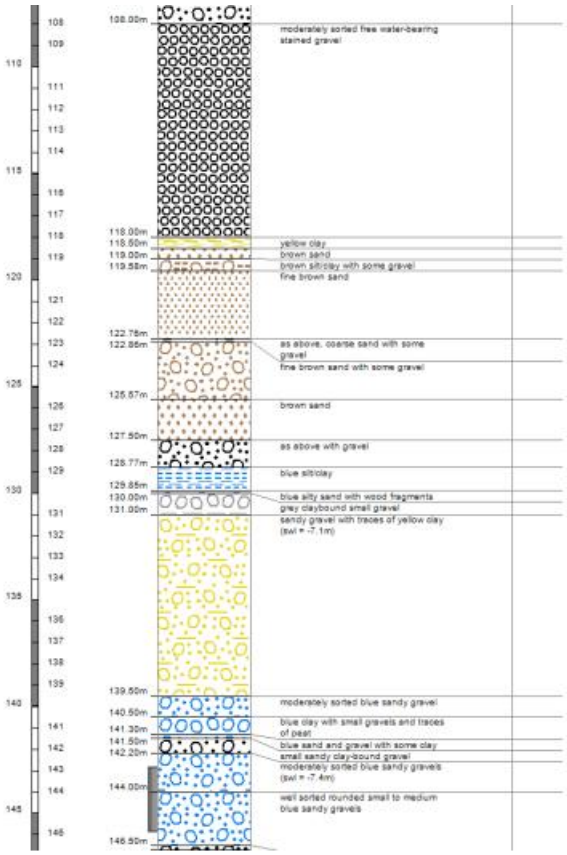
Borelog for well M35/10908

Grid Reference (NZTM): 1574355 mE, 5204190 mN
Location Accuracy: 2 - 15m
Ground Level Altitude: 8.0 m +MSD Accuracy: < 0.5 m
Driller: McMillan Drilling Ltd
Drill Method: Rotary/Percussion
Borelog Depth: 146.8 m Drill Date: 12-Mar-2007

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53.00m
moderately sorted sandy gravel with some clay
59.00m
brown sandy gravel
61.00m
moderately sorted sandy gravel with some clay
70.00m
brown small very sandy gravel
79.00m
as above with some clay
84.00m
peat
85.00m
blue/grey small sandy gravel
91.00m
grey clay with some gravel
94.00m
grey moderately sorted free water-bearing sandy gravel
96.00m
as above blue/brown stained less sand
103.00m
as above becoming sandy
108.00m
moderately sorted free water-bearing stained gravel


108.00m
moderately sorted free water-bearing stained gravel
118.00m
118.50m
yellow clay
119.00m
brown sand
119.58m
brown silt/clay with some gravel
fine brown sand
122.78m
122.86m
as above, coarse sand with some gravel
fine brown sand with some gravel
125.87m
brown sand
127.50m
as above with gravel
128.77m
blue silt/clay
129.85m
130.00m
blue silty sand with wood fragments
131.00m
grey claybound small gravel
sandy gravel with traces of yellow clay (swl = -7.1m)
139.50m
moderately sorted blue sandy gravel
140.50m
141.30m
blue clay with small gravels and traces of peat
141.50m
blue sand and gravel with some clay
142.20m
small sandy clay-bound gravel
moderately sorted blue sandy gravels (swl = -7.4m)
144.00m
well sorted rounded small to medium blue sandy gravels
146.50m

Appendix C – Testing on PW1

TEST ID	WELL NUMBER	TEST DATE
2388	M35/10908	01 Dec 2006 00:00:00:000

Well and test details

Printable summary for selected test

Well depth	145.8 m
Screens between	142.8 m and 145.8 m
Test type	constant
Max flow rate	31 l/s
Pumping duration	5817 mins
Test conducted by	

Test analysis and results

Analysis method	Boulton(1963)	
	Pumped aquifer	**Overlaying aquifer**
Transmissivity	166 m2/day	
Storativity	0.000118	0.004
Leakage	673 m	
K'/B'	0.00036700000055	
Conductivity		
Test data available electronically	Yes	

Quality rating

Test setup and reporting	1 - Good (1 - Good to 3 - Unreliable)
Test analysis and parameters	2 - Good (1 - Excellent to 5 - Inaccurate)

