

Waimakariri District Council

Utilities and Roading Committee

Agenda

Tuesday 16 July 2024

9am

Council Chambers
215 High Street
Rangiora

Members:

Cr Paul Williams (Chairperson)

Cr Robbie Brine

Cr Niki Mealings

Cr Philip Redmond

Cr Joan Ward

Mayor Dan Gordon (ex officio)



WAIMAKARIRI
DISTRICT COUNCIL

AGENDA CONTENTS – UTILITIES AND ROADING COMMITTEE MEETING

<u>Item Number</u>	<u>Item Topic</u>	<u>Page numbers</u>
3	Confirmation of Minutes	
3.1	Minutes of 18 June 2024	7-15
3.3	Workshop Notes of 18 June 2024	16
5	Staff Reports	
5.1	Proposed Amendments to Technical Practice Note on Flood Mapping, Freeboard and Floor Levels	17-40
5.2	July 2023 Flood Recovery Progress Update	41-55
5.3	Adoption of Final 3 Waters, Solid Waste and Transport Activity Management Plans 2024	56-1015

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 16 JULY 2024 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 Roding Committee held on Tuesday 18 June 2024.

7-15

RECOMMENDATION

THAT the Utilities and Roding Committee:

- (a) **Confirms** the circulated Minutes of the meeting of the Utilities and Roding Committee held on 18 June 2024, as a true and accurate record.

3.2 Matters arising (From Minutes)

3.3 Notes of the workshop of the Utilities and Roding Committee held on Tuesday 18 June 2024.

16

RECOMMENDATION

THAT the Utilities and Roding Committee:

- (b) **Receives** the circulated Notes of the meeting of the Utilities and Roding Committee held on 18 June 2024.

4 DEPUTATION/PRESENTATIONS

Nil.

5 REPORTS

5.1 Proposed Amendments to Technical Practice Note on Flood Mapping, Freeboard and Floor Levels – Amy Wilhelm (Finished Floor Level Officer) and Jennifer McSloy (Development Manager)

17 - 40

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 240625103292.

AND

THAT the Utilities and Roading Committee recommends:

THAT the Council:

- (b) **Approves** the updated Technical Practice Note on Flood Mapping, Freeboard and Floor Levels (TRIM 240412057972).
- (c) **Notes** that the Practice Note will need to be updated in the future once the Proposed District Plan and Regional Policy Statement are operative, as both contain hazard chapters which will affect the document. If Council's flood models are updated, the Practice Note will also be reviewed and updated as required.

5.2 July 2023 Flood Recovery Progress Update – Kalley Simpson (3 Waters Manager), Joanne McBride (Roading and Transport Manager), Pat Towse (Flood Team Lead)

41 - 55

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 240704109396.
- (b) **Notes** that all 88 investigations have been triaged, scoped, and investigated, 16 are being reviewed for approval and 72 are complete;
- (c) **Notes** that all 126 maintenance actions have been processed, 6 have works programmed, and 120 are complete;
- (d) **Notes** that the Flood Team has effectively been wrapped up and recruitment is currently underway for the Infrastructure Resilience Team, who will assist with progressing the remaining improvements works and implementing proposed future works.
- (e) **Notes** that the total cost estimate for the flood recovery work is \$4.055 million.
- (f) **Notes** that the expenditure to date is \$3,628,674 and the final forecast expenditure remains at \$4.055 million;
- (g) **Circulates** this report to all Community Boards for information.

5.3 **Adoption of Final 3 Waters, Solid Waste and Transport Activity Management Plans 2024 – Gerard Cleary (General Manager Utilities and Roading)**

56 - 1015

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 240613096204.
- (b) **Adopts** the following final Activity Management Plans:
 - i. Solid Waste Activity Management Plan (TRIM 221219218511)
 - ii. Stock Water Race Activity Management Plan (TRIM 221219218512)
 - iii. Rural Drainage Activity Management Plan (TRIM 230503062547)
 - iv. Water Supply Activity Management Plan (TRIM 230516070466)
 - v. Wastewater Activity Management Plan (TRIM 230710103391)
 - vi. Urban Drainage Activity Management Plan (TRIM 230726112895)
 - vii. Transportation Activity Management Plan (TRIM 240709111417)
- (c) **Notes** that progress on the AMP Improvement Programmes will be reported to the U&R Committee.
- (d) **Circulates** a copy of Report No. 240613096204 to all Community Boards for their information.

6 CORRESPONDENCE

Nil.

7 PORTFOLIO UPDATES

7.1 **Roading – Councillor Philip Redmond**

7.2 **Drainage, Stockwater and Three Waters (Drinking Water, Sewer and Stormwater) – Councillor Paul Williams**

7.3 **Solid Waste– Councillor Robbie Brine**

7.4 **Transport – Mayor Dan Gordon**

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 Public Excluded Minutes from 18June 2024.
- 11.2 Report from Management Team Operations 17 June 2024.
- 11.3 Report from Management Team Operations 17 June 2024.

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.
11.1	Confirmation of Public Excluded Minutes from 18 June 2024	Good reason to withhold exists under Section 7	As per Section 7(2)(h) of the Local Government Official Information and Meetings Act 1987, to “enable any local authority holding the information to carry on, without prejudice or disadvantage commercial activities” and For reasons of protecting the privacy of natural persons and enabling the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege as per LGOIMA Section 7 (2)(a), (g) and (i).
11.2	Report from Management Team Operations 17 June 2024	Good reason to withhold exists under Section 7	As per Section 7(2)(h) of the Local Government Official Information and Meetings Act 1987, to “enable any local authority holding the information to carry on, without prejudice or disadvantage commercial activities”
11.3	Report from Management Team Operations 17 June 2024	Good reason to withhold exists under Section 7	Resolves that the recommendations in this report be made publicly available but that the contents remain public excluded as per Section 7(2)(h) of the Local Government Official Information and Meetings Act 1987, to “enable any local authority holding the information to carry out, without prejudice or disadvantage, commercial activities”.

CLOSED MEETING

See Public Excluded Agenda (separate document)

OPEN MEETING

NEXT MEETING

The next meeting of the Utilities and Roading Committee will be held on Tuesday 20 August 2024 at 9am.

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, 18 JUNE, AT 9AM.

PRESENT

Councillors P Williams (Chairperson), R Brine, N Mealings, P Redmond, J Ward, and Mayor D Gordon (from 9.12am).

IN ATTENDANCE

Councillors B Cairns, T Fulton

J Millward (Chief Executive), G Cleary (Utilities and Roading Manager), K Simpson (3 Waters Manager), J McBride (Roading and Transportation Manager), J Recker (Stormwater and Waterways Manager), J Fraser (Infrastructure Planner), S Allen (Water Environment Advisor) and A Smith (Governance Coordinator).

1 APOLOGIES

Moved: Councillor Williams

Seconded: Councillor Redmond

THAT an apology for absence be received and sustained from Councillor Ward.

CARRIED

2 CONFLICTS OF INTEREST

There were no conflicts of interest recorded.

3 CONFIRMATION OF MINUTES

3.1 Minutes of the meeting of the Utilities and Roading Committee held on Tuesday 28 May 2024.

Councillor Williams referred to Item 5.1 in the minutes, relating to the Zone Implementation Programme Addendum (ZIPA) discussion on existing planting projects dying. It was agreed that the plants not surviving and the explanation for this provided by staff be included in the minutes.

Moved: Councillor Brine

Seconded: Councillor Redmond

THAT the Utilities and Roading Committee:

- (a) **Confirms** the circulated Minutes of the meeting of the Utilities and Roading Committee held on 28 May 2024, as a true and accurate record, with the addition of comments in Item 5.1, as referred to above.

CARRIED

3.2 Matters arising (From Minutes)

There were no matters arising.

4 DEPUTATION/PRESENTATIONS

There were no deputations or presentations.

5 REPORTS

5.1 Commence Public Consultation on Amended Stormwater Drainage and Watercourse Protection Bylaw 2024 – J Fraser (Infrastructure Planner) and J Recker (Stormwater and Waterways Manager)

The approval of the Committee was sought to undertake public consultation on the amended Waimakariri District Council Stormwater Drainage and Watercourse Protection Bylaw 2024, using the Special Consultative Procedure. The Council was required to update this bylaw and the report also sought the appointment of two Councillors to the Hearing Panel. It was proposed that the Bylaw be open for public submission on Thursday 20 June 2024, with the Bylaw documents available on the Council website, in Service Centres and Libraries. The consultation period would close on 29 July 2024, with a tentative date for hearings set for 25 September 2024. The recommendation from the Hearings Panel would then go to the Council 4 November 2024 meeting.

Councillor Redmond queried the reference in the Bylaw document under Cultural to a Resource Consent for drain cleaning. It was advised that the Council had a drainage maintenance consent from ECan in place for several years. This was a global consent for all council drains in the district and there were quarterly meetings with ECan staff to monitor the consent. There was no change in the requirements for this consent which had been in place for some time.

Councillor Mealings referred to Item 13.1.3 in the Policy on where planting was allowed. For clarification J Recker advised that planting was allowed however there needed to be provision allowed for access for the Council contractors to carry out maintenance. J Recker advised that staff were working on making this information more available to the public (via LIMs) so that the public had a better understanding of the rules of the Stormwater Bylaw. Councillor Mealings said landowners need to be aware of what their responsibilities were and J Recker agreed there was a need for education on the importance of maintenance of the waterways.

Councillor Fulton queried where the responsibilities for enforcement sat, and if this was something that the Council could reinforce, or if issues needed to be referred to Ecan. J Fraser responded that ECan had the enforcement tools under Section 15 of the RMA. The Council was required under the Land and Water Regional Plan to manage the discharges from 1 January 2025 from site and activity. Initially, the Council had to follow procedures in the Bylaw and the network conditions prior matters being handed over to ECan.

Moved: Mayor Gordon

Seconded: Councillor Williams

THAT the Utilities and Rooding Committee:

- (a) **Receives** Report No. TRIM 240328049935.
- (b) **Approves** the attached proposed Stormwater Drainage and Watercourse Protection Bylaw 2024 and Statement of Proposal for public consultation using the Special Consultative Procedure outlined in the Local Government Act 2002.
- (c) **Appoints** Councillor Williams (portfolio holder), Councillor Redmond and Councillor Fulton to hear submissions on the proposal and to recommend decisions to the Council.
- (d) **Notes** the proposed hearing / submissions deliberations date is Wednesday 25 September 2024.
- (e) **Notes** that upon adoption, the Bylaw will be renamed the Stormwater Drainage and Watercourse Protection Bylaw 2024, to reflect the date of its last review.

- (f) **Notes** that, once adopted, the Stormwater Drainage and Watercourse Protection Bylaw 2024 will not be required to be formally reviewed for another 10 years, however it will be able to be reviewed in the intervening period, if required.
- (g) **Circulates** this report to the Community Boards for their information.

CARRIED

5.2 Private Well Study – Results from 2023 Study – S Allen (Water Environment Advisor)

S Allen spoke to this report which provided information on a study of private wells which was undertaken in 2023. The Council, alongside Environment Canterbury and Canterbury District Health Board had been recommended by the Zone Implementation Programme Addendum (ZIPA) to develop a programme for testing and reporting water quality and nitrate levels in private drinking water supply wells. The studies commenced in 2019 with samples from Eyreton, Cust, Carleton and Swannanoa. The results showed similar to the previous years, with one well having levels above the limit for drinking water.

In addition to information provided in the report, it was advised that ECan would be carrying out a study in the coming spring of deep wells in the Eyrewell area, of both public and private wells.

Councillor Fulton asked if the information booklet could be made more readily available. S Allen advised that there was an update currently being undertaken on information in the booklet, and once this had been included, there would be further push on promoting the information.

Councillor Mealings asked what happened to the data from the samples taken from these private well samples. It was advised that any information that the Council got was placed on the relevant property files.

Moved: Councillor Williams

Seconded: Councillor Mealings

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 240520080417.
- (b) **Notes** the findings of the 2023 study, with one well above the nitrate-nitrogen Maximum Acceptable Value (MAV) set in the Drinking Water Standards for New Zealand (2022). Of the wells sampled, 57% of the wells in Eyreton, 60% in Cust, 25% in Carleton and 20% in Swannanoa sampling areas were above half of the MAV (5.65 mg/L).
- (c) **Notes** that the median nitrate concentration for Eyreton and Cust sampling areas, as sampled in the 2023 study, exceed the limit of a median of 5.65 mg/L nitrate-nitrogen set in Plan Change 7 of the Land and Water Regional Plan for private water supply wells, while Swannanoa and Carleton sampling areas did meet this limit.
- (d) **Notes** that Waimakariri District Council and Environment Canterbury staff will continue to raise awareness of the health impacts of high nitrates, and to encourage private well owners to test water regularly, including updating and wider distribution of the publication of a 'managing a private well supply' pamphlet for the District.
- (e) **Notes** that Waimakariri District Council proposes to repeat this study in spring 2024 (with 10 wells in each of the four sampling areas (40 wells total). Well owners from the previous sample rounds will be approached for repeat annual sampling, to allow for assessment of trends over time.

- (f) **Notes** that statistically robust trends for nitrate concentration over time are not able to be concluded from data for only five years, or three years of data for Swannanoa and Carleton sampling areas.
- (g) **Circulates** this report to the Council, Community Boards and Waimakariri Water Zone Committee for information.

CARRIED

Councillor Williams emphasised that this study was of private well water supplies and that all the Council's public water supplies had nitrate levels which were well below the required levels for drinking water standards.

Councillor Mealings said the longer these studies could be carried out, the more beneficial the data would be from the samples taken. Councillor Mealings was thankful to the property owners who had allowed the water in their wells to be studied.

Mayor Gordon supported the sampling and testing of private wells, noting that the Council had spent considerable time in the last few weeks reassuring the community that the Council's drinking water was safe, and the Council undertook rigorous testing. Mayor Gordon noted this testing was unlike the recent water testing undertaken by Greenpeace and expressed his disapproval of Greenpeace's testing as its methodology was questionable. Mayor Gordon reiterated that if any residents had concerns, to contact the Council and they would be given the right advice on how to manage that. Thanks were extended to staff for providing the results of these studies and for the management of these important matters.

Councillor Redmond supported the motion. In reference to the new information brochure that was being produced, Councillor Redmond suggested that these could be distributed to North Canterbury lawyers and possibly wider afield. It would make legal advisers aware that when people were purchasing properties, the testing of water in private wells was the owners responsibility.

In reply, Councillor Williams reiterated the comments made by Mayor Gordon and refuted the scaremongering that had been occurring on the quality of local drinking water supplies. Councillor Williams believed the quality of Council water supplies were probably the best in New Zealand.

6 CORRESPONDENCE

Nil.

7 PORTFOLIO UPDATES

7.1 Roading – Councillor Philip Redmond

Focus areas for staff:

- Re-metalling was being carried out on unsealed roads and maintenance grading was continuing.
- High shoulder removal was currently underway on a number of unsealed roads (removed with a grader). Noted that there had also been a new machine in operation working on high shoulder removal.
- Ice gritting was continuing on an as required basis around the district.
- The Resealing Programme for 2024/25 had been developed and staff were currently inspecting and agreeing pre-reseal repairs with the maintenance contractor. These repairs would be carried out in the spring.
- The Pavement Rehabilitation Programme had also been developed and pre-testing of sites to help determine the design was beginning.

- Over the next month the focus would shift onto designing for the 2024/25 financial year.

Capital:

- The Waimakariri Gorge Bridge Deck Replacement was nearly complete. Guardrail had been completed on the southern approach and installation is continuing on the northern approach (WDC side of the bridge). The scaffolding was being removed and this would take approximately two weeks to complete. Additional works were undertaken to clean the beams under the bridge and repair a crack in the abutment which was non-structural. The deck would receive a further reseal in the summer to ensure it remained waterproof. There had been some issues with sealing around joints, and this was something that staff would be addressing in time, in warmer temperatures.
- The Island Rd / Ohoka Rd traffic signals had been commissioned and intersection works are complete. Councillor Redmond congratulated staff on this project and believed the traffic signals were working well.
- Kerb and Channel Renewal work in Geddis Street was now complete.
- Palmer Street Upgrade work was continuing. Berms and shoulder sealing were the last tasks to be completed and this was planned for the next week.
- Ashley Street kerb and channel and footpath works were also now complete.
- The last of the footpath renewal projects had been completed for this financial year. This was the footpath renewal on Douglas Street.

Other works:

- Doubledays Footbridge remained closed. Repairs to the pier cap were currently underway.
- South Belt pavement works adjacent to the new development were now complete.
- Work was continuing to underground the trunk watermain on Townsend Road at the culvert. The cut-in of the main was planned to occur overnight late June / early July with the road closed overnight to allow the connection to be completed.
- 16 new permanent flooding signs have been installed in known flooding areas. These fold down signs were quick and easy to open during a flood event.
- Work was undertaken to remove tree debris from previous floods which had become stuck against the bridge piers at the Mandeville and Mafeking Bridges.
- There was work coming up to install water, stormwater and sewer mains through the Blackett St / King St roundabout. This was continuation of the Rangiora Sewer Upgrade project. The roundabout would need to be closed to accommodate these works. Start date 1 July with the intersection closed for 6 weeks. There would be several contractors working on this site at the same time to get the project completed with minimum disruption.

Events:

- The Kaiapoi Lights from 26th to 28th June.
- Kaiapoi Matariki Event is coming up on 28th June.

Road Safety:

- The Waimakariri Road Safety Working Group meets this Wednesday. The purpose of the group is to provide a forum for collaboration on road safety functions and initiatives.

Councillor Fulton sought information on the joins in the new deck on the Waimakariri Gorge bridge and queried if this would need to be redone in spring/summer. In response, G Cleary advised that the bridge itself was a steel

structure and was not entirely rigid, so there was some movement due to the decking being wooden. Each wooden plank was structurally sound, and there had been packing used to get the surface as level as possible. When vehicles, especially heavy trucks, travelled over the surface, the bridge would move. To accommodate each wooden plank, the design had allowed for some movement. There was a sealant between each plank and then a chip seal surface. The movement had been constrained as much as it could be. There were no concerns about the structural integrity of the bridge, however it was not strong enough to hold concrete panels. It was agreed that there could be an information update provided to the public on the timeframe for the extra coating going on the bridge deck which was scheduled for summer. G Cleary noted that technology was advancing, and the planks were not available in the past and they are now, and had been used successfully on other bridges, including the Rakaia Gorge Bridge.

Regarding the speed humps, G Cleary said these had been installed to slow traffic during the construction period, however they may be removed later. G Cleary would follow up with the contractor and Selwyn District Council to get confirmation of this.

Mayor Gordon also endorsed the need for some communication to go out to the public, about the additional coating to go on the bridge deck in the summer. Mayor Gordon also suggested that there could be information included in a publication of the Oxford Observer to keep the community updated on this matter.

7.2 **Drainage, Stockwater and Three Waters (Drinking Water, Sewer and Stormwater) – Councillor Paul Williams**

Water

- The UV treatment installation project was progressing relatively well. The new UV unit at the Pegasus Water Treatment Plant was installed and currently being commissioned. The works at the other sites of Darnley, Peraki, South Belt and Domain would not be completed until September 2024.
- Taumata Arowai were going to be visiting the Pegasus Water Treatment Plant in July as part of the Woodend Pegasus chlorine exemption application.

Wastewater

- Featherstone Ave, Kairaki sewer lateral and manhole repair works were complete and would be monitored in the next spring tide and heavy rainfall events.

Drainage

- Cones Road Drain Upgrade was almost complete, with the remaining reinstatement works to be completed by the end of June.
- Wolffs Road drainage improvements were almost complete. The culvert was successfully installed without the need for sheet piling or dewatering.
- Greens Road culvert in Tuahiwi has been installed and the downstream drain regrading and widening will be complete by the end of the month.
- Cam River heavy maintenance works were complete.

7.3 **Solid Waste– Councillor Robbie Brine**

Councillor Brine took the opportunity to advise of the passing last night of Gareth James. He had previously been an employee of the Council, as Manager Services (which at the time also included Community and Recreation).

Gareth had in more recent years been involved with the regional landfill at Kate Valley and had won numerous awards for his engineering skills and expertise. Councillor Brine considered it a privilege to work with Gareth over a number of years, initially during construction of the Kate Valley facility and then as a Board Member of Transwaste.

1. Budget announcement – changes to waste disposal levy & Waste Minimisation Act
 - Revenue from the waste disposal levy going into the contestable fund would be spent on a wider range of projects in addition to minimising waste:
 - Projects that support the environment and climate change mitigation and adaptation, such as restoring freshwater catchments and freshwater improvements.
 - Help cover the costs associated with disposal of waste generated by an emergency such as a cyclone, and to clean up contaminated sites and landfills vulnerable to severe weather events.
 - The landfill disposal levy would continue to be increased by \$5/tonne from 2025 to 2027.
 - At this stage Councils would still receive 50% of the levy revenue, but that would be reviewed when the Act is reviewed.
 - There won't be any impacts on the 2024/25 budgets from this change, and staff would work through these as part of the Annual Plan process.
2. On Monday 17 June (which is “Global Garbage Man Day”) our comms team put out a media story and video about “a day in the life of a collection truck driver” which puts a face to the kerbside collection drivers. Leanne Winter has been driving the recycling truck for many years, and she has highlighted the challenges and good things about collecting bins in Waimakariri.

Solid Waste is busy as usual, but Councillor Brine had nothing of concern to report.

As Councillor Brine was unable to attend, Councillor Mealings had recently attended the Waste Minimization Conference in May 2024 and considered this an excellent conference and provided some feedback from the conference. Matters highlighted at the conference included construction demolition waste, composting, waste reduction, food waste, waste minimisation levy and best practices used in other districts. One of the main speakers was the Minister for the Environment.

7.4 Transport – Mayor Dan Gordon

Mayor Gordon noted there were still further announcements to come on the Woodend Bypass project. The status of the Woodend Safety Improvements was still to be provided, Mayor Gordon noting that these were needed regardless of what stage the Bypass project was at. The Council was advocating for walking and cycling to be included in the bypass design. This was an important project for the district and thanked the Council staff for their involvement in the design.

Currently there was discussion on road tolling at Government level, and this may be considered for the Woodend Bypass. This was yet to be defined. Councillor Mealings said by having a toll on this bypass, this may discourage people from using the bypass, and to still drive through Woodend.

Mayor Gordon noted the Council had been eligible for the Emergency works funding, and without this, it would have been a significant challenge for the Council, to deal with the regular adverse weather events. Mayor Gordon

commented that without this emergency funding available, it would have put extreme hardship on the Council and many smaller councils across the country. He suggested that if this funding was to cease, there needed to be another mechanism to allow Central Government funding available for Councils in cases of weather emergency.

8 QUESTIONS UNDER STANDING ORDERS

There were no questions.

9 URGENT GENERAL BUSINESS

There was no 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:

Moved Councillor Redmond

Seconded Councillor Mealings

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

- 11.1 Confirmation of Public Excluded Minutes from 28 May 2024.
- 11.2 Report from Management Team Operations 27 May 2024.

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.
11.1	Confirmation of Public Excluded Minutes from 28 May 2024	Good reason to withhold exists under Section 7	As per Section 7(2)(h) of the Local Government Official Information and Meetings Act 1987, to “enable any local authority holding the information to carry on, without prejudice or disadvantage commercial activities” and For reasons of protecting the privacy of natural persons and enabling the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege as per LGOIMA Section 7 (2)(a), (g) and (i).
11.2	Report from Management Team Operations 27 May 2024	Good reason to withhold exists under Section 7	As per Section 7(2)(h) of the Local Government Official Information and Meetings Act 1987, to “enable any local authority holding the information to carry on, without prejudice or disadvantage commercial activities”

CARRIED

CLOSED MEETING**Resolution to resume in open meeting.**

Moved: Mayor Gordon

Seconded: Councillor Mealings

THAT open meeting resumes and the business discussed with the public excluded remains public excluded unless otherwise resolved in the individual resolutions.

CARRIED

The public excluded meeting commenced at 10.05am and concluded at 10.21am.

OPEN MEETING**NEXT MEETING**

The next meeting of the Utilities and Roading Committee will be held on Tuesday 16 July 2024 at 9am.

There being no further business, the meeting closed at 10.22am.

CONFIRMED

Chairperson
Councillor Paul Williams

Date

NOTES OF A WORKSHOP OF THE UTILITIES AND ROADING COMMITTEE HELD IN THE COUNCIL CHAMBERS, HIGH STREET, RANGIORA ON TUESDAY, 18 JUNE 2024, WHICH COMMENCED AT 10.25AM

PRESENT

Councillors P Williams (Chairperson), R Brine, N Mealings, P Redmond, J Ward and Mayor D Gordon

IN ATTENDANCE

Councillors T Fulton

J Millward (Chief Executive), G Cleary (General Manager Utilities and Roding), K Simpson (3 Waters Manager), A Smith (Governance Coordinator)

APOLOGIES

CARRIED

1. Nitrates in Drinking Water

Presenter Kalley Simpson (3 Waters Manager)
Trim ref: Powerpoint presentation

K Simpson provided information on nitrate levels in water and current testing practices of the Council for its public water supplies, with the aid of a PowerPoint presentation.

Questions/ Issues/ Observations:

Councillor Williams asked if there was any comparative figures between our Council nitrate levels in water supplies, and other Councils throughout the country. K Simpson said the areas where water supplies are taken from groundwater are prone to have higher levels of nitrates. This includes Canterbury. Some areas in Selwyn (Kirwee and Darfield) have high readings. J Millward advised that Tamata Arawai have advised that a letter would be released soon which would include some of these figures. It was pointed out that there can be differences in nitrate readings in water supplies that may be coming from the same aquifers.

Councillor Fulton

G Cleary said the job of the council staff was to comply with the standards required for the Water Authority Tamata Arawhai and work with Ecan to get an understanding of the water flows. He was not saying whether Greenpeace were right or wrong.

Question from Councillor Mealings

THERE BEING NO FURTHER BUSINESS THE WORKSHOP CONCLUDED AT 10.53am.

WAIMAKARIRI DISTRICT COUNCIL**REPORT FOR DECISION**

FILE NO and TRIM NO: TSU-22 / 240625103292

REPORT TO: UTILITIES AND ROADING COMMITTEE

DATE OF MEETING: 16 July 2024

AUTHOR(S): Amy Wilhelm, Finished Floor Level Officer
Jennifer McSloy, Development Manager

SUBJECT: Proposed Amendments to Technical Practice Note on Flood Mapping, Freeboard and Floor Levels

ENDORSED BY:
(for Reports to Council, Committees or Boards)



 General Manager



 Chief Executive

1. SUMMARY

- 1.1. This report seeks approval from the Utilities and Roding Committee to endorse the proposed updates to the Technical Practice Note on Flood Mapping, Freeboard and Floor Levels (**Practice Note**) (provided as attachment i).
- 1.2. This report also requests that the Utilities and Roding Committee recommends the Council adopt the updated Practice Note.
- 1.3. The updates include:
 - 1.3.1. administrative updates to correct definitions and ensure consistent terminology is used throughout the Practice Note;
 - 1.3.2. Correction to a discrepancy between the freeboard requirements for Rural and Rural Residential properties, and brings the freeboard requirements between the two into alignment;
 - 1.3.3. Including the Minimum Finished Floor Level Maps using the 1 in 200 year flood hazard mapping as attachments to the Practice Note.
- 1.4. The amendments to the Practice Note have been collated by the Utilities and Roding Department through discussions with the Flood and Floor Level Working Group.
- 1.5. The Practice Note uses Council's most recent flood hazard models, which were developed using the best information available at the time. Staff are aware there are updates to government guidance (Coastal hazards and climate change guidance published in February 2024), and a new Canterbury Regional Council Regional Policy Statement currently out for Schedule 1 consultation. The updated Government guidance is being reviewed, and if Council's flood hazard models are updated the Practice Note will also be updated. Equally, when the Proposed District Plan and/or proposed Regional Policy Statement become operative, the Practice Note will require updates.

Attachments:

- i. Amended Technical Practice Note on Flood Mapping, Freeboard and Floor Levels (Record No. 240412057972)

2. RECOMMENDATION

THAT the Utilities and Roding Committee

- (a) **Receives** Report No. 240625103292.

AND

THAT the Utilities and Roothing Committee recommends:

THAT the Council:

- (b) **Approves** the updated Technical Practice Note on Flood Mapping, Freeboard and Floor Levels (TRIM 240412057972).
- (c) **Notes** that the Practice Note will need to be updated in the future once the Proposed District Plan and Regional Policy Statement are operative, as both contain hazard chapters which will affect the document. If Council's flood models are updated, the Practice Note will also be reviewed and updated as required.

3. **BACKGROUND**

- 3.1. The current Practice Note was endorsed by the Council in 2023 (report 200108001550). Since then, as staff have used the document as a working document to complete FFL assessments, inconsistencies in terminology and minor errors have been identified. To improve the clarity and usability of the document, staff have produced an updated version which addresses the inconsistencies and minor errors.

- 3.2. The current Practice Note will need to be updated in the future once the Proposed District Plan is adopted to reflect the proposed changes to the natural hazards chapter. The proposed updates to the current Practice Note covered in this report are required in the interim to ensure consistency and clarity in setting minimum finished floor levels.

3.3. **Minor Changes**

- 3.3.1. Most of the proposed amendments to the Practice Note are minor and relate to correcting inconsistencies in terminology and definitions found within the document. The proposed amendments also ensure consistent terminology is used both within the document and between similar Council documentation e.g. resource consents, finished floor level assessments, engineering reports etc. The improvements in terminology include:

- 3.3.1.1. Adding "above undisturbed ground at any point intersecting the building footprint" to areas such as Rural Very Low flood hazard category to clarify the finished floor level needs to be above undisturbed ground, before any earthworks/landscaping etc. is undertaken.

- 3.3.1.2. Aligning the definition of "Finished Floor Level" to acknowledge the District Plan definition and construction/building industry interpretation/best practice.

- 3.3.1.3. Adding definitions for Dwelling and Construction tolerance.

- 3.3.1.4. Other changes such as "uncoloured area" to "clear area" (in relation to Very Low flood hazard areas), "floor levels" to "finished floor levels", "house" to "dwelling" and "Suitably Qualified Person" to "Suitably Qualified and Experienced Person".

- 3.3.1.5. Clarifying abbreviations within the document such as "Project Delivery Unit (PDU)", "Canterbury Regional Policy Statement (CRPS)", "Annual Exceedance Probability (AEP)" etc. Given that the intention is for the Practice Note to be an internal document with potential for various

sections being referenced in decisions and/or the whole document being made available to applicants, it is beneficial to clarify abbreviations.

3.4. Alignment of Freeboard Requirements for Rural and Rural Residential Properties

- 3.4.1. There are two proposed changes to the freeboard requirements which are not considered to be a minor change and therefore need to be endorsed by the Council. The table below summarises the proposed update (current requirements struck out with proposed changes underneath):

Hazard Category	Rural	Rural Residential	Urban
Very Low (Clear)	N/A – FFL to be minimum 400mm above surrounding ground*	Freeboard = 500mm N/A – FFL to be minimum 400mm above surrounding ground	N/A – Building Code requirements apply
Low (Green)	Freeboard = 400mm Freeboard = 500mm	Freeboard = 500mm	Freeboard = 500mm
Medium (Blue)	Freeboard = 500mm	Freeboard = 500mm	Freeboard = 500mm
High (Red)	No build advised	No build advised	No build advised

These changes are explained in more detail below:

- 3.4.2. Amending the Very Low Flood Hazard Category for Rural and Rural Residential (Res4A) areas to both have a minimum finished floor level of 400mm above surrounding ground. This will bring Rural Residential areas into alignment with what is required in Rural areas.

In the initial report to Council regarding the adoption of the Practice Note (TRIM 200108001550), it was stated for Rural and Rural Residential:

“In areas where flood water is predicted to be below 100mm (very low hazard) the Technical Practice Note requires a floor level to be 400mm above the surrounding ground. This allows for a 300mm freeboard.”

Rural Residential areas generally have more infrastructure in the way of stormwater and flood protection compared to Rural areas, yet the 500mm freeboard requirement currently included in the Practice Note for Rural Residential areas in the very low flood hazard area would mean the minimum finished floor level for a dwelling would be at least 600mm above ground (100mm flooding + 500mm freeboard). Compare this to a Rural dwelling where the finished floor level in the very low flood hazard area is 400mm above undisturbed ground.

- 3.4.3. Amending the Low Flood Hazard Category for Rural areas to have a freeboard of 500mm, an increase from 400mm. This will bring Rural into alignment with both Rural Residential and Urban areas, resulting in a consistent freeboard across all low and medium hazard areas.

Currently, the low flood hazard freeboard requirement for the Rural area is 400mm, which is a lower freeboard requirement compared to Rural Residential and Urban areas with the same flood hazard category. Rural Residential and Urban areas generally have more infrastructure in the way of stormwater and flood protection compared to Rural areas so it does not make sense that Rural areas would have a lower freeboard requirement.

- 3.4.4. Amending the Rural and Rural Residential areas to have the same freeboard requirements for all flood hazard area brings consistency to the Practice Note and helps to eliminate confusion between two areas which are similar in nature.

3.5. **Minimum Floor Level Maps**

- 3.5.1. The 2023 version of the “Kaiapoi Adopted Minimum Floor Level Requirements New Zealand Datum 2016” and “Coastal Settlements Adopted Minimum Floor Level Requirements New Zealand Datum 2016” maps which show the 1 in 200 year modelling have been added to the appendix. The 1 in 200 year finished floor level maps are used to assess the FFL where 4 or more dwellings are proposed on an existing residential lot, or where a developer for a larger scale subdivision consent within an area on the map that has not previously been developed (i.e. greenfield).

4. **ISSUES AND OPTIONS**

- 4.1. The Utilities & Roothing Committee and Council have three options available. These are outlined below.
- 4.2. Option 1. Recommended Option
 - 4.2.1. Approve the amendments to the Practice Note. This will ensure consistency within the document, correct minor errors, and clarify freeboard requirements.
- 4.3. Option 2. Require reconsideration or amendment
 - 4.3.1. Request the General Manager Utilities and Roothing revise the amendments to the Practice Note or provide more information if there are any outstanding issues to address. This would allow staff to consider any issues raised by Council and address them before bringing a revised Practice Note back to the Committee and Council for adoption. This is not recommended, as staff have worked through the proposed amendments with the Flood and Floor Level Working Group of which the General Manager Utilities and Roothing is a member, and the proposed amendments are supported by that group.
- 4.4. Option 3. Decline.
 - 4.4.1. Decline to approve the amendments to the Practice Note and leave the current document as is. This is not recommended as the inconsistencies, minor errors and contradictory freeboard requirements need to be addressed in the current document.
- 4.5. The Management Team has reviewed this report and support the recommendations.

5. **COMMUNITY VIEWS**

5.1. **Mana whenua**

Te Ngāi Tūāhuriri hapū are not likely to be affected by, or have an interest in the subject matter of this report.

5.2. **Groups and Organisations**

There are groups and organisations likely to be affected by, or to have an interest in the subject matter of this report. The amendments may be of particular interest to engineers working on behalf of Developers or building consent applicants within the District.

5.3. **Wider Community**

The wider community is not likely to be affected by, or to have an interest in, the subject matter of this report.

6. **OTHER IMPLICATIONS AND RISK MANAGEMENT**

6.1. **Financial Implications**

There are not financial implications of the decisions sought by this report.

6.2. **Sustainability and Climate Change Impacts**

The recommendations in this report do not have sustainability and/or climate change impacts. The Practice Note ensures new dwellings are built to a level which is protected from future flooding.

6.3 **Risk Management**

There are not risks arising from the adoption/implementation of the recommendations in this report.

6.3 **Health and Safety**

There are not health and safety risks arising from the adoption/implementation of the recommendations in this report.

7. **CONTEXT**

7.1. **Consistency with Policy**

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

7.2. **Authorising Legislation**

The Local Government Act is relevant to the information within this report.

7.3. **Consistency with Community Outcomes**

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

7.4. **Authorising Delegations**

The Utilities and Roading Committee has the delegation to receive and approve the recommendations of this report.

WAIMAKARIRI DISTRICT COUNCIL**TECHNICAL PRACTICE NOTE**

FILE NO AND TRIM NO: TSU-22 / 240412057972

DATE: 19 June 2024~~21 June 2022~~

TO: Council staff involved in 3 Waters, Building, Policy, Planning and Land Development

FROM: Gerard Cleary, Manager Utilities and Roading

SUBJECT: Flood Mapping, Freeboard and Floor Levels

1. Purpose

- 1.1. The purpose of this Technical Practice Note is to document standard practice and provide guidance to achieve a consistent framework for Council staff involved in flood risk assessment and setting out and approving building floor levels. It will be used to:
- 1.1.1. Provide technical advice on applications for Building Consent
 - 1.1.2. Provide technical advice on Resource Consent applications under the Operative District Plan
 - 1.1.3. Provide advice on enquiries received from external Customers
- 1.2. The Practice Note is intended to be reviewed when the Proposed District Plan becomes operative.
- 1.3. The General Manager Utilities and Roading, 3 Waters Manager, and Project Delivery Manager will use discretion in applying this Technical Practice Note on a case-by-case basis.

1.4. Flood Maps

- 1.4.1. This Technical Practice Note relies on flood maps which can be found on Waimap
- 1.4.2. These Maps have colour coded hazard areas as follows:
- Clear areas are considered to be ~~Very Low~~very-low hazard
 - Green mapped areas are considered ~~Low~~low hazard
 - Blue coloured areas are considered ~~Medium~~medium hazard
 - Red coloured areas are considered ~~High~~high hazard

2. Planning and Regulatory Context**2.1. General**

- 2.1.1. The setting of ~~finished~~ floor levels is governed by the requirements of the ~~Canterbury~~ Regional Policy Statement, Waimakariri District Plan, Building Act and Building Code. In

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all cases, Building Act compliance still needs to be achieved and any necessary resource consents applied for. In many cases the guidance in this Technical Practice Note will exceed those of the Building Act and therefore the Building Act will be met by default. However, where they are not it is still a requirement that the Building Act requirements are met. There is also a requirement to meet any finished floor level requirements of consent notices on the property title, or any district plan rule.

2.2. Building Consents

2.2.1. The applicant for a Building Consent is required to demonstrate that the proposed development complies with the Building Act and Building Code as part of their building consent application. This includes achieving minimum finished floor levels in relation to surrounding ground levels and predicted flood levels.