Observation wells

OBSERVATION WELL	WELL DEPTH (M)	SCREENS FROM (M)	SCREENS TO (M)	DISTANCE TO PUMPED WELL (M)	DRAWDOWN (M)	TRANSMISSIVITY	STORATIVITY	LEAKAGE	K'/B'	OVERLAYING AQUIFER	
										TRANSMISSIVITY (M^2/DAY)	STORATIVITY
M35/10910	220			265	3.32	166	0.000118	0			
Comment											

Comments

COMMENT DATE	COMMENT
10 Aug 2007 15:35:00:000	Transmissivity = 130.8 m2/day Storativity = 1.18e-4 K'/B' = 4.80e-4 d-1 Sigma (Sy) = 0.004 Revised analysis using Hunt & Scott (2007) suggests a slightly higher T value of 166 m2/d. Analysis in O:\Aquifer tests\M35_10909\Pegasus_info\Ecan\Hunt_analaysis_DS.xls
28 Apr 2014 11:17:00:000	C14C/62477 aquifer test data

Appendix D – Water Quality Samples

Summary of Groundwater Quality Results – July and Oct 2025

Sample	Unit	GW1 (7/10/25)	GW2 (7/10/25)	EQ1 (10/07/25)	EQ2 (10/07/25)	EQ3 (10/07/25)	MAV / GV
Individual tests							
Langelier Saturation Index	g/m³	-0.1	-0.2	0.0	-0.2	0.1	
Total Antimony	g/m³	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	0.02
Total Barium	g/m³	0.0103	0.0103	0.030	0.0180	0.0107	1.5
Total Cadmium	g/m³	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	0.004
Dissolved Calcium	g/m³	21	21	18.6	11.5	22	
Total Chromium	g/m³	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	0.05
Total Mercury	g/m³	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.007
Total Nickel	g/m³	<0.000053	<0.000053	<0.000053	<0.000053	<0.000053	0.08
Bromide	g/m³	0.033	0.033	0.037	0.062	0.034	
Routine Water Profile							
Turbidity	NTU	0.26	0.88	0.86	0.14	0.14	<5
pH	pH	7.9	7.8	8.1	8.1	8.1	7.0-8.5
Total Alkalinity	g/m³ as CaCO3	111	109	112	114	109	Not in NZDWS
Free Carbon Dioxide	g/m³	3.0	3.1	1.8	1.8	1.9	
Total Hardness		64	65	58	35	65	
Electrical Conductivity	mS/m	23.1	22.8	23.4	25.7	22.9	<1500µs/cm (mS/m)
Electrical Conductivity	µS/cm	231	228	23.4	25.7	22.9	
Approx. Total Dissolved Solids	g/m³	155	153	157	172	153	
Total Arsenic	g/m³	<0.0011	<0.0011	0.0050	0.0037	<0.0011	0.01
Total Boron	g/m³	<0.053	<0.053	0.023	0.028	0.0176	2.4
Total Calcium	g/m³	21	21	19.3	10.9	21	

Sample	Unit	GW1 (7/10/25)	GW2 (7/10/25)	EQ1 (10/07/25)	EQ2 (10/07/25)	EQ3 (10/07/25)	MAV / GV
Total Copper	g/m^3	<0.00053	<0.00053	<0.00053	<0.00053	<0.00053	<1(staining of laundry)
Total Iron	g/m^3	0.048	0.116	0.22	0.142	0.021	0.3 (staining of laundry)
Total Lead	g/m^3	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	0.01
Total Magnesium	g/m^3	2.8	2.9	2.4	1.9	3.0	NA
Total Manganese	g/m^3	0.054	0.060	0.09	0.095	0.031	0.4
Total Potassium	g/m^3	1.00	1.00	0.87	0.86	0.96	
Total Sodium	g/m^3	24	25	27	41	21	200
Total Zinc	g/m^3	0.0047	0.0090	0.0078	0.0056	<0.0011	<1.5 (taste threshold)
Chloride	g/m^3	6.4	6.5	7.7	12.5	7.2	250 (taste /corrosion)
Nitrate-N	g/m^3	<0.05	<0.05	<0.05	<0.05	<0.05	11.3
Sulphate	g/m^3	<0.5	<0.5	<0.5	<0.5	<0.5	250 (taste threshold)
Total Coliforms and E.coli.							
Total Coliforms	MPN/100mL	<1	<1	<1	<1	<1	<1
E.coli	MPN/100mL	<1	<1	<1	<1	<1	<1
Waimakariri Routine Water Kit Profile							
Carbonate	g/m^3 at 25°C	<1.0	<1.0	<1.0	<1.0	<1.0	
Bicarbonate	g/m^3 at 25°C	135	132	134	137	131	
Calcium Hardness	g/m^3 as $CaCO_3$	53	53	48	27	53	
Sample Temperature	°C	20.0	20.0	20.0	20.0	20.0	
Fluoride	g/m^3	0.09	0.09	0.09	0.15	0.10	1.5
Total Ammoniacal -N	g/m^3	0.031	0.029	0.194	0.56	<0.010	
Total Phosphorus	g/m^3	0.086	0.084	0.33	0.59	0.072	
Reactive Silica	g/m^3	21	21	24	24	21	
No-Purgeable Organic Carbon	g/m^3	0.4	0.3	0.6	0.7	<0.3	

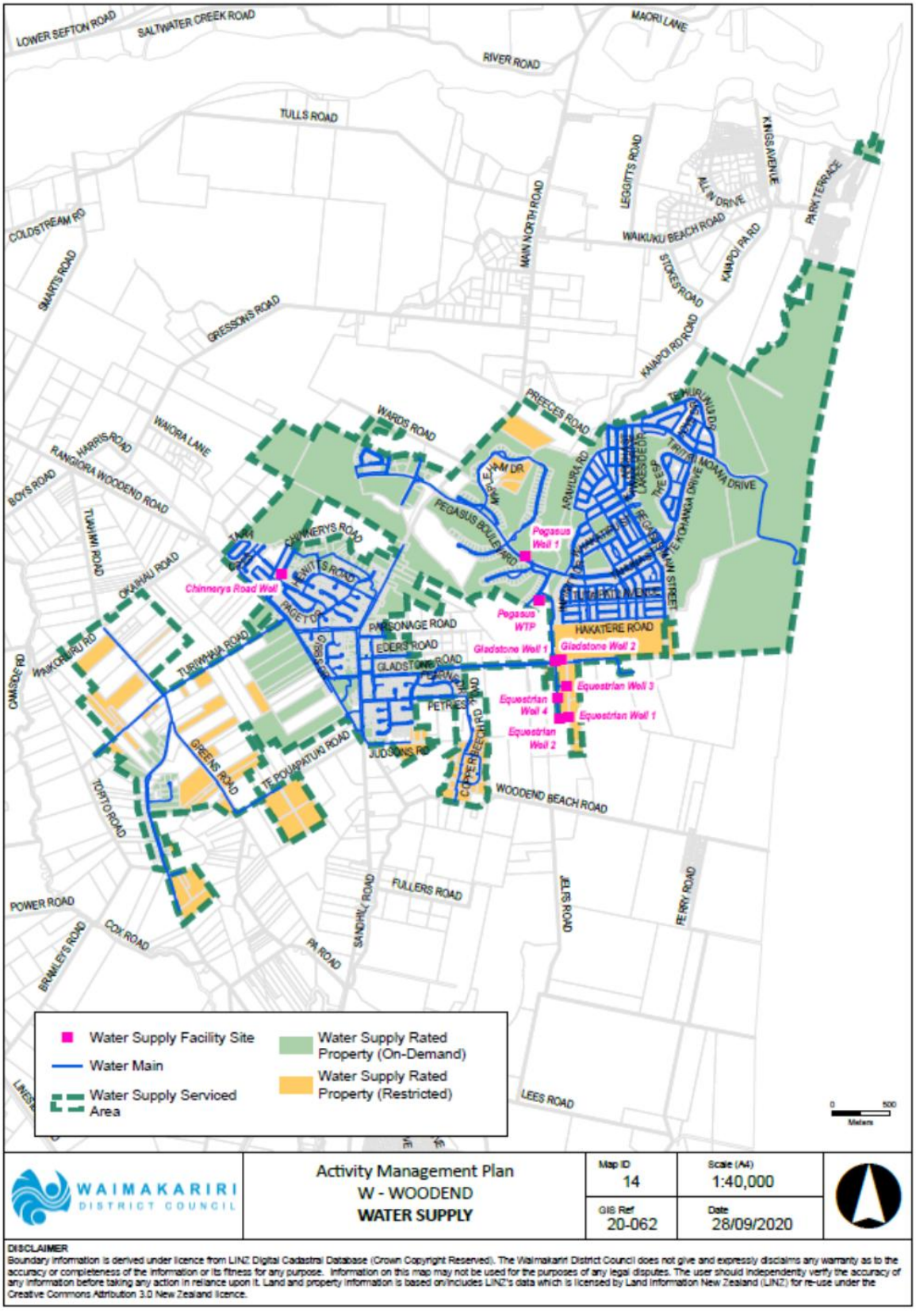
Summary of Groundwater Quality Results – 11 June 2026