2.3. Subdivision or Land Use Consents under the District Plan

2.3.1. The applicant for a subdivision consent, or land use consent is required to demonstrate that they comply with the District Plan, and any relevant regional plan such as the Land Water Regional Plan, in addition to having regard to the flood mitigation and avoidance policies of the Canterbury Regional Policy Statement (CRPS) in the consent assessment. Reference should also be made to Section 106 of the Resource Management Act (hazards relating to subdivision) and any consent notice in relation to finished floor levels and flood hazards.

2.4. Private District Plan Change

2.4.1. For private plan change proposals, any amendments proposed to the District Plan must 'give effect' to the policies of the CRPS and any relevant national policy statements. Expert evidence will need to be provided to demonstrate this.

2.4.2. In order to demonstrate compliance the applicant is required to provide a flood assessment report from a Suitably Qualified and Experienced Person (SQEP) for Council consideration, assessment and approval. This assessment will need to include consideration of the flood hazard and a freeboard requirement.

3. General Requirements

3.1. Flood assessment methodology

3.1.1. Where the development is changing the underlying ground level, or there are new roadways being constructed, then the applicant will need to provide evidence from a SQEP to demonstrate the effect of the development. The evidence shall consider both the effect on the potential occupants of the development, as well as neighbouring properties, and will apply freeboard requirements as per the District Plan, if available and as set out in this practice note. The applicant may request information pertaining to the site from the Council's flood hazard model to assist with providing the required assessment and evidence.

3.1.2. Where the development is being carried out in a manner that will not disrupt the existing overland flow-paths, then upon request the Council will provide a Minimum Finished Floor Level that will meet Council requirements. Examples of this include building consent applications and development or subdivisions of four lots or less. The Minimum Finished Floor Level will be based on the Council's flood hazard model and other relevant information held by Council, and will apply the general principles below, including freeboard requirements.

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3.1.3. If the applicant disagrees with the Council's Minimum **Finished** Floor Level, then they can commission a flood assessment report signed by a SQEP and submit to the Council for consideration. If the Minimum **Finished** Floor Level is required under the District Plan, the Council consideration will be undertaken as part of a resource consent application assessment.

3.2. Existing (Post 2000) Large Scale Subdivisions and Land Use Consent Areas

3.2.1. Most large scale residential subdivisions that have been established since 2000 (for example Silverstream and Beach Grove) will have pre-approved minimum **finished** floor levels that were established for the specific subdivision at the time of the development. In these cases the minimum **finished** floor levels specified in the resource consent documentation will apply. Should a new development seek to build outside of the resource consent parameters then the District Plan (including the Minimum **Finished** Floor Level) might apply.

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3.3. Extensions to existing ~~dwellinghouses~~

3.3.1. Provided that the Building Act and Building Code requirements are met in relation to predicted flooding, extensions up to 30 percent of the existing floor area would likely be considered acceptable. The reasoning for this is that this does not create a substantial additional risk to an existing **dwellinghouse** and would allow, for example, the addition of a bedroom.

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3.4. Existing Developments and Existing Buildings

3.4.1. It is important to note that existing buildings that have been constructed to previously applicable standards are not impacted by this technical note. As with many development standards that change over time any previously constructed and consented activities will continue to enjoy any existing use rights. This technical note is forward looking only.

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3.5. Benchmarks

3.5.1. The developer shall provide local benchmarks to be used to set out floor levels. A minimum of two benchmarks are required, visible by line of sight, to each lot frontage.

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4. Demonstrating Compliance with Required **Finished Floor Level~~floor-level~~ for Building Consent**

4.1. **Project Delivery Unit** (PDU) staff will identify any formally received applications (for PIM or Compliance Check in conjunction with a Building Consent or as a PIM Only) that require a Finished Floor Level (FFL) Assessment. Following identification PDU will set up a new **FFLFL** application in Tech 1 and associate the Building Consent number as a related application.

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4.2. Set up and FFL assessment will be undertaken by the **Finished Floor Levels Officer**~~Project Planning & Quality~~ and **Land Development Team**~~Teams~~. Advice provided by PDU will depend on whether the **FFLFL** was tabulated through the subdivision process or not, in accordance with the process set out in TRIM record 210514077201.

4.3. Location of structures on site, and access

4.3.1. In all cases, care shall be taken to avoid siting buildings in flood hazard areas and where possible to site the building on the property clear of ponding or overland flow paths.

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- 4.3.2. Where there is no clear area, then where possible the building should be located, where possible, on the area with the lowest flood hazard. For example, locate the building site on green (low hazard) rather than blue (medium hazard) mapped areas.

4.4. Rural area – Very Low Hazard Areas (Clear/White/clear area on 1 in 200 year flood maps)

- 4.4.1. On generally flat areas the minimum finished floor level is to be set no lower than 400mm above undisturbed ground at any point intersecting the building footprint. This means that the floor level at every point around the house needs to be at least 400mm above undisturbed ground.

The RL stated is the minimum finished floor level requirement and assumes 400mm clearance above undisturbed ground will be achieved across the building footprint. Ground level can vary across a site. During set out, it is the builder's responsibility to check constructing to the RL achieves a 400mm minimum clearance above undisturbed ground at any point intersecting the building footprint.

The proposed finished floor level on the plans is assessed using the site level information provided by the applicant. It is the responsibility of the applicant to ensure the accuracy of the site level information provided.

- 4.4.2. On a sloping area, or ridge, the finished floor level may not need to be elevated above the ground other than to simply comply with standard Building Code building act ground clearance requirements. Note that a topographical survey may be requested to confirm the building site is on a localised high point.

4.5. Rural - Low Hazard Areas (Green on 1 in 200 year flood maps)

- 4.5.1. The finished floor level shall be 500mm above the modelled 0.5% AEP (1 in 200 year) flood level based on the Council's district wide flood hazard mapping.

- 4.5.2. If required by the Council the applicant may need to engage a Suitably Qualified and Experienced Person to provide a flood assessment report to Council showing the proposed dwellinghouse site and finished floor level and demonstrate that the finished floor level will be at least 500mm above the 0.5% Annual Exceedance Probability (AEP) (1 in 200 year) flood level and that the building or site works will not impede overland follow or exacerbate or cause flooding on any other property.

4.6. Rural – Medium Hazard Areas (Blue on 1 in 200 year flood maps)

- 4.6.1. If building is approved, the finished floor level shall be 500mm above the modelled 0.5% AEP (1 in 200 year) flood level based on the Council's district wide flood hazard mapping.

- 4.6.2. If required by the Council the applicant may need to engage a Suitably Qualified and Experienced Person to provide a flood assessment report to Council showing the proposed dwellinghouse site and finished floor level and demonstrate that the finished floor level will be at least 500mm above the 0.5% AEP (1 in 200 year) flood level and that the building or site works will not impede overland follow or exacerbate or cause flooding on any other property.

- 4.6.3. In areas where there is a Medium Hazard it may not always be possible to build because of the requirements for a floor level and all weather access will have unacceptable impacts on neighbouring properties.

4.7. Rural – High Hazard Areas (Red on 1 in 200 year flood maps)

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4.7.1. It is not considered appropriate to build in these areas due to the high hazard unless a resource consent has been obtained. Any finished floor level requirements of the Resource Consent shall apply.

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4.8. Rationale for flood events and freeboards

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4.8.1. The Building Act requires new dwellingshouses to be designed and built in such a way that surfaceSurface water, resulting from an event having a 2% probability of occurring annually, shall not enter buildings. The Building CodeAct methodology (E1/VM1 section 4.3.1) suggests a 150mm freeboard in normal circumstances, and 500mm where waves may occur.

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4.8.2. However, the Council has applied different flood models and freeboards as the "Acceptable Solutions" due to a recognition of the greater risks of building on an active flood plain (which covers the majority of the District), and recent experiences over the past two decades of flood events.

4.8.3. It is recognised that this is a greater requirement than the Building CodeAct minimum requirements.

4.8.4. Therefore, the applicant can choose to supply information supporting a level in keeping with the Building CodeAct. This would need to be a flood model assessment of the specific site, certified by a SQEP.

4.8.5. The Council does not model a 1 in 50 year flood event throughout the District. The Council does have models for the 1 in 100 year (1% AEP), 1 in 200 (0.5% AEP) and 1 in 500 year (0.2% AEP) year-events.

4.8.6. The 1 in 200 year (0.5% AEP) is referenced in the Canterbury Regional Policy Statement (CRPS) RPS (Policy 11.3.2) such that development should be avoided unless (among other matters), new buildings have

an appropriate finished floor level above the 0.5% AEP design flood level. While it is acknowledged that this policy is only triggered by a Resource Consent application, nevertheless it is an indication of where the region sets its risk profile for new buildings.

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4.8.7. For this reason, the Council has adopted the 1 in 200 year (0.5% AEP) flood level as an appropriate event to require protection from.

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4.8.8. With regard to the freeboard, the Council rationale is as follows:

4.8.8.1. Rural Very Low Risk~~very-low-risk~~ (i.e.: no flooding indicated)

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4.8.8.1.1. 400mm total clearance above undisturbed ground at any point intersecting the building footprint

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4.8.8.1.2. 100mm possible flooding (due to margin of error in flood model)

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4.8.8.1.3. 300mm freeboard above flood level (due to uncertainty in exact terrain shape, and due to uncertainty in future land surface changes in surrounding upstream areas)

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4.8.8.2. Rural Low Risk~~low-risk~~

4.8.8.2.1. 500mm total freeboard above modelled 1 in 200 year (0.5% AEP) Flood Depth-flood-level

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4.8.8.2.2. 100mm margin of error in flood model

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4.8.8.2.3. 300mm freeboard above flood level (due to uncertainty in exact terrain shape, and due to uncertainty in future land surface changes in surrounding upstream areas)

4.8.8.3.4. 100mm additional freeboard due to greater variation of flood depth at greater depths.

4.8.8.3. Rural Medium Risk

4.8.8.3.1. 500mm total freeboard above modelled 1 in 200 year (0.5% AEP) Flood Depth-flood-level

4.8.8.3.2. 100mm margin of error in flood model

4.8.8.3.3. 300mm freeboard above flood level (due to uncertainty in exact terrain shape, and due to uncertainty in future land surface changes in surrounding upstream areas)

4.8.8.3.4. 100mm additional freeboard due to greater variation of flood depth at greater depths.

4.8.8.4. Urban Very Low Risk (Building Consents only)

4.8.8.4. Building Code requirements apply

4.8.8.5. Urban Low Risk (Building Consents only)

4.8.8.5.1. 500mm total freeboard above modelled 1 in 100 year (1% AEP) Flood Depth 0.5% AEP flood-level

4.8.8.5.2. 100mm margin of error in flood model

4.8.8.5.3. 300mm freeboard above flood level (due to wash from passing vehicles)

~~4.8.8.5.4. 100mm additional freeboard to allow for other unaccounted for variables including survey error, lot level tolerance, infrastructure failure, and uncertainty in climate change allowances.~~

4.8.8.6. Urban Medium Risk (Building Consents only)

4.8.8.6 Urban (Subdivision)

4.8.8.6.1. 500mm total freeboard above modelled 1 in 100 year (1% AEP) Flood Depth

4.8.8.6.2. 100mm margin of error in flood model

4.8.8.6.3. 300mm freeboard above 0.5% AEP flood level (due to wash from passing vehicles)

4.8.8.6.4. 100mm additional freeboard to allow for other unaccounted for variables including survey error, lot level tolerance, infrastructure failure, and uncertainty in climate change allowances.

4.8.8.7. Urban Very Low Risk (Subdivision)

4.8.8.4. Building Code requirements apply

4.8.8.8. Urban Low Risk (Subdivision)

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4.8.8.8.1. 500mm total freeboard above above modelled 1 in 200 year (0.5% AEP) Flood Depth

4.8.8.8.2. 4.8.8.5.2:100mm margin of error in flood model

4.8.8.8.3. 300mm freeboard above flood level (due to wash from passing vehicles)

4.8.8.8.4. 100mm additional freeboard to allow for other unaccounted for variables including survey error, lot level tolerance, infrastructure failure, and uncertainty in climate change allowances.

4.8.8.9. Urban Medium Risk (Subdivision)

4.8.8.9.1. 500mm total freeboard above modelled 1 in 200 year (0.5% AEP) Flood Depth

4.8.8.9.2. 100mm margin of error in flood model

4.8.8.9.3. 300mm freeboard above flood level (due to wash from passing vehicles)

4.8.8.9.4. 4.8.8.5.4:100mm additional freeboard to allow for other unaccounted for variables including survey error, lot level tolerance, infrastructure failure, and uncertainty in climate change allowances.

4.8.9. The 500mm freeboard requirement stems from the Building Code (E1/VM1 Section 4.3.1.) which requires a 500mm freeboard where "surface water has a depth of 100mm or more and extends from the building directly to a road or car park, other than a car park for a single dwelling". The Building Code also makes the comment "the 500mm freeboard allows for waves generated by vehicles. Such waves will not be sustained unless there is at least 100mm depth of water and an unobstructed path from the point where the wave is generated to the building".

5. Demonstrating Compliance with the Operative District Plan Provisions – Greenfield Development

Table 1: Summary of Freeboard Requirements, Greenfield Development

Hazard Category	Rural (Ru)	Rural Residential (Res 4A and 4B)	Urban (Res 1, 2, 3, 5, 6, 7 Bus 1 & Bus 2)
Very Low (Clear)	N/A – FFL to be minimum 400mm above surrounding ground*	N/A – FFL to be minimum 400mm above surrounding ground*Freeboard = 500mm	N/A – Building Code requirements apply
Low (Green)	Freeboard = 500mm	Freeboard = 500mm	Freeboard = 500mm
Medium (Blue)	Freeboard = 500mm	Freeboard = 500mm	Freeboard = 500mm
High (Red)	No build advised	No build advised	No build advised

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Table 1: Summary of Freeboard Requirements, Greenfield Development

5.1. New Greenfield Subdivision of > = 4 lots (Res 1, 2, 3, 5, 6, 7, Bus 1 & 2)

- 5.1.1. In areas identified as low or medium flood hazard, the minimum requirements for floor levels are to provide a 500mm freeboard above the 0.5% (200yr) AEP (1 in 200 year) flood level.
- 5.1.2. New greenfield subdivision with a building platform located within a high flood hazard area (or where no building platform is specified) is non-complying and resource consent would be required. It is possible that land can be raised so that it no longer meets the Canterbury Regional Policy Statement (CRPS) high flood hazard definition (high flood hazard is: where depth x velocity of flood waters is >= 1 in a 0.2% AEP (1 in 500 year) flood event.

where depth x velocity of flood waters is >= 1 in a 0.2% (500yr) AEP flood event.
- 5.1.3. Site levels should be formed to allow 225mm between the finished site level and the required minimum floor level to allow reasonable building site platforms, as required by the Building Code.
- 5.1.4. Overall, new Greenfieldgreenfield development is subject to the process and outcome of the Plan Change, Ecan consents, assessment of flood displacement and / or subdivision consent.

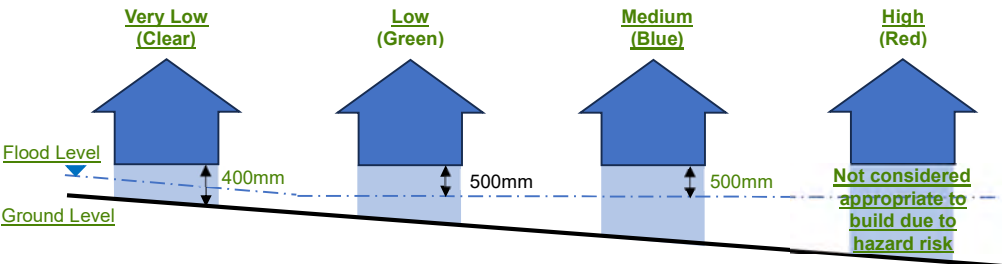
5.2. New Subdivision of (Residential 4A and 4B)

- 5.2.1. Minimum requirements are 500mm freeboard above the 0.5% AEP (1 in 200 year) flood level.
- 5.2.2. Regard must also be given to the 0.2% AEP (1 in 500 year) flood as required by the Canterbury Regional Policy Statement (CRPS).
- 5.2.3. This is subject to the process and outcome of the Plan Change or subdivision consent.

5.3. New subdivision in Rural Areas

5.3.1. General

The concepts in figure 1 apply.



Flood Hazard Classification	Very Low (Clear) <100mm Flood Depth	Low (Green) 100-300mm Flood Depth	Medium (Blue) 300-1000mm Flood Depth	High (Red) 1000+mm Flood Depth
Minimum Finished Floor Level Requirement	400mm above undisturbed ground at any point intersecting the building footprint or Floor Risk Assessment (FRA) by SQEP	If possible, avoid or 500mm above Flood Level or FRA by SQEP	Avoid unless not possible or 500mm above Flood Level or FRA by SQEP. Note: Council may require FRA by SQEP for Medium hazard sites	
Development Manager Advice on Floor Level	✗	✓	✓	✓
Development Manager Approval of Floor Level	✓	✓	✓	✓

Figure 1: Minimum floor level requirements (Rural and Rural Residential) large lot residential)

5.3.2. Rural - Very Low Flood Hazard Areas. (Clear-area on 0.5% AEP (1 in 200 year) Flood Hazard Maps)

On generally flat areas, the finished floor level shall be a minimum of 4500mm above undisturbed the highest point of the original ground level at any point intersecting the building footprint, the house site.

Where the property is on the side of a hill and obviously clear of any flooding or overland flow path, the Building Code Act requirements in relation to floor levels above ground shall govern (i.e. a floor level above and the 2% AEP (50 year) flood level plus a freeboard). The 400mm above undisturbed the highest point of the existing ground at any point intersecting the building footprint provision may not necessarily be required. Note that a topographical survey may be requested to confirm that the building site is on a localised high point.

5.3.3. Rural - Low Hazard Areas. (Green on 0.5% AEP (1 in 200 year) Flood Hazard Maps)

The floor level shall be 500mm above the modelled 0.5% AEP (1 in 200 year) flood level based on the Council's district wide flood hazard mapping.

5.3.4. Rural – Medium Hazard Areas. (Blue on 0.5% (200 year) AEP (1 in 200 year) Flood Hazard Maps)

At the Council's discretion and where the building is only partially on or at the edge of an area shown as blue, the Council's flood hazard mapping may be used to determine the minimum floor level. In this case the floor level shall be 500mm above the modelled 0.5% AEP (1 in 200 year) flood level based on the Council's flood hazard mapping.

If required by the Council the applicant may need to engage a Suitably Qualified and Experienced Person (SQEP). They shall provide a flood assessment report to Council showing the proposed dwellinghouse site and floor level and demonstrate that

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the floor level will be at least 500mm above the 0.5% AEP (1 in 200 year) flood level and that the building or site works will not impede overland flow or exacerbate or cause flooding on any other property.

In areas where there is a Medium Hazard it may not always be possible to build because of the requirements for a floor level and all weather access will have unacceptable impacts on neighbouring properties.

5.3.5. Rural – High Hazard Areas (Red on 0.5% AEP (1 in 200 year) Flood Hazard Maps)

It is not considered appropriate to build in these areas due to the high hazard.

6. Demonstrating Compliance with the Operative District Plan Provisions – Intensification (3 or Fewer Lots)

6.1. Rural Areas and Residential 4 areas

6.1.1. Sections 5.2 and 5.3 above applies.

6.2. Residential Areas (Res 1, 2, 3, 5, 6, 7) - General

6.2.1. In existing zoned residential areas that trigger assessment under the Resource Management Act 1991 (RMA) via the District Plan, it is anticipated that all developable lots will have a finished ground level that avoids inundation in a 1% AEP (1 in 100 year) flood event.

6.2.2. The consent assessment, where required, is also required to consider the 0.5% AEP (1 in 200 year) flood, with regard to Policy 11.3.2 of the Canterbury Regional Policy Statement (CRPS) given in the engineering assessments and the matters covered in s106 of the RMA. Detail on 11.3.2 of the CRPS is included as [Appendix 1 of this report note](#).

6.2.3. Assessment of the matters covered in Policy 11.3.2 may require consideration of the specific site conditions both within and adjacent to the subject site; and may result in the setting of finished floor levels that give effect to Policy 11.3.2.

6.2.4. This practice note is the starting point for consideration of Policy 11.3.1. For infill development in urban areas the 1% AEP (1 in 100 year) flood level shall be allowed for with freeboard. The 0.5% AEP (1 in 200 year) flood level should be assessed and considered as part of the setting of floor levels. In practice this may mean a floor level for 1 to 3 dwellingshousess that is at or even lower than the 0.5% AEP (1 in 200 year). This needs to be considered in the context of being compatible with existing surrounding dwellingshousess without causing an adverse impact on neighbours.

6.2.5. This applies to the small scale (3 dwellingshousess or fewer) infill development of existing urban areas where the surrounding area has already been built on. It applies to small scale subdivisions of existing residential lots or new dwellingshousess on vacant lots, or rebuild of existing dwellingshousess. For large scale development (4 dwellingshousess or more) the Greenfield provisions shall apply. (Refer section 5.1)

6.2.6. The Council's urban flood hazard maps shall be used where they are available. These models include provision for the open drains, stormwater pipes and pump stations that make up the urban stormwater network. In the absence of urban flood hazard maps the district wide flood hazard maps shall apply.

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6.2.7. In all cases, care shall be taken to avoid siting buildings in flood hazard areas and where possible to site the building on the property clear of ponding or overland flow paths.

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6.2.8. Where there is no ~~Clear~~ area (~~Very Low Hazard~~~~very low hazard~~), the building should be located, where possible, on the area with the lowest flood hazard. For example locate the building site on ~~Green (Low Hazard~~~~green (low hazard)~~ rather than ~~Blue (Medium Hazard~~~~blue (medium hazard)~~ mapped areas.

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6.2.9. Where a dwelling is being replaced, the floor level for the new dwelling shall be no lower than the original dwelling. And where flood modelling is available for such a site an assessment shall be made by Council to the home owner/applicant to set a minimum floor level.

6.3. Existing residential areas (Res 1, 2, 3, 5, 6, 7) (excluding Kaiapoi and coastal urban areas) - Where very low flood hazard is mapped. ~~(Clear area on 1% AEP (1 in 100 year) Flood Hazard maps)~~

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6.3.1. Floor levels should be required to meet Building ~~Code~~~~Act~~ requirements (i.e. a floor level above the 2% AEP (~~1 in~~ 50 year) flood level plus a freeboard.

6.3.2. The freeboard will be as required by the Building Code.

6.3.3. Note - Isolated small pockets of flooding shown on the flood hazard maps may be treated as "Clear" at the sole discretion of the Council.

6.4. Existing residential areas (Res 1, 2, 3, 5, 6, 7) (Excluding Kaiapoi and coastal urban areas) - Where a low or medium flood hazard is mapped. ~~(Green and Blue areas on the 1% AEP (1 in 100 year) Flood Hazard Maps)~~

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6.4.1. The floor level of ~~dwelling~~~~houses~~ shall have a freeboard above the 1% AEP (~~1 in~~ 100 year) flood level.

6.4.2. The freeboard requirements shall be ~~500mm~~~~400mm~~ above 1% AEP (~~1 in~~ 100 year) for the mapped Green areas (Low Hazard).

6.4.3. The freeboard requirements shall be 500mm above 1% AEP (~~1 in~~ 100 year) for the mapped Blue areas (Medium Hazard).

6.4.4. Consideration shall also be given to the spill level of the secondary flow path based on known topographical levels.

6.5. Existing residential areas (Res 1, 2, 3, 5, 6, 7) (Excluding Kaiapoi and coastal urban areas) - Where a high hazard area is mapped. ~~(Red on 0.5% AEP (1 in 200 year) Flood Hazard Maps)~~

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6.5.1. It is not considered appropriate to build in these areas due to the high hazard flood risk.

6.5.2. If a building is approved, then the floor level of ~~dwelling~~~~houses~~ shall have a freeboard of 500mm above 1% AEP (~~1 in~~ 100 year) flood level

6.6. Kaiapoi and coastal urban existing residential areas (Kaiapoi, The Pines Beach, Kairaki, Woodend Beach and Waikuku Beach)

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6.6.1. The Council Flood Hazard Models assume that the underlying drainage infrastructure (including pipes and pumps) continues to operate. This is a satisfactory assumption for the majority of the District where there is little need to pump stormwater and good

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secondary flow paths exist. However, Kaiapoi and the coastal urban areas are more dependent on pumps and pipelines continuing to operate to maintain the levels that the Flood Hazard model predicts. This is not considered to be an appropriate assumption for these areas, because it is possible that this protection would have an outage during a large rainfall event, at some time during the life of a new dwellinghouse.

6.6.2. Therefore, the basis for determining a minimum floor level in Kaiapoi and the existing coastal urban areas is based on the possible depth of flooding if the pumping system was not working and/or the piped system became blocked. This differs from the Flood Hazard model results where the proposed property is in a 'basin' – i.e. the property level is lower than the surrounding ground levels (including stop banks). In this situation, the 'ponding' level takes precedence over the level from the Flood Hazard model.

6.6.3. The minimum floor levels in the existing urban areas of Kaiapoi, The Pines Beach, Kairaki, Woodend Beach and Waikuku Beach, where there are no underlying floor level requirements from existing subdivision and land use consents, are shown on the maps attached as Appendix 2.

6.6.4. The diagram below explains the floor level requirements for existing urban areas of Kaiapoi and the coastal urban areas.

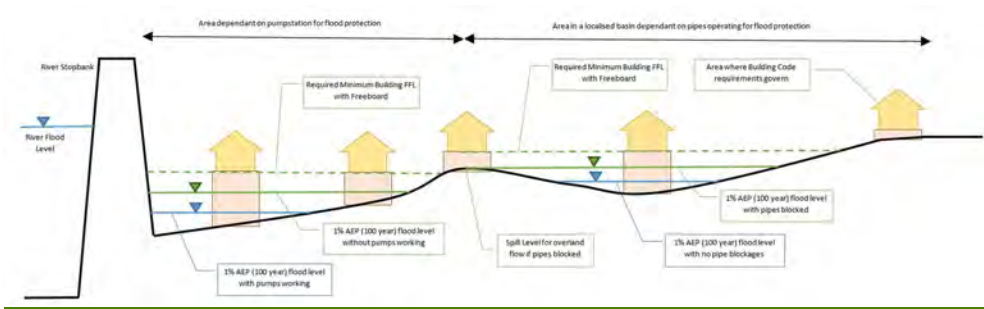


Figure 2: Urban Kaiapoi and Existing Coastal Developed Areas

7. Commercial Areas (Business 1, 2)

7.1. Advice will be given for these areas in relation to the flood level and freeboard as it would apply to residential. This information shall be advice only and the Building Act provisions shall apply.

8. Definitions

8.1. Annual Exceedance Probability (AEP) ~~is as~~ defined in the Canterbury Regional Policy Statement: "the probability for a certain size of flood flow occurring in a single year."

8.2. Building Location Certificate ~~--~~ means a certificate prepared by a registered licensed professional surveyor.

8.3. Construction tolerance ~~-- approval needs to be obtained for any non-complying finished floor levels that do not meet the required level. Variations in construction tolerances of up to 40mm in have been accepted in the past, but any variation needs to be assessed on a case by case~~

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basis, taking into consideration the nature of the flooding and overland flow paths in the building's vicinity.

8.4. ~~4.~~ Current WDC Flooding Map -- means the current available published localised flood hazard mapping generated by the Waimakariri District Council.

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8.5 Dwelling -- in practice this refers to all floor areas that are a habitable space. In the District Plan, dwellinghouse means any habitable structure, occupied or intended to be occupied in part or in whole as a residence. Under the Proposed District Plan a habitable room means any room used for the purposes of teaching or used as a living room, dining room, sitting room, bedroom, office or other room specified in the Plan to be a similarly occupied room.

8.6. ~~4.~~ Finished Floor Level -- there are two definitions available for -- means the level of the finished floor levels. In accordance with the District Plan, Finished Floor Levels means for a concrete floor the top of the concrete slab, and for a wooden floor the bottom of the joists supporting the floor. The construction/building industry commonly interprets -- The finished floor level as meaning the top level of the finished floor of a building, measuring is measured from the top of the finished floor slab or top of flooring substrate not including floor finishes such as carpet, tiles etc. Under the Proposed District Plan there is the potential to address the discrepancy in the definition of the finished floor level for different floor types (concrete and timber) through the issuing of a Flood Assessment Certificate. The finished floor level slab or top of floor joists and does not include decorative features or tiles. For residential sites that have been filled to achieve minimum finished floor levels an attached garage may be exempt from compliance with a specified minimum finished floor level if the garage does not meet the Building Code requirements for a habitable space. If no formal finished floor level exists (for example pole sheds), the minimum finished floor level is deemed to be the height of undisturbed ground underneath the building.

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8.7. ~~5.~~ Freeboard - Freeboard, for the purposes of this Technical Practice Note, refers to the height to a floor level above a mapped flood water level. The freeboard represents a margin of safety for effects of wind or wave action, vehicle wash, or other influences on the maximum height of floodwaters. It is important to note that this is not the same as height above ground level.

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8.8. ~~6.~~ Greenfield development -- means existing areas zoned residential (excluding rural residential) within the Canterbury Regional Policy Statement (CRPS) infrastructure boundary and that do not fall within the definition of infill development. Greenfield development includes applications for comprehensive residential allotments as defined in the Waimakariri District Plan (minimum of 4 dwellings). Note that Greenfield development areas may have specific floor level requirements imposed within the District Plan.

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8.9. ~~7.~~ Height above ground level - The height above ground level is the difference between the floor level and the surrounding existing ground level.

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8.10. ~~8.~~ Infill Development -- means existing areas zoned residential (excluding rural residential) that contained a dwelling on <<date of practice note 2019>> and/or have the ability to erect up to three dwellings in accordance with the delineated area provisions, or a complying subdivision under the Waimakariri District Plan. Note that infill development areas may have specific floor level requirements imposed within the District Plan.

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8.11. ~~9.~~ New Urban Areas - New development areas have all had specific flood risk assessments as part of the Plan Change or Subdivision Consent process. In most cases this has resulted in a predetermined floor level being required for specific sites, or a set procedure to be followed to determine the minimum floor level.

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8.12. ~~10.~~ Suitably Qualified and Experienced Person (SQEP) -- means a Chartered Professional Engineer with expertise in flood hazard assessment, or equivalent.

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8.13. ~~44.~~ Surrounding Ground Level - means the highest undisturbed natural ground level at the proposed building location and should be determined by appropriate spot heights intersecting the building footprint dwelling location. For all zones, 'Surrounding Ground Level' should be expressed as a pre or post development level if earthworks have, or are anticipated to occur. This ensures that any cut or fill of building platforms is accounted for. 'Finished Formation Level' has the same meaning as surrounding ground level.

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9. Review

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9.1. This document is anticipated to be reviewed to incorporate the updated District Plan natural hazards provisions.

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Where a flood risk assessment is submitted by an external consultant reference shall be made to these standard definitions. Any alternative definition or meaning used shall be defined by the report author within the flood risk assessment.

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Appendix 1 (Canterbury Regional Policy Statement 1133.3.2)

11.3.2 Avoid development in areas subject to inundation

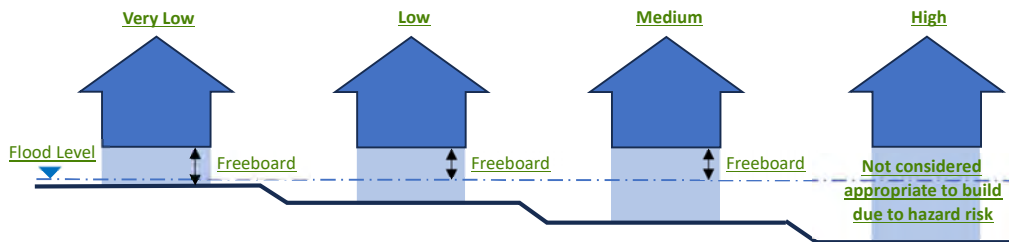
In areas not subject to [Policy 11.3.1](#) that are subject to inundation by a 0.5% AEP flood event; any new subdivision, use and development (excluding critical infrastructure) shall be avoided unless there is no increased risk to life, and the subdivision, use or development:

1. is of a type that is not likely to suffer material damage in an inundation event; or 2. is ancillary or incidental to the main development; or 3. meets all of the following criteria:

- new buildings have an appropriate floor level above the 0.5% AEP design flood level; and
- hazardous substances will not be inundated during a 0.5% AEP flood event;

The table below summarises the flood level and freeboard requirements (Except for Kaiapoi and coastal urban areas, where there is a separate Flood Level Map.).

Figure 3:



FREEBOARD			
Flood Hazard Zone	Urban Greenfield (4 or more dwellings)	Urban Brownfield (3 or fewer dwellings)	Rural
Very Low (Clear)	NZBC / RC	NZBC / RC	400mm (above GL)
Low (Green)	500mm (1 in 200 year)	500mm (1 in 100 year)	500mm
Medium (Blue)	500mm (1 in 200 year)	500mm (1 in 100 year)	500mm
High (Red)	No Build	No Build	No Build

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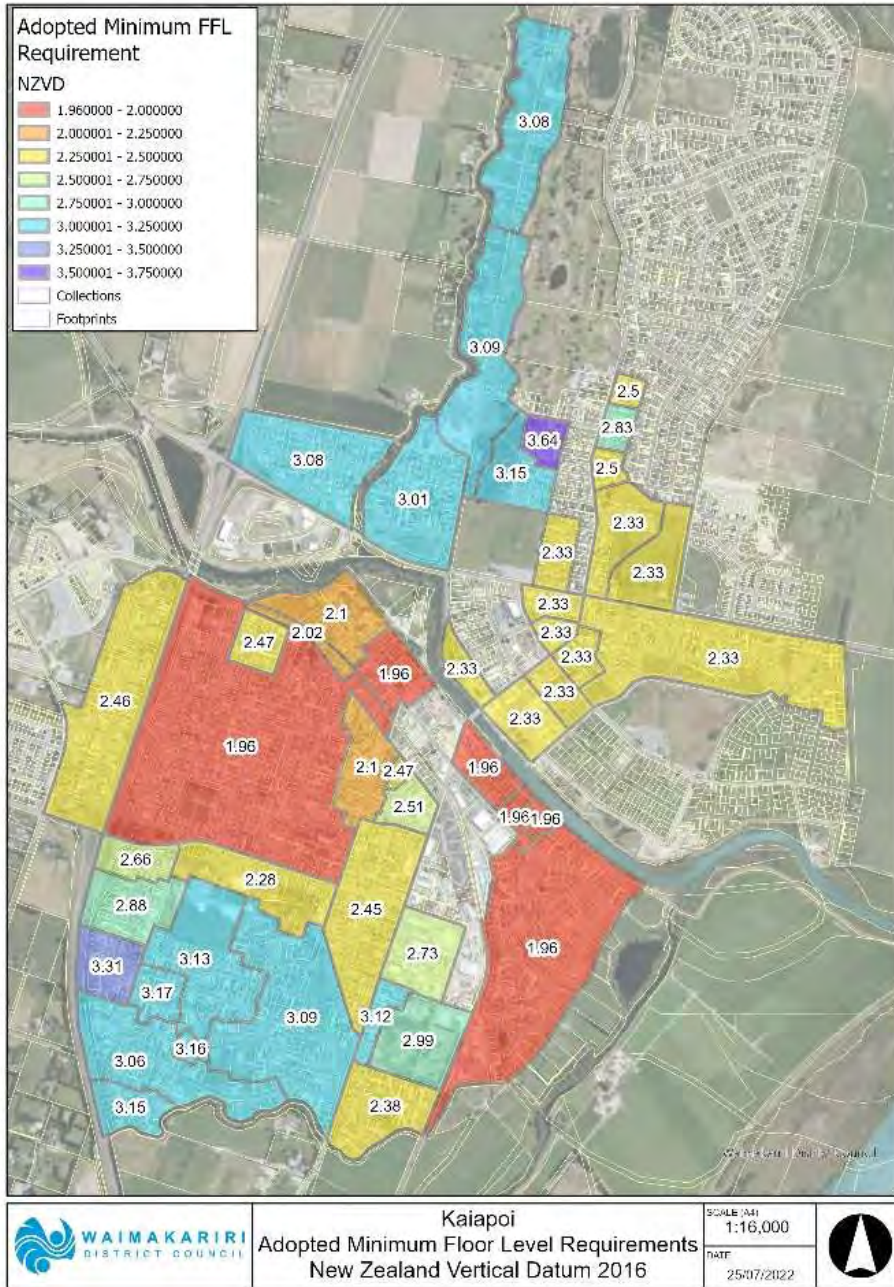
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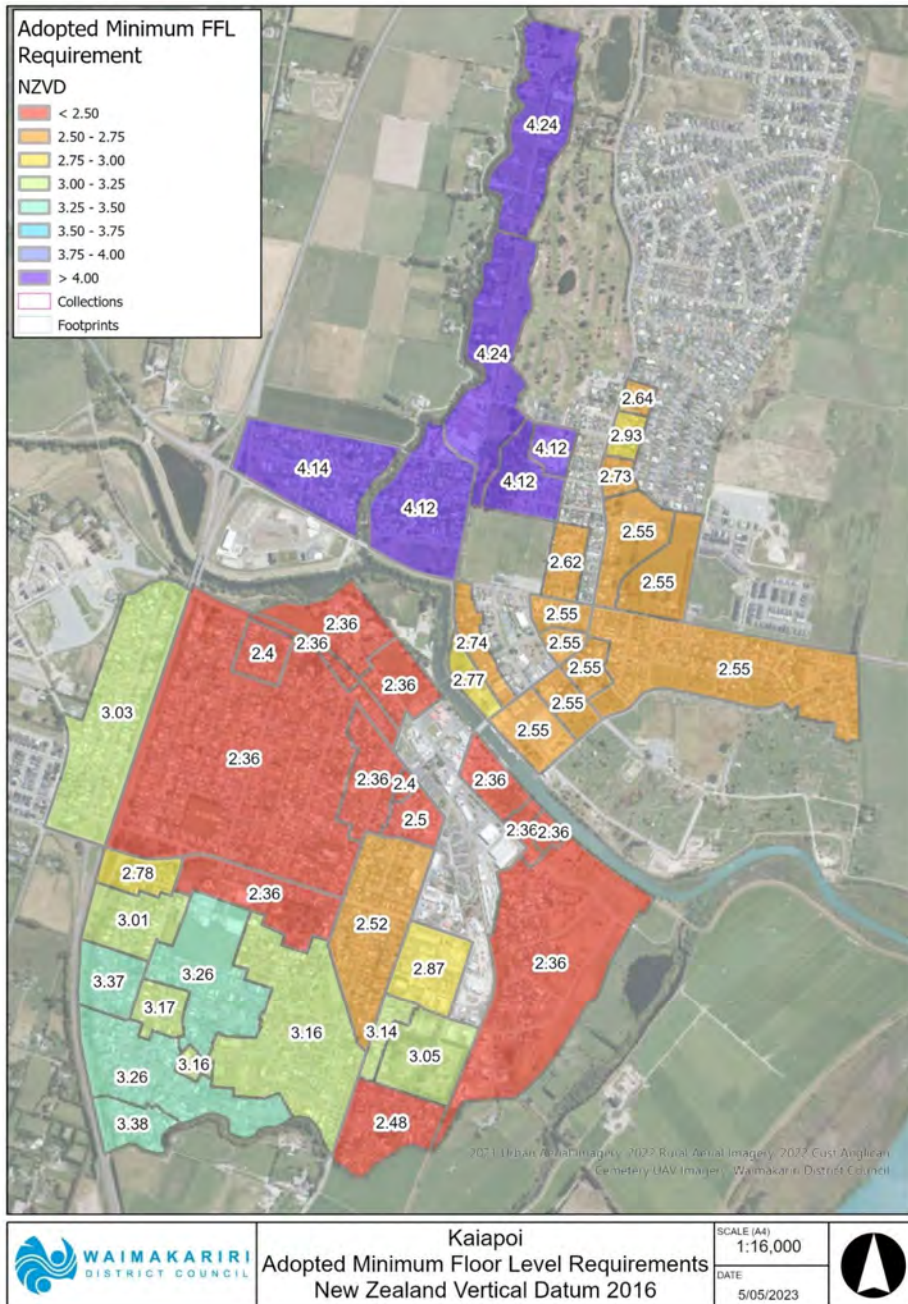
Appendix 2) Kaiapoi and Existing Developed Coastal Urban Areas Minimum Finished Floor Levels