Sample	Unit	GW1	GW2	EQ1	EQ2	EQ3	MAV / GV
True Hazen Colour	Hazen		<10	<10	<10	<10	
Total Iron	g/m^3		0.032	0.184	0.52	<0.021	0.3 (staining of laundry)
Total Manganese	g/m^3		0.054	0.037	0.102	0.032	0.4
Nitrate-N	g/m^3		<0.05	<0.05	<0.05	<0.05	11.3
Nitrate	g/m^3		<0.3	<0.3	<0.3	<0.3	
Total Coliforms	MPN/100mL	<1	<1	<1	<1	<1	<1
E.coli	MPN/100mL	<1	<1	<1	<1	<1	<1

Appendix E – Woodend/Pegasus Water Supply Pipeline Layout

APPENDIX 'A'. PLANS

Figure 13: A1 - Plan of Serviced Area – Woodend and Tuahiwi



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Appendix F – Groundwater Levels

Figure 6 presents the groundwater levels recorded in nearby water level observation wells M35/10909, M35/11937, M35/11938 and M35/11939 (Figure 7). Table 9 presents the highest and lowest groundwater levels recorded for these wells. It shows that the groundwater levels for deeper well M35/10909 (215 m) range from 2.9 to 4.7 m bgl, while levels in wells M35//11937 and M35/11938 (182-195 m deep) range from 3.4 m to 6.9 m bgl. The shallowest well M35/939 (147 m deep) has groundwater levels ranging from 3.4 to 7.6 m bgl.