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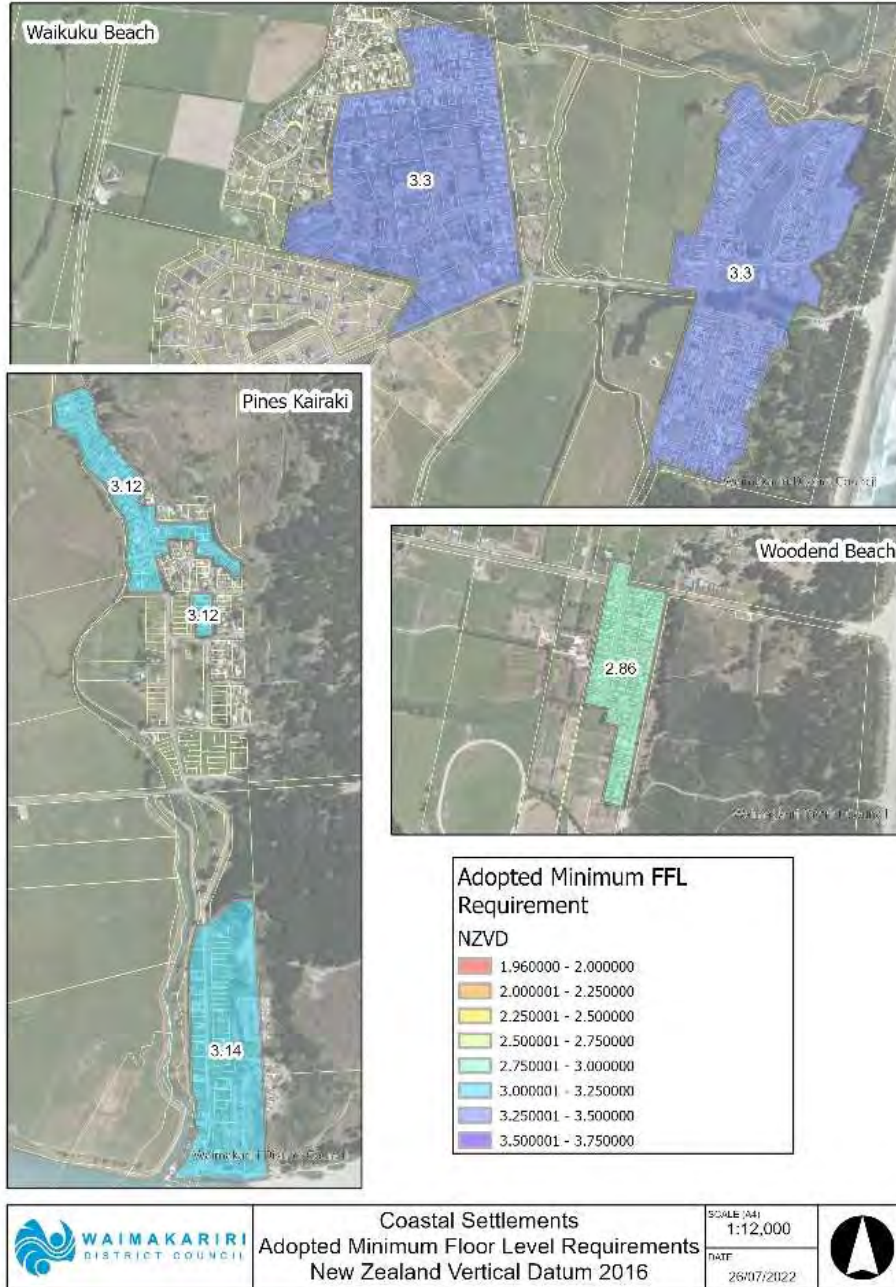
1 in 100 year (1% AEP) for small scale Urban Brownfield (infill) development (3 dwellings or less)

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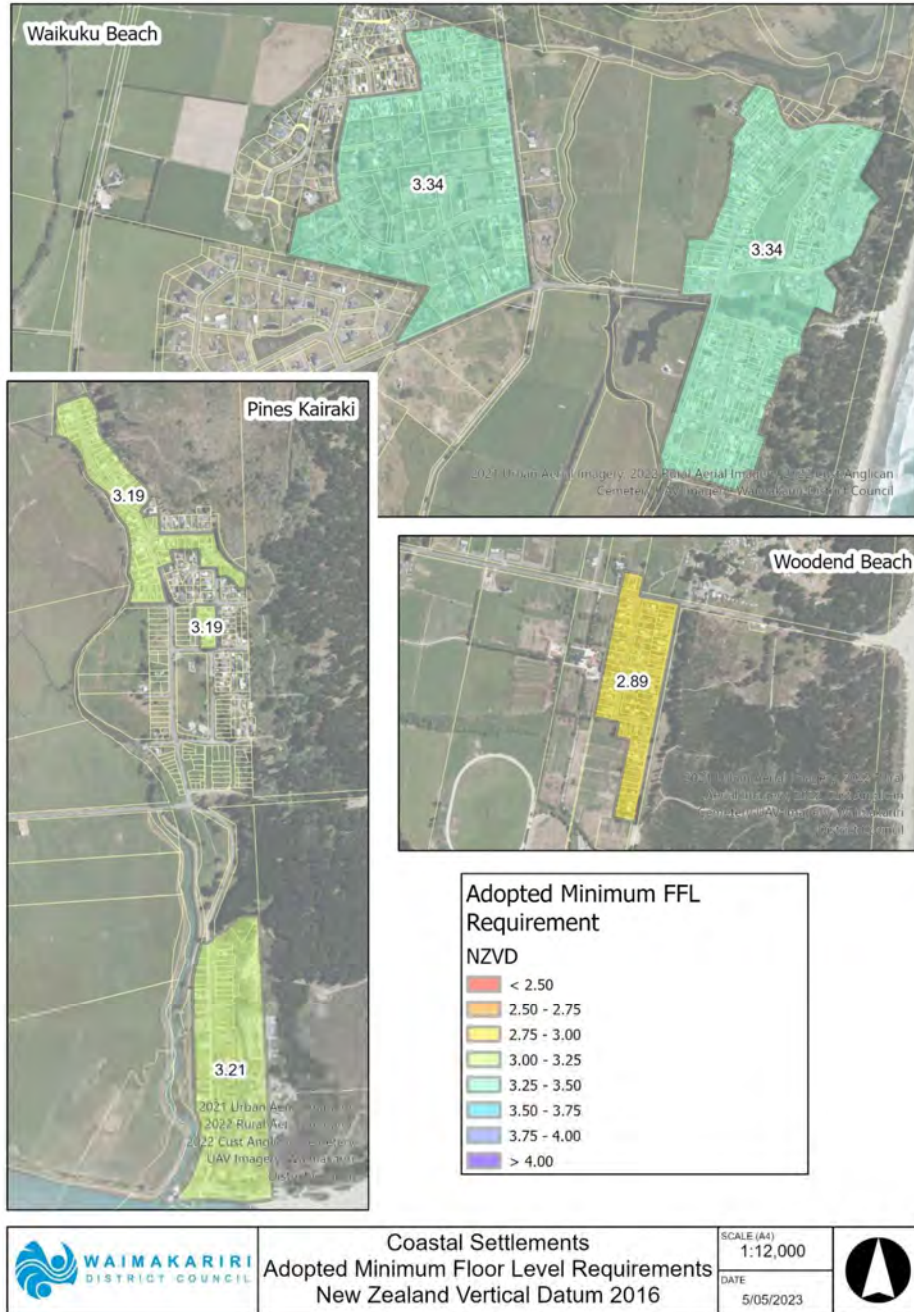


1 in 200 year (0.5% AEP) for larger scale Urban Greenfield development (4 dwellings or more)

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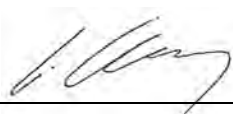
1 in 100 year (1% AEP) for small scale Urban Brownfield (infill) development (3 dwellings or fewer)



1 in 200 year (0.5% AEP) for larger scale Urban Greenfield development (4 dwellings or more)

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WAIMAKARIRI DISTRICT COUNCIL**REPORT FOR INFORMATION****FILE NO and TRIM NO:** RDG-22-04, DRA-16-05 / 240704109396**REPORT TO:** UTILITIES AND ROADING COMMITTEE**DATE OF MEETING:** 16 July 2024**AUTHOR(S):** Kalley Simpson, 3 Waters Manager
Joanne McBride, Roading and Transport Manager
Pat Towse, Flood Team Lead**SUBJECT:** July 2023 Flood Recovery Progress Update**ENDORSED BY:**
(for Reports to Council,
Committees or Boards)

General Manager



Chief Executive

1. SUMMARY

- 1.1 This report provides a progress update on the July 2023 Flood Recovery work programme, including investigation work and maintenance actions, and provides an overview of the physical works programme recommended by the investigations.
- 1.2 A total of 351 service requests have been received related to the July 2023 storm event, which have been triaged, grouped and classified into a total of 88 investigations, 126 maintenance actions and 31 customer advice actions¹.
- 1.3 As at 4 July 2024, all investigations have been triaged, scoped and investigated, 16 are in the approval stage and 72 have been completed. The remaining 16 investigations are currently being reviewed internally before final signed off. A majority of these remaining investigations are complex and have required additional survey, modelling and analysis in order to confirm the recommended improvements.
- 1.4 A further 126 maintenance actions were also identified from the service requests following the July 2023 event. As at 4 July 2024, all have been started and processed, 6 have been programmed, and 120 have been completed.
- 1.5 Work on the following three key focus areas that experience extensive flooding has commenced:
 - **Cam River / Ruataniwha** – Substantial work has been completed on the Cam River / Ruataniwha by both Environment Canterbury and Waimakariri District Council, which has included tree felling and vegetation clearance as well as localised stopbank improvement works. The waterway has recently been reinspected to identify any minor follow up work required. Environment Canterbury have undertaken survey of the stream bed and stopbanks which will be used to identify any future upgrading works to the Cam River system.
 - **Tuahiwi** – Council has completed heavy maintenance work, including trimming of vegetation from the banks and removal of sediment from the bed, along the main channel of the Tuahiwi Stream / Waituere between Church Bush Road to the Cam

¹ Note that the total number of service requests is greater than the number of investigations and maintenance tasks as an investigation or maintenance task can have multiple service requests associated with the work.

River, and vegetation clearing works on the Tuahiwi Stream / Waituere between Greens Road and Church Bush Road. The new box culvert on the upper end of the diversion drain (between Greens Road and the Cam River) has been installed and the drain regrading / widening the middle section above Pa Road, is due to be completed by the end of July 2024.

- **Waikuku Beach** – Detailed assessment is underway to determine the cause of flooding from the Taranaki Stream which was higher than expected, although will take some months to complete. This work will be coordinated with Environment Canterbury and will look at factors such as the operation of the flood gate, upstream development, and the catchment hydrology, including any recharge from the Ashley River.

- 1.6 There are a total of 24 immediate works projects that are being progressed in the 2023/24 financial year to implement drainage improvements that have been identified as part of the investigation work. 11 projects have been completed and 13 projects will carryover into the 2024/25 financial year. Of the 13 ongoing projects, 4 are currently under construction, 9 are in the design phase.
- 1.7 The total cost of the flood recovery work is \$4.055 million, as approved by Council at the October 2023 Council meeting (refer Trim 230921147926). To date \$3,628,674 (or approximately 89%) of the work has been completed and the final forecast expenditure remains at \$4.055 million. As indicated above, it is anticipated that some of this spend with carryover into the 2024/25 financial year.
- 1.8 The Flood Team has effectively been wrapped up, with just the final changes to the remaining investigations to be completed. Recruitment is currently underway for the Infrastructure Resilience Team, who will assist with progressing the remaining improvements works and implementing proposed future works.

Attachments:

- i. Flood Recovery July 2023 Event Tracking – As at 4th July 2024 (Trim 240704109393).
- ii. Flood Recovery July 2023 Event Dashboard – As at 4th July 2024 (Trim 240704109391).

2. **RECOMMENDATION**

2.1. **THAT** the Utilities and Roading Committee:

- a. **Receives** Report No. 240704109396.
- b. **Notes** that all 88 investigations have been triaged, scoped, and investigated, 16 are being reviewed for approval and 72 are complete;
- c. **Notes** that all 126 maintenance actions have been processed, 6 have works programmed, and 120 are complete;
- d. **Notes** that the Flood Team has effectively been wrapped up and recruitment is currently underway for the Infrastructure Resilience Team, who will assist with progressing the remaining improvements works and implementing proposed future works.
- e. **Notes** that the total cost estimate for the flood recovery work is \$4.055 million.
- f. **Notes** that the expenditure to date is \$3,628,674 and the final forecast expenditure remains at \$4.055 million;
- g. **Circulates** this report to all Community Boards for information.

3. **BACKGROUND**

- 3.1 The district experienced a significant rainfall event over the weekend of 22-24 July 2023, with the coastal area around Woodend receiving approximately 150mm of the rainfall over a 48 hour period.
- 3.2 A total of 351 service requests related to the July 2023 storm event were received. All service requests have been acknowledged and have been collated, triaged and categorised. This work has identified that there is a total of 88 investigations and 126 maintenance tasks that need to be undertaken to address the issues raised in the service requests (refer Table 1 below). There are also 31 service requests predominantly related to private drainage issues where advice has been provided to the customer. These predominantly onsite that are not the responsibility of Council to address.

Table 1 – Classification of Service Requests

Classification		No. SR	Investigations	Maintenance Tasks
Investigations	Recent (July 2022)	82	36	-
	Historical (pre 2022) ¹	54	30	-
	New (July 2023)	25	22	-
Maintenance		159	-	126
Customer Advice		31	-	-
TOTAL ²		351	88	126

¹ These are locations where previous investigation work has been undertaken in the past, which was used as a reference for assessing any improvement works required.

² Note that the total number of service requests is greater than the number of investigations and maintenance tasks as an investigation or maintenance task can have multiple service requests associated with the work.

- 3.3 The Flood Team was established, which was overseen by a Flood Recovery Project Control Group (PCG), comprised of relevant managers from the Utilities & Roading department. A tracking spreadsheet was updated fortnightly and was reported formally to the Utilities and Roading Committee monthly.

4. **ISSUES AND OPTIONS**

Key Focus Areas

- 4.1. The three key focus areas that experience extensive flooding that will require more detailed assessment, investigation and community and stakeholder are:

- Cam River / Ruataniwha
- Tuahiwi
- Waikuku Beach

Cam River / Ruataniwha

- 4.2. A report Cam River / Ruataniwha was presented to the previous Utilities & Roading Committee meeting in October (refer Trim 231005158212). Immediate maintenance works to remove fallen trees was completed in October. Environment Canterbury have completed the maintenance work, including tree felling and vegetation clearance, on the lower Cam River from the Kaiapoi River up to Bramleys Road. Work on the upper Cam River above Bramleys Road up to Marsh Road has also now been completed. This work took longer than expected due to the amount of tree maintenance work required.
- 4.3. Localised stopbank improvement works to improve the upper Cam River / Ruataniwha system upstream of Bramleys Road have been completed. This has included raising the accessway to 151 & 153 Bramleys Road to reduce the likelihood of breakout flow on the true right bank and raising the stopbank at 100 Topito Road to reduce the likelihood of

breakout from on the true left bank. Environment Canterbury also raised a section of the stopbank adjacent to 73 & 79 Tuahiwi Road, which was particularly vulnerable.

- 4.4. Environment Canterbury have been re-surveying of the bed and banks of Cam River, the section downstream of Bramleys Road has been completed and the section above Bramleys Road is expected to be completed over the coming months. The new survey information will be compared to the historical survey from the 1980s, to identify any areas that need immediate works, and also undertake modelling of the Cam River to determine if any larger scale upgrades are required. A report will be prepared on their findings but this is not expected to be complete until the end of this calendar year. This information will feed into the proposed update of the Scheme Plan for the Cam River/ Ruataniwha.

Tuahiwi

- 4.5. Council has completed heavy maintenance work, including trimming of vegetation from the banks and removal of sediment from the bed, along the main channel of the Tuahiwi Stream / Waituere between Church Bush Road to the Cam River, and vegetation clearing works on the Tuahiwi Stream / Waituere between Greens Road and Church Bush Road.
- 4.6. Upgrading works on the diversion drain (between Greens Road and the Cam River) are currently under construction. The new box culvert at the upper end of the diversion has been installed and the regrading / widening the middle section upstream of Pa Road will be completed by the end of July 2024.
- 4.7. Survey work has been completed for a potential overflow diversion at Church Bush Road in the lower reach of the Tuahiwi Stream. This has been discussed with Environment Canterbury River Engineers who support this as an option. Further work is required to develop this upgrade and to seek additional budget from Council for the work.

Waikuku Beach

- 4.8. Modelling works of the Taranaki Stream has commenced as part of the detailed assessment to determine the cause of higher than expected flooding in Waikuku Beach. This work will assess factors such as the operation of the flood gate, upstream development, flood storage within the Tutaepatu Lagoon area and the catchment hydrology, including any recharge from the Ashley River. A meeting with Environment Canterbury has been held as part of scoping the modelling work required. They are looking at upgrading the flood gates on the outlet of the Waikuku Stream at Leggitts Road to make them less susceptible to blockage. This modelling work has commenced but will take some months to complete and it is not expected to know the outcome until August 2024.

Progress of Investigations

- 4.9. All of the 88 investigations have been triaged, scoped and investigated, and 16 are being reviewed and 72 are complete. The current status of these are summarised in the following table.

Table 2 – Progress of Investigations

Phase	Previous Report	Current Status ⁴	Change
Triaging	0	0	-
Scoping	0	0	-
Under investigation (Flood Team)	0	0	-
Review and approval (Asset Manager)	25	16	-9
Maintenance / immediate works programmed ¹	0	0	-
Improvement works proposed ²	0	0	-
Completed ³	63	72	+9
Total	88	88	-

¹ For the current financial year.

² Subject to future year budget process.

³ Investigation complete, actions agreed. works programmed or budgeted, customer/s called back.

⁴ As at 4 July 2024.

- 4.10. All investigation work has been completed by the Flood Team and is either currently under internal review by Council staff or has been signed off as complete. Once signed off as complete, the physical works have been either programmed as immediate works or budgeted for future years and customers have been contacted to let them know the outcome of the investigation. Where the issue related to private drainage issues practical advice has been provided to the customer on onsite measures they could consider to put in place.
- 4.11. There are 16 investigations are currently being reviewed internally before final signed off. A majority of these remaining investigations are complex and have required additional survey, modelling and analysis in order to confirm the recommended improvements.
- 4.12. The following table provides a summary of the solutions identified by the investigations, which will be updated as the investigations are reviewed and approved.

Table 3 – Outcome of Investigations

Implementation Solutions	Previous Report	Current Status	Change
Not yet determined	25	16	-9
Physical Works FY23/24	40	43	+3
Future year capex	10	12	+2
O&M changes	0	0	-
No action/Customer Advice	13	17	+4
Total	88	88	-

- 4.13. The current expenditure for investigations is \$808,486. The budget for the investigation costs is up to \$450,000 drawing from the allocated fund of \$600,000 for the Flood Team investigation work.
- 4.14. There are 35 investigations that have been previously investigated due to past flooding events. The budgets assigned to these investigations (FT04 to NS5) are to cover the costs associated with investigating the cause of flooding and confirm if the previous programmed works would address the flooding issues observed in the recent July 2023 event.

Progress with Maintenance Actions

- 4.15. Of the 126 maintenance actions all 126 have now been inspected and either completed or programmed. The current status of these is summarised in the following table.

Table 4 – Progress with Maintenance Actions

Phase	Previous Report	Current Status ²	Change
To be started	0	0	-
Work in progress	24	6	-
Completed ¹	102	120	-
Total	126	126	-

¹ Inspection complete, maintenance required programmed, customer/s called back.

² As at 4 July 2024.

- 4.16. The current expenditure for maintenance actions is \$362,824. The budget for the maintenance action costs is up to \$150,000 drawing from the allocated fund of \$600,000 for the Flood Team investigation work.

Progress with Immediate Works

- 4.17. There are a total of 24 immediate works that are being progressed in the 2023/24 financial year to implement drainage improvements that have been identified as part of the investigation work (refer Table 5 below). Note that some of these projects are funded from existing capital works budgets that existed prior to the July 2023 flood event, as well as new capital works budget approved by Council in October 2023.

Table 5 – Progress with Immediate Works

Project	Budget	Status
Broadway Ave, Waikuku Beach	\$15,000	Complete
10 Beach Crescent, Waikuku Beach	\$80,000	Design
Rotten Row, Waikuku Beach	\$25,000	Design
Pegasus Main Street, Pegasus	\$50,000	Design
Pearson Drain Improvements, Oxford	\$330,000	Design
Helmores Street Bund, Rangiora	\$75,000	Complete
Main North Road, Kaiapoi	\$5,000	Complete
Tram Road, Clarkville	\$100,000	Waiting Construction
Edmunds Road, Clarkville	\$50,000	Complete
Revells Road, Tuahiwi	\$50,000	Design
Greens Road, Tuahiwi	\$200,000	Under Construction
Woodfields Road, Cust	\$150,000	Under Construction
South Eyre Road, Eyrewell	\$20,000	Design
Washington Place, West Eyreton	\$50,000	Under Construction
Lower Sefton Road, Ashley	\$100,000	Design
Upper Sefton Road, Ashley	\$80,000	Design
North Eyre Road, Eyreton	\$15,000	Complete
Poyntzs Road, Cust	\$80,000	Design
Wilson Drive, Ohoka	\$200,000	Completed
Bramleys Road, Tuahiwi	\$100,000	Completed
Upper Cam River	\$150,000	Under Construction
Siena Place, Mandeville	\$30,000	Completed
Featherstone Ave, Kairaki	\$90,000	Completed
306 Beach Road	\$72,000	Completed
Total	\$2,117,000	

- 4.18. 11 projects have been completed and 13 projects will carryover into the 2024/25 financial year. Of the 13 ongoing projects, 4 are currently under construction, 9 are in the design phase. Approximately, \$1.415 million will carryover into the 2024/25 financial year, however a majority of this is either under construction or is expected to commence construction this calendar year. These projects will continue to be reported to the Audit & Risk Committee as part of the quarterly capital works programme report.

Proposed Future Works

- 4.19. There are 12 investigations that relate proposed future works that have capital works budgets in outer years. The works for Washington Place and Cust Road are currently being designed and will be completed next financial year, while the other projects which relate to improvements in Kaiapoi, Rangiora, Oxford, Waikuku Beach and Mandeville are planned for outer years as shown in Table 6 below.

Table 6 – Proposed Future Works

Project	Budget	Construction
Washington Place, West Eyreton	\$160,000	23/24 - 24/25
Cust Road, Cust	\$300,000	24/25
Depot Road, Oxford (Roding)	\$1,000,000	24/25 - 25/26
Kaikanui Diversion	\$1,570,000	24/25 - 26/27

Percival Street, Rangiora (Sewer)	\$550,000	25/26
Cridland Street West, Kaiapoi	\$2,000,000	25/26 - 26/27
Belmont Avenue, Rangiora	\$480,000	27/28
10 Beach Crescent, Waikuku Beach (Stage 2)	\$1,100,000	28/29
Mandeville Resurgence Channel (Stage 1 & 2)	\$22,600,000	24/25 - 31/32
Taranaki Stream Pump Station	\$6,250,000	34/35 - 35/36
Church Bush Road overflow diversion	TBC	TBC
MacDonalds Lane, Waikuku	TBC	TBC

Communications

- 4.20. The communications strategy document was prepared and endorsed by the Utilities & Roothing Committee. The website has been updated to deliver the flood response progress to the public based on the progress as at 4th July 2024.
- 4.21. A programme of regular communications has been implemented to support the recovery programme. In particular, the following key activities have been undertaken:
- A fortnightly dashboard and detailed tracking sheet published on the website.
 - Personal phone calls or emails to submitters when investigations begin to understand the issue, with follow up communications to confirm the outcomes.
 - Residents meetings, either street meetings or at community halls, will be held where appropriate. A residents' meeting has already been held in the West Eyreton Hall for the Washington Place flooding issue. Additionally, several street meetings have already been held for the Bramleys Road / Cam River flooding issue, the Threlkelds Road flooding issue and the Tram Road flooding issue. A further meeting is planned with the Threlkelds Road residents on the 31 July 2024.
 - Close out emails or communications with submitters as appropriate when each investigation is complete.

Implications for Community Wellbeing

- 4.22. There are implications on community wellbeing by the issues and options that are the subject matter of this report.
- 4.23. Safe and reliable Roothing and 3 Waters infrastructure is critical for wellbeing. 3 Waters infrastructure includes adequate drinking water, wastewater drainage and stormwater drainage for health and Roothing infrastructure is required to provide safe egress and enable residents to access goods and services within the community.
- 4.24. The Management Team has reviewed this report and support the recommendations.

5. COMMUNITY VIEWS

Mana whenua

- 5.1. Te Ngāi Tūāhuriri hapū are likely to be affected by or have an interest in the subject matter of this report as it relates to impacts on waterways and rivers. Staff will update the Runanga at the executive meetings and where relevant on specific projects or consents engage with Mahaanui Kurataio Limited.

Groups and Organisations

- 5.2. A number of the issues in this report cross over with Environment Canterbury (Ecan) in terms of consenting, or in relation to rivers and natural waterways assets and services they maintain. Staff from Ecan and WDC are working to proactively coordinate where necessary.

- 5.3. There are some drainage related issues that also relate to water races and irrigation races. Where this is the case staff are coordinating with Waimakariri Irrigation Limited.

Wider Community

- 5.4. The wider community is likely to be affected by, or to have an interest in the subject matter of this report, as the wider community has been impacted by the recent flood event.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

Financial Implications

- 6.1. The Council has approved unbudgeted expenditure of up to \$4.055 million in the 2023/24 financial year for emergency and immediate works responding to and recovering from the flooding.
- 6.2. The updated cost estimate and spend to date for the works associated with recovery from the flood is summarised below with the assessment of the funding source.

Table 7 – Financial Spend Summary

Area	Estimate	Spent to date	Forecast final expenditure
Roading	\$1,950,000	\$1,934,476	\$1,950,000
Stormwater	\$230,000	\$106,247	\$230,000
Land Drainage	\$815,000	\$88,372	\$815,000
Rivers	\$300,000	\$211,949	\$300,000
Wastewater	\$160,000	\$116,320	\$160,000
Flood Response Investigations	\$600,000	\$1,171,310	\$600,000
TOTAL	\$4,055,000	\$3,628,674	\$4,055,000

- 6.3. At this stage it is expected that the final expenditure will be within the budget estimate approved by Council in October 2023. There is approximately \$855,000 of immediate works budgeted in the \$4.055 million approved by Council in October 2023 that will carry over into the 2024/25 financial year. Note that there will be a carry over of approximately \$400,000 of expenditure, which has been allowed for in the total forecast cost.

Sustainability and Climate Change Impacts

- 6.4. The frequency and severity of flood events is likely to increase due to the impacts of climate change.

Risk Management

- 6.5. There are risks arising from the adoption/implementation of the recommendations in this report.
- 6.6. A risk-based approach has needed to be adopted around the management of any improvements works. Whole of life cost will be considered when agreeing the extent of works and the residual risk due to further rainfall events.

Health and Safety

- 6.7. There are health and safety risks arising from the adoption/implementation of the recommendations in this report.

- 6.8. Physical works will be undertaken to repair flood damage and as per standard process for any physical works, the contractor will be required to provide a Site Specific Health & Safety Plan for approval prior to work commencing on site.

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 Land Transport Management Act is the relevant legislation in relation to Rooding activities.

Consistency with Community Outcomes

- 7.3. The Council's community outcomes are relevant to the actions arising from recommendations in this report.
- 7.4. This report considers the following outcomes:

There is a safe environment for all

- Harm to people from natural and man-made hazards is minimised.
- Our District has the capacity and resilience to quickly recover from natural disasters and adapt to the effects of climate change.
- Crime, injury and harm from road crashes, gambling, and alcohol abuse are minimised.

Transport is accessible, convenient, reliable and sustainable

- The standard of our District's roads is keeping pace with increasing traffic numbers.
- Communities in our District are well linked with each other, and Christchurch is readily accessible by a range of transport modes.

Core utility services are sustainable, resilient, affordable; and provided in a timely manner

- Harm to the environment from sewage and stormwater discharges is minimised.
- Council sewerage and water supply schemes, and drainage and waste collection services are provided to a high standard.
- Waste recycling and re-use of solid waste is encouraged, and residues are managed so that they minimise harm to the environment.

Authorising Delegations

- 7.5. Relevant staff have delegation to authorise unbudgeted emergency works where needed.

Flood Recovery Tracking July 2024

As at 1 July 2024

Work package	Location	Report status	Investigation Outcome	% Completed
23I-01	228 Marsh Road & 2 Marshall Street, Rangiora	Submitted for Review		75
23I-02	12 & 14 Pascoe Drive, WOODEND	Submitted for Review		75
23I-03	1639 Poyntzs Road, HORRELLVILLE	N/A	Physical Works FY23/24	100
23I-04	138 Edmunds Road & 585 Tram Road, CLARKVILLE	N/A	Physical Works FY23/24	100
23I-05	19 B Newnham Street, RANGIORA	Approved	No Action/ Customer Advised	100
23I-06	165 Raddens Road, OHOKA	Approved	Physical Works FY23/24	100
23I-07	1758 North Eyre Road, EYRETON	N/A	Physical Works FY23/24	100
23I-08	242 Jeffs Drain Road, CLARKVILLE	Submitted for Review		75
23I-09	785 Tram Road, WAIMAKARIRI DISTRICT	Approved	Physical Works FY23/24	100
23I-10	489 Woodfields Road, SWANNANOA	Submitted for Review		75
23I-11	97 & 97 A Threlkelds Road, OHOKA,	Approved	No Action/ Customer Advised	100
23I-12	153 & 180 Loburn Terrace Road, LOBURN NORTH	Approved	Physical Works FY23/24	100
23I-13	187 Terrace Road, CUST	Approved	No Action/ Customer Advised	100
23I-14	Waikuku Beach Road / Leggits Road, WAIKUKU BEACH	Approved	Physical Works FY23/24	100
23I-15	236 & 269 Swannanoa Road, FERNSIDE	Submitted for Review		75
23I-16 - Draft email sent to Gerard	196 Loburn Terrace Road, LOBURN NORTH	Approved	No Action/ Customer Advised	100
23I-17	60 Siena Place, MANDEVILLE	N/A	Physical Works FY23/24	100
23I-18	13 & 26 Collins Drive, WAIKUKU BEACH	Approved	Physical Works FY23/24	100

23I-19	79 Park Terrace, WAIKUKU BEACH	Submitted for Review		75
23I-20	4, 6 & 8 Waikuku Beach Road, WAIKUKU BEACH & 1/57 Topito Road, TUAHIWI	Approved	Future Year CAPEX	100
23I-21	229 Island Road, KAIAPOI	Submitted for Review		75
23I-22	214 Greigs Road, CLARKVILLE	Submitted for Review		75
23I-23	964 Woodfields Road, CUST	N/A	No Action/ Customer Advised	100
23I-24 - Draft email forwarded to Jason 29/05/24	102 Topito Road, TUAHIWI	Approved	Physical Works FY23/24	100
23I-25	29 Reserve Road, WAIKUKU BEACH	Approved	Future Year CAPEX	100
23I-26	23 & 31 Queens Avenue, WAIKUKU BEACH	Approved	Physical Works FY23/24	100
23I-27	3 B Charles Street, RANGIORA	N/A	No Action/ Customer Advised	100
23I-28	793 Browns Road, SWANNANOA	Submitted for Review		75
23I-29	152 Ohoka Road, KAIAPOI	N/A	No Action/ Customer Advised	100
23I-30	8 Rowse Street, RANGIORA	Approved	No Action/ Customer Advised	100
23I-31	102 Eders Road, WOODEND	N/A	No Action/ Customer Advised	100
23I-32	47 Upper Sefton Road, SEFTON	Submitted for Review		75
23I-33	82 & 110 Old North Road, KAIAPOI	Approved	Physical Works FY23/24	100
23I-34	198 Sladdens Farm Road, COOPERS CREEK	N/A	Physical Works FY23/24	100
23I-35	69 Old North Road, KAIAPOI	N/A	Physical Works FY23/24	100
23I-36	18 Evans Place, KAIAPOI	N/A	No Action/ Customer Advised	100
23I-37	105 Otaki Street, KAIAPOI	N/A	No Action/ Customer Advised	100
23I-38	2 Alpine Lane (Pvt), KAIAPOI	Submitted for Review		75
23I-39	43 Cam Road, KAIAPOI	N/A	Future Year CAPEX	100

23I-40	3 Allin Drive & Kings Avenue, WAIKUKU BEACH	N/A	Physical Works FY23/24	100
23I-41	10 Parkinson Place, WOODEND	Submitted for Review		75
23I-42	246 Revells Road, KAIAPOI	Approved	Future Year CAPEX	100
23I-43a	3307 South Eyre Road, EYREWELL	N/A	No Action/ Customer Advised	100
23I-43b	3359 South Eyre Road, EYREWELL	Approved	Physical Works FY23/24	100
23I-44	533 Lower Sefton Road, ASHLEY	Submitted for Review		75
23I-45	3 Railway Street, SEFTON	Approved	No Action/ Customer Advised	100
23I-46	67 & 77 Fairweather Crescent, KAIAPOI	Approved	Future Year CAPEX	100
23I-47	119 Greens Road, TUAHIWI	Approved	Physical Works FY23/24	100
23I-48	183 B Tuahiwi Road, TUAHIWI	N/A	No Action/ Customer Advised	100
23I-49	109 Te Pouapatuki Road, WOODEND	Approved	Physical Works FY23/24	100
23I-50	1/57 Topito Road, Tuahiwi	Approved	Physical Works FY23/24	100
23M-066	127 Mairaki Road, Waimakariri District	Approved	Physical Works FY23/24	100
FT04	310 Beach Road, KAIAPOI	N/A	Physical Works FY23/24	100
23M-027 & 23M-081	Fullers Road, Kaiapoi	Submitted for Review		75
FT10	59 Main North Road, KAIAPOI	N/A	Physical Works FY23/24	100
FT17	15 Cridland Street West, KAIAPOI	N/A	Physical Works FY23/24	100
FT24	31 & 35 Broadway Avenue, WAIKUKU BEACH	N/A	Physical Works FY23/24	100
FT25	34 Kiwi Avenue, WAIKUKU BEACH	Approved	Physical Works FY23/24	100
FT27	4 Swindells Road	N/A	Physical Works FY23/24	100
FT31	29, 30 & 31 Pegasus Main Street, PEGASUS	N/A	Future Year CAPEX	100
FT37	Church Street Reserve, OXFORD	Approved	Physical Works FY23/24	100
FT42	5 & 10 Wilson Drive. OHOKA	N/A	Physical Works FY23/24	100

FT44	1461 Main North Road (Sh1) (Wnd-Amb), WOODEND	N/A	Physical Works FY23/24	100
FT45	6 & 16 Macdonalds Lane, WAIKUKU	Approved	Future Year CAPEX	100
FT46	2, 4, 11, 14 & 28 Stalkers Road and 62 Ferry Road, WOODEND BEACH	N/A	Physical Works FY23/24	100
FT49	1838 & 1840 Cust Road. CUST	N/A	No Action/ Customer Advised	100
FT50	1689 & 1689 B Cust Road, CUST	N/A	Physical Works FY23/24	100
FT56	4123 South Eyre Road, EYREWELL	N/A	Future Year CAPEX	100
FT62	56 Featherstone Avenue, KAIRAKI	N/A	Physical Works FY23/24	100
H08	14 Blakeley Place & Hinemoa Park, KAIAPOI	Approved	Physical Works FY23/24	100
H14	1140 & 1170 Woodfields Road and 50 Howsons Road, CUST	N/A	Physical Works FY23/24	100
H16	205 Cones Road / Fawcetts Road & 36 Max Wallace Drive, ASHLEY	N/A	Physical Works FY23/24	100
H18	79 Greens Road, TUAHIWI	Approved	Physical Works FY23/24	100
H21	28 Belmont Avenue, RANGIORA	Submitted for Review		75
H24	32 Wetherfield Lane, MANDEVILLE	N/A	Future Year CAPEX	100
H27	376 Island Road, KAIAPOI	N/A	No Action/ Customer Advised	100
H30	308, 380 & 414 No 10 Road, EYRETON, 1124 & 1126 Tram Road, WAIMAKARIRI DISTRICT, 8 Wetherfield Lane, MANDEVILLE	N/A	No Action/ Customer Advised	100
H32	5 Washington Place, WEST EYRETON & 9 Earlys Road, CUST	N/A	Physical Works FY23/24	100
H41	301, 305 & 306 Tram Road, WAIMAKARIRI DISTRICT	Approved	Physical Works FY23/24	100
N08	15 & 29 Holland Drive, KAIAPOI	Approved	Physical Works FY23/24	100
N13	10 Beach Crescent, WAIKUKU BEACH	Submitted for Review		75
N18	29 & 53 Northside Drive, WAIKUKU BEACH	Approved	Physical Works FY23/24	100

N19	16 Church Bush Road, TUAHIWI	Approved	Future Year CAPEX	100
N30	150 Bramleys Road, TUAHIWI	N/A	Physical Works FY23/24	100
N32	45 Queens Avenue, WAIKUKU BEACH	Approved	Physical Works FY23/24	100
NS1	51 Percival Street, RANGIORA	N/A	Future Year CAPEX	100
NS4	32 Wetherfield Lane, MANDEVILLE (FYI SR is actually for 380 No10 Road)	N/A	Future Year CAPEX	100
NS5	183 B & 255 Tuahiwi Road, TUAHIWI	N/A	Physical Works FY23/24	100

FLOOD RECOVERY FORTNIGHTLY STATUS REPORT
As at Tuesday, 2 July 2024



Fortnightly Report

Introduction
The district experienced a significant rainfall event over the weekend of 22-24 July 2023, with the coastal area around Woodend receiving approximately 150mm of the rainfall over a 48 hour period.

The purpose of this report is to update the Utilities and Roading Committee and Community Boards on the status of the drainage and sewer service requests and further investigations:

Report Format
This report will be prepared fortnightly and will include the following information

- This Dashboard showing:
 - General commentary
 - Dashboard metrics
 - Specific commentary on Key Focus Areas
 - An attached report on all the investigations

General Update
Maintenance Investigations are down to 6, and these have been programmed to be completed this month, with 120 that have now been completed.
We are now down to only 16 Investigation Reports to be approved and looking to close these off this month.

Tenders
Both Washington Place and Woodfields Road Tenders have been awarded, with start dates in August.
Greens Road Culvert Upgrade has been completed, and Wolffs Road Culvert upgrade has also been completed.

Physical Works
From the outcome of the investigations there are currently 11 areas of Immediate Maintenance works, that CORDE are working through to have completed this month.



Wolffs Road Stormwater Culvert Upgrade in Progress

Key Metrics

Investigation Phase	As at 5 June	This report
Triaging	0	0
Scoping	0	0
Under investigation	0	0
Submitted for approval	20	16
Investigations completed	68	72
% of work Investigation completed	99%	99%
Total	88	88

Implementation Solutions	As at 5 June	This report
Not yet determined	19	16
Physical Works FY23/24	41	43
Future year capex	12	12
No action/Customer Advice	16	17
Total	88	88

Maintenance Actions Phase	As at 5 June	This report
To be started	0	0
Work in progress	0	0
Works programmed	6	6
Completed	120	120
Total	126	126

Key Focus Areas

Cam River	ECan maintenance work on the Cam River up to Marsh Road has been completed with the chipping and removal of tree material due to be finished this month.	Completed
Tuahiwi	Maintenance of Tuahiwi Stream from Greens Road to the Cam River, Te Pouapatuki Road drain are complete. Greens Road Diversion access way culvert upgrade is complete. Further investigation into downstream channel improvements is underway.	Maintenance and Upgrade Works Completed
Waikuku Beach	A Waikuku modelling study is to be undertaken to determine the cause of flooding which was higher than expected. This work will look at factors such as the operation of the flood gate, upstream development, and the catchment hydrology, including any recharge from the Ashley River.	Under Investigation
Swindells Road, Waikuku Beach	Temporary pump to be delivered to this month. Swale and pipework improvements along stopbank is out for tender.	Tender
Stalkers Road, Woodend Beach	The Stalkers Road Upgrade works have now been completed	Completed
Cust Road, Cust	Design for overflow pipe to the lower terrace is complete. Tender expected to go out this month.	Design Complete
Washington Place, West Eyreton	The Tender for Earlys Road culvert upgrade has been awarded, with works expected to start in August. Channel and bunding improvements works either side of Earlys Road will be completed this month, weather depending.	Works Underway/Programmed
Featherstone Ave, Kairaki	Issue with inflow and infiltration overloading the sewer. Urgent works to address main issues in campground completed. Additional remedial work on manholes and laterals in Featherstone Ave to be progressed.	Works Programmed
Cones Road, Ashley	Construction is underway and expected to be completed this month.	Works Underway
Resurgence Flow, Mandeville	Modelling of to assess downstream impacts from stage 1 improvement works is underway. Site visit with elected members scheduled for August.	Future year capex
Beach Crescent, Waikuku Beach	Install sumps and pipework to connect existing low points to a new pump chamber in the campground and install a discharge main through to the sand dunes for the discharge from a portable pump. Design is under review.	Under Investigation
Tram Road, Clarkville	Upsize the 375mm culvert to a 600mm culvert on both sides of Tram Road . The physical works are due to start in August	Waiting to be programmed
Upper Sefton Road, Sefton	Investigation report under review. Site meeting to be organised after review of options are complete.	Under Investigation

WAIMAKARIRI DISTRICT COUNCIL**REPORT FOR DECISION**

FILE NO and TRIM NO: IFR-02 SHW-01-11 / 240613096204

REPORT TO: UTILITIES & ROADING COMMITTEE

DATE OF MEETING: 16 July 2024

AUTHOR(S): Gerard Cleary, General Manager Utilities and Roading

SUBJECT: Adoption of Final 3 Waters, Solid Waste and Transportation Activity Management Plans 2024

ENDORSED BY:
(for Reports to Council,
Committees or Boards)



General Manager



Chief Executive

1. SUMMARY

- 1.1. This report presents the final 2024 Solid Waste, Water Supply, Wastewater, Rural Drainage, Urban Drainage, Stock Water, and Transportation Activity Management Plans to Council for adoption.
- 1.2. During 2023/24, in preparation for the 2024 Long term plan (LTP), the 3 Waters, Transportation and Solid Waste Activity Management Plans were reviewed and updated. This work formed the basis for the draft 2024-2034 LTP budgets.
- 1.3. Activity Management Plans (AMPs) are important documents that state how the Council will manage its assets and activities in the future and provide the supporting information for the LTP and 30 Year Infrastructure Strategy.
- 1.4. The plans outline the significant issues associated with the activities and assets. They summarise the various components of the schemes and identify future funding requirements and upgrades to maintain levels of service and manage growth and renewals.
- 1.5. A previous report (TRIM Number 231120185994), was taken to Council at the January 2024 draft LTP Budget meeting, requesting that the draft AMPs from the U&R department be adopted for consultation.
- 1.6. Following the LTP deliberations meeting on 21 May 2024, any changes made to the 3 Waters, Solid Waste and Roading / Transport budgets required minor amendments to be made to the AMP's. These primarily consisted of updates to the budget graphs. The Activity Management Plan's therefore align with the final LTP and the Infrastructure Strategy.
- 1.7. The Councils asset management is an integrated approach for informed investment decisions and effective stewardship of infrastructure assets. In finalising the AMP's, Asset Managers have taken the LTP process and adoption into consideration, so that there is consistency between the AMP's, LTP and Infrastructure Strategy. There were no significant items that needed to be reconsidered as a result of the LTP consultation and final adoption by Council.

Attachments:

- i. Solid Waste Activity Management Plan 2024 (TRIM Number 221219218511)
- ii. Stock Water Race Activity Management Plan 2024 (TRIM Number 221219218512)

- iii. Rural Drainage Activity Management Plan 2024 (TRIM Number 230503062547)
- iv. Water Supply Activity Management Plan 2024 (TRIM Number 230516070466)
- v. Wastewater Activity Management Plan 2024 (TRIM Number 230710103391)
- vi. Urban Drainage Activity Management Plan 2024 (TRIM Number 230726112895)
- vii. Transportation Activity Management Plan 2024 (TRIM Number 240709111417)

2. **RECOMMENDATION**

THAT the Council:

- (a) **Receives** Report No. 240613096204.
- (b) **Adopts** the following final Activity Management Plans:
 - i. Solid Waste Activity Management Plan (TRIM Number 221219218511)
 - ii. Stock Water Race Activity Management Plan (TRIM Number 221219218512)
 - iii. Rural Drainage Activity Management Plan (TRIM Number 230503062547)
 - iv. Water Supply Activity Management Plan (TRIM Number 230516070466)
 - v. Wastewater Activity Management Plan (TRIM Number 230710103391)
 - vi. Urban Drainage Activity Management Plan (TRIM Number 230726112895)
 - vii. Transportation Activity Management Plan (TRIM Number 240709111417)
- (c) **Notes** that progress on the AMP Improvement Programmes will be reported to the U&R Committee.
- (d) **Circulates** a copy of Report No. 240613096204 to all Community Boards for their information.

3. **BACKGROUND**

- 3.1. The Utilities and Roding Activity Management Plans cover the following activities:
 - Rural Drainage
 - Solid Waste
 - Stock Water
 - Transportation
 - Urban Drainage
 - Water Supply
 - Wastewater
- 3.2. Activity Management Plans (AMPs) are important documents that state how the Council will manage its assets and activities in the future. They provide the supporting information for the LTP and 30 Year Infrastructure Strategy, and accordingly are reviewed on a three yearly cycle.
- 3.3. The plans outline the significant issues associated with the activities and assets. They summarise the various components of the schemes and identify future funding requirements and upgrades to maintain levels of service and manage growth and renewals.

4. **ISSUES AND OPTIONS**

- 4.1. While the Local Government Act 2002 does not specifically require councils to produce Activity or Asset Management Plans, it does require councils to provide robust and well documented planning for their assets. Audit New Zealand specifically seeks this information as part of their audit of the LTP process.
- 4.2. To meet the requirements of sound asset management and of Audit NZ, there is no workable alternative than to produce Activity Management Plans. The Council's Asset Management Policy defines the principles, requirements, and responsibilities for undertaking asset management across the Council.

- 4.3. Council's values statement includes a commitment to service through doing better every day, thus continuous improvement is a fundamental component of the Council's day-to-day business. An improvement programme is included in every Activity Management Plan to ensure assets are effectively managed. As service levels, technologies and regulations change, we anticipate that there will be continuous improvements to our asset management practices.
- 4.4. The improvement programme also raises the standard of Council asset management practices to a level that is appropriate to each activity, as measured by the NZ Treasury Asset Management Maturity Assessment Tool (AMMA). The Maturity Score has five levels, and ranges from "0-20" Aware through to "81-100" Advanced.
- 4.5. A maturity assessment is usually carried out for all activity areas after each LTP cycle, to determine the maturity of the plans. Waimakariri District Council's AMPs have therefore been developing and improving over several LTP cycles and have been peer reviewed regularly since 2009.
- 4.6. The 3 Waters AMP's were not peer reviewed this time as the uncertainty with Three Waters Reform meant that only a basic update of the plans was undertaken and many of the improvements recommended by the previous peer review had not been actioned.
- 4.7. The Transportation AMP was most recently peer reviewed in January 2024. Some of the high priority recommendations from the review have been incorporated in the current AMP, while others not able to be addressed immediately have been included in the improvement plan. Medium and low priority recommendations will be taken into account at the next AMP rewrite. The overall score for the Transportation AMP rose from 73 to 76, as compared to the recommended score for Waimakariri Transportation AMP which is 70 (Intermediate Level) or higher.
- 4.8. Audit NZ have reviewed the AMP documents, but this review has primarily focussed on confirming alignment of the financial information in the AMPs with the LTP and Infrastructure Strategy rather than being a full review of all performance and asset management processes.

Implications for Community Wellbeing

There are implications on community wellbeing by the issues and options that are the subject matter of this report.

The Activity Management Plans and are for core services that contribute directly to the health and wellbeing of the community.

- 4.9. The Management Team has reviewed this report and support the recommendations.

5. COMMUNITY VIEWS

5.1. Mana whenua

Te Ngāi Tūāhuriri hapū are likely to be affected by, or have an interest in the subject matter of this report. Activity Management Plans (AMPs) state how the Council will manage its assets and activities in the future: the management of water – particularly sustainable use of water, water quality, and discharge of wastewater – is of particular importance to Te Ngāi Tūāhuriri.

5.2. Groups and Organisations

There are groups and organisations that likely to be affected by, or to have an interest in the subject matter of this report. As above, there will likely be interest in activity management outcomes or perhaps in some aspects of the AMPs by specific groups. The services the AMP's cover are subject to consultation as part of the LTP.

Where any specific proposals may affect a scheme and/or a community (such as a headworks upgrade or change in level of service) targeted and specific consultation is carried out. An example would be upgrading a water supply scheme to meet drinking water standards. Typically, costs, benefits and risks associated with each option under consideration are presented to the affected community and their feedback considered in making a decision about which option to select.

5.3. **Wider Community**

The wider community is likely to be affected by, or to have an interest in the subject matter of this report. Draft AMPs have been available to the public during the LTP consultation period, but as part of the wider feedback on the LTP, submissions have been received on a number of issues, consideration of which will be included in future AMP reviews, if they have not been dealt with by that time.

6. **OTHER IMPLICATIONS AND RISK MANAGEMENT**

6.1. **Financial Implications**

There are financial implications of the decisions sought by this report.

The budgets included in the AMPs have been included and approved as part of the 2024-34 Long Term Plan process. Budgets for Asset Management improvements have also been included in the relevant asset management operational budgets included in the Long Term Plan.

National Land Transport Programme (NLTP) funding is set every three years, and this allocates funding to Road Controlling Authorities (RCA's) for approved activities. The Transportation AMP includes a number of projects which assume co-funding through the NLTP. The results of Council's application for funding through the NLTP will not be known until September 2024, and as such funding remains a risk until the outcome is known.

6.2. **Sustainability and Climate Change Impacts**

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

Climate change resilience and sustainability considerations have been included within each individual AMP.

6.3. **Risk Management**

The AMP's all contain risk assessment sections. Those risk sections that are due for a comprehensive review and update have been incorporated as an improvement in the individual AMP Improvement Plans.

As outlined in 6.1, the Transportation AMP includes a number of projects which assume co-funding through the NLTP. The results of Council's application for funding through the NLTP will not be known until September 2024, and as such funding remains a risk until the outcome is known.

6.4. **Health and Safety**

There are no health and safety risks arising from the adoption/implementation of the recommendations in this report. Health and safety is an important consideration in the design, construction and operation of solid waste, utility and roading assets and activities.

7. **CONTEXT**

7.1. **Consistency with Policy**

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

7.2. **Authorising Legislation**

Activity Management Plans are required for compliance with requirements of the Local Government Act 2002 Section 101B Infrastructure Strategy.

7.3. **Consistency with Community Outcomes**

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

A place where everyone can have a sense of belonging...

- Our community has equitable access to the essential infrastructure and services required to support community wellbeing.

...that values and restores our environment...

- Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.
- Our district transitions towards a reduced carbon and waste district.

...and is supported by a resilient and innovative economy.

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

7.4. **Authorising Delegations**

The Utilities & Roading Committee has the delegated authority to approve the adoption of the Utilities and Roading department's Activity Management Plans.



Solid Waste Services

Activity Management Plan 2024

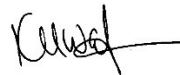

Solid Waste | July 2024



Prepared by**Waimakariri District Council****215 High Street,****Private Bag 1005****Rangiora 7440,****New Zealand**waimakariri.govt.nz**Document Control:**

<i>Revision N°</i>	<i>Description</i>	<i>TRIM</i>	<i>Date</i>
A	Draft for presentation to Council	221219218511	29/01/2024
B	Final for presentation to Council	221219218511	25/06/2024

Document Acceptance

<i>Action</i>	<i>Name</i>		<i>Signed</i>	<i>Date</i>
Prepared by	Kitty Waghorn	Solid Waste Asset Manager		11/06/2024
Approved by	Gerard Cleary	General Manager: Utilities and Roding		10/7/2024
Adopted by		Utilities & Roding Committee		

Contents

1.	Executive Summary.....	5
2.	Introduction.....	6
3.	Related Documents.....	6
4.	Activity Description (What Do We Have and Do?)	6
	Waste Transfer Facilities	6
	Southbrook Resource Recovery Park.....	7
	Oxford transfer station	7
	Cust rural recycling facility	8
	Residual Waste Disposal Facilities	8
	Cleanfill Disposal Facilities	8
	Closed Landfill Aftercare	9
	Kerbside Collection Service	10
	Waste Minimisation & Education	11
	Key Statistics.....	12
5.	Service Management Issues (What Do We Need to Consider?)	15
	Levels of Service.....	15
6.	Asset Condition.....	18
	Transfer Stations and Resource Recovery Park.....	19
	Closed Landfills	19
	Cleanfill Disposal Sites	19
	Kerbside Collections.....	20
7.	Asset Criticality	20
8.	Risk Assessment.....	20
	Operational Risk Assessment	21
	Risk Matrix.....	22
	Overview – Risk Update	23
9.	Climate Change	23
10.	Growth projections	24
11.	Capacity & Performance	36
12.	Key Issues	42
13.	Future Works & Financial Projections	43
14.	Renewals Programme	45
15.	New Works and Waste Minimisation Initiatives.....	45
16.	Financial Projections	49
17.	Projected Income from Rates and Gate Charges.....	49
18.	Improvement Plan	50

❖ Appendix 1: Kerbside Collection Area Plans	54
❖ Appendix 2: Disposal Facility Layout Plans	58
❖ Appendix 3: Addendum to 2021 Solid Waste Activity Management Plan	67

1. Executive Summary

The following table provides a summary of the key asset management components that have been assessed for Solid Waste Services. These have been identified through consideration of the levels of service, consents, asset condition, risk analysis, disaster resilience, growth projections, and capacity assessment:

Resource Consents	There have been some minor non-compliances around reporting within stipulated timeframes, and new processes will be developed to ensure sampling and reporting is completed in accordance with consent conditions.
Levels of Service	Kerbside bin and bag collections are provided on a weekly/fortnightly basis. Any confirmed missed collections are returned for on the following working day. There is flexibility within the contract to extend collections into new developments on the fringes of towns, and also into new areas if there is sufficient demand.
	Southbrook resource recovery park is open 7 days a week, and Oxford transfer station is open 2 part-days per week. Future upgrades are planned and budgeted for, to enable additional growth demand to be met. Council will consider provision of recycling drop off facilities for rural residents as opportunities arise.
	The cleanfill pits are available for use by registered contractors, 6 days a week.
Capacity & Performance	Capacity of waste transfer and cleanfill disposal facilities have been assessed as being capable of meeting current demand. Future upgrades are programmed to facilities to continue to be able to meet demand.
Asset Condition	The majority of the assets are in good condition, but an ongoing annual renewals programme is required to maintain the current standard of infrastructure.
Risk Assessment	No extreme or high risks have been identified.
Disaster Resilience	Southbrook RRP has some exposure to a loss of power from a natural disaster and for flooding in the event of an Ashley-Rakahuri River breakout at Summerhill. Rangiora closed landfill has some exposure to flooding from the Ashley-Rakahuri River, and Kaiapoi closed landfill is potentially vulnerable to a rise in groundwater levels from sea level rise. Further assessments are required to better understand and address these issues. Solid Waste services rely on roading infrastructure to allow transportation of materials to final disposal or processing facilities, most of which are outside this District.
Growth Projections	The number of properties provided kerbside collection are predicted to increase by 58% and the district's population is predicted to increase by 46% over 30 years; and by 87% & 69% respectively over the next 50 years. Upgrades of waste transfer facilities will be required to accommodate this growth.

2. Introduction

The purpose of this Activity Management Plan (AMP) is to outline the significant issues associated with the Council's assets and to show how the Council proposes to manage solid waste services and assets in the future.

This plan describes the solid waste activities and summarises the various assets, their condition and performance, and identifies future funding requirements including upgrades where necessary. It has been prepared by the Council's Solid Waste Asset Manager.

This AMP should be read in conjunction with the Council's 2018 Waste Management & Minimisation Plan and the Council's Long Term Plan 2024-34.

All figures within this AMP exclude inflation.

3. Related Documents

The following related documents have been used as reference documents or for guidance in the development of some of the sections in this Activity Management Plan

- Waimakariri District Plan
- Population in the Waimakariri District (TRIM 221216218192)
- Population Projections for LTP 2024-2034 (TRIM 231220204687)
- WDC Asset Management Policy (TRIM 221026186221)
- 2022 Customer satisfaction Survey (TRIM 230612086340)
- Waste Management & Minimisation Plan 2018 (TRIM 180710076343)

4. Activity Description (What Do We Have and Do?)

Solid waste services are provided across the District either directly by the Council or by private enterprise. The Council's Solid Waste Services Contracts were retendered in 2018, awarded to Waste Management NZ Ltd in December 2018, and the new contract commenced on 1 July 2019. The separable portions of the Solid Waste contracts each have 7-year contract terms with 3, one year renewal periods. The Council's Solid Waste Services Activity incorporates the following sub-activities:

Waste Transfer Facilities

The Council provides two waste transfer facilities for the diversion and transfer of primarily solid wastes, for the whole district. There is one privately owned and operated waste transfer station located in Rangiora. The Council's Solid Waste Asset Manager is responsible for overall management and the Solid Waste Officer is responsible for day-to-day operations of the Council sites.

The Council's Facilities Operations & Maintenance contract with Waste Management covers the operations and maintenance of both waste transfer facilities described below. A rural recycling drop-off for residents in the Summerhill and Cust areas has been operating in Cust from August 2019 under this contract.

Southbrook Resource Recovery Park

The Council holds land use consents for Southbrook transfer station from the Waimakariri District Council, RC960442 originally issued on 7 July 1997, RC055171 issued on 13 May 2005 and RC105086 for the expanded site, which was awarded on 2 June 2010, and also holds discharge consents from Environment Canterbury (CRC971142.3 and CRC971143) which expire on 7 July 2032. The property on which the transfer station and resource recovery park is situated is classified as a HAIL site owing to its activities.

Southbrook Resource Recovery Park (RRP) includes separate waste transfer and recycling & recovery facilities, and is located at 284 Flaxton Road in Southbrook, Rangiora. The site is fenced, landscaped and vegetated and has a roading and parking network, together with various signs and utility services.

The RRP houses facilities that contribute to the achievement of effective, efficient reduction, reuse, recycling, recovery and disposal of Waimakariri District's solid waste. Under the new contract, Waste Management retrieve a range of materials and items from the rubbish pit in order to divert these from landfill. These include scrap metal, timber, reusable items, cardboard, clean fill / hard fill, and tyres.

The Council owns the fixed infrastructure and security camera system and is responsible for supply of the EFTPOS terminals and the internet service for the weighbridge computers. The Weightrax weighbridge computer and software is provided under an Infrastructure as a Service (IaaS) contract to Atrax Group NZ Ltd.

Waste Management owns the two waste compactors and hoppers, the containers, skips and bins used for accepting and transporting waste materials (excluding those used for laminated glass, and household battery recycling), plant, tools and office equipment. Waste Management is also responsible for supplying the telephone lines at the kiosk and shop and electricity to the site.

Waste Management is responsible for minor maintenance works at the site such as landscape and minor building and fence maintenance, and Council is responsible for more major maintenance works such as repair of pavements, damage to fences and buildings, and repainting road markings.

Oxford transfer station

Oxford transfer station (TS) is located in High St in Oxford and holds land use consents from Waimakariri District Council (RC940213 and RC045185) and discharge consents from Environment Canterbury CRC952151.1 which expires on 12 July 2030 and CRC952152 which expires on 21 June 2030. The property on which the transfer station is situated is a HAIL site owing to its activities and proximity to a closed landfill.

The site opened in 1997, is fully fenced, landscaped and vegetated, and has a roading and parking network, together with various signs and utility services. Oxford TS is currently operated and maintained under contract to Waste Management NZ Ltd, under the new waste facilities operations and maintenance contract.

The Council owns the fixed infrastructure and is responsible for provision of electricity to the site and also for the EFTPOS machine at the kiosk.

Waste Management owns the skips and containers used for accepting and transporting waste materials, the plant, tools, and office equipment, including the telephone and telephone lines.

Cust rural recycling facility

The Cust rural recycling facility site is in the carpark of the Cust Hotel, a privately owned property. This site does not require a discharge consent from Environment Canterbury, and has a Land Use Consent from the Waimakariri District Council for these operations (RC185132).

Similar levels of service could be offered to other remote rural communities, dependent on demand, cost effectiveness, availability of a suitable site, and funding considerations.

Residual Waste Disposal Facilities

The Council ensures that a landfill is provided for the disposal of the district's residual waste (rubbish).

The Regional Landfill, located at Kate Valley in the Hurunui District, is owned by Transwaste Canterbury Ltd, which is a public-private joint venture company between five shareholding Canterbury Councils and Waste Management NZ Ltd. Waimakariri, Hurunui, Ashburton and Selwyn District Councils, and Christchurch City Council are the shareholding Councils. The landfill is consented to 22 March 2039.

Operation of the landfill is contracted to Canterbury Waste Services Ltd (CWS), which is a subsidiary of Waste Management NZ Ltd. The Council has a contract with Transwaste for the transport of rubbish to, and disposal at, Kate Valley Landfill: the District's rubbish is transferred into large hook-bin containers at Southbrook RRP and dispatched for disposal at the landfill. These bins are removed by CWS.

Cleanfill Disposal Facilities

Council operates two sites for the disposal of cleanfill and clean hardfill, for the whole district. Access onto the sites is only available to contractors who are registered with the Council: this registration involves signing a waste acceptance agreement that is valid for three years, and which can be extended for a further three years. Once registered, contractors can obtain a key from the Southbrook RRP kiosk, and they are required to return the key within one day unless the contractor separately negotiates for a longer retention time.

The cleanfill disposal sites are operated under an "honesty" system, and is monitored by use of 'game' cameras and regular audits. There are a limited number of keys available, and this restricts the number of users accessing the site on any one day.

Sutherlands Pit cleanfill site is located at 769 Oxford Road, approximately 7.5 kilometres east of Rangiora. The site has a land use consent for commercial cleanfill and gravel extraction & crushing activities and has discharge consents for its current activities (CRC040682 and CRC040683). The Council is monitoring ground-water quality in the vicinity of the cleanfill in accordance with discharge consent CRC040683. These consents were awarded on 25 January 2005 and will expire on 25 January 2040.

Garterys Pit is located at 2042 Tram Road (at the corner of Tram Rd and Chapmans Boundary Road) and is 16.4km from Rangiora; 23.5km from Kaiapoi and 19.5km from Oxford. The site has a land use consent for commercial cleanfill and gravel extraction & crushing activities, and has discharge consents for its current activities. The Council is monitoring ground-water quality in the vicinity of the gravel extraction pit in accordance with discharge consent CRC061131.1. This consent was awarded on 22 February 2007 and will expire on 21 February 2042.

Consenting Garterys Pit as a cleanfill disposal site doubled the amount of capacity for cleanfill and hard fill disposal, and in the last 2 years there has been a significant drop in demand for use of the cleanfill disposal. As yet, no further sites in the district have been identified as suitable for this use.

The Government has expanded the waste disposal levy as from 1 July 2021, with more than just Class 1 landfills being levied, and the Class 1 levy progressively being increased over a 4-year period. Both Council 'cleanfill' sites are now classified as Class 3 or 4: Managed or Controlled Fills, rather than cleanfills as they accept more than virgin excavated natural material, such as clay, soils, gravels, or rock.

Recently gazetted regulations require Council to report on the weight of materials received at our and 'cleanfill pits' as from 1 January 2023. As from 1 July 2023, a \$10/tonne levy will apply at both sites.

At this stage it appears as if a per-volume conversion can be used to calculate tonnages from the volumetric quantities that are delivered to these sites by contractors, however the current honesty system may not be sufficient to meet Levy reporting and charging requirements going forward. The costs to install and operate weighbridges may increase cleanfill disposal costs to unacceptable levels for commercial users. Council is investigating whether it would be cost-effective to install weighbridge and data tracking systems at these sites given the increase in operational costs for these systems, even if the sites continue to operate on an unmanned basis.

Closed Landfill Aftercare

The Council manages and monitors five closed landfills, which were formally closed in 1999 and were granted discharge consents on 14 October 1999. These consents expire on 14 October 2034. All closed landfill sites are HAIL sites. Around 65 old, small community landfills have been identified by Environment Canterbury as HAIL sites in the Waimakariri district. These are generally being managed by the Council's Property department, but at this stage Council has not sought a discharge consent for these historical sites.

The Post Closure Landfill Management Plans for the five consented closed landfills have been implemented by covering and landscaping the sites, and the Council is monitoring ground-water quality in the vicinity of four of the five closed landfills in accordance with the discharge consent conditions.

The closed landfill sites are:

- Rangiora, located at 236 East Belt in Rangiora. Groundwater quality is monitored at three bores in accordance with discharge consent CRC971344. This consent expires on 14 October 2034. The bores are all on adjacent land owned by the Council and Environment Canterbury.

- Kaiapoi, located at 610 Main North Road in Kaiapoi. Groundwater quality is monitored at four bores and from the Kaiapoi Lakes in accordance with discharge consents CRC971356 and CRC152074, both of which expire on 14 October 2034. The consent conditions have been varied to reduce the number of sampling points when urban residential subdivisions surrounded the closed landfill site. All of the pre-existing monitoring bores that were located on rural farmland were removed during development works, and new bores have been installed on Council-owned reserve land.
- Oxford, located at 46 High Street in Oxford. Groundwater quality is monitored at one bore in accordance with discharge consent CRC971353, which expires on 14 October 2034. The bore is within Council-owned that houses the closed landfill, transfer station and wastewater treatment plant.
- Mandeville, located at 292 No 10 Road, Mandeville North. Groundwater quality is monitored at one bore in accordance with discharge consent CRC971350, which expires on 14 October 2034. The bore is located on the road reserve downstream of the closed landfill.
- Cust, located at 106 O'Farrells Road, Cust. Groundwater quality is not monitored at this site, in accordance with discharge consent CRC971347, which expires on 14 October 2034.

Environment Canterbury have recently advised Council staff that investigations will need to be undertaken into the composition, impermeability and overall effectiveness of cover at these five sites, and further that our Council will be responsible for seeking a global discharge consent for the historical closed landfills.

Kerbside Collection Service

The kerbside collection contract covers the collection of recyclable materials, rubbish in bags and from bins, and mixed organic waste from bins, and the transportation of these materials to the recycling processing plant in Christchurch, Southbrook RRP, and the organics processing plant in Christchurch.

Solid waste kerbside collection services include weekly organics collection, and fortnightly rubbish bag & bin and recycling collections. The contractor owns and maintains the bins.

Recycling and rubbish collections are provided to around 72% of the population, and organics services are available to 68% of the population as it is not offered in the Ohoka, Mandeville and Swannanoa collection area. Organics and rubbish bins are an opt-in service, with three bin sizes available for the organics service and two bin sizes for rubbish.

Targeted rates for recycling are a flat rate independent of bin size, but the optional services rates vary dependent on waste stream and bin size. As at the end of June 2023, 75.1% of eligible properties had taken up the option of rubbish bin collections, and 65.4% had taken up the option of organics bin collections.

Ratepayers can choose to swap their bin size or have organics & rubbish bins removed from their property. The removals and swaps come at a cost, including part-charges for larger bins, and rates

are not adjusted during the year to reflect the change in service but are changed as from 1 July in the following financial year.

The extent of the rating areas currently serviced by the kerbside collection contracts is presented in Appendix A.

WDC-branded rubbish bags are user-pays with the Council recovering all the collection and disposal costs of the rubbish from bag sales. The Council has a two-year supply agreement with OfficeMax Ltd for the manufacture and delivery of WDC-branded rubbish bags, which commenced on 1 February 2023 and ends on 30 January 2025. The Council sells the bags to residents at a set retail price at its service centres and waste transfer facilities and sells the bags at a reduced (wholesale) price to supermarkets and some smaller retail outlets.

The wheelie bins are estimated to have a life of 15 years and will remain the property of Waste Management for the duration of the contract. The contract allows for the Council to purchase the bins for their residual value on contract completion and to sell the bins to the new contractor at commencement of a new contract unless a change is made to their policy around ownership of the kerbside collection bins on an on-going basis.

Introduction of a mixed organics bin collection service has impacted on the waste flows through the Council's disposal sites, and on landfill and diversion tonnages.

Recycling bin audits were undertaken in 2020/21, paused during COVID Levels 3 and 4 in 2021/22 and recommenced on 9 January 2023 in response to a reported increase in highly contaminated bins in several areas, and to ongoing low-level non-compliance with our acceptance criteria. The education contractor is responsible for undertaking these audits, as outlined below.

Waste Minimisation & Education

The Council funds, provides and participates in several waste minimisation initiatives, e.g., Waste Minimisation/Sustainability education programmes, and other recycling services in addition to services provided at our waste transfer stations and the Cust rural recycling facility.

The Council has contracted delivery of a Sustainability Education Programme to EcoEducate Ltd, which covers waste minimisation, water conservation, and stormwater and groundwater quality and care. This education service commenced in July 2022, and has a two-year contract term. Staff are seeking to extend the contract term to 30 June 2025, and propose to undertake an open procurement process in 2024/25.

This programme, which is available to early childhood education centres, to primary, area and secondary schools, and to community groups and organisations, receives funding from the Solid Waste and Water Supply budgets. A 'consultancy' service to provide advice to businesses about more sustainable practices receives funding from the Solid Waste budget and the current educator also delivers this service.

We note that it has been challenging for the contractor to gain entry into the number of schools that were previously engaged with since 2019/20 when COVID-related measures impacted schools in a number of ways owing to closures and then limiting attendance to pupils and school staff.

Enviroschools Canterbury is facilitated through Environment Canterbury, and is funded from the Council's Solid Waste, Transportation, Stormwater and Waterways and Greenspace budgets. This is a whole-school approach to sustainability.

The number of schools participating in the Enviroschools programme is limited by a few factors:

- A significant level of commitment is required from school communities to sign up to the programme and to work toward achieving bronze, silver, and green-gold status. Several schools that could achieve Enviroschools award status have not signed up to the programme.
- The Enviroschools facilitator's time to help guide schools through their journeys has in the past been limited by funding. The 2022/23 financial year is the first year where additional funding has been made available from other teams and departments. This has enabled a full-time facilitator to be assigned to this district which will enable growth in the number of schools committing to the programme.

Paper4trees and the Sustainable Living Programme are also subsidised by the Council's Solid Waste budgets to further encourage our District's schools and residents to up-take sustainable behaviours. Lesley Ottey from EcoEducate is a trained Sustainable Living Education facilitator.

Kerbside recycling bin audits are being undertaken by staff from EcoEducate. This auditing process is like those occurring in nearby Council areas and is done to ensure overall contamination levels do not creep up to over 10%, in which case those loads will end up in landfill.

These audits involve contractors inspecting all recycling bins presented at kerbside for collection in targeted areas, assessing the level of compliance with acceptance standards, and providing feedback to the residents. This may be a gold start for excellent bins, education for bins that were mostly correct, and tagging 'contaminated' bins and pulling back from the kerb.

If a bin is contaminated at a second audit, a letter is sent out by the Council to the property owner, listing what was wrong in the bin and warning that the bin will be removed from the property if a 3rd contamination happens. Once a bin is removed, there is a 3-month stand-down period, and the property owner could then apply to have the bin returned.

Key Statistics

Key statistics from solid waste services during the 2022/23 financial year are itemised in **Table 1**

Table 1: Key statistics (from 2022/23) of Solid Waste Services

Waste Transfer Facilities	22/23	19/20
Number of Council-owned transfer stations	2	2
Number of cardboard recycling drop-off points	0	1
Number of rural recycling drop-off points	1	1 (trial)
Number of permanent hazardous waste drop-off points	2	2
Quantity of rubbish taken to landfill (includes rubbish from kerbside collection) (tonnes per annum)	14,191	16,444
kg per capita per annum (population base 67,900)	256.2	262.2
Quantity of recycling (excludes recycling from kerbside collection)	2,062	2,105

(tonnes per annum) kg per capita per annum (population base 67,900)	30.4	33.5
Quantity of other diverted materials (green waste, tyres, window glass, timber) (tonnes per annum) kg per capita per annum (population base 67,900)	3,808 56.1	2,400 38.2
Quantity of waste oil (litres)	23,100	37,200
Quantity of hazardous wastes (paint, household & garden chemicals) (tonnes per annum)	36	11
Quantity of electronic wastes recycled (tonnes per annum)	11	0
Total Replacement Value of Assets	\$7.71 Million	\$5.65 Million
Depreciated Replacement Value of Assets	\$5.44 Million	\$4.19 Million
Residual Waste Disposal Facilities	22/23	19/20
Number of operating landfills in district	0	0
Number of operating landfills in Region, available for use by WDC	1	1
Cleanfill Disposal Facilities	22/23	19/20
Number of Council-owned Cleanfill Sites	2	2
Volume of cleanfill (cubic metres per annum)	346	1,336
Number of groundwater sites sampled (Sutherlands Pit only)	4	4
Total Replacement Value of Assets	\$384,957	\$313,503
Depreciated Replacement Value of Assets	\$222,344	\$216,312
Closed Landfill Aftercare	22/23	19/20
Number of consented closed landfills	5	5
Number of groundwater sites sampled (excludes 1 surface water site)	9	9
Total Replacement Value of Assets	\$314,914	\$264,817
Depreciated Replacement Value of Assets	\$116,999	\$82,585
Kerbside Collection Service	22/23	19/20
Number of properties rated for recycling service Start/End of year	19,281 / 19,898	17,632 / 18,137
Number of rating units Start/End of year	20,568 / 21,224	18,766 / 19,379
Number of properties eligible for rubbish bag collection services Start/End of year	18,285 / 18,887	16,747 / 17,236
Number of rating units Start/End of year	19,507 / 20,144	17,845 / 18,423
Number of properties rated for rubbish bin service Start/End of year	14,659 / 15,724	10,635 / 12,122
Number of bin rating units Start/End of year	14,820 / 15,918	10,713 / 12,232
Number of properties rated for organics bin service Start/End of year	12,099 / 13,102	8,396 / 9,743
Number of rating units Start/End of year	12,173 / 13,184	8,438 / 9,796
Quantity of recycling collected (tonnes per annum)	3,421	4,335
Quantity of recycling processed for recycling (tonnes per annum)	3,320	3,381
Quantity of recycling landfilled post-March 2020 (tonnes per annum)	100	953
Quantity of rubbish collected (tonnes per annum)	4,814	3,808

Quantity of organics collected (tonnes per annum)	6,477	4,342
Quantity of recycling collected per property & per rating unit kg per property per annum kg per rating unit per annum	174.6 164.6	242.4 227.3
Quantity of rubbish collected per property & per rating unit ¹ kg per property per annum kg per rating unit per annum	259.0 242.8	263.8 210.0
Quantity of organics collected per property & per rating unit kg per property per annum kg per rating unit per annum	511.6 508.5	478.7 496.3
Value of Recycling Collection Contracts plus costs for processing & disposal of contaminated materials (\$ per annum)	\$1.23 Million	\$1.06 Million
Value of Rubbish Collection Contracts plus rubbish disposal costs (\$ per annum)	\$1.80 Million	\$1.34 Million
Value of Organics Collection Contracts plus disposal costs (\$ per annum)	\$1.46 Million	\$1.06 Million
Total Replacement Value of Assets	\$0	\$0
Depreciated Replacement Value of Assets	\$0	\$0
Waste Minimisation/Education	22/23	19/20
EcoEducate		
Number of schools visited for waste minimisation education	31	53
Total number of classroom hours	64	272
Total number of children attending classroom sessions	4,115	5,455
Number of community engagements	30	32
Total number of hours Compass FM (0.5hr interviews)	141 7	203.25 5
Total number of attendees / conversations Estimated radio audience	4,797 1,400	3,873 1,000
Value of Waste Minimisation Education Contract	\$68,903	\$48,361
Enviroschools Canterbury		
Number of schools/early childhood centres participating in Enviroschools programme	21	19
Funding for Enviroschools programme (<i>Solid Waste component</i>)	\$25,000	\$25,000
Waste Free Living / Waste Free Parenting Workshops (<i>not provided since 2019</i>)		
Number of Waste Free Parenting Workshops	0	2
Number of Attendees	0	68
Funding for Waste Free Workshops	\$0	\$6,480

¹ Note this is not the average weight per bin, as the total weight of rubbish is that collected from both bags and bins. Weights are calculated by dividing total waste collected by all properties inside the serviced kerbside collection area.