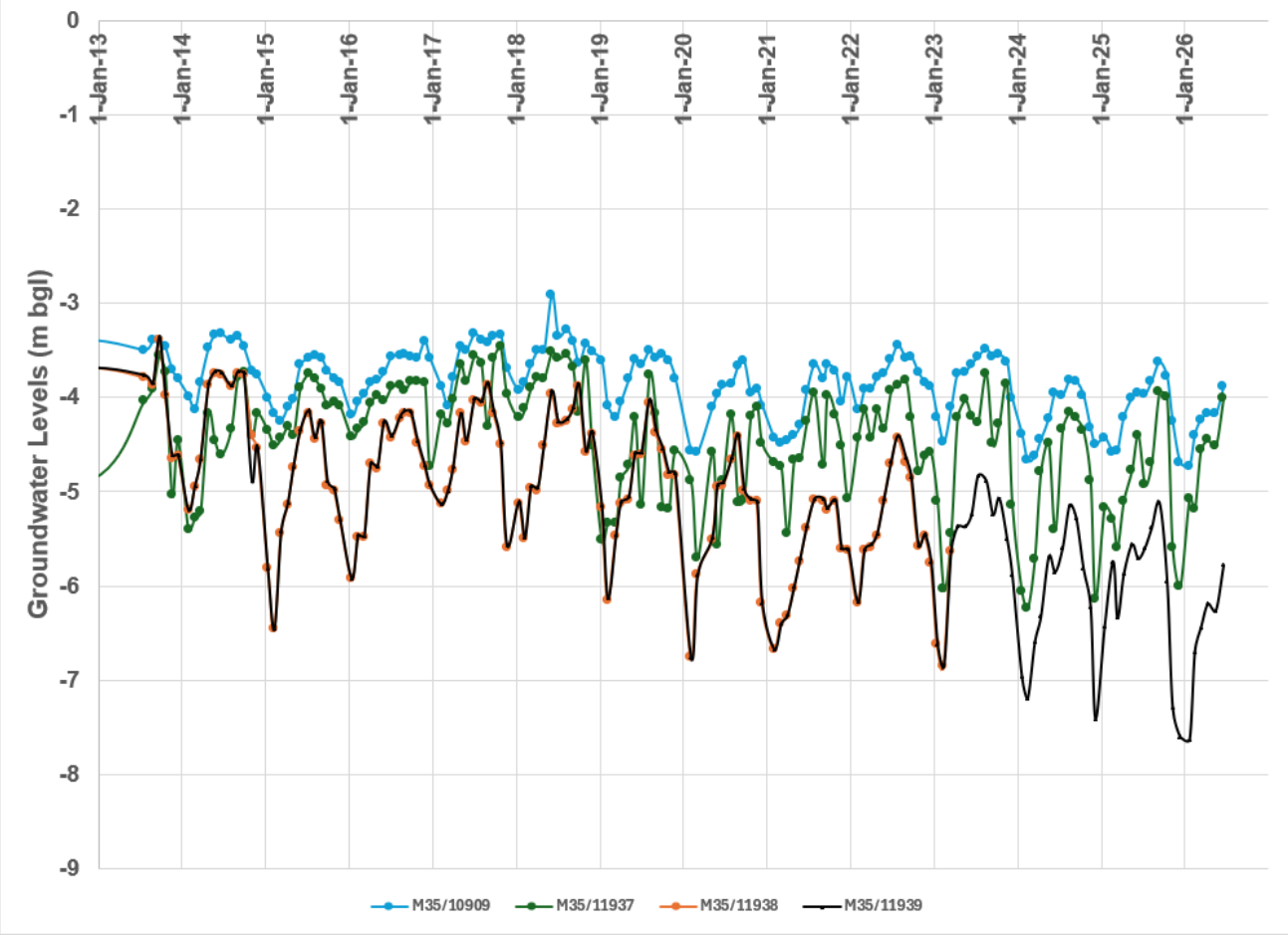


Figure 6: Groundwater levels

Table 9: Groundwater levels

Well	Depth (m)	Highest Water Level (m bgl)	Lowest Water Level (m bgl)
M35/10909	215	2.91	4.73
M35/11937	195	3.47	6.24
M35/11938	182	3.39	6.86
M35/11939	147	3.36	7.63



Figure 7: Location of groundwater level monitoring wells

WAIMAKARIRI DISTRICT COUNCIL

MEMO

FILE NO:	WAT-10-36-08, 260618145237
DATE:	31/07/2026
MEMO TO:	Caroline Fahey, Water & Wastewater Manager
FROM:	Rob Rankin, Project Engineer Sam Murphy, Senior Civil Engineer
SUBJECT:	Woodend-Pegasus New Source Well – Proposed Drilling Location Memo

The purpose of this memo is to recommend a location for the drilling of the new Woodend-Pegasus Source Well, for consideration by the Water & Wastewater Manager.

1. Background

1.1. The Woodend-Pegasus Source Capacity Upgrade project is required to provide "n+1" redundancy and support future growth in the area. This means that a new source is required so that the Woodend-Pegasus water scheme will always have sufficient source capacity, with any one primary source unavailable at any given time. The target yield for a new bore is 38 L/s additional capacity.

1.2. Attempts to utilise an existing partially-drilled bore (Equestrian Well 4, EQ4) were unsuccessful, and in April 2026 the Utilities and Roading Committee directed staff to decommission EQ4 and begin investigations into a new bore to fulfil the project objectives. The full project background is available at Trim 260311073671.

1.3. The existing project budget was insufficient to fund both the unsuccessful attempt to utilise EQ4, and drill an entirely new bore. Following the report to U&R Committee, additional budget was obtained through the Annual Plan process.

1.4. External consultant Aqualinc have completed a hydrogeological assessment (Trim 260703159849) considering existing bores and known aquifer locations in the vicinity of the raw water delivery main supplying the Pegasus Water Treatment Plant. This memo further assesses the recommended drilling sites proposed by Aqualinc and recommends a location for the new water supply bore.

2. Site Considerations

2.1. Investigation Area

2.1.1. All existing primary bores supplying the Woodend-Pegasus scheme enter the Pegasus headworks via a common raw water delivery main, so a new bore fed from elsewhere may require a new delivery main and reconfiguration of the Pegasus headworks inlet pipework. Close proximity for the proposed new bore to the existing delivery main is a key consideration to keep costs down, therefore locations considered in this memo are all in the vicinity of the existing delivery main. Other areas may

be evaluated at the client's request if the options presented in this memo are not considered suitable.