5. Service Management Issues (What Do We Need to Consider?)

There are a number of key aspects to consider when managing solid waste services and assets; these include:

- Target & actual Levels of Service
- Asset condition & Criticality
- Capacity & performance of the assets
- Risks associated with the assets and services
- Growth predictions for the service

These issues have been assessed and are explained in the following sections.

Levels of Service

Levels of service (LoS) are a measure of the standard of service being provided. The target levels of service are a factor in determining the kind of kerbside collection services provided, the type of facilities at Council waste transfer facilities, and the facility operating hours.

The LoS detailed for Councils solid waste services and facilities are motivated by either legislative requirements (for example, compliance with resource consent conditions) or by Council outcomes. They have been developed over time, and are guided by a number of factors, including:

- Customer Expectations
- Affordability
- Council Community Outcomes (Strategic goals and objectives)
- Legislative Requirements
- Growth

There are several other key aspects to consider when managing solid waste services; these include desired and actual levels of service, the level of waste diversion, and risks. These issues have been assessed in detail and are summarised in the following sections.

The Council outcomes that are relevant to solid waste services are:

- Core utility services are sustainable, resilient, affordable and provided in a timely manner.
- Waste recycling and re-use of solid waste is encouraged, and residues are managed so that they minimise harm to the environment.
- Council sewerage and water supply schemes, and drainage and waste collection services are provided to a high standard.

Primary customers are households that are inside the kerbside collection area boundaries, with key stakeholders being Community Boards, Councillors, and private waste collection service providers.

The principal method of communicating proposed the LoS to customers has been via the Long Term Plan (LTP) process. Performance measures form part of the LTP documentation that goes out for public consultation, during preparation for the LTP. The Council's Solid Waste AMP, which is updated concurrently with preparation for the LTP, is made available on Council's website, when completed, which allows a channel for feedback from customers who may be interested.

More specific consultation is carried out when the Waste Management & Minimisation Plan (WMMP) review proposes significant changes to Councils solid waste services, such as occurred with the review undertaken in 2016/17, and which is anticipated for 2023/24.

The reported performance measures around operational hours for facilities in 2022/23 are those that were set in the 2021-31 LTP. The reported performance measures relating to per-capita targets for landfill reduction and diversion are taken from the 2018 WMMP targets, which were also set in the LTP. Future performance measures and targets are those set in the upcoming LTP.

The kerbside collection Levels of Service in the adopted 2018 WMMP are:

- Fortnightly collection of recyclable materials from wheelie bins. Ratepayers have a choice of 80L, 140L or 240L bin capacity. A targeted rate for this service is charged to all rateable properties within the collection areas.
- Weekly collection of organic waste from wheelie bins. This is an optional service, and ratepayers have a choice of 80L, 140L or 240L bin capacity. These are charged at differential rates.
- Fortnightly collection of rubbish from wheelie bins and WDC-branded bags. The rubbish bin service is optional, and ratepayers have a choice of 80L or 140L bin capacity. These are charged at differential rates.
- The rubbish bin collection service is available to properties in the Ohoka and extended Ohoka Rural recycling collection area. Rubbish bag and organic collection services are not offered in this area.

Table 3 shows the levels of service achievement for solid waste services in the 2022/23 year, and the previous LoS achievements recorded as from 2008. Note that some of the current performance measures have changed from those reported on in 2008 and 2011.

Table 3: 22/23 target levels of service and levels of achievement

Level of Service	2021-2023 Performance Measure	2021-2023 Target	2022/23				Previous Results [#]				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Transfer facilities open to the public	Southbrook Resource Recovery Park open for 56 hours per week	At least 360 days of the financial year	99.7%	Rubbish pit closed 1 day to manage asbestos removal	Not Achieved	N/A	100	100	99.7	KPI Not measured	KPI Not measured
Transfer facilities open to the public	Oxford Transfer Station open 8.5 hours per week	At least 98 days per calendar year	100%	No unscheduled closures	Achieved	N/A	100	100	100	KPI Not measured	KPI Not measured
Providing a kerbside waste and recycling collection service	Kerbside collection service provided as scheduled.	99%	99.2%	All but 9 compliant & correctly presented bins & bags were collected	Achieved	N/A	100	100	100	KPI Not measured	KPI Not measured
Education and waste diversion facilities	Reduction in annual quantity of waste per capita to landfill	Reduction from 294 kg per capita	256.2	Target is 262.4. Kerbside organics collection and diversion from pit	Achieved	N/A	262.2	298.6	321.2	330.7	405
Education and waste diversion facilities	Increase in annual quantity of materials per capita diverted from landfill	Increase from 170 kg per capita	216.8	Target is 201.6. Kerbside organics collection and diversion from pit	Achieved	N/A	205.1	178.5	178.3	124.8	116

6. Asset Condition

The current assessment of asset condition is based on theoretical remaining useful life derived from component age. Adjustments to the remaining life are made to individual components where information is available to suggest the theoretical remaining life is inappropriate.

The solid waste assets are revalued on a three yearly valuation cycle. The most recent internal asset valuations are current as at 30 June 2022, and the next date of internal valuation will be 30 June 2025. These valuations provide an overview of the assumptions about useful lives of assets.

A high-level condition assessment of the original transfer station assets has been undertaken as part of the planned asset improvements, but this has yet to be reconciled with the asset information held in the Solid Waste asset database. The condition of more recently installed individual components at these sites, and the individual components relating to closed landfills and cleanfill pits, have continued to be estimated based on the component age in relation to the typical design life.

Graphical representations of the system conditions of the combined solid waste assets, based on percentage of life elapsed are presented in **Figure 1** and **Table 4**.

Figure 1: Solid Waste Asset Condition



Table 4: Condition Grade and Asset Value

Condition Grade	Definition	Total Value
1	Very Good <i>More than 80% of life remaining</i>	\$ 1,857,000 22%
2	Good <i>Between 50% and 80% of life remaining</i>	\$ 5,047,000 59%
3	Adequate <i>Between 20% and 50% of life remaining</i>	\$ 739,000 9%
4	Poor <i>Between 10% and 20% of life remaining</i>	\$ 13,000 0%
5	Very Poor <i>Less than 10% of life remaining</i>	\$ 832,000 10%
Total		\$ 8,488,000

Transfer Stations and Resource Recovery Park

The ages of the original Southbrook and Oxford transfer stations, the main assets for the Solid Waste service are both approximately 25 years, or 25% of a 100 year base life. The Southbrook transfer station site was upgraded in 2011/12 and incorporates recycling and reuse/re-sale facilities as well as a large hardstand and retaining wall for bulk disposal of green waste and clean fill: the entire site operates as a Resource Recovery Park.

Some portions of infrastructure at both sites require higher levels of maintenance owing to their age and increased usage of the sites, primarily pavement areas and the rubbish pit floor at Southbrook RRP. The pit floor is scheduled to be replaced as part of planned upgrade and expansion works.

The two compactors at Southbrook RRP are not Council-owned assets but are owned and maintained by Waste Management.

Closed Landfills

The five landfills – Rangiora, Kaiapoi, Oxford, Mandeville and Cust – were closed in 1999. The main infrastructure for these sites consists of the original landfill boundary fences, and monitoring bores which were installed after closure of the landfills where these were required under the relevant resource consent conditions. Separate discharge resource consents are associated with each closed landfill.

All five of the monitoring bores at Kaiapoi closed landfill were removed during subdivision earthworks to the south and south-east of the closed landfill site. The Council has installed and obtained consents to monitor four replacement groundwater monitoring bores.

Cleanfill Disposal Sites

The Sutherlands Pit cleanfill site was consented in 2005 and began operating in mid-2005. It operates adjacent to an active gravel extraction and crushing operation on the same property. Garterys Pit cleanfill site began operating in 2019, and this also operates adjacent to an active gravel extraction and crushing operation. The main infrastructure for these sites consists of boundary fences, access roads, vehicle crossings, and monitoring bores.

Solid Waste is responsible for the monitoring bores and groundwater monitoring at Sutherlands Pit. The Roading Department is responsible for the monitoring bores and groundwater monitoring at Garterys Pit.

Kerbside Collections

The recycling, rubbish and organics wheelie bins are owned and maintained by Waste Management, the Council's kerbside collection contractor. The contractor is responsible for ordering, storing, delivering and maintaining (i.e., repair and replacement of) the bins. Kerbside recycling bins were assessed to be in good condition in 2018: the original bins that were delivered in early 2011 are at approximately 80% of their 15-year life. The rubbish and organics bins were new at the commencement of the new collection contract in July 2019 and the initial bins rolled out for the new service are at approximately 27% of their life.

Rubbish bags are manufactured/imported and stored by OfficeMax Ltd on behalf of the Council via Contract 21/06, which has a term of 2 + 1 years and commenced in February 2023. The company delivers the bags to Council service centres and retail outlets as required.

7. Asset Criticality

Asset criticality provides an indication of the importance of an individual asset and the corresponding impact on the service delivery should the asset fail for any reason.

Criticality is a measure of the importance of a given asset to the overall scheme and is determined by the consequence of failure. Assets for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation are considered more highly critical. Critical assets have a lower threshold for action than non-critical assets. Criticality is used as a means to:

- Identify the most important assets in the overall network.
- Prioritise assets that warrant specific condition assessment.
- Prioritise assets for repair following multiple failures, e.g., following an earthquake or events triggering major power failures.
- Quantify the relative consequence of failure, which can then be used to assess the risk of failure and prioritise renewals.

There has not been a criticality assessment undertaken for solid waste assets and services. This is included in the improvement plan, and budgetary allowances for the improvements have been made in the LTP.

8. Risk Assessment

The purpose of carrying out risk assessments is to identify any risks to the solid waste services and facilities which need to be mitigated, and to prioritise implementation of any mitigation plans.

A number of different risk assessment have been carried out, each one with a specific focus, although there is some overlap. A description, and the purpose of each assessment is provided below.

- i. *Operational Risk Assessment*: This is the broadest scope assessment. Possible causes of failure of solid waste services and infrastructure are examined, together with the consequences of that failure. Failure includes non-collection of bags or bins at kerbside, power failure at transfer station, accidents causing injury to collector or customer, or

damage to property, as well as failure caused by natural disasters. This assessment was last carried out for the 2009 AMP review.

When next reviewed the methodology will also be reviewed, to align with ISO 31000.

- ii. *Vulnerability Assessment* Solid Waste vulnerability (particularly recycling) should have reference to market forces such as economic upturns, down-turns or recycling marker prices. See [section 12](#).
- iii. *Corporate Risk*: High level risk assessment carried out corporately in association with the development of the LTP and Infrastructure Strategy. Covers Environmental, Economic, and Social risks. There is no strong linkage between the corporate risk assessment and the other risk assessments noted above.

Operational Risk Assessment

Recent risk assessments have been undertaken by the service provider for facilities operations and kerbside collections, but a high-level risk assessment has not been undertaken for Solid Waste Services since 2009. A total of 51 possible events were initially considered in the 2009 AMP review (see Risk Matrix section below table 5). The risk analysis found that the Solid Waste Services had 0 Extreme, 7 High, 32 Medium, and 12 Low Risks. Table 5 summarises the extreme and high risks for solid waste services.

Table 5: Summary of Extreme and High Risks for Solid Waste Services

Process	Event	Cause	Risk Rating	Possible Mitigation Measures
Collection	Non-collection of rubbish bags or waste bins	Adverse weather event or other emergency (i.e. flooding, snow)	H	Advise public to hold waste until next collected or to self-deliver to transfer station
	Accident causing injury to collector	Sharp object in bag or heavy bag	H	Advise public to wrap sharp /broken items before placing in bag; Collector wears protective gloves; weight limits placed on bags.
Collection / Facilities Operations	Accident causing injury, or damage to property	Customer falling into pit; staff cut by sharp object	H	Fall arrestor in place at pit face; WDC to audit contractors H&S policies and practices to confirm that the risk is addressed adequately
		Customer vehicle damaged in collision with other customer or operational plant; damage to WDC property by customer vehicle	H	WDC to audit contractors H&S policies and practices to confirm that the risk is addressed adequately
	Discharge of Hazardous Waste	Inappropriate handling of hazardous waste	H	WDC to ensure contractors are properly trained and that the correct equipment, procedures and signage are in place
Disposal	Groundwater contaminated by leachate from Rangiora Closed Landfill	Leachate contaminating private wells used for potable water	H	Bi-annual monitoring in place to detect leachate; potential to extend reticulated water supply to affected properties
General	Failure to meet waste reduction targets	Waste reduction initiatives not effective or targets too optimistic	H	Increase education and auditing. Re-evaluate targets and/or waste reduction measures

Risk Matrix

Each of the 51 possible causes identified in 2009 were rated for consequence (1 to 5) and likelihood (A to E) and then combined to give a risk score using the matrix as Figure 2. The three cells highlighted by a black frame show where the WDC matrix differs from the standard AS/NZ 4360 risk matrix. These changes were made as they better reflect the level of risk accepted by WDC on their 3 waters and other assets.

Figure 2: WDC Risk Matrix

Risk Matrix		Consequences				
		Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	A Almost certain	M	H	H	E	E
	B Likely	M	H	H	E	E
	C Possible	L	M	H	H	E
	D Unlikely	L	L	M	H	E
	E Rare	L	L	M	H	H

Improvement projects will need to be assigned to each risk event. In some cases multiple projects are required to address a wide ranging risk. Improvement projects take the form of either capital works (ref AMP) or process improvement (ref IP) projects.

Overview – Risk Update

Although no formal risk assessment has been undertaken for this AMP review, there has been an ongoing assessment of operational risks by the contractors. Several changes have been made to site management, infrastructure and operational practices at Southbrook RRP and Oxford transfer station to mitigate some of the above high-risk events, and to address new risks that had arisen since the completion of the new RRP.

9. Climate Change

No specific studies have yet been carried out considering the potential effect of climate change on solid waste services, although Council has undertaken work to identify hazards arising from climate change in the district.

More intense rain falling less frequently, and changes in the amount of snowfall and spring-melt periods, will cause more severe flooding events. This would increase risk to the transport network that crosses major rivers, impact on the kerbside collections into properties that are susceptible to flooding, and result in a greater amount of waste from storm-damaged homes. The Rangiora closed landfill lies adjacent to the Ashley River and is the only monitored site that is at risk of damage by flooding.

The increase of extremely windy days and in wind directions in Canterbury could also affect rainfall, and result in a greater amount of waste from wind-damage. Sea level rise could impact on the Kaiapoi closed landfill as raising groundwater levels may accelerate the generation of leachate, and impact on the provision of kerbside collection services into lower-lying coastal properties.

A more detailed assessment will be made of the exposure of Solid Waste assets and services to these hazards to increase our understanding of the impacts, and a work plan will be developed to address any deficiencies.

10. Growth projections

Situation

Waimakariri District Council commissioned a population model in 2022 from Formative Ltd. This model uses the StatsNZ Estimated Residential Population as the base population, and uses the same assumptions for fertility, mortality and net migration from the 2018-based projections. However, they have been updated to a newer base year which provides a contemporary set of projections that reflect the growth that has eventuated since 2018.

The overall district population growth scenario used for the 2022 AMP update was supplied by Formative Ltd, broken into towns and rural areas (TRIM 231220204687). Growth projections were calculated using the High Growth Scenario, which was the basis for infrastructure planning. The model spans from 2022 to 2053 therefore as the timeframe for this infrastructure planning is for the thirty years between 2024 to 2054, the population projections have been extended out a further year to 2054.

It is anticipated that there will be minor extensions of the kerbside collection areas beyond the existing collection area boundaries in response to urban and rural residential development. The growth is expected to continue in the areas identified in the urban development strategy and occur as infill within the collection boundaries.

Demand

There are a number of factors that may influence future demand for solid waste in the District:

- Population trends or increases in population.
- Changes in demographics.
- Changes in population density.
- Changes in legislation.
- Advancements in technology.
- Increased concern over waste of resources and effects of litter and illegal dumping on the environment.

A combination of population growth forecasts and historic demand for services, particularly the optional kerbside bins, has been considered in establishing the districts future demand for solid waste. Use of rubbish bags has been dropping, and it is likely bag collection services will be phased out at the time the contract is renewed.

There has been a signalled intent from Central Government that they will require Councils to provide mandatory recycling services to urban townships with a population of 1,000 or more as from 2027, and mandatory food-scrap or mixed organic collection services to the same townships by 2027 or 2030. The dates for introducing the mandatory food/organic collections are dependent on the availability of a suitable composting plant with capacity to take the additional organic materials.

Our Council currently meets the requirement for provision of recycling services to small townships, however the organic collections are optional and not mandatory. The LTP budgets have been prepared on the assumption that the Council will be providing mandatory organics

and rubbish bin collection services to all “urban” properties as from 1 July 2029, when the new contract commences.

One major exception would be the limited services collection area of Ohoka, Swannanoa & Mandeville: this currently does not have the option for bag or organic collections and is not classified as an urban township. Multiple occupancy developments such as lifestyle and retirement villages may also be exempt from the requirement to be provided with a mandatory organics collection service.

The number of properties eligible for kerbside recycling collections would be increased by an average of 410 per year during the 2024-34 LTP period to accommodate this growth as shown in **Table 6**.

Table 6: Growth Projections

Rangiora	Rates Strike July 2023	Years 1 - 3	Years 4 - 10	Years 11 - 20	Years 21 - 30	Years 31 - 50
	2023/24	2024/25 to 2026/27	2027/28 to 2033/34	2034/35 to 2043/44	2044/45 to 2053/54	2053/55 to 2073/74
Projected Properties						
Recycling	19,898	21,219	23,787	26,824	29,618	39,943
Rubbish	15,724	18,360	22,582	25,466	28,121	33,185
Organics	12,102	15,572	21,597	24,360	26,884	31,714
Projected Rating Units						
Recycling	21,224	22,633	25,372	28,612	31,592	37,272
Rubbish	15,918	18,587	22,861	25,780	28,468	33,594
Organics	13,184	15,669	21,732	24,502	27,052	31,912
Projected increase in Properties						
Recycling	-	7%	20%	35%	49%	73%
Rubbish	-	17%	44%	62%	79%	111%
Organics	-	19%	65%	86%	105%	142%
Projected Annual Recycling Weight	3,544	3,649	4,078	4,597	5,055	6,248
Projected Annual Rubbish Weight	4,890	5,290	6,121	6,895	7,607	8,970
Projected Annual Organics Weight	5,669	6,870	9,405	10,593	11,685	13,774

Longer term growth over the next 50 years is projected to increase by 87%. This is a decrease from the growth forecast of 93% over 50 years in the 2021 Activity Management Plan as the lower Stats NZ projections has resulted in the high-growth model from Formative Ltd being somewhat lower than previous projections.

Waimakariri kerbside collection services are expected to be provided to an average of 390 new properties annually (up to 2033/34) and approximately 280 per annum in the long term (2034/35 to 2073/74). This allows for organic growth around existing collection areas, and

increases could be higher if demand for services results in collections being provided into new areas.

Managing Uncertainty

The growth model developed for the Council to enable assessments of growth-related works is by its nature uncertain as it relies on population projections that are highly dependent on changing economic and social factors.

A key means of managing this uncertainty has been to use the best available data and consult with Council staff in the policy and planning fields for the best information.

Long term, the 2024 projections are lower than for the 2021 AMP projections, which has resulted in minor changes to the portions of the capital programme that cater for growth. This flows into the picture shown by the IS of long term expenditure.

District Overview – Growth Forecasts

The serviced kerbside collection properties are predicted to grow by approximately 49% over the 30 year projection period. Solid waste services are not provided until the homeowner occupies the dwelling and requests a recycling bin, at which point rates are charged. At present there is still a reasonable supply of sections that have not yet been built upon and which will be eligible for collection services once the buildings are occupied.

Over the first 10 year projection period properties serviced for kerbside collections in the Waimakariri District are expected to increase by approximately 385 properties in the urban-serviced area and 20 properties in the rural-serviced area annually. Over the remainder of the 30 year period the rate of additional properties is predicted to reduce to approximately 295 'urban' and 15 'rural' annually.

The projected population trends for the District and the kerbside rubbish, recycling and organics collection services are presented in **Figure 3, Figure 4 and Figure 5**.

Figure 3: Population Projections for District and Rubbish Collection Services

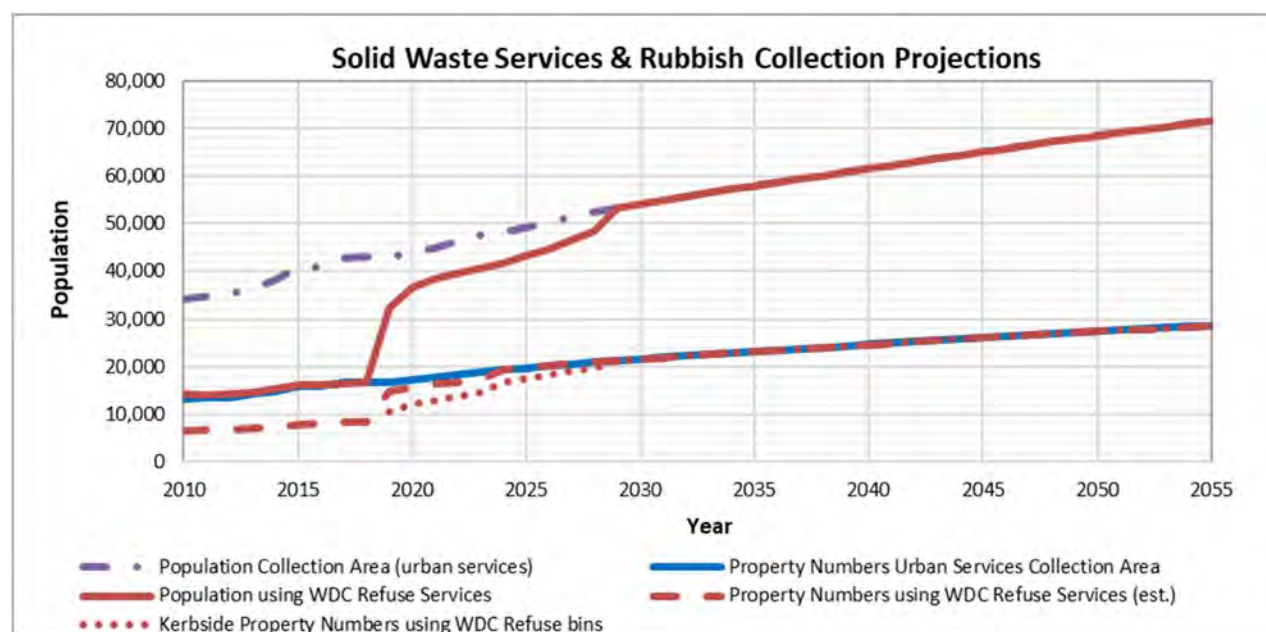


Figure 4: Population Projections for Recycling Collection Services

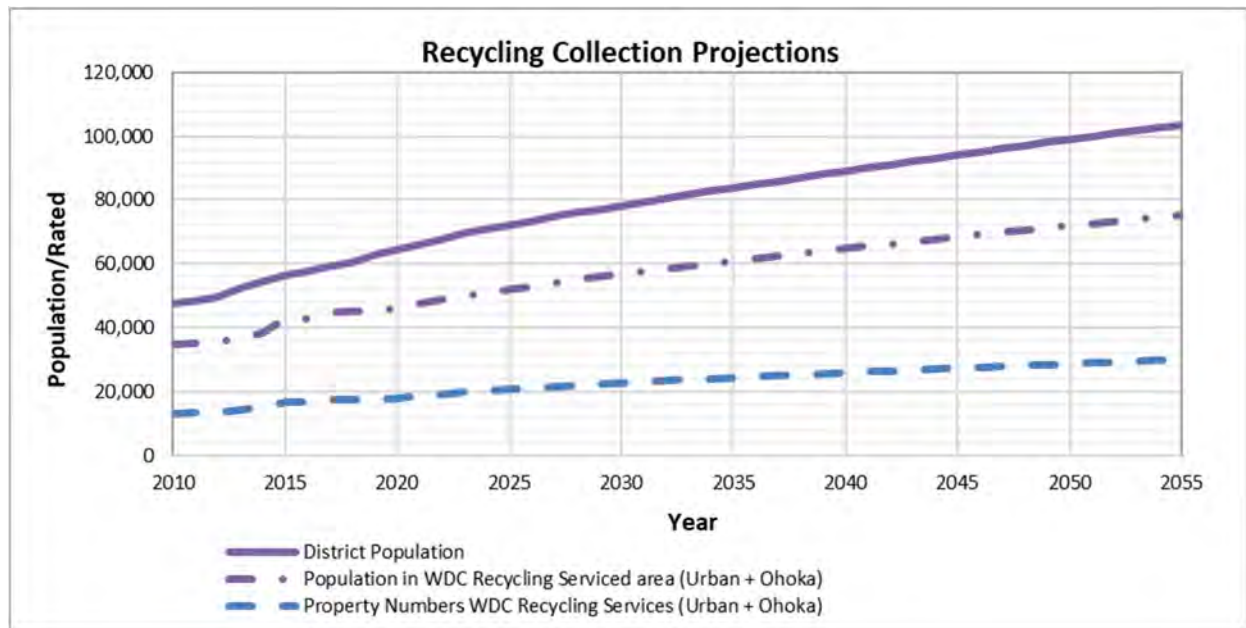
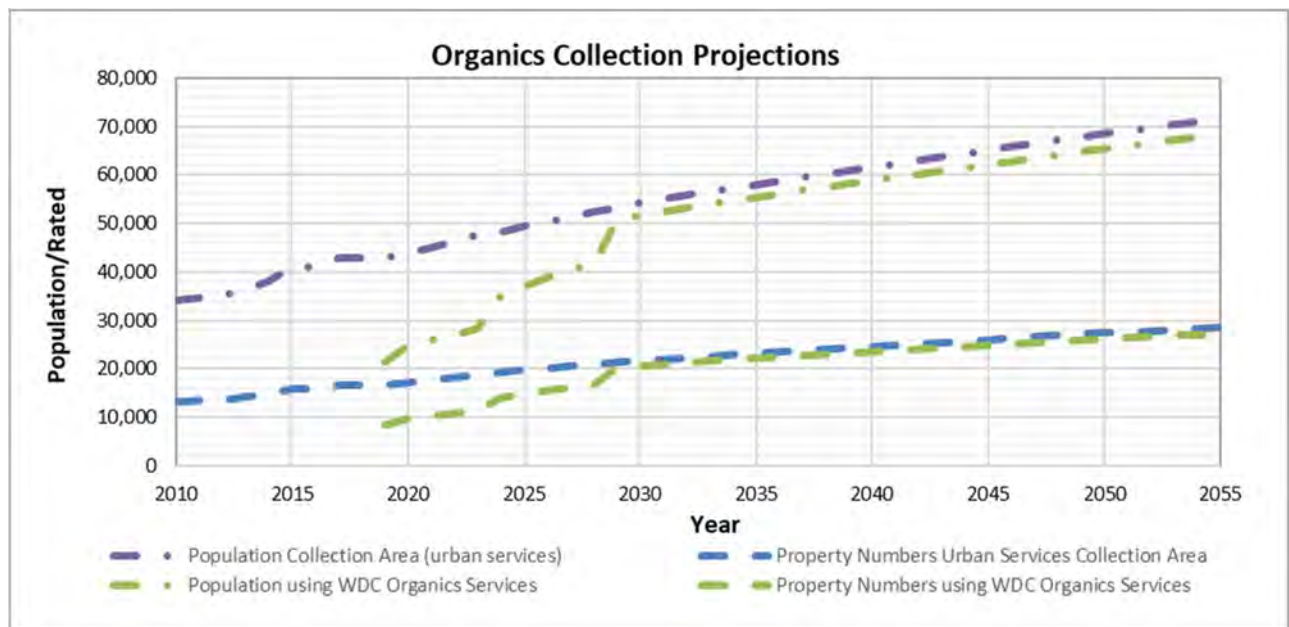


Figure 5: Population Projections for Organics Collection Services



Waste Management & Minimisation Plan

The Council completed its Waste Assessment and reviewed their 2012 Waste Management Plan in 2017. The draft Waste Management & Minimisation Plan (WMMP) was consulted on from June to August 2017. The final draft document was presented to the Council for approval in December 2017.

Council approved the inclusion of optional weekly mixed organics bin and an optional fortnightly rubbish bin or user-pays bag collection in addition to the current fortnightly recycling collection service in the draft WMMP and the 2018-28 Long Term Plan consultation round. Subsequently the Council approved inclusion of the "your choice" kerbside collection service in the 2018-28 Long Term Plan and in the 2018 WMMP.

A Waste Assessment is scheduled to be undertaken in the 2023/24 year, and we anticipate that the 2018 WMMP will be reviewed once the WA has been approved by the Council. Once that review is complete, any changes to the WMMP will be consulted on.

Kerbside collection

Approximately 90% of the properties eligible for kerbside rubbish and recycling collection services as of 30 June 2019 are 'urban' and are located within the main towns and townships of the District, with the remainder being in rural areas. Around 10% of the properties that are identified as 'urban' are outside the regional Urban Development Strategy (UDS) area. Residential growth is expected to occur within the UDS boundaries provided for in the Transitional District Plan, and through expansion of the residential zones around the current town boundaries and collection areas.

The Ohoka Recycling Collection Area, which covers 996 properties, receives recycling and rubbish bin collection services, and includes the properties in Ohoka that are on the water supply scheme plus a proportion of rural Ohoka, Clarkville, Mandeville and Swannanoa.

It is anticipated that the Council's kerbside collection services will be extended beyond the existing boundaries to include the closer rural environs around the urban centres such as Rangiora and Kaiapoi, in particular as residential subdivisions extend into those areas, and that a kerbside service could be extended out to higher-density rural areas, for example Ashley, Loburn, and Fernside dependent on demand.

Extensions into the higher-density rural areas beyond the current serviced areas have not been modelled in the growth tables at this stage as there is little consensus among rural residents about wanting a kerbside collection service from the Council. Ongoing investigations and consultation on rural recycling services and facilities will provide more certainty on any such expansion: the growth tables will be amended to reflect the findings of those investigations once there is a better understanding of demand from the rural sector.

Demand projections around increases in services have been based on the following assumptions:

- That all future dwellings in Urban, Rural and Commercially rated and serviced areas will receive a recycling collection and will be eligible for rubbish bag or bin and organics bin. Collections.

- That subdivisions neighbouring on urban limits will receive a recycling collection and will be eligible for rubbish bag or bin and organics bin collections.
- That all future dwellings within the Ohoka Recycling Area limits will receive a recycling collection and will be eligible for a rubbish bin collection.
- That 6.5% of households eligible for Council rubbish collection services currently use bags to dispose of their rubbish at kerbside, and numbers will decrease to 3% by 28/29.
- That the 75% uptake of rubbish bins at the end of 2022/23 will increase to 85% by 28/29.
- That the 65.5% uptake organics bins at the end of 22/23 will increase to 72.5% by 28/29.
- That as from July 2029, subject to legislative changes and feedback from the WMMP consultation and the next LTP budget consultation, when the new collection contract commences:
 - Rubbish bags will cease to be collected at kerbside;
 - Organics bins will be a mandatory service for households within the urban collection area; and
 - It is likely that rubbish bins will also be a mandatory service within the urban and extended Ohoka collection areas, for those properties with recycling services.

Waste Disposal and Diversion Facilities

Southbrook resource recovery park (RRP) is the Council's main waste handling facility and is located centrally in the Eastern end of the District, is open 7 days a week from 8:30am to 4:30pm, and services the Eastern portion of the District. Southbrook RRP was upgraded in 2011 with the recycling and reuse area officially opened in September 2011.

Oxford transfer station services the Western portion of the District, and draws custom from the Waimakariri Gorge area to Horrellville and West Eyreton. The site is open two half-days per week (Friday and Sunday afternoons).

Council's intention is to retain Southbrook RRP and Oxford transfer station and to modify these sites where necessary to cope with growth in the district, to meet new requirements, and where practicable alter the overall level of service the assets are operating under or were designed for.

Almost all chargeable materials and commercial loads of recyclables that are deposited at the RRP are weighed, with a small number of loads recorded by load type (bag and wheelie bin). The number of customers entering Southbrook RRP and Oxford transfer station to access only the recycling and recovery facilities is not recorded.

The projected level of growth and development in the district will mean that the total weight of rubbish and hardfill will increase in the short term. The projected landfilled and diverted waste tonnage increases in Figure 9 indicate that the rubbish pit will not reach capacity until 2038 when another upgrade has been scheduled for the RRP site.

Since the introduction of a multiple bin & bag collection service, we have experienced a change in waste flows, reducing rubbish and green waste tonnages at Southbrook RRP and changes in how rubbish gets to the site. This is discussed in the below section on Waste Generation and Disposal Trends.

Customer satisfaction surveys

The 2022 Customer Satisfaction Survey asked a number of questions around waste disposal patterns for recycling, rubbish and organic waste, as well as satisfaction levels with Council's solid waste services.

Satisfaction levels among those people who responded were generally high for all solid waste services, however there has been a slight decrease in satisfaction levels from the 2019 survey results for most questions about the services. The satisfaction levels (very satisfied and satisfied) are shown in Table 7. Note that the waste facility results from 2019 were the combined results for the Oxford and Southbrook facilities and did not include Cust RRF as that was only being trialled in 2019.

Table 7: Customer Satisfaction Levels

Service	2022 results	2019 results	Change	Comments
Recycling Collection	92%	97%	-5%	Bin audits and operational issues likely impacting on satisfaction levels
Rubbish Collection	91%	92%	-1%	Council not providing a 240L bin and operational issues could be impacting on satisfaction levels.
Organics Collection	90%	95%	-5%	Operational issues likely impacting on satisfaction levels.
Location of waste facilities				
Southbrook RRP (618 respondents)	98%	99%	-1%	Not statistically significant.
Oxford TS (55 respondents)	95%	—	—	
Cust RRF (18 respondents)	100%	—	—	
Services Provided by Staff				
Southbrook RRP (618 respondents)	96%	99%	-3%	Operational issues likely impacting on satisfaction levels. Unstaffed site
Oxford TS (55 respondents)	95%	—	—	
Cust RRF (18 respondents)	48%	—	—	
Opening Hours				
Southbrook RRP (618 respondents)	96%	96%	0%	8:30 am-4:30 pm, 7 days. Limited hours at Oxford TS. Cust available 24/7.
Oxford TS (55 respondents)	51%	—	—	
Cust RRF (18 respondents)	100%	—	—	
Rubbish Disposal				
Southbrook RRP (618 respondents)	96%	98%	-2%	Operating at capacity. Not supplied at Cust.
Oxford TS (55 respondents)	97%	—	—	
Cust RRF (18 respondents)	48%	—	—	
Recycling Services				
Southbrook RRP (618 respondents)	95%	97%	-2%	Operating at capacity.

Oxford TS (55 respondents)	87%	—	—	Basic recycling only, no reuse.
Cust RRF (18 respondents)	84%	—	—	Basic recycling only.
Range of Services				
Southbrook RRP (618 respondents)	97%	98%	-1%	Disposal, recycling, shop/reuse.
Oxford TS (55 respondents)	82%	—	—	Basic disposal, recycling services.
Cust RRF (18 respondents)	46%	—	—	Basic recycling only.
Greenwaste Disposal				
Southbrook RRP (618 respondents)	95%	97%	-2%	Operating at capacity.
Oxford TS (55 respondents)	84%	—	—	Shreddable green waste only.
Cust RRF (18 respondents)	19%	—	—	Not supplied at Cust.
Hazardous Waste Disposal				
Southbrook RRP (618 respondents)	96%	97%	-1%	
Oxford TS (55 respondents)	93%	—	—	
Cust RRF (18 respondents)	0%	—	—	Not supplied at Cust.

Although satisfaction levels for kerbside collection services have decreased by 1% to 5%, the 90 to 92% satisfaction levels indicate that, overall, residents are satisfied with this service. Recycling bin audits are ongoing to manage contamination levels: this process may have impacted satisfaction levels around recycling collection services. There was an increase in operational issues around the time the satisfaction survey was carried out: these may also have contributed to the observed decrease in satisfaction levels for all three waste streams.

Southbrook RRP is operating at capacity, and at high-use times levels of service are impacted by the number of customers using the site with queue at the kiosk, pit and greenwaste disposal areas, and limited parking available at the recycling drop-off and shop. This is undoubtedly impacting on satisfaction levels more than indicated in Table 7, because the 2019 results were the combined Southbrook RRP and Oxford TS satisfaction levels which would have been lower than those for the Southbrook RRP alone.

The Cust rural recycling facility is an unstaffed site in the carpark behind the Cust Hotel. It provides only for the drop-off of basic recycling (plastics, cans, glass bottles, paper and cardboard) and does not provide for disposal of rubbish, greenwaste and hazardous wastes. This limited level of service shows in the lower level of satisfaction from the survey.

Waste Generation and Disposal Trends

Economic Trends

Per-Capita waste generation has been observed to increase annually when the economy is strong, and to decrease when the economy weakens. With the expected continuing development in the district we have allowed for a 0.4% increase per annum in waste generation when making our demand projections, as this follows the trend expected from the forecast growth in the district.

Historical Waste Generation and Diversion Figures

The per-capita waste figures and annual waste tonnages are shown in **Figures 6, 7 and 8**. Note that the “Total” line is the sum of landfilled, recycled and diverted waste. Per-capita total waste generation has been reasonably static, and per-capita landfilled waste has been steadily decreasing since 2007/08. Increases are generally caused by improving economic conditions

and district growth, however the 2020/21 landfill weights were impacted by the amount of recycling that was landfilled in 2020 owing to high levels of contamination in kerbside bins during and after the first lock-down period.

Figure 6: Annual Per Capita Waste Figures

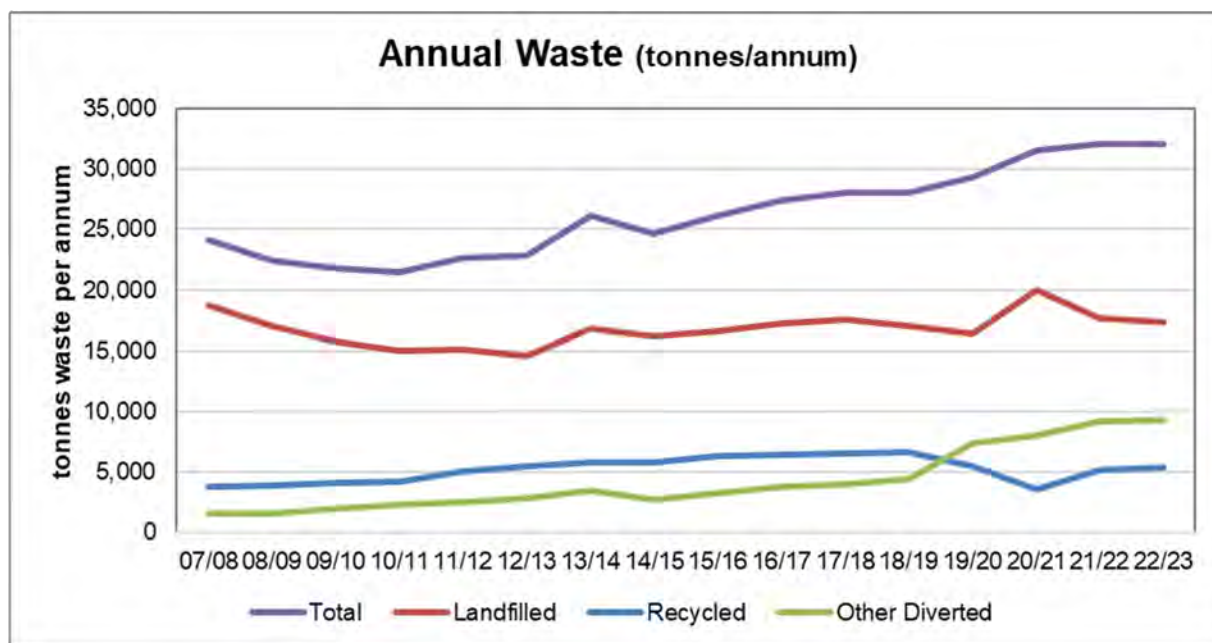


Figure 7: Annual Waste Quantities

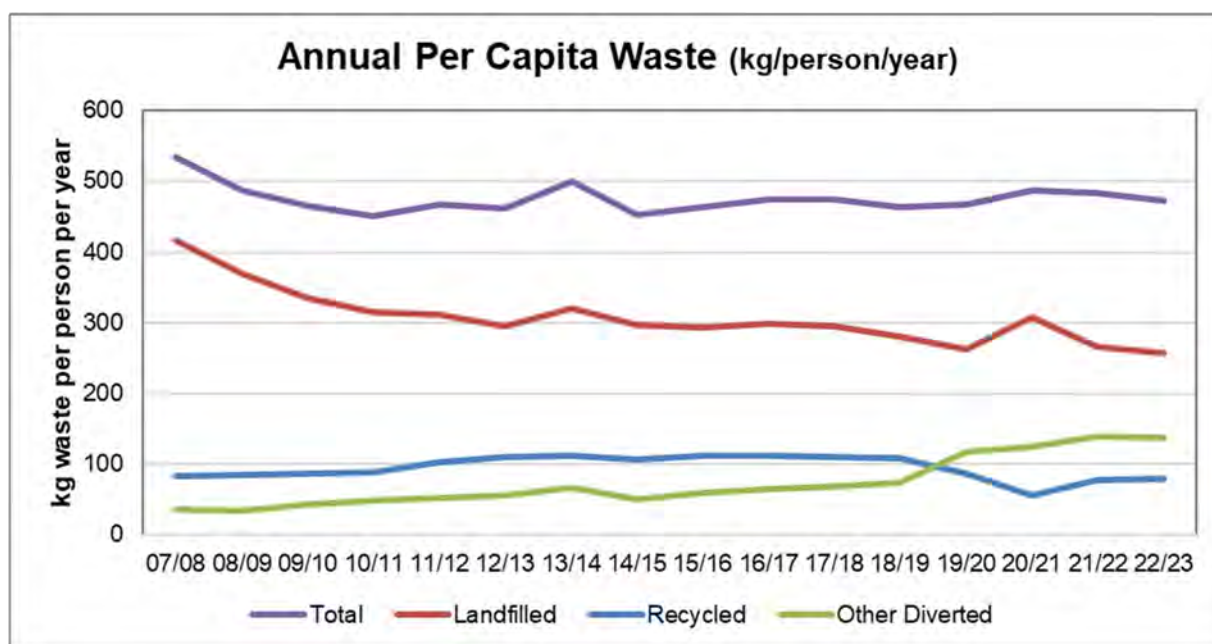
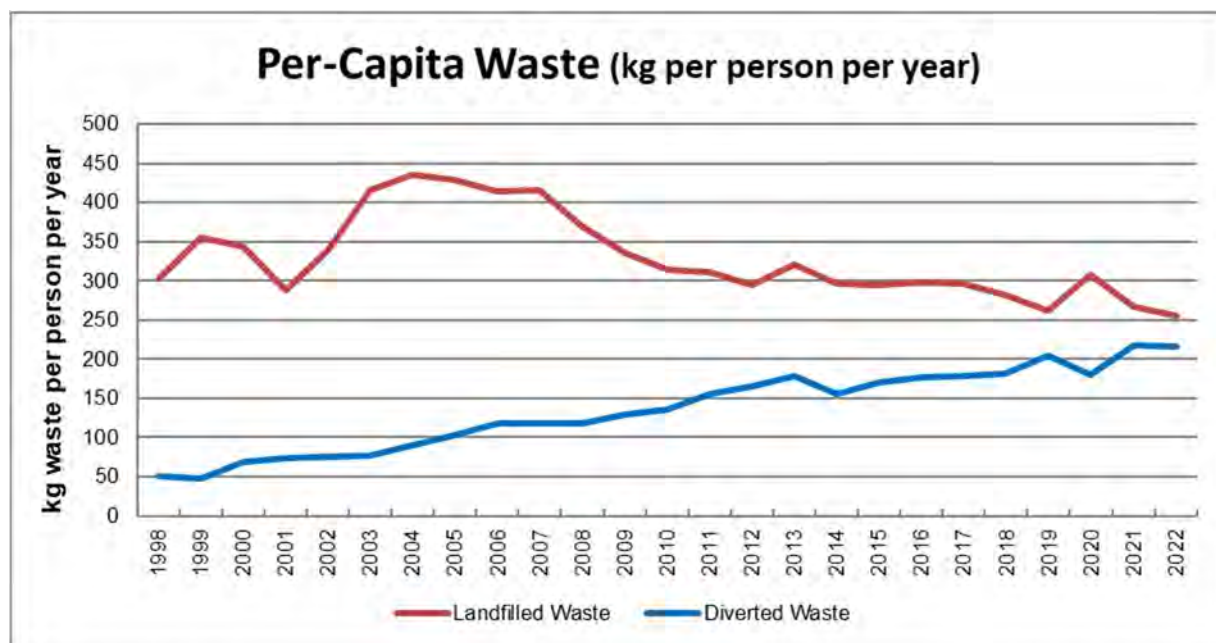


Figure 8: Annual Waste Quantities: Landfilled & Diverted

Waste diversion figures have generally been increasing as facilities and services improve. The increase in diversion levels measured in 2019/20 was a result of the new kerbside organics collection service and this has now started to level off although the uptake of bins is still higher than district growth. It would require considerable improvements to diversion services to replicate this increase.

The drop in recycling in 2019/20 and 20/21 was a result of COVID-19 site restrictions during this period, and in increase in contamination in kerbside recycling that resulted in approximately 90% of kerbside recycling being landfilled during the last quarter of 2019/20. Kerbside bin audits have remedied that high level of contamination; however, these are continuing to ensure contamination levels remain below the 10% acceptance standard at the recycling sorting plant.

Continuing initiatives such as providing resources for school and adult education and facilitating a sustainability programme for businesses only indirectly affects the quantity of waste taken to landfill. The planned facility upgrades at Southbrook RRP which will enable better diversion for materials such as dry waste (paper & cardboard, construction & demolition waste) in the disposal pit and via a new bunker system and increasing the capacity of the reuse and recycling facilities, will directly impact landfill quantities.

Other initiatives that would also directly impact on landfill quantities include further expanding the kerbside recycling collection service to other higher-density rural areas or providing better access to for recycling for more remote rural residents.

Demand Projections

The “demand projection” around waste generation, disposal and diversion has been modelled for the AMP. This is set against a 0.4% p.a. increase in waste generation to indicate the anticipated gains from recent and planned changes to waste services. The continued higher-than-growth uptake of rubbish and organics bins has also been factored into demand projections for kerbside services.

The collection services contract is due for renewal in 2029/30, and this is likely to see a change in the services provided. There has been a signal from the Government that they will bring in legislation to require all Councils to provide food scrap or mixed organic waste collection services to all urban households by 2030 at the latest, and this would impact on our own services.

Figures 9 and 10 present the demand trends for per-Capita district-sourced waste quantities, and total district-sourced waste quantities (total waste generated, landfilled waste, and diverted waste), with the 3-bin collection service and planned and future site upgrades considered.

Figure 9: Projected Annual Per Capita Waste Figures

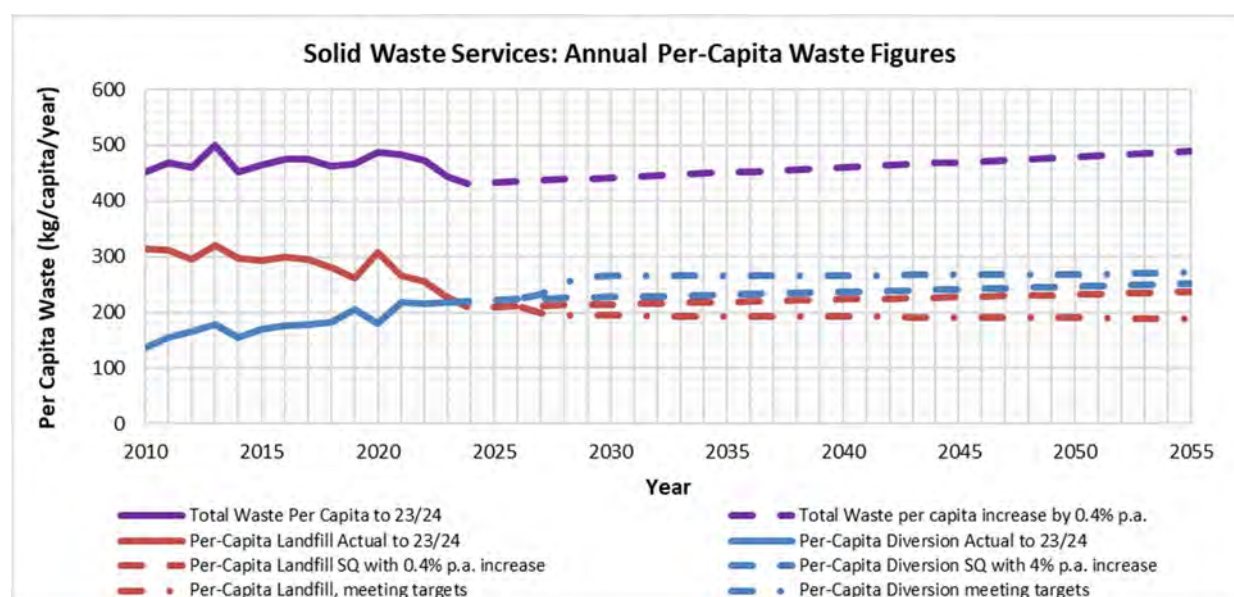


Figure 10: Projected Annual Waste Quantities



Note that the Forecast Quantities in **Figure 10** are based on the per-Capita rates (measured in kg per person per annum) multiplied by the projected district population. There has been a drop in waste handled through Council transfer stations as from 1 July 2022 owing to a private

transfer station operating in the district which takes waste from some local collection companies. The landfill figures reported in this AMP include those taken to landfill from both Southbrook resource recovery park and this private facility, but diversion figures are for only Council facilities therefore are likely to be under-reported.

Confidence ratings for waste generation and diversion forecasts are Low, given the observed variances in waste quantities over the past 10 years and the fact that external forces such as landfill disposal charges and economic conditions influence 'waste behaviours' and these are largely unpredictable in nature.

Council's services still only address increasing diversion from landfill of ever-increasing amounts of products (including packaging and electronic goods) that are being created and thrown away, and do not deal with reducing the overall quantity of waste that is being produced.

Is essential that Central Government target waste generation, rather than relying on Local Government providing diversion services, to reduce the quantity of waste being produced and sent to landfill. They have started to address this with the recent increases to landfill levy and bans and phasing out of problem plastics and single-use items, and the declaration of 6 priority products which is resulting in the development of mandatory product stewardship schemes to manage these products.

Government proposals to develop a container return scheme have been put on hold: the Council will continue to lobby Government to ensure that Extended Producer Responsibility continues to be high on their agenda with regard to waste minimisation. Businesses and householders must also be made aware of the consequences of their own purchasing practices, and it would be appropriate for a public education campaign to be developed and rolled out at a National level, with Councils providing support for such a campaign.

11. Capacity & Performance

There are capacity issues relating to the regional landfill, Resource Recovery Park & transfer stations, cleanfill site, hazardous waste services and the kerbside collection service.

Landfill

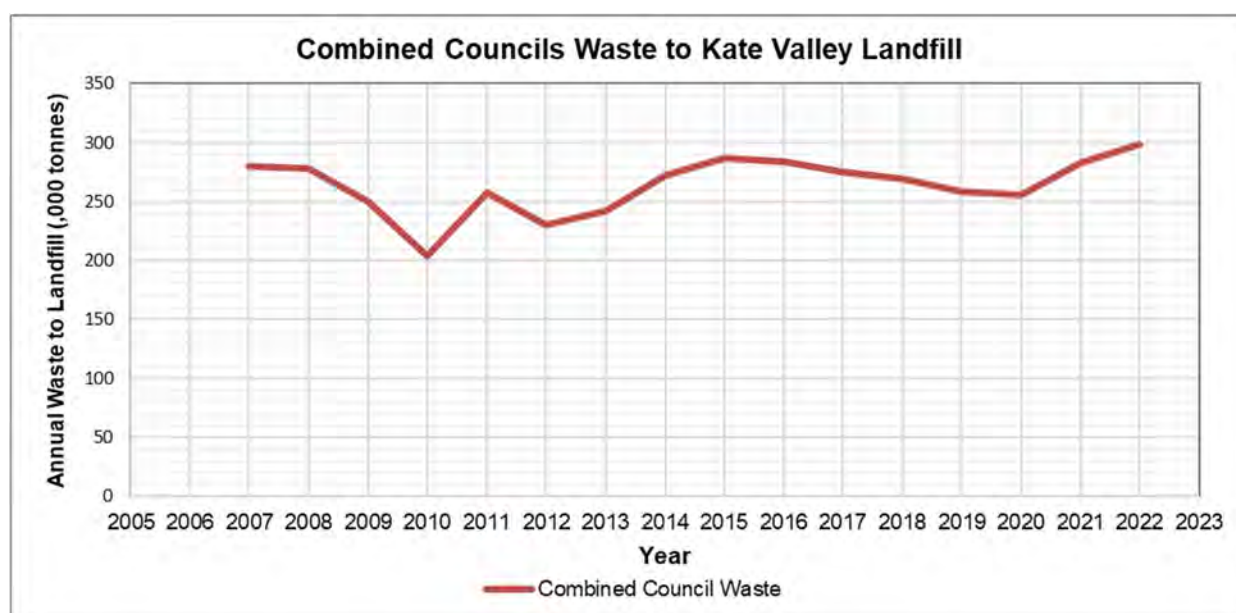
The Regional Landfill was constructed at Kate Valley in the Hurunui District, and this began accepting municipal and special wastes in June 2005. The landfill is owned by a private-public partnership (Transwaste Canterbury Ltd) between five contributing Councils (Christchurch City and Ashburton, Hurunui, Selwyn and Waimakariri Districts) and Waste Management NZ Ltd.

The landfill site and transportation of residual waste is managed under contract by Canterbury Waste Services, a wholly-owned subsidiary of Waste Management NZ Ltd.

The consented life of Kate Valley Landfill is 35 years (2037), and an upper bound figure of 7.72 Million tonnes of waste was forecast for this period. This forecast was based on historical waste volumes, which at the time of the initial landfill design showed a very slow growth owing to the introduction of kerbside recycling and composting initiatives in Canterbury, and in Christchurch in particular. To date 3.39 Million tonnes of waste has been disposed of at Kate Valley from the five contributing Councils' facilities.

Figure 11 shows the annual weight of residual waste sent to Kate Valley landfill since July 2006.

Figure 11: Combined Councils Waste to Landfill



HAIL sites around Canterbury were disturbed post-earthquake during the recovery and rebuild phases. These contaminated sites trigger the need to manage contaminated soils in accordance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESC).

There are limited numbers managed fills consented to accept contaminated high-density fill (e.g. soils contaminated with detectable levels of asbestos, or that meet residential, commercial or recreational standards levels of contamination) and as a consequence the majority of these materials are being transported for disposal at Kate Valley Landfill.

Waste Disposal Levy

The Government passed the Waste Minimisation Act in 2008 and imposed a national waste disposal levy of \$10/tonne (plus GST) on all waste sent to landfill. The Ministry for the Environment undertook public consultation around a proposal to increase and expand the landfill levy, and early in 2020 announced that this levy would be expanded to cover all Class 1, 2, 3 and 4 landfills, and that the levy itself was increased for Class 1 (municipal) levies, as shown in **Figure 12**.

Figure 12: Timeline for Waste Levy Expansion and Increase

LANDFILL CLASS	Waste types	1 JULY 2021	1 JULY 2022	1 JULY 2023	1 JULY 2024
Municipal landfill (class 1)	Mixed municipal wastes from residential, commercial and industrial sources	\$20	\$30	\$50	\$60
Construction and demolition fill (class 2)	Accepts solid waste from construction and demolition activities, including rubble, plasterboard, timber, and other materials		\$20	\$20	\$30
Managed or controlled fill facility (class 3 and 4)	On or more of: <ul style="list-style-type: none"> contaminated but non-hazardous soils and other inert materials (eg. rubble) soils and other inert materials. 			\$10	\$10

Source: <https://environment.govt.nz/what-government-is-doing/areas-of-work/waste/waste-disposal-levy/expansion/>

The levy resulted in an increase in disposal costs, and the Council recovers those costs through its own disposal charges. The purpose of the levy is two-fold:

- To raise revenue for promoting and achieving waste minimisation; and
- To increase the cost of waste disposal to recognise that disposal imposes costs in the environment, society and the economy.

The levy increases have impacted on the cost for disposal at landfill but have also resulted in an increase in levy funding back to Councils, who receive 50% of the levy funds back on a per-population basis, and to the contestable Waste Minimisation Fund. Councils are required to report on the tonnage of materials received at all of our facilities and disposal sites as part of the planned legislative changes.

The Ministry for the Environment announced on 4 June 2024 that the Central Government Budget includes an allowance to amend the Waste Minimisation Act to continue increasing the waste disposal levy at Class 1 landfills by \$5/tonne for an additional three years (2025 to 2027).

The timing of this information has not allowed the Council to model the impacts of the increases in costs and revenue in the LTP or for the AMP.

Currently reporting of outwards loads from Oxford transfer station are based on weighbridge records at various disposal facilities, and reporting for inwards loads at Oxford transfer station and the cleanfill sites are based on customer numbers and volumes which are then converted into weights. Weighbridges may need to be installed at these sites to allow for more accurate measurement of the weight of materials entering the sites.

Oxford TS operates only part-time, has reasonably low usage and receives a significant level of rates funding in addition to gate income in order to fund all operational costs. The cleanfill sites are unmanned, and current charges are relatively low as operational costs are relatively minor. Council will need to determine if it would be cost-effective to install weighbridge and data tracking system at these sites given the anticipated increases in operational costs from this additional reporting requirement.

The Council will need to consider how best to utilise the increase in levy funding, which can only be used for waste minimisation and diversion and in accordance with Councils' WMMPs. Reporting structures have yet to be confirmed, and allowance needs to be made as to whether the infrastructure at our waste handling and disposal facilities are appropriate to capture the level of detail about managed wastes that will be necessary.

Investment and business plans will need to be prepared in order to determine the best use of anticipated increases in levy funding from the increased landfill levy, and the Council proposes to work more closely with other Canterbury Councils to determine whether regional waste processing facilities could be funded from combined levy funds.

Emissions Trading Scheme and Reduction Plan

As from 1 January 2013 the Emissions Trading Scheme (ETS) applied to landfills, and disposal charges were increased, although not to the extent originally forecast. Any changes to the costs associated with landfill gas emissions and the ETS are passed on to transfer station users. These modest increases in ETS charges have been passed on by Council to its customers through gate charge increases. To date there has been little movement on ETS charges, but this may change with the Government's commitment to Carbon Neutrality by 2050.

The Emissions Reduction Plan was published in May 2022, and includes a chapter on solid waste. This document states that in 2019 94% of waste emissions were biogenic methane which are largely generated by the decomposition of organic waste (such as, food, garden, wood, and paper waste). While waste contributes a small percentage of our total emissions, biogenic methane has a warming effect 28 times greater than carbon dioxide.

The Emissions Reduction Plan includes six actions which are intended to reduce the amount of biogenic methane emissions from landfill. These are: enabling businesses and households to reduce organic waste; increasing diversion of organic waste from landfill by improving household collection services, investing in processing facilities and requiring businesses to separate food scraps from rubbish; reducing/diverting construction and demolition waste to beneficial uses; exploring bans or limits to divert more organic waste from landfill; increasing gas capture at landfills; and improving waste data capture and prioritising a national waste licensing scheme.

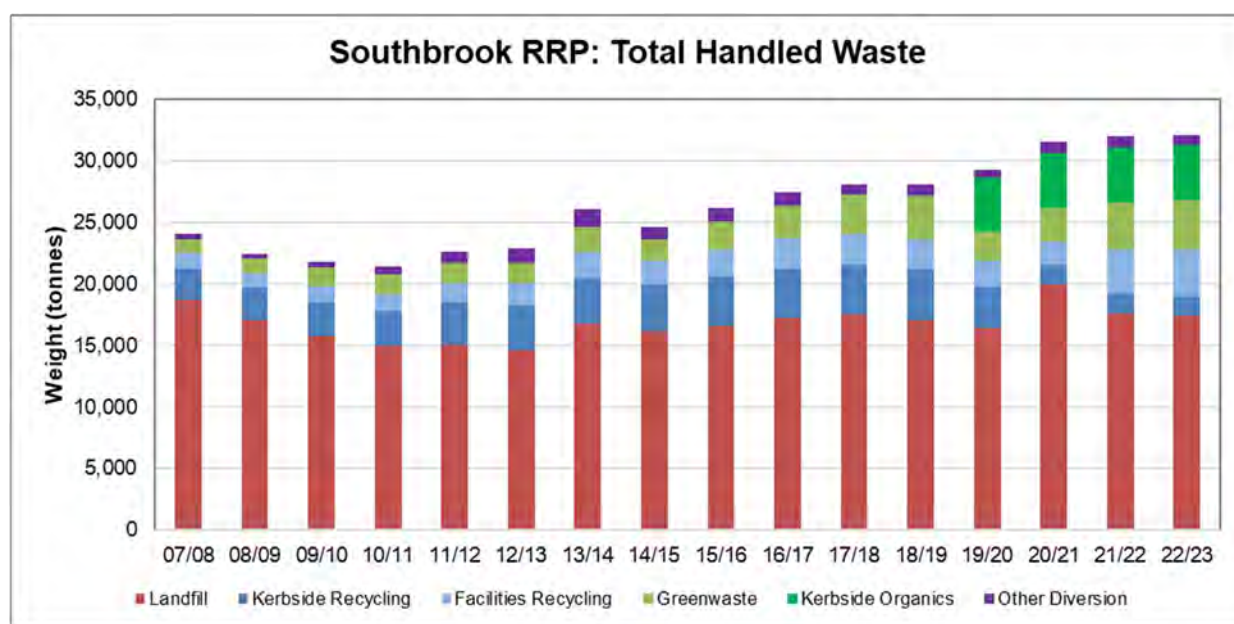
Resource Recovery Park and Transfer Stations

Two of the 2018 Waste Management & Minimisation Plan action plans are to “improve RRP and Transfer Station facilities (Oxford TS and Southbrook RRP) to expand associated services for diverted material”, and “to optimise the separation of diverted material at the RRP and TS facilities through procurement processes and contractual agreements”.

Southbrook Resource Recovery Park and transfer station

The annual quantity of landfilled and diverted waste transferred through Southbrook RRP is shown in **Figure 13**. This includes waste and recycling from Oxford transfer station and the Cust rural recycling facility during its trial period. The site is open from 8:30am to 4:30pm from Monday to Sunday.

Figure 13: Annual Waste Quantities through Southbrook RRP



The estimated annual capacity of the Southbrook RRP site is estimated to be between 30,000 and 35,000 tonnes. The rubbish pit capacity is estimated at 20,000 tonnes. Facilities for diverted materials such as green-waste, clean-fill, hazardous waste and recycling is estimated to be 15,000 tonnes (2,500 t public recycling; 5,000 comingled recycling from kerbside; and 7,500 t other diverted materials). This does not include the weight of goods sold through the second-hand shop: this is not easily quantifiable but is estimated to be between 400 and 500 tonnes per annum.

Figure 9 on page 34 (forecast annual waste quantities) indicates that Southbrook RRP would reach capacity (35,000 t.p.a.) by 2030 and that the rubbish pit would reach capacity (20,000 t.p.a.) by 2041 without the proposed upgrades. However, there are currently impacts on levels of service owing to the number of customers using the site.

The Southbrook transfer station site has a number of pinch points in high-demand times that impact on its capacity: principally the kiosk (where customers weigh in and weigh out across two weighbridges), rubbish pit & compactor unit capacity, recycling consolidator capacity, rubbish pit parking, and the container storage and loading/unloading area behind the rubbish pit.

The recycling and recovery centre also has capacity issues around car-parking for people dropping off recycling and for visiting the second-hand shop, the size and number of bins used for accepting recycling (which results in an increase in the frequency of service vehicle trips to empty the bins), plus the size of the shop itself which limits the range and volume of reusable goods that can be accepted for resale.

There is limited space available along the south and east of the site for expansion, and the presence of the sewer pump station limits how the site can be reconfigured. It may be necessary to purchase land from the neighbouring property to the south to allow for future expansion, and this is currently being explored. A funding allowance has been made in the 2024-34 LTP budgets to purchase a buffer strip along the southern boundary, but there is no budget provision for a larger land purchase to enable future site expansion.

The LTP funding from 2022/23 through to 2027/28 is proposed to upgrade and expand the site in three stages: resource recovery hub (shop, education centre, makers-space); resource recycling centre (recycling, hazardous and re-use drop-off); and transfer station disposal site. A site development plan is being prepared but has yet to be approved by Council as at the end of 2022/23. The design and consenting of the site upgrades are planned for 2022/23 and 2023/24, construction on the first stage would commence in 2025/26, and the third stage is scheduled to be completed by 2027/28.

The LTP allows for the upgrade which gives us adequate provision into 2040. As part of the longer-term strategy for the site WDC staff will investigate options for expanding or moving to a different site in the future. This would then be considered in a future LTP.

The discharge and land use consents for Southbrook RRP expire in July 2032, and budget allowances have been made in 2027/28 to 2028/29 to undertake the preparatory work and apply for a renewal of these consents.

Oxford transfer station

The Oxford transfer station is currently operating well within its capacity with regard to rubbish, although consideration needs to be given to recycling capacity: resourcing is set for current levels of rubbish disposal, which is only adequate for current recycling levels. There are a number of pinch points that will impact on this transfer station's capacity: principally the kiosk, rubbish pit parking, roading layout and storage capacity of rubbish skips, recycling containers, scrap steel and greenwaste.

Allowances have been made in the Long Term Plan budgets to address these recycling capacity and operational issues relating to scrap steel and greenwaste management, and for the installation of a weighbridge to enable better data recording and charging by weight. No allowance has been made to change operating hours: the site is currently open on Friday and Sunday afternoons.

The discharge and land use consents for Oxford transfer station expire in July 2032, and budget allowances have been made in 2029/30 and 2030/31 to undertake the preparatory work and apply for a renewal of these consents.

Budgetary allowances have been included in 2032/33 and 2033/34 for design and construction of new facilities at Oxford transfer station. Outcomes from any investigations, associated

stakeholder discussions and negotiations would be included in an Annual Plan or Long Term Plan budget for final consultation.

Cleanfill

The Sutherlands Pit cleanfill site on Oxford Road began operations in August 2005 and is consented until the end of January 2040: if there is still sufficient capacity in the pit to continue operations at this date, the Council could seek an extension to the period of the consents, and budget allowances for this have been made in 2038/39 and 2039/40. Sutherlands Pit was originally projected to have a long life (approximately 32 years), as it is situated in an operating gravel extraction pit, and it was expected filling operations would continue after the extraction operations cease.

A capacity assessment in 2014 estimated the remaining site life to be from 2.5 to 11 years dependent on airspace and site usage, with capacity being reached between 2018 and 2026. More airspace is now available, and levels of disposal have reduced in the past three years, therefore it is estimated that there could still be 5 to 10 years life remaining for clean and hardfill disposal at this site.

Based on the 2014 assessment, an alternative clean fill site – Garterys Pit, located at the corner of Tram and Chapmans Boundary Roads – was consented and is operational. Garterys Pit has a larger airspace and potential lifespan than Sutherlands Pit and is in a reasonably central location therefore is a viable alternative for Sutherlands Pit.

The Council owns a limited number of properties with pits, however none of these would be suitable for use for clean fill disposal. The Council will have to determine if it should be providing low-cost hardfill and cleanfill disposal for all civil contractors, for only civil contractors working on Council contracts, or if it should cease providing such a service.

Allowances have been made in the Long Term Plan budgets for the installation of weighbridges to enable data recording for reporting purposes, and which will allow charging by weight. We have yet to determine if this would be a cost-effective exercise.

Rubbish, Organics and Recycling Kerbside Collection

The collection of rubbish, organics and recycling is contracted out to Waste Management NZ Ltd. The contract was retendered in 2018 and commenced on 1 July 2019, and has a term of 7 years, plus 3 one-year rights of renewal. The Council approved limiting the upper size of rubbish bins to 140L to encourage waste diversion: this decision will be reviewed if there is sufficient demand for a larger bin for rubbish.

Rubbish and organics bins are currently an optional service, and rubbish bags are still collected at kerbside for those who do not have a rubbish bin. Central Government has signalled that they may require Councils to provide mandatory food scrap or organic collection services to households in urban areas by 2030. If this is mandated, then the new collection contract will require organics bins to be provided to all properties in the “urban” collection area, with some exclusions e.g., high-density retirement/lifestyle developments. This has been factored into the LTP budgets and waste diversion forecasts.

Council has yet to consider how rubbish collection services would be provided under the new contract, particularly if organic collection services are to be provided to all properties in the urban collection area.

12. Key Issues

By considering the levels of service, asset condition, risk analysis, growth projections, and capacity assessment, the following key points are noted about the solid waste assets:

- The proposed changes to the waste levy, the reviewed New Zealand Waste Strategy, and outcomes from the review of the Waste Minimisation Act 2008 have required an increased level of reporting about materials received at the transfer stations and cleanfill pits. Installation and operation of weighbridge infrastructure to capture this data could have significant cost implications for our smaller facilities.
- National and international influences impact on the Council's waste minimisation initiatives, costs and revenue streams. These include:
 - Continuing low recycling market prices, tighter acceptance criteria and changes to the BASEL convention have impacted on the financial viability of recycling, although it is still more cost effective to continue to provide kerbside recycling services than take all materials to the landfill. Consideration may need to be given to either more source separation or better sorting of recyclables at the MRF, and this will continue to be monitored. Both of these options will increase collection and/or processing costs and would impact on rates.
 - Implementation of Extended Producer Responsibility schemes and other Government initiatives around problem and single-use plastics, and potential container deposit legislation. These will impact on the material type of packaging products being produced, and on recycling quantities, collection and processing costs;
 - Changes to fuel costs and carbon emissions charges will affect the cost to collect and transport recycling, greenwaste and mixed organics.
- District growth has put pressure on facilities and services. Facility upgrades are necessary to manage the increased demand, provide a safe environment for customers to dispose of waste and other materials, and to facilitate the diversion of more materials from landfill.
- Issues in this district include ensuring consideration of waste management (both on-site and providing access to services) at an early stage during the design of residential and commercial developments; issuing bins to new properties as subdivisions and buildings are completed and continuing uptake of rubbish and organics bins to existing properties; re-routing of the collection vehicles as new developments are occupied in order to maintain collection efficiencies; management of construction waste from ongoing developments and infrastructure repairs and renewals; and management, including appropriate disposal, of contaminated material from HAIL and other contaminated sites.
- There is an increasing demand for provision of recycling services to a greater proportion of the district's population, particularly in the rural areas, but it could prove to be difficult to provide affordable and convenient collection and disposal services for the whole district. The success of the rural recycling drop-off facility in Cust could

determine if this form of facility could be provided to other rural areas that don't have access to kerbside services.

- There continues to be a high number of incidents of dumped garden waste, rubbish and cars around rural areas and river beds, and dumped household rubbish in litter bins, which is generally attributed to some people's reluctance to pay for waste disposal. This will be further exacerbated by increases in disposal charges.
- A number of cross boundary issues will impact on waste quantities, for example where there is a differential in disposal charges, or different bylaws, between neighbouring Councils. TLA's will need to coordinate around regional and national waste minimisation initiatives and common waste minimisation messages, in order to achieve economies of scale.
- The Council may not continue to have access to data about any landfilled or diverted waste materials handled through private or out-of-district waste facilities. This would result in the under-reporting of total and per-capita waste figures.
- Although there is an increased public awareness that "recycling is good to do", we have experienced difficulty in increasing the public's awareness about all aspects of waste minimisation, using the more traditional methods for informing and educating school children, householders and businesses. It is difficult to quantify the success of waste minimisation initiatives, when there is only an indirect link between expenditure on some initiatives (i.e., education, advertising, etc.) and actual waste reduction achieved by those methods.
- Landfill sites have the potential for environmental harm, and harm to health, from gas and leachate if not managed properly.
- Climate change impacts are not expected to be significant for solid waste assets, however it could cause increased leachate from Kaiapoi closed landfill which is at risk from sea level rise increasing groundwater levels, and the Rangiora landfill is potentially at risk from damage by a severe flood event.

13. Future Works & Financial Projections

Operation & Maintenance

The age and increased usage of the transfer station sites, and increased use of the cleanfill pit, will result in an increased level of funding for operations and maintenance at these sites. An increased level of service with the introduction of a multiple bin collection service in addition to projected population growth inside the serviced kerbside collection areas has resulted in higher operational costs. The operations and maintenance budgets have been adjusted to reflect these increasing demands on kerbside collection services, transfer stations and the cleanfill pit.

Previous levels of input into operating the kerbside collection contracts, and into operating and maintaining the transfer stations and cleanfill site have until recently been sufficient to limit per-capita landfilled waste to below previous levels, as waste quantities tend to rise and fall in relation to economic growth. The earthquake rebuild and rapid development post-earthquake increased the per-Capita waste quantities from 2013 to 2017, and COVID impacted these in

2020, but these had dropped to an all-time low by 2022. The Council may not have access to data relating to any landfilled or diverted waste materials handled through private or out-of-district waste facilities in the future. This would result in the under-reporting of total and per-capita waste figures.