2.2. Property Ownership

2.2.1. The Equestrian Wellfield is located in and around a privately-owned property at 207 Gladstone Road. Existing bores EQ1-4 are on their own Council-owned land parcels, and an existing easement protects access and conveyance of water and power through 207 Gladstone Road.

2.2.2. The land parcels originally set aside for the bores have proven to be insufficient for Drinking Water Quality Assurance Rules (DWQAR) setback requirements, so extensions have been required for the EQ1-3 sites. Staff were in the process of extending the EQ4 site during the drilling contract, however due to U&R Committee instruction to abandon the bore, the property purchase process has been cancelled. The property owners of 207 Gladstone Road have indicated they do not desire to repeat the process for a new bore.

2.2.3. Council operates two wells which are located along the southern edge of Gladstone Park. The Park is owned and administered by Council, with several community and sporting groups leasing areas for their own activities.

2.2.4. Neighbouring private properties are a mixture of rural and lifestyle blocks. The available area for a new bore is restricted by existing bores, the nearby Woodend Wastewater Treatment Plant (WWTP), and proposed Woodend Bypass road.

2.3. Community Drinking Water Source Protection Zones (CDWSPZ)

2.3.1. CDWSPZs designated by Environment Canterbury (ECan) are put in place to protect public water supply sources from potential contamination, which includes restricting some activities within the zone. Creating a CDWSPZ would require negotiations with affected third parties, which could extend the programme and become costly to Council.

2.3.2. For the purposes of this investigation, the only activity likely to be relevant is disposal of sewage to ground. Several properties in the area are connected to septic tanks and have existing disposal fields.

2.3.3. The route of the proposed Woodend Bypass runs approximately 300 metres west of the existing water delivery main and some construction activity will likely occur closer than that. Discharge of construction-phase stormwater within the CDWSPZ would require resource consent, so establishing such a zone where it will affect the Bypass could create unnecessary future complications.

2.4. Well Interference - Separation Distance from Existing Bores

2.4.1. Unwanted well interference effects can be reduced by increasing the horizontal distance between wells. Past discussions with hydrogeological consultants and drilling contractors indicate that:

2.4.1.1. Between production wells the rule of thumb is minimum 50 metres.

2.4.1.2. If a well has failed and damaged the surrounding aquifer, the recommended minimum distance to avoid the damaged area is 10 to 15 metres.

2.4.1.3. If there are existing wells in the area, it may be favourable to drill closer rather than further away so that the CDWSPZs overlap, minimising additional area and restrictions placed on affected third parties.

2.5. Clearance and Access

2.5.1. Costs associated with enabling access to the new bore. These could include tree felling, stump grinding, ground preparation, constructing access roads and vehicle crossings, extending delivery mains, or upgrading electrical infrastructure.

2.6. Site-Specific Considerations

2.6.1. Anything else that could present an issue for one location but not another. Examples could be an adjacent stockwater race, chemical storage, or presence of above ground and underground services that overlap with the bore location and associated water pipework.

2.7. Bore Depth

2.7.1. While all other considerations relate to the ease of constructing and maintaining an above-ground asset, the depth of the bore is considered critical as it is the primary consideration which affects the final yield and quality of the water. Suitable bore depth is inferred by examining the characteristics of existing bores in the area. Council water supply bores are the only existing bores in the area which are of comparable depth.

2.7.2. Of the existing Council water supply bores in the vicinity (Equestrian Wells (EQ) 1 - 3, Gladstone Wells (GW) 1 & 2, and Pegasus Well (PW1)), the majority are screened at around 200-214 metres below ground level (mbgl).

2.7.3. Exceptions are EQ2, which is screened deeper at 244 mbgl (it is noted that this bore experiences high arsenic levels); and PW1, which is screened shallower at 142 mbgl, has lower yield, and is far enough from the investigation area that Aqualinc have advised the geomorphology may not be applicable. PW2 and PW3 are also at 142 mbgl and are not used due to high arsenic and low yield respectively.

2.7.4. Based on this information, the lowest risk option is to target the same aquifer the other Council bores draw from at depths of 200-214 mbgl.

3. Proposed Drilling Location

3.1. Aqualinc proposed five potential locations for the new water supply bore, shown in Figure 1. Analysis of each location, advantages and disadvantages, and an interference assessment are available at TRIM 260703159849.