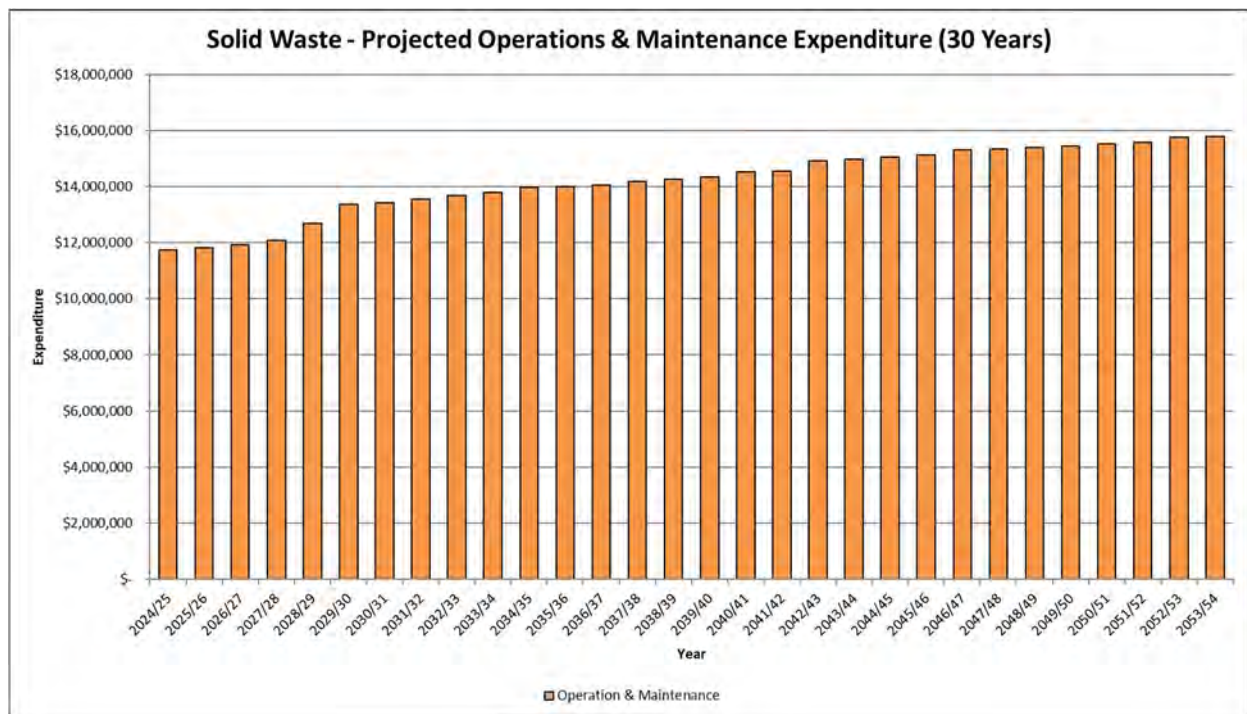
Higher levels of management and operations input are required now that additional waste minimisation & waste diversion initiatives have been embedded, and this input will have to continue to increase, to achieve a greater level of waste diversion from landfill than current ratios.

The operations and maintenance budgets have been adjusted in the short to medium term to reflect the work programme in the 2018 Waste Management & Minimisation Plan, the required maintenance of aging infrastructure, and as a result of the upgrades. However, consideration still needs to be made over the next AMP review period to ensure the development of, and budgeting for, a longer-term waste minimisation programme once the 2018 WMMP document has been reviewed and adopted.

Improvements to recycling services for specific “customers” (businesses, schools, etc.) within the currently serviced area, and provision of recycling facilities for more remote rural residents have yet to be addressed. It should be noted that these were seen as a priority in the previous AMP: while some progress has been made in investigating these initiatives, this is insufficient to introduce any new programmes at this stage.

Other waste diversion initiatives will be considered as new technologies and services become available to the Council, and these will be included in future AMP’s and LTP’s for public consideration. The projected 30-year operations & maintenance expenditure is presented in **Figure 14**. The figures are not adjusted for inflation.

Figure 14: Projected Operation & Maintenance Expenditure



14. Renewals Programme

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it restores the system to its original capacity. The renewals programme is determined in two stages. The first ten years of the programme are based on assessments by the Asset Manager: given that the average condition of the major assets – the transfer stations – is still reasonably good, the amount of renewals required over the next 10 years (the LTP period) remains relatively low.

From year 11 forward expenditure is taken directly from the valuations tables, using the remaining life of each asset as a guide. This model provides a long term view of the funding required to ensure that a renewals fund is sufficient to enable future asset renewals, without needing to borrow.

Figure 15 below only shows the output from the model. The final renewals budget put forward into the draft LTP, is included in the capital works graph, **Figure 16**.

Figure 15: Projected Renewals Expenditure

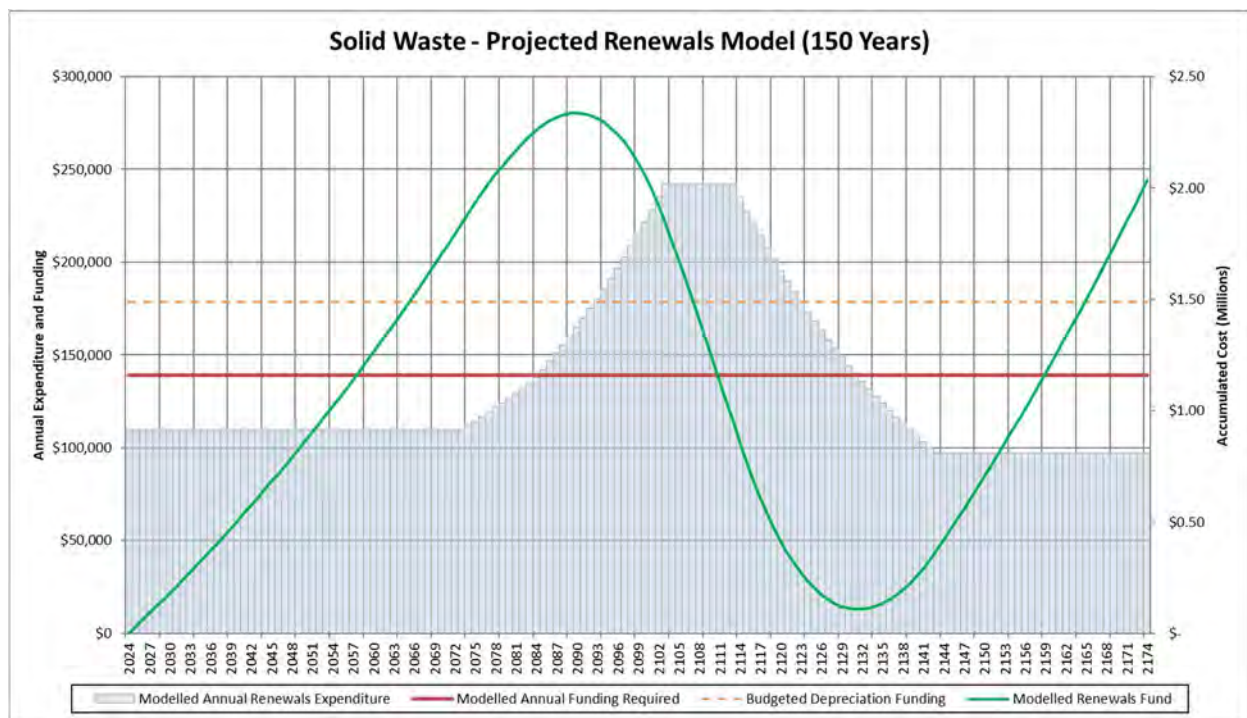


Figure 15 also shows the difference between the annual funding required for the renewal of assets at the end of their life, as determined by the renewals model, and the budgeted depreciation funding. This indicates that renewals are slightly overfunded. Given the relatively poor understanding of asset condition and therefore remaining life at this stage, this is not an inappropriate outcome. The planned asset stocktake, should enable these funding lines to be better matched at the next AMP review.

15. New Works and Waste Minimisation Initiatives

The district's landfill disposal levels initially decreased from 17,258 tonnes per year in 2016/17 to 16,464 tonnes in 2019/20, spiked to 19,953 tonnes in 2020/21 and have reduced again to 17,394 tonnes in 2022/23. Taking into account population growth, the per-capita landfill disposal has dropped from 298.6 kg per person per year in 2016/17 to 256.2 kg per person per

year in 2022/23. Landfill disposal quantities are primarily affected by a slowing economy, rising landfill costs, increases in levels of service and an increase in our community's awareness about sustainability.

The new levels of service for kerbside collections have been used to forecast waste volumes and financial forecasts for the LTP budgets. Two significant work items have been programmed within the next 10 years to accommodate growth and increase the resource recovery park capacity, and to further divert reusable and recyclable resources from being landfilled.

While it is generally acknowledged that waste reduction initiatives become more expensive once the easier and more cost effective options are completed, future technologies may in fact reduce costs for initiatives that are currently prohibitively expensive. The Government increased and extended the waste disposal levy, have reviewed the NZ Waste Strategy, the Waste Minimisation Act and the Litter act. The outcome of the increased levy provides Council with additional waste minimisation funding, although the future funding split has not as yet been finalised. The levy increase also provides an incentive for some recovery or recycling initiatives by incrementally increasing the landfill charge for residual waste, making it economically feasible to divert certain material types from landfill.

Figure 16 shows the 50 year budget for all capital works, including projects driven by growth and levels of service. The budgets are not adjusted for inflation.

Figure 16: Projected Capital Works Expenditure

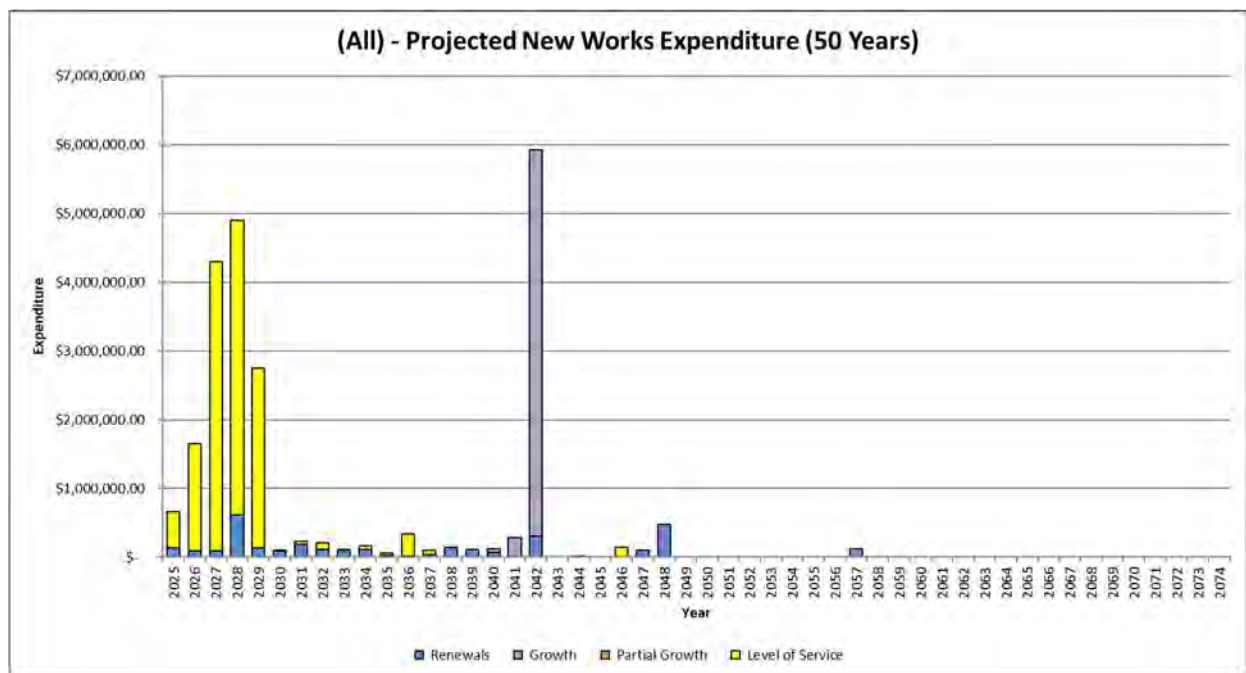


Table 9 shows the major projected capital works for the next 50 years.

The level of confidence for the works (High / Medium / Low) is presented in the following table. For a more complete discussion on the level of optimisation, refer to the District Overview section of the AMP.

Table 9: Summary of Capital Works (Includes Renewals and Replacements) 2021-30

Year	Project ID	Project Name	Level of Confidence	Project Value	LOS Component	Renewals Component	Growth Component
Year 1 - 10				\$16,399,520	\$13,601,170	\$2,798,350	\$0
2025	URU0004	Southbrook New Shop and Education Centre	3 - Low	\$6,571,000	\$6,571,000	\$0	\$0
2025	URU0005	Oxford Transfer Station Infrastructure	3 - Low	\$84,600	\$84,600	\$0	\$0
2025	URU0006	Weighbridges and Services for Cleanfills	3 - Low	\$387,220	\$387,220	\$0	\$0
2025	URU0012	Southbrook Transfer Station Access Roads	3 - Low	\$677,200	\$0	\$677,200	\$0
2025	URU0015	Southbrook Transfer Station Disposal Pit Upgrade and Road Realignment	3 - Low	\$4,425,370	\$4,425,370	\$0	\$0
2025	URU0016	Southbrook Transfer Station Minor Improvements	3 - Low	\$120,000	\$120,000	\$0	\$0
2025	URU0018	Southbrook Transfer Station Land Purchase	3 - Low	\$754,880	\$754,880	\$0	\$0
2025	URU0019	Oxford Transfer Station Access Roads	3 - Low	\$95,000	\$0	\$95,000	\$0
2025	URU0021	Oxford Transfer Station Pumpstation Renewals	2 - Very Low	\$12,800	\$0	\$12,800	\$0
2025	URU0023	Oxford Transfer Station Replacement Sundries	3 - Low	\$119,800	\$0	\$119,800	\$0
2025	URU0027	Oxford Transfer Station Minor Improvements	3 - Low	\$44,800	\$44,800	\$0	\$0
2025	URU0031	Cleanfill Site Fencing	3 - Low	\$15,000	\$0	\$15,000	\$0
2025	URU0033	Cleanfill Site Cameras	4 - Below Medium	\$61,000	\$61,000	\$0	\$0
2025	URU0038	Oxford Transfer Station New Hardstand Area	3 - Low	\$55,500	\$55,500	\$0	\$0
2025	URU0041	New Kiosk adjacent to weighbridge	2 - Very Low	\$66,000	\$66,000	\$0	\$0
2025	URU0042	Oxford Transfer Station Security Monitoring	6 - Above Medium	\$17,000	\$17,000	\$0	\$0
2026	URU0017	Southbrook Transfer Station Landscaping and Shelter Belts	3 - Low	\$122,000	\$122,000	\$0	\$0
2026	URU0020	Oxford Transfer Station Fencing	3 - Low	\$66,000	\$0	\$66,000	\$0
2026	URU0044	Landfill Cover Remediation	1 - Coarse	\$380,000	\$380,000	\$0	\$0
2026	URU0045	Global Consent for Historic Landfills	1 - Coarse	\$120,000	\$120,000	\$0	\$0
2027	URU0007	Cust, Loburn, Ashley, Sefton, Oxford West	3 - Low	\$225,800	\$225,800	\$0	\$0
2027	URU0011	Southbrook Transfer Station Replacement Sundries	3 - Low	\$306,300	\$0	\$306,300	\$0

<i>Year</i>	<i>Project ID</i>	<i>Project Name</i>	<i>Level of Confidence</i>	<i>Project Value</i>	<i>LOS Component</i>	<i>Renewals Component</i>	<i>Growth Component</i>
2028	URU0008	Southbrook Transfer Station Fencing Replacements	3 - Low	\$300,000	\$0	\$300,000	\$0
2028	URU0009	Southbrook Transfer Station Inwards Weighbridge Pit Replacement	3 - Low	\$154,500	\$0	\$154,500	\$0
2029	URU0030	Flood Protection Rangiora Landfill	3 - Low	\$310,000	\$310,000	\$0	\$0
2030	URU0001	Waste Minimisation Future Replacements	3 - Low	\$350,750	\$0	\$350,750	\$0
2030	URU0028	Closed Landfills Fencing	3 - Low	\$171,000	\$0	\$171,000	\$0
2032	URU0029	Closed Landfills Discharge Consent	3 - Low	\$150,000	\$0	\$150,000	\$0
2032	URU0034	Cleanfill Site Fencing, Access Road and Signage Improvements	3 - Low	\$186,000	\$186,000	\$0	\$0
Year 11 - 20				\$6,465,600	\$356,100	\$152,300	\$5,957,200
2035	URU0024	Oxford Transfer Station Weighbridge and Civil Works	2 - Very Low	\$356,100	\$356,100	\$0	\$0
2037	URU0048	Pump & Pump Station	3 - Low	\$32,300	\$0	\$32,300	\$0
2038	URU0032	Cleanfill Sites Resource Consents	3 - Low	\$120,000	\$0	\$120,000	\$0
2040	URU0037	Future Material Recoveries Facility	3 - Low	\$5,957,200	\$0	\$0	\$5,957,200
Year 31 - 50				\$120,000	\$0	\$120,000	\$0
2057	URU0035	Cleanfill Site Monitoring Bores	3 - Low	\$120,000	\$0	\$120,000	\$0
Grand Total				\$22,985,120	\$ 13,957,270	\$3,070,650	\$5,957,200

16. Financial Projections

Projected Expenditure

Figure 17 shows budgeted expenditure on routine operations and maintenance, renewals, and capital expenditure for Solid Waste Services, to 2053/54.

Note that there is a large fixed-price component to the operational and maintenance costs for Solid Waste. Only the quantity-dependent costs such as disposal and transportation charges would be affected if waste (particularly residual waste) quantities vary from predicted levels, whereas income is entirely dependent on quantities.

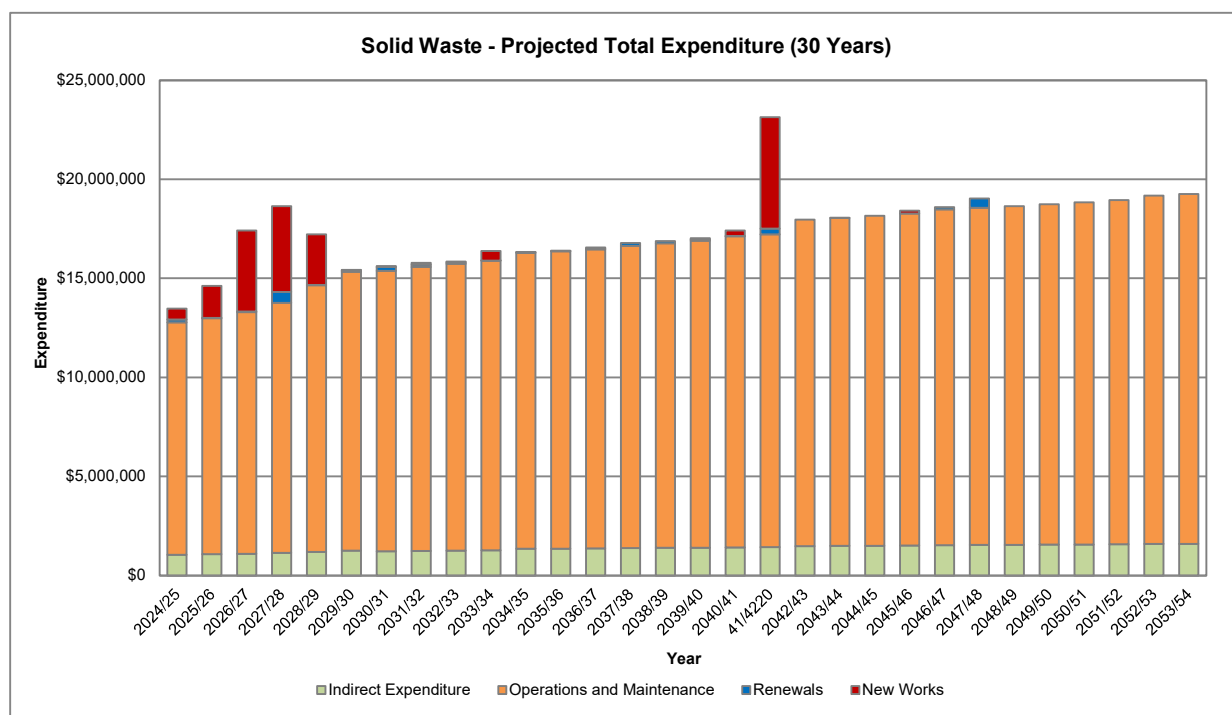
While the projected waste quantities have a Low confidence rating, projected expenditure has a Medium confidence rating until 2029/30 owing to the fixed-price operational and maintenance component of these costs and then a Low confidence rating as the new facilities operations contract will commence at that time.

In the graph, operational costs include operations and maintenance, and indirect expenditure.

Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, interest and internal overhead costs.

Capital includes expenditure for growth, levels of service and renewals, but excludes carry forwards. The budgets are not adjusted for inflation.

Figure 17: Projected Expenditure



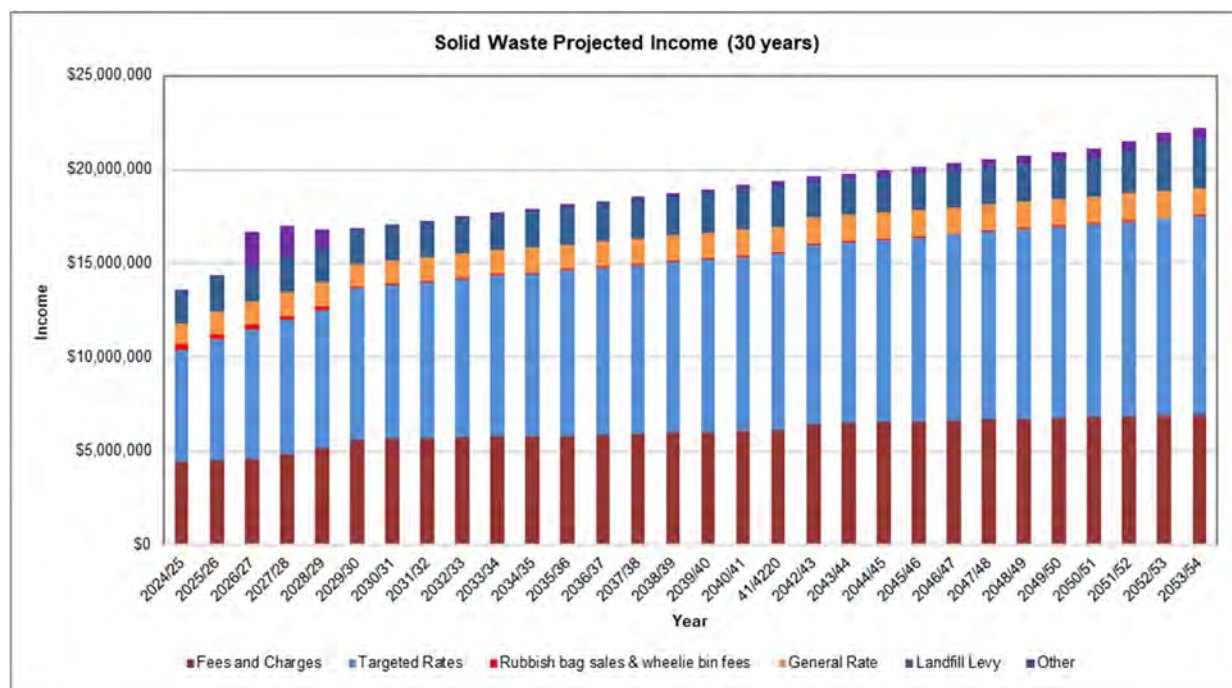
17. Projected Income from Rates and Gate Charges

It is difficult to project rates and gate charges for waste services, given the uncertainties involved with future waste minimisation initiatives, their costs and their effectiveness at reducing the quantity of waste being sent to landfill.

Figure 18 presents the projected general and targeted kerbside collection rates and income from sale of rubbish bags, transfer station charges, waste minimisation charges and landfill levy. Note that these rates and charges have been set as required to fund the above operational and maintenance costs and the capital works.

If waste (particularly residual waste) quantities were to vary from predicted levels income would be affected as there is a direct correlation between the quantity of waste being disposed of at the RRP and transfer station and the income at these sites.

Figure 18: Projected Income



18. Improvement Plan

Table 10 details activity specific improvements recommended to address a number of management issues identified in this AMP. Each improvement item has been tagged to either a capital project or, a process improvement project to help manage and track Councils response.

Projects have been given a priority in Table 10. High priority projects are where budgets have been allowed for, and it is expected that the work will be completed within the first three years of the 2024/34 LTP. The medium priority category indicates that the project is programmed for the years 4 to 10 of the 2024/34 LTP.

Table 10: 2021 AMP Improvement Plan

Project Ref	AMP Section	Project Description	Priority	Status	Estimated Cost
SWIP01	Risk Assessment / Climate Change	Undertake a lifelines assessment to better identify key risks and required mitigation measures for a natural disaster	High	Planned for 2024-2027	N/A
SWIP02	Risk Assessment	Update Risk Assessment using common risk approach. Develop high level framework, seek update of hazard information.	High	Planned for 2024-2027	N/A
SWIP03	Asset Criticality	Assess the criticality of assets at a component level	Medium	Planned for 2027/28 onwards	\$15,000
SWIP04	Asset Condition	Prepare a condition assessment programme and carry out a condition assessment for all facilities	High	Planned for 2024/25 onwards	\$15,000
SWIP05	Capacity & Performance	Undertake a capacity assessment of Southbrook RRP, Oxford TS, and cleanfill disposal sites	High	Planned for 2024-2027	\$15,000
SWIP06	Valuation Improvements	Undertake a detailed valuation at component level of the Southbrook Resource Recovery Park and Oxford transfer station	High	Planned for 2024-2027	\$7,500
SWIP07	Service Management	Review the effectiveness of waste minimisation action plans in the current Waste Management & Minimisation Plan, as part of legislated 6-yearly Waste Assessment and WMMP review	High	Planned for 2024/25	N/A
SWIP08	Risk Assessment / Climate Change	Confirm natural hazard information at facilities and closed landfill sites	High	Planned for 2024/25 onwards	\$15,000
SWIP09	Asset Condition	Define asset data and spatial accuracy requirements for all Solid Waste assets	Medium	Planned for 2024-2027	N/A
SWIP10	Asset Condition	Carry out asset inventory check at all facility sites. Record key attributes and condition, and functional descriptions	Medium	Planned for 2024-2027	\$15,000
SWIP11	Asset Condition	Establish documentation that specifies asset data that must be included in As Built information supplied to AIM team	High	Planned for 2024-2027	\$7,500

Project Ref	AMP Section	Project Description	Priority	Status	Estimated Cost
SWIP12	Growth Projections	Modelling improvements for waste & population forecasts, renewals model	Medium	Planned for 2027/28 onwards	N/A
SWIP13		Develop system to store and manage consent information	High	Planned for 2024-2027	\$7,500
SWIP14		Undertake/update Asset Management Maturity Assessment	Medium	Planned for 2027/28 onwards	\$7,500
SWIP15		Review Improvement Plan on 3-year cycle	High	Planned for 2025/26	N/A

As an adjunct to this section the 10 key questions that Audit NZ have advised should be responded to, as a high level check on the adequacy of Asset Management Plans, has been reproduced below in Table 11 with responses. Additional improvement projects are included in Table 10 that fill gaps identified through this process. (NB from 2021 AMP)

Table 11: Audit NZ Questions and Responses

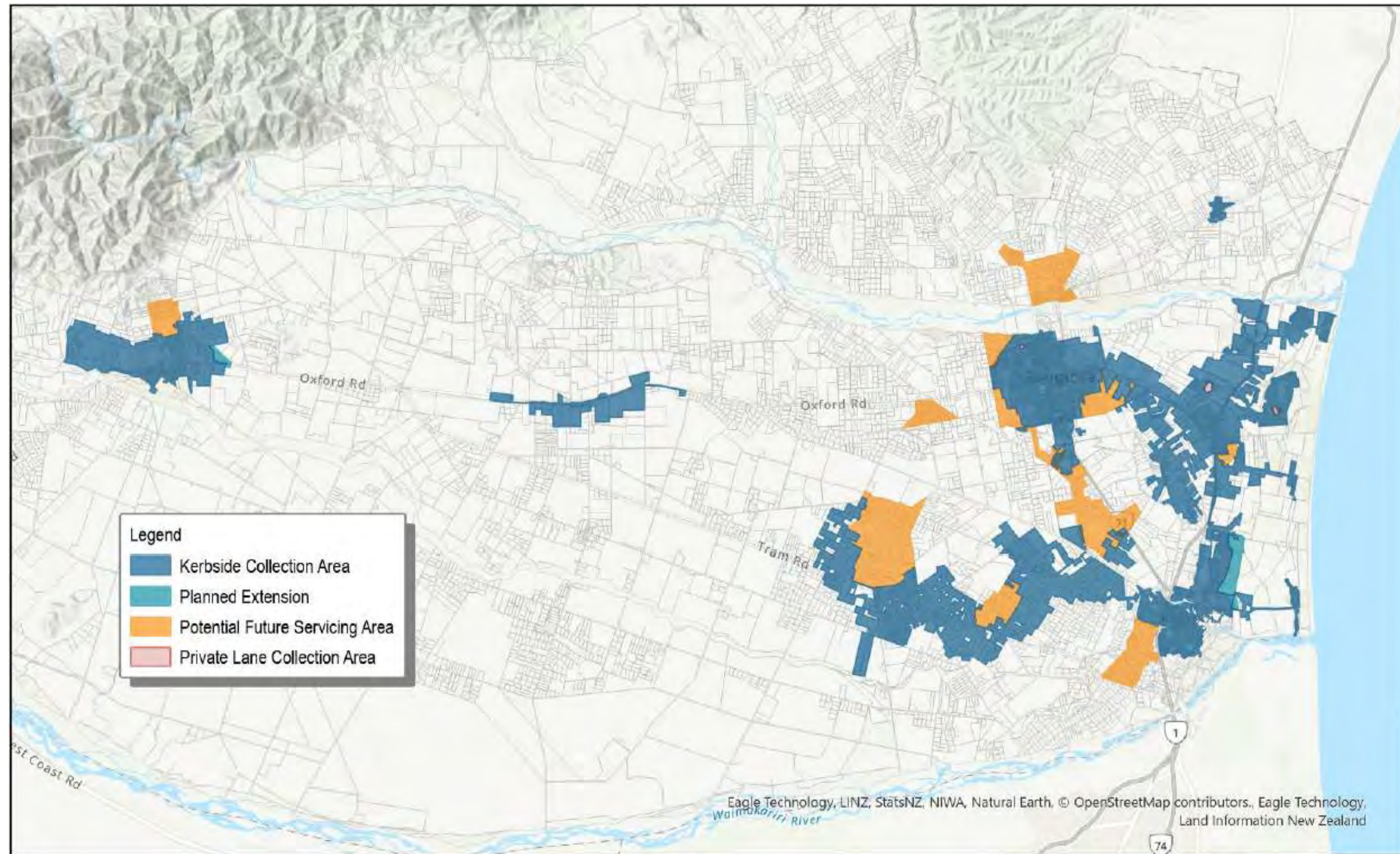
Audit NZ Question	Response
1. Have you got a strategy for the long-term sustainability of your assets?	<p>Council has Activity Management Plans that are reviewed in house, at three yearly intervals, that contain a renewals assessment and funding model that ensures the long term sustainability of its solid waste assets.</p> <p>Solid Waste Asset Management processes do need improving, and this has been recognised with the planned stage 2 of the Asset Management Information System project that will be extended to include Solid Waste assets.</p>
2. Have you set an asset management policy?	Yes. TRIM link to policy
3. Do you have good quality up-to-date asset management plans for achieving your strategy?	Yes. These are comprehensively reviewed every three years and submitted for peer review.
4. Does your organisation have appropriate asset management skills and experience?	Yes. A dedicated asset manager is responsible for the management of the relevant assets.
5. Do you know the reliability of your asset information?	Yes. Facility asset data is not reliable, and the need for a comprehensive assessment of all facility assets has been recognised and planned for in the improvement programme.
6. Do you have a structured approach to assessing the condition and performance of your assets?	Not currently for Solid Waste. The average age of its assets is relatively young, and the condition of solid waste assets has not as yet been undertaken. This has been recognised and planned for in the improvement programme.
7. Have you defined a clear and comprehensive set of service levels to be delivered or supported by the assets?	Yes. These are reviewed and approved by Council in conjunction with the three yearly AMP review.
8. How well do you forecast future demand for the services that are delivered or supported by your assets?	Demand forecast is largely based on growth projections and past trends. Improvements could be made by considering other factors such as for example demographic changes, and changing technologies.
9. Do you report, and get reports, on achievement of your asset management plan(s)?	<p>Key Levels of Service are reported quarterly to Council, and other LOS are reported annually to Council.</p> <p>Asset Management Plans themselves are peer reviewed.</p>

10. Do you have a backlog of repairs, maintenance, and asset renewals? And what are you doing about it?	No. The Asset Management Plan process delivers approved budgets that to date have been sufficient to ensure that there is no appreciable maintenance backlog, and that fully funds future renewals
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APPENDIX A: KERBSIDE COLLECTION AREA PLANS**A.1 District Map showing Location & Extent of Kerbside Collection Areas**

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A.1 District Maps showing Location & Extent of Kerbside Collection Areas



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Meters

Scale: 1:180,000
Original Size: A4

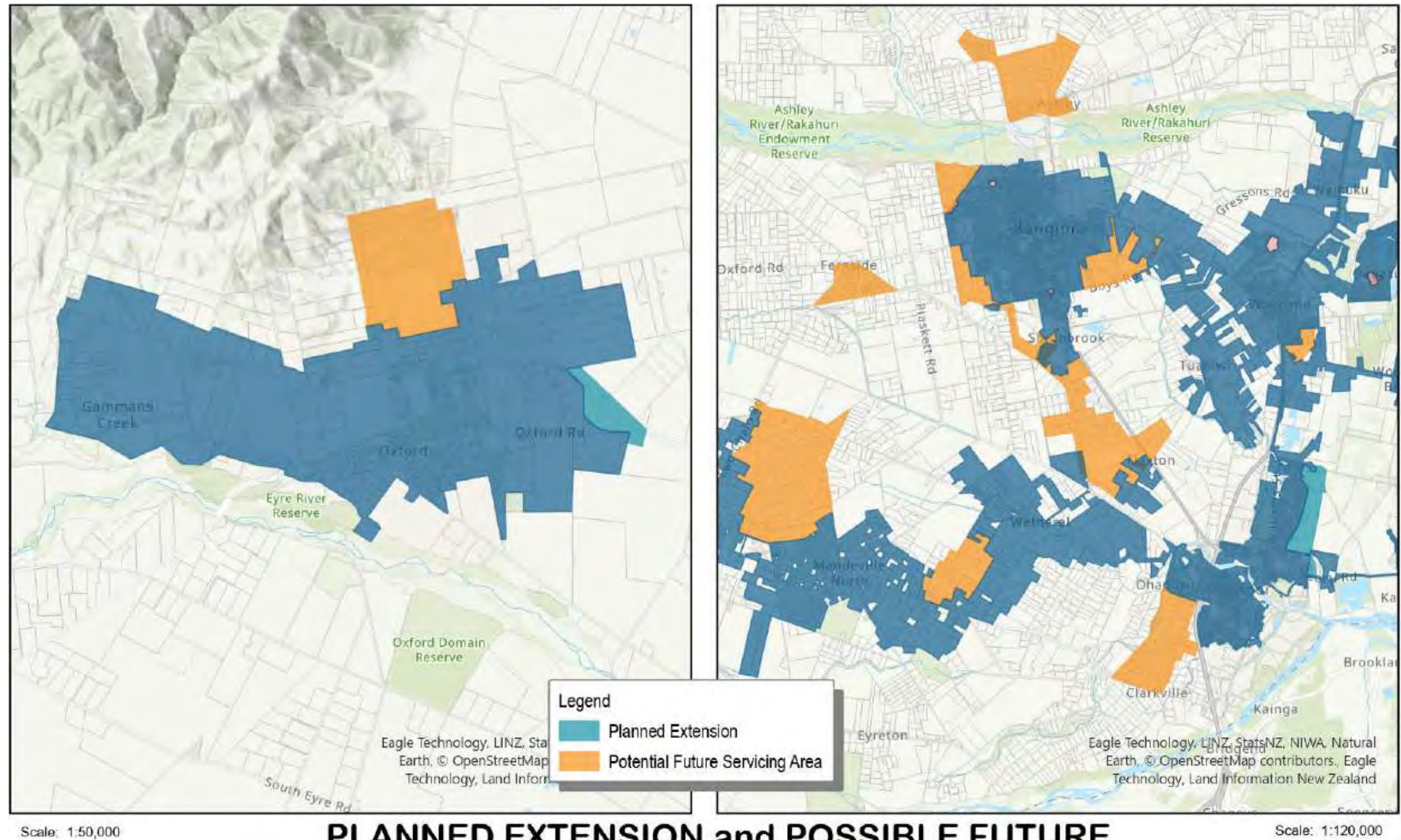
KERBSIDE COLLECTION AREAS

Activity Management Plan | Overview Map | As of June 30, 2023 | GEOS-2254

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PLANNED EXTENSION and POSSIBLE FUTURE KERBSIDE COLLECTION AREAS

Activity Management Plan | Overview Map | As of June 30, 2023 | GEOS-2254



Original Size: A4

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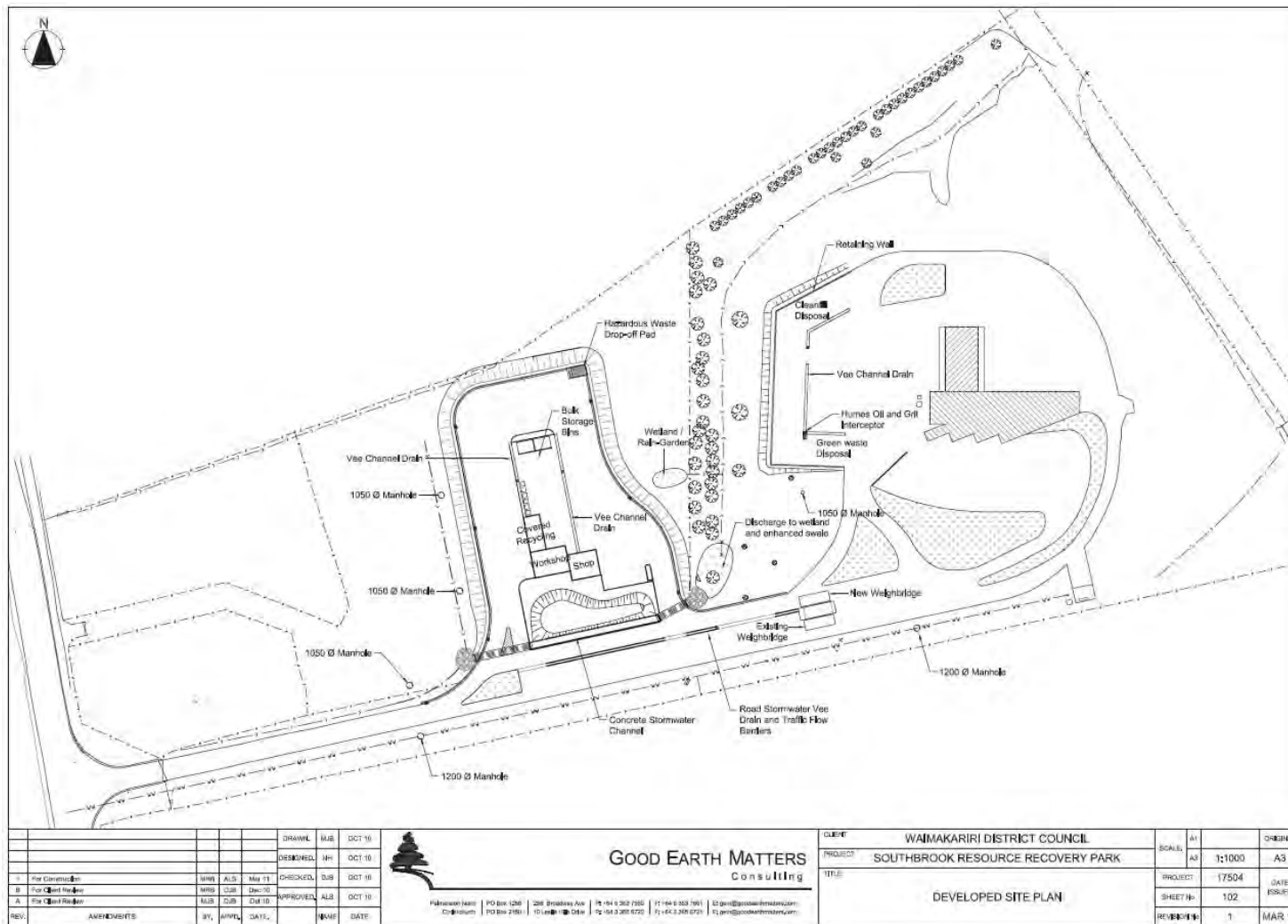