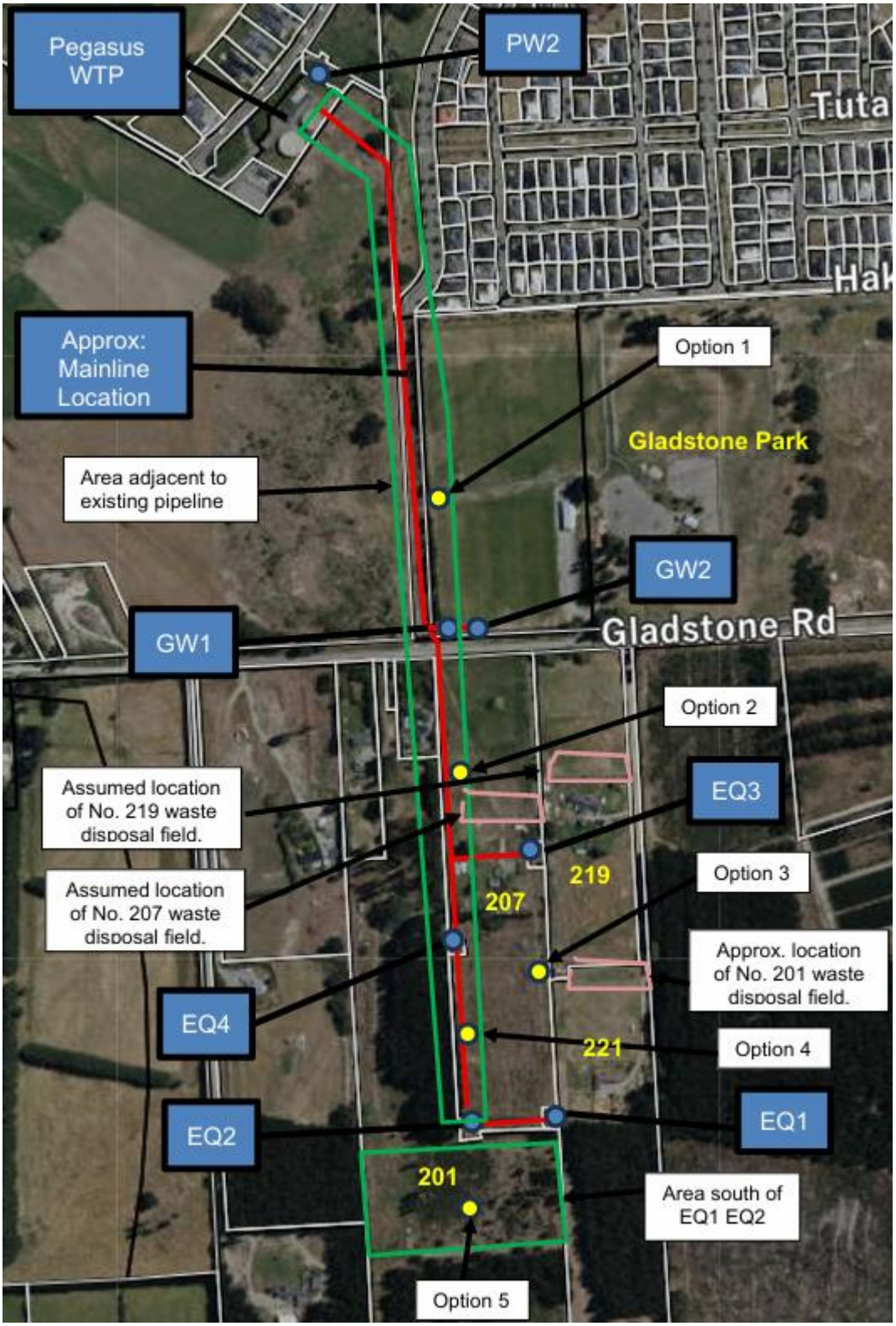


Figure 1. Potential new water supply bore locations proposed by Aqualinc.

3.2. Aqualinc recommended the following:

3.2.1. Proceed with a new well targeting a depth of approximately 200 to 215 m.

3.2.2. Recommend proceeding with Option 1, due to:

- Proximity to delivery main infrastructure.
- Good separation from existing wells.
- Lower interference effects.
- CDWSPZ away from nearby dwellings and possible waste disposal fields.

3.2.3. During drilling and design, use conservative screen design to reduce turbidity risk.

3.3. If Option 1 was not preferred by Council, Aqualinc recommended Options 4 or 5 as alternatives. Options 2 and 3 were not recommended.

3.4. Staff have evaluated the options presented and generally agree with Aqualinc's assessment. Staff have then further investigated the viability of Option 1:

3.4.1. The bore would be located on Gladstone Park. The Park is owned and operated by Council's Greenspace Unit, who are supportive of the proposed well location.

3.4.2. Preliminary discussions have been held with the Gladstone Park Advisory Group, who have indicated their support of the proposed drilling location.

3.4.3. The Greenspace Unit have advised that the proposed location must be presented to the Woodend-Sefton Community Board for their approval. This would be undertaken upon approval of this memo by the Water and Wastewater Asset Manager.

3.4.4. The Property Unit have confirmed that there are no legislative requirements relating to easements or property purchase at this time, however a separate property title for the well may become required in the future if the delivery of water services is taken away from Council.

The Property Unit are currently discussing best practice for easements / property purchase for current and future bore sites on Council land in the Local Water Done Well era. They have advised that preparing for this eventuality by creating a separate title at this time is likely to be prohibitively costly because the Public Works Act 1981 cannot be invoked by Council on Council-owned land.

3.4.5. In addition to the water take consent Aqualinc are assisting with, the PDU Infrastructure Planner has advised resource consent may be required for trenching due to the proposed location being within SASM013, a Site or Area of Significance to Māori which covers the Waimakariri coastline as far inland as Tuahiwi. The requirement for a consent is being investigated by the Planning Unit.

3.4.6. During the development and testing phases of the drilling contract it is estimated up to 1100 m^3 of water will be discharged from the well per day, for a period lasting several weeks. There are limited options to dispose of this quantity of water. This risk will be passed to the drilling contractor.

3.4.7. Nairn Electrical have indicated the transformer feeding GW1 will not require an upgrade to support the power requirements.

3.4.8. Nairn Electrical have indicated the control kiosk at GW1 is not large enough to house an additional Variable Speed Drive (VSD). Nairns have also advised that the GW1/GW2 electrical infrastructure within the cabinet is nearing the end of its operational life. Nairn have offered options to either:

- Locate the proposed new Gladstone Well No.3 (GW3) controls at GW1, which would include a full upgrade of the central controls, and potentially a new shed and generator pad. Due to the larger footprint, further approvals from internal and external stakeholders may be required.
- Locate the GW3 controls at the wellhead and do not undertake the central electrical upgrade at this time.

The GW3 component for both options fits within the existing allowance for electrical works, however the works to upgrade the GW1/GW2 infrastructure would require additional budget.

3.4.9. The interference assessment indicated that the additional drawdown caused by the new bore would not significantly affect the other bores *provided* the pumps are all installed >70 mbgl. It has been identified that the pump in GW1 is installed at 35.7 mbgl, and the level sensor is not operational to track the water level. It is therefore possible that Option 1 may draw the water level in GW1 down past the low-level cutoff and incapacitate the bore.

It is recommended that investigation is undertaken to repair/replace the level sensor or otherwise verify the static water level in GW1 during normal operation, to quantify the interference risk. It is also noted that the 29-year-old GW1 pump is well past the end of its expected operational life and may fail at any time; replacing it would be an ideal opportunity to install additional lengths of riser pipe and re-install the pump lower in the bore, mitigating the interference risk.

4. Summary and Recommendations

4.1. External consultant Aqualinc have completed a hydrogeological assessment (Trim 260703159849) assessing potential new locations for a new water supply bore for the Woodend-Pegasus water supply scheme. The recommended location for the new bore is along the western boundary of Gladstone Park.

4.2. Following further internal assessment, staff are in agreement that this location is viable.

4.3. Based on the above, it is recommended that the Water and Wastewater Manager approve Option 1 as the location of Gladstone Well 3.

4.4. It is recommended that the target depth for the new well be 200 – 215 metres, targeting the same aquifer that was encountered by several existing bores in the area.

4.5. Once approved, staff will gain approval from other internal and external stakeholders as required, and prepare the tender documents for the drilling of the bore at this site.

4.6. It is also recommended that the level sensor in GW1 is replaced, and the age and condition of the pump and riser in GW1 is assessed. If it is verified that the pump is actually 29 years old, and/or the pump and riser are in poor condition, then it is recommended that budget is assigned to replace them as GW1 is critical to the functioning of the Woodend-Pegasus water supply scheme.