APPENDIX B: DISPOSAL FACILITY LAYOUT PLANS

- B.1 Southbrook RRP and Transfer Station
- B.2 Oxford Transfer Station
- B.3 Sutherlands Pit Cleanfill Site
- B.4 Garterys Pit Cleanfill Site

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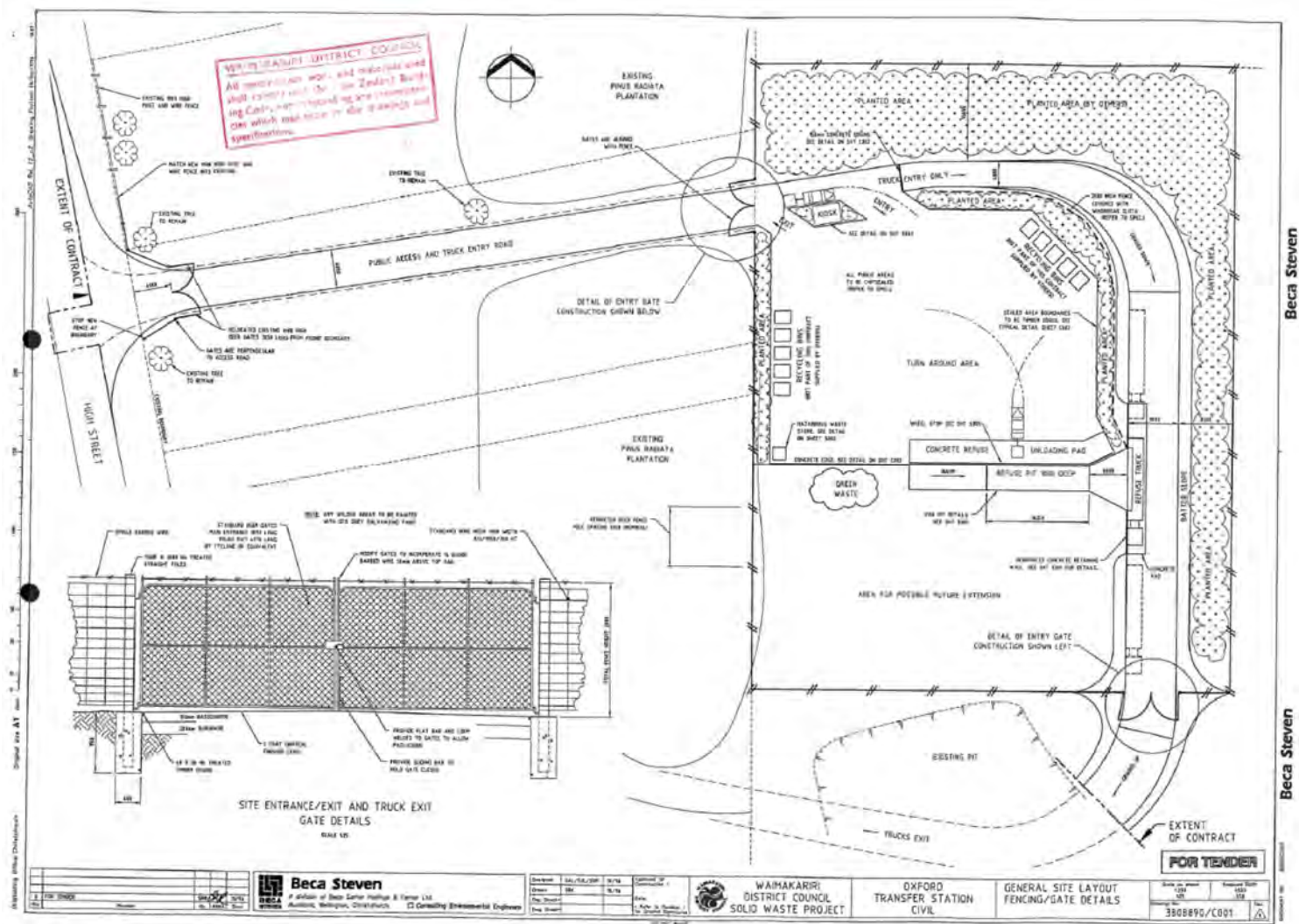
B1.1 Southbrook RRP Design Layout



B1.2 Southbrook RRP Aerial Photo (2023)

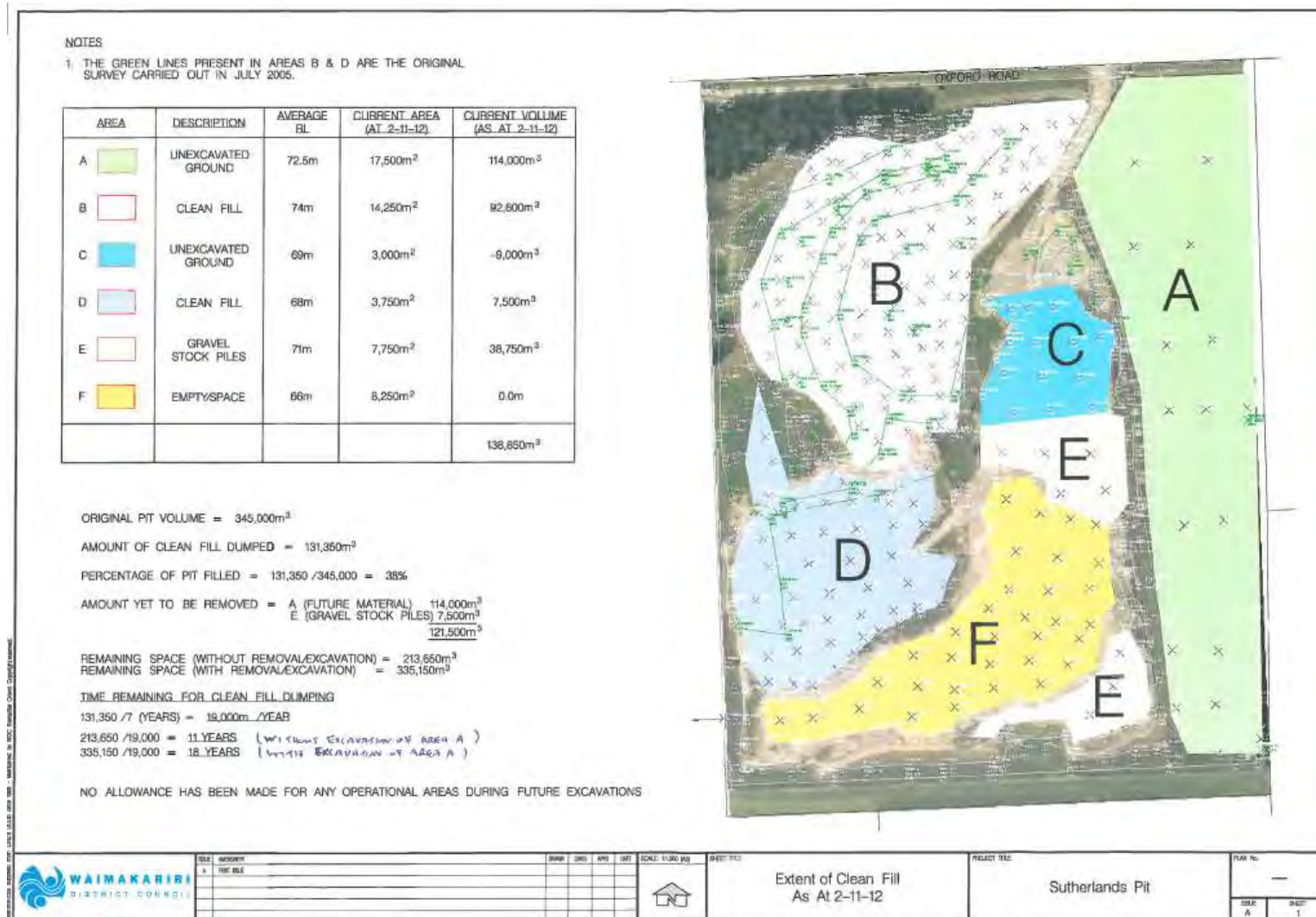


B2.1 Oxford Transfer Station Design Layout



B2.2 Oxford Transfer Station Aerial Photo (2023)

B.3.1 Sutherlands Pit Cleanfill Site Capacity Plan



B3.2 Sutherlands Pit Aerial (2022)

B4 Garterys Pit Aerial (2022)

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Activity Management Plan 2024

Stock Water Race Scheme

3 Waters | July 2024





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Action	Name		Signed	Date
Prepared by	Dan Lewis	Land Drainage Engineer		17/01/2024
	Chris Bacon	Network Planning Team Leader		17/01/2024
Reviewed by	Kalley Simpson	3 Waters Manager		17/01/2024
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Contents

1.	Executive Summary	5
2.	Introduction.....	5
3.	Scheme Description (What Do We Have?).....	6
4.	Scheme Management Issues (What do we need to consider?).....	10
4.1	Levels of Service	10
4.2	Asset Condition	15
4.3	Asset Criticality.....	16
4.4	Risk Assessment	16
4.5	Growth Projections	16
4.6	Capacity & Performance	17
5.	Future Works and Financial Projections (What do we need to do?)	17
5.1	Operation & Maintenance	17
5.3	Capital Works	21
5.4	Financial Projections	23
6.	Improvement Plan	25
6.1	2021 Improvement Plan	25
7.	Future challenges	26
	Appendix 1: Long Term Plan Stock Water Performance Measures.....	27

Tables

Table 1: Key Asset Management Components.....	5
Table 2: Waimakariri District Council Ownership.....	7
Table 3: Key Statistics 2022/23	7
Table 4: Levels of Service Targets and Performance Measures	11
Table 5:Planned Budget versus Renewals Model Recommendations 2024-34	20
Table 6: Summary of Capital Works (Includes Renewals)	22
Table 7: Replacement Costs and Annual Depreciation.....	23
Table 8: 2021 AMP Improvement Plan	25

Figures

Figure 1: Stock Water Races Rated Properties	9
Figure 2: Remaining Useful Life Profile by Replacement Value.....	15
Figure 3: Annual Stock Water Operation & Maintenance 30-Year Budget.....	18
Figure 4: Annual Stock Water Renewals 150-Year Budget.....	19
Figure 5: Projected Capital works Expenditure	21
Figure 6: Projected Expenditure	23

1. EXECUTIVE SUMMARY

The following table provides a summary of the key asset management issues of the stockwater race system identified through consideration of the levels of service, consents, asset condition, risk analysis, disaster resilience, growth projections, and capacity assessment:

Table 1: Key Asset Management Components

Levels of Service	Some levels of service are not being achieved for the stock water races. These mainly pertain to nuisance and threatening flooding of adjoining property or roads and associated complaints that occur during extreme rainfall events, over which WIL has no control. Consideration needs to be given to reviewing the levels of service
Resource Consents	The activity complies with its resource consent conditions.
Asset Condition	Condition of hard stockwater assets such as pipes and culverts is based on asset age, and material type. Knowledge of these assets is not good. Water races themselves are maintained in perpetuity and not assessed for condition
Risk Assessment	A risk assessment was last carried out in 2011. An updated process has been developed, with the risk analysis currently in progress. Expected to be completed across all of Council's water activities in 2024
Growth Projections	There is a shift from large farms to life style properties within the scheme. This translates into an increase in rated properties and static stock water demand.
	Intensive farming relies less on stock water due to on farm reticulation. This translates into races delivering stock water that are seen as an environmental liability.
Capacity & Performance	Construction of a new major irrigation storage pond is planned by WIL which will increase irrigation scheme reliability during drought years. However, there is no formal provision for stock-water supply from this pond.

2. INTRODUCTION

The purpose of this Activity Management Plan (AMP) is to outline the significant assets and issues associated with the stock water race system and show how the Council proposes to manage these in the future.

This plan summarises the various components of the stockwater race system, its condition and performance, and identifies future funding requirements including upgrades where necessary.

The data that has been relied upon to produce this document was taken at the end of the 22/23 financial year. i.e 30 June 2023.

Further details of the asset management practices used by Council to manage its rural drainage assets are contained in the Rural Drainage Activity management Plan 2024 .

Projects identified to improve asset management processes for this scheme that will also benefit the performance of the other 3 waters schemes are managed at a District level for efficiency.

Projects are also identified within this AMP that will maintain or improve levels of service.

All figures within this AMP exclude inflation

3. SCHEME DESCRIPTION (WHAT DO WE HAVE?)

The water race network consists of an open channel system, taking water from the Waimakariri River at the Browns Rock intake. It comprises of a stock water scheme owned by the Waimakariri District Council (Council) and an irrigation scheme owned by Waimakariri Irrigation Ltd (WIL).

WIL are contracted by Council to manage the stock water scheme operations and maintenance. Refer to Trim [080721022383](#) for a copy of the contract document.

The stock water scheme takes 2.1 cumecs of water and delivers it to approximately 44,000 hectares of land for stock drinking water purposes. In addition there are two small takes each of 28 litres per second on the Cust River at Patersons Road and upstream of Stokes Bridge on the Rangiora Oxford Road.

The area supplied lies between the Waimakariri and Ashley rivers, east of Burnt Hill and Oxford and west of Rangiora and Eyreton.

The irrigation scheme supplies an additional 11.041 cumecs of water to approximately 23,000 hectares of land for irrigation. Within this allocation, 1.5 cumecs can be discharged into the Eyre River for ground water replenishment if requested by Environment Canterbury.

WIL and the Council share the water race assets that make up the stock water and irrigation networks. The asset ownership ratio is based on a historic water use split of 32% Council and 68% WIL. Council plan to review the Service Level Agreement with WIL, which will also include a review of asset ownership.

The percentages of Waimakariri District Council ownership of assets as indicated in the 2022 asset valuation of stock water races are shown in the table below. Note that the valuation was carried out one year earlier than the normal three year interval on account of the current high inflation levels

Table 2: Waimakariri District Council Ownership

Asset	Council Ownership
Channel	100%
Bridges & Culverts in Farm	0% & 32% respectively
Bridges & Culverts in road reserve	100% & 32% respectively
Tunnel Intake (but not valued as no replacement programme)	100%
Resource Consents for Stock Water	100%
Syphon	32%
Weir & Gate Structures	32%

Some key statistics (2022/23 year) of the scheme are shown in Table 3. Table 4 shows other Council documents relevant to this AMP. A plan of the stock water race network is available at the following link: [Stockwater Map](#). Stockwater rated properties are available in the [AMP Plans and Figures Viewer](#).

Table 3: Key Statistics 2022/23

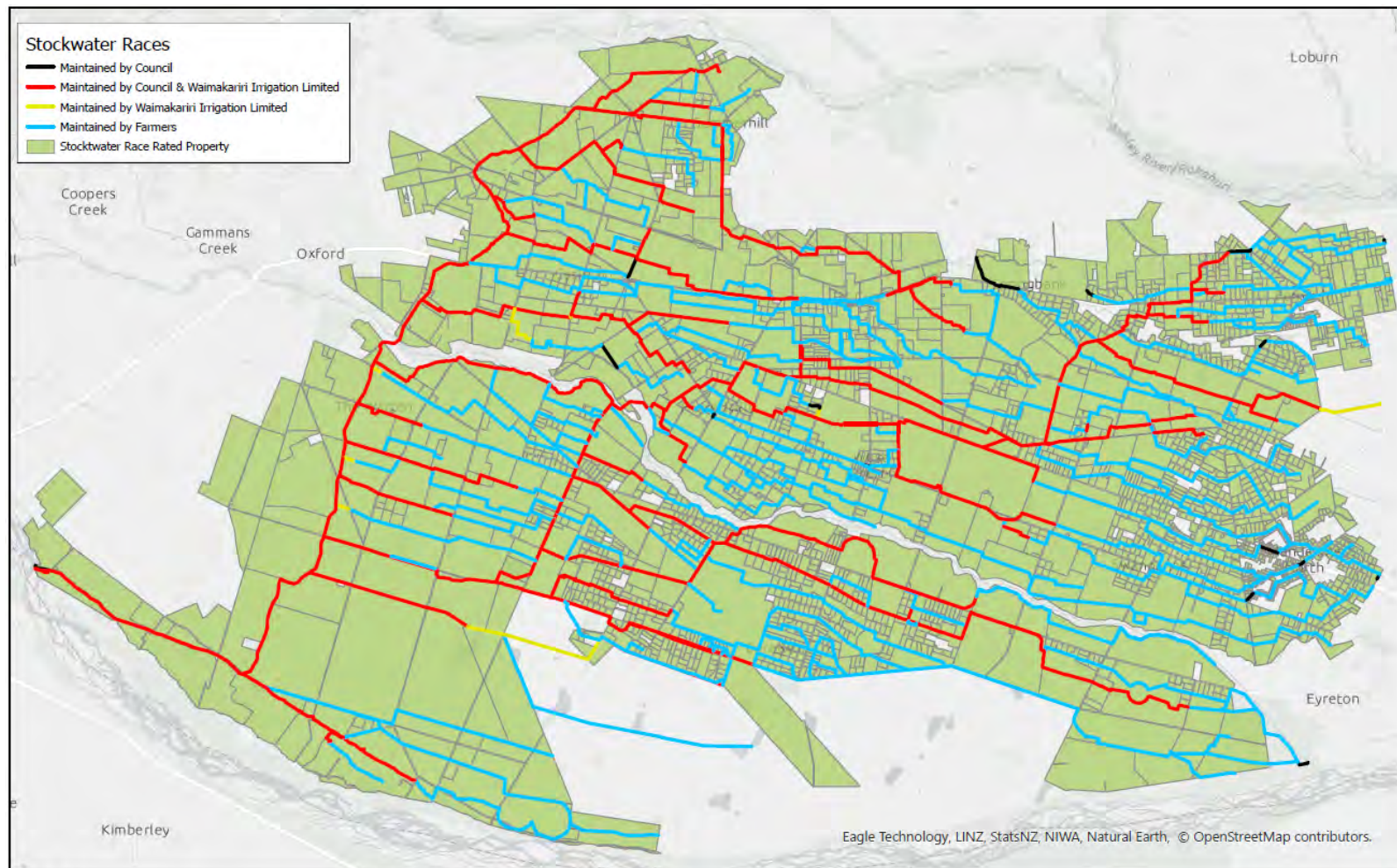
Group	Type	Quantity	Data Source
Area	Rated	42,730 Ha	Rates Strike 2022/23
Rates	Rated Properties	1,673	
	Properties < .4046 hectares	93	
	Properties > .4046 hectares	1499	
	Special Rate	5	
Valuation - Races (non-depreciating)	Length (Races)	828km	Water Races Asset Valuation 2021/22
	Replacement Cost	\$12.6 Million	
	Depreciated Replacement Cost	\$12.6 Million	
Valuation – Other Assets (depreciated)	Replacement Cost	\$6.3 Million	Water Races Asset Valuation 2021/22
	Depreciated Replacement Cost	\$4.3 Million	
Intakes	Waimakariri River - Browns Rock	1	
	Cust River – Stokes Bridge	1	
	Cust River – Patersons Road	1	
Gates / Weirs	Total	33	

Siphons	Total	68 (1.89km)	Water Races Asset Valuation 2021/22
Culverts	Road	401 (5.66km)	
	Farm	110 (0.98km)	
Intake Control	Total	1	
Consents – Take Water	Browns Rock Intake	CRC133965 (Expires 2039)	3 Waters Consents Database
	Cust River at Patersons Road	CRC012084 (Expires 2039)	
Consents – Discharge Water	Discharge – Various Locations	11 Consents (Various Expiry Dates)	

Table 4: Related Council documents

Data Reference	Trim Reference
Agreement in Relation to Management of Water Race System: Waimakariri District Council and Waimakariri Irrigation Limited 29 November 2000	080721022383
Water Races Asset Valuation 2021/22 (section 10)	220803132120
3 Waters Consents Data spreadsheet	230705100599
513 Wrights Road Resource Consent Decision Irrigation Storage Pond for Waimakariri Irrigation Limited	141006108705
Waimakariri Irrigation Limited Annual report for year ending June 2022	231107177954
Waimakariri Water Race System Operations and Maintenance Manual July 2007	070910029035
Waimakariri Stockwater Scheme Efficiency Audit	041110016
Compliance Monitoring Report for Browns Rock water Intake July 2020.	200727094289

Figure 1: Stock Water Races Rated Properties



0 2000 4000
Meters

Scale: 1:140,000
Original Size: A4

Stockwater Race Rated Properties

Date: 5/02/2024

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4. SCHEME MANAGEMENT ISSUES (WHAT DO WE NEED TO CONSIDER?)

There are a number of key aspects to consider when managing the stock water race network; these include:

- Desired & actual levels of service
- Asset condition & Criticality
- Risks associated with the service
- Growth predictions for the scheme
- Capacity & performance of the service

These issues have been assessed in detail and are summarised in the following sections

4.1 Levels of Service

The levels of service measures included in the table below are reported on in the WIL Monthly Reports with latest results from 2022/23 shown.

Table 5 sets out the performance measures and targets for the stock water race activity, and records current and past achievement against those targets.

Taken from the 22/23 WIL end of June monthly report

Table 4: Levels of Service Targets and Performance Measures

Level of Service	2021-2023 Performance Measure	2021-2023 Target	2023				Previous Results [#]			
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011
Scheme efficiency	Independent efficiency assessment to determine losses within the system	High rating	-	Scheme efficiency rated "Medium to High" in a 2004 Audit. No subsequent audit has been carried out.	Unknown	Include in review of levels of service	Y	Y	Y	Y
The stockwater race system is managed to an appropriate standard.	The number of water outages exceeding 24 hours duration	Nil	23	The outages were related to the debris blockages following the significant rainfall in July, high winds causing trees to topple in September, damage to the Stoke intake weir in October, managing flows during water restrictions in January / February, race failure in Pestors Road in March and shut down of the intake structure for	Improvement required.	Improve service request reporting to allow better analysis of why performance measures are not met. Review contractor reporting at next iteration of contract.	Nil	N	N	N

Level of Service	2021-2023 Performance Measure	2021-2023 Target	2023				Previous Results [#]			
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011
				inspection and maintenance in May.						
	The percentage of service requests responded to within 48 hours	95%	99%	429 of the 434 service requests received this year were responded to within 48 hours.		Target reduced in 2021 to 95%. See report 200406043184	N	N	Y	-
Flooding-Roads	No flooding of any road adjacent to a water race	None occurred	38 service requests received for flooding roads	Flooding of roads can be a result of blocked culverts, high flows due to storm events or flow management.	Improvement required.	Improve service request reporting to allow better analysis of why performance measures are not met. Review performance measure as current reporting includes flood events.	N	N	N	N
Flooding-Private property, non threatening	No flooding of any property non-threatening to any stock or chattels	None occurred	93 service requests received for non-threatening flooding properties	Flooding of any property can be a result of blocked culverts, high flows due to storm events or flow management.	Improvement required.	Improve service request reporting to allow better analysis of why performance measures are not met. Review performance measure as	N	N	N	N

Level of Service	2021-2023 Performance Measure	2021-2023 Target	2023				Previous Results [#]			
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011
						current reporting includes flood events.				
Flooding-Private property, threatening	No flooding of any property threatening to any stock or chattels	None occurred	30 service requests received for threatening flooding of properties	Flooding of any property can be a result of blocked culverts, high flows due to storm events or flow management.	Improvement required.	Improve service request reporting to allow better analysis of why performance measures are not met. Review performance measure as current reporting includes flood events.	N	N	N	N
Continuity of supply	No closure or blockage of the main stock water race intake	None occurred	Intake closed for total of 5 days.	Closure due to high flows in the Waimakariri River. Intake closed to prevent damage.	Improvement required.	Review LoS so issues that cannot be controlled by WIL are excluded	N	N	Y	Y
Continuity of supply	No blocked intake at the tunnel	None occurred	Pass	-----	Achieved	N/A	Y	Y	Y	Y

Level of Service	2021-2023 Performance Measure	2021-2023 Target	2023				Previous Results [#]			
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011
Culvert maintenance	No blocked culverts at any time	None occurred	134 blockages reported	Blocked culverts can occur throughout the network. Most often caused by poor race cleaning frequencies.	Not achieved	Improve maintenance awareness of landowners.	N	N	N	N
Water Quality	No complaints about race failure, dirty water or odours	None occurred	1 reports of race failure, dirty water or odours	1 case recorded, but insufficient additional information recorded to be useful for analysis or planning improvements	Not achieved	Improve service request reporting to allow better analysis of why performance measures are not met. See IP057.	N	N	N	N
Consent Breach	Resource Consent Breaches leading to minor adverse effects: Target - 0	None occurred	Pass	No breaches reported.	Achieved	N/A	Y	Y	Y	Y
Consent Breach	Resource Consent Breaches leading to significant adverse effects: Target - 0	None occurred	Pass	No breaches reported.	Achieved	N/A	Y	Y	Y	Y

4.2 Asset Condition

The stock water race system consists of an intake tunnel, open races, pipes, culverts, drop structures, gates and siphons.

Once created, the stockwater open races are considered to have an unlimited life and only require maintenance intervention to ensure ongoing performance. For this reason the water races are not subject to depreciation.

The remaining man-made assets are subject to deterioration and have a finite lifecycle which needs to be carefully managed to ensure good performance from the assets. Asset condition is monitored and managed using remaining useful life profiles informed from the Councils 3 yearly infrastructure revaluation. Insufficient information is recorded about actual asset condition.

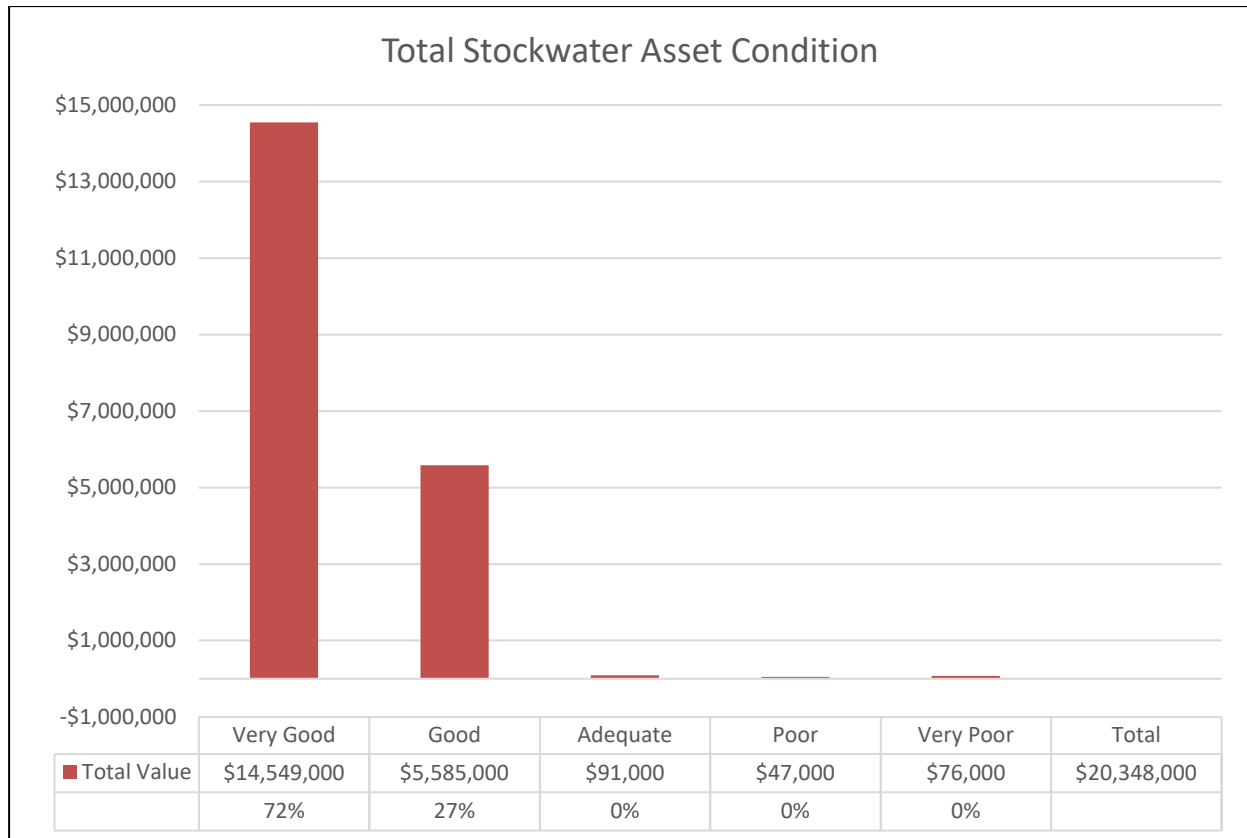
Approximately 2kms of open channel through Cust has been converted over time to a piped network by private landowners. Much of this is in short pipe lengths of unknown size, material and condition.

Funding of a CCTV programme is included in annual budgets to survey the piped network, culverts and siphons and assign evidence based condition ratings. As data is gathered and analysed, this can be used in the renewals model.

There is also a programme of culvert replacement managed by WIL based on a set annual budget.

Figure 2 below illustrates the remaining useful life profiles for the man-made water race assets (excluding open channels) based on component age and asset design life.

Figure 2: Remaining Useful Life Profile by Replacement Value



Parameter	Very Good (Grade 1)	Good (Grade 2)	Adequate (Grade 3)	Poor (Grade 4)	Very Poor (Grade 5)
Definition	<i>More than 80% of life remaining</i>	<i>Between 50% and 80% of life remaining</i>	<i>Between 20% and 50% of life remaining</i>	<i>Between 10% and 20% of life remaining</i>	<i>Less than 10% of life remaining</i>

4.3 Asset Criticality

Asset criticality provides an indication of the importance of an individual asset and the corresponding impact on the service delivery should the asset fail for any reason. Criticality is used in risk based investment decisions to help decide when an asset should be replaced to avoid the consequences of failure.

The stock water assets have not yet been assessed for criticality. The Council will consider the timing and best process for assigning criticality to assets in collaboration with WIL.

4.4 Risk Assessment

A risk assessment was last carried out in 2011 for the stock water race system. The key output from the risk assessment is the identification of any extreme and high risks to the delivery of stock water, which need to be mitigated.

A total of 50 possible events were assessed for their “risks to the delivery of stock water in the following categories:

- Intake
- Distribution
- Discharge
- Management

A Risk Assessment Update project is under way. A risk assessment process has been developed that integrates the existing operational risk assessment process with the disaster resilience assessment with the objective of reducing duplication and making updates simpler. It is expected the new risk analysis across all of Council’s water activities will be completed in 2024

4.5 Growth Projections

There has been a trend towards conversion of large farms into smaller life style blocks within the district for a number of years. This has translated into a steady increase in the number of properties rated for stock water.

The life style block profile generally follows a decrease in stocking rates and stock water while increasing demand for recreational and irrigation water. The Council considers that the overall demand for stock water has remained static throughout this behavioural shift.

The increased demand for domestic irrigation water is being managed by the Council through an application process to take additional water and, restricting the offtake pipe diameter to 20 mm per property. The Council maintains a register of properties granted this right and monitors the presence of offtakes in collaboration with WIL to help prevent the misuse of stock water.

The increase of intensive farming has led to less reliance on stock water due to on farm reticulation. Races are often seen as a liability due to increased environmental outcomes. Many races are being relocated around the perimeter of properties. Requests from owners to fence and plant riparian areas are also being received.

4.6 Capacity & Performance

The capacity of the stock water system is a function of the resource consent conditions and water race conveyance potential. Given the demand for water in the catchment, it is considered unlikely that Council will be seeking consent to take additional water for stock purposes in the near term. This effectively caps the supply of water that can be offered to stock water customers.

The performance of the existing networks is considered to be good with most channels requiring only annual maintenance to optimise their performance.

The culvert replacement programme includes extending the width of some existing culverts to cross the road corridor and pass under any adjacent fences. This was in response to sections of water race being vulnerable to blockages from material being caught in the fence and impeding flow in the water race.

In 2014 WIL sought to obtain resource consent to construct two new storage ponds of up to 8.2 million cubic metres capacity at its Wrights Road and Dixon's Road property. Consent was granted in August 2020, although a decision to proceed with construction has yet to be made. There has been an increase in the number of on farm storage ponds in the intervening years since the consent was first applied for.

A 2004 audit rated the scheme as operating at a medium to high level of water efficiency (medium to low water losses).

5. FUTURE WORKS AND FINANCIAL PROJECTIONS (WHAT DO WE NEED TO DO?)

This section covers the future works required to meet the target levels of service, maintain the asset in an acceptable condition, reduce the risks to an acceptable level and accommodate growth.

5.1 Operation & Maintenance

Maintenance of stockwater races is separated into three areas of responsibility; Council, Waimakariri Irrigation Ltd (WIL) and property owners. These are shown on the stockwater map (available here: [Stockwater Map](#)). The red lines denote races that are physically maintained by WIL, but costs are shared.

In summary, Council are responsible for some feeder races or where a race does not supply stockwater to the adjacent property through which it runs. Waimakariri Irrigation Ltd are responsible for all races supplying a combination of irrigation and stockwater and property owners are responsible for races supplying stockwater. This includes races located within the adjacent road reserve. Maintenance of structures such control gates, piped races and road culverts is the responsibility of Council. Council maintenance is undertaken by WIL under the existing service level agreement.

Encouraging property owners to maintain races is an ongoing concern. Reliability of the supply is impacted by poor maintenance. Educational information explaining best practice for maintenance methods, is made available on the Council website for land owners who are responsible for conducting stockwater race maintenance.

The fact sheet that the Council makes available is here: [Stockwater Races - Maintenance-and-Biodiversity.pdf](#)

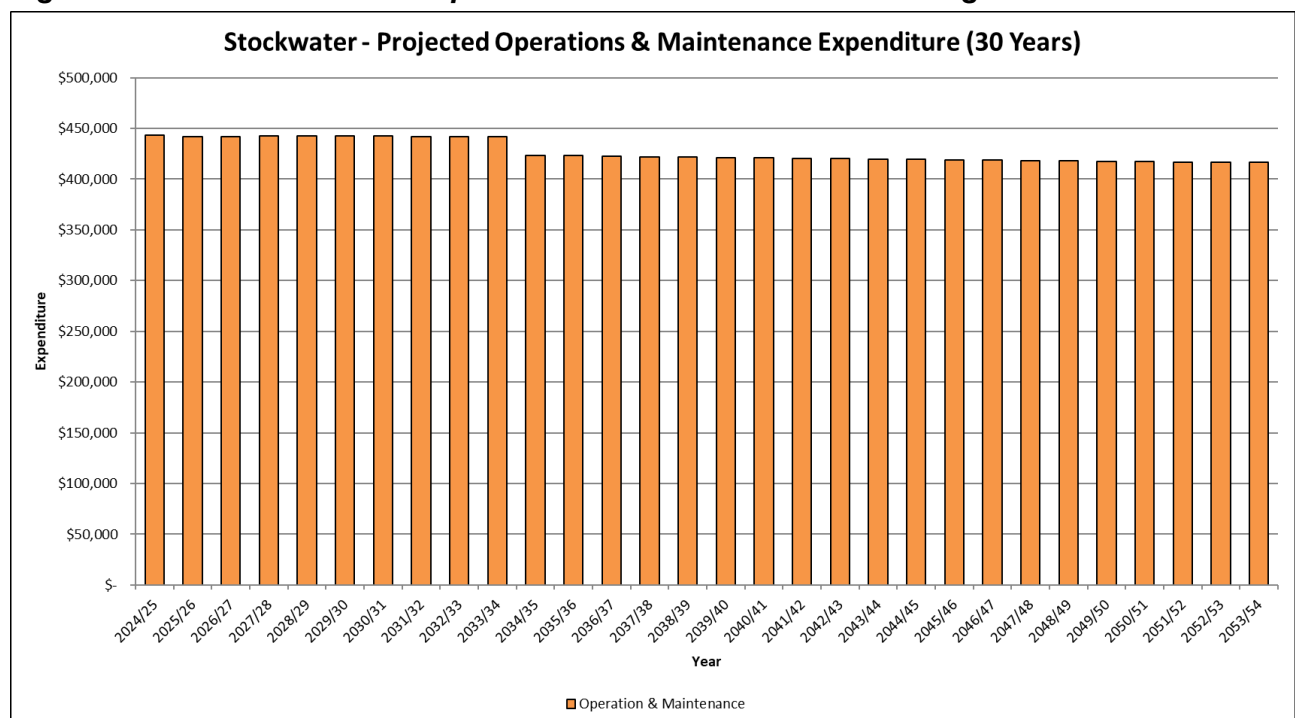
Maintenance of the open channel and closed pipelines within the Cust village is an issue. Many properties have incorporated the open channel into landscaping which restricts the ability to access the race for maintenance. Cleaning of pipes requires specialised truck mounted equipment to remove silt from the pipe.

The following 30 year graph showing the current maintenance programme is largely reactive with a programme of annual maintenance including user education.

The operations and maintenance budgets are generally kept the same as the previous year unless some known specific item causes a fluctuation.

Systems are not yet in place to capture the cost distinction between planned and unplanned maintenance.

Figure 3: Annual Stock Water Operation & Maintenance 30-Year Budget



5.2 Renewals Programme

Renewal expenditure is work that does not increase the capacity of the existing assets, rather it restores the system to its original capacity.

The renewals programme is determined in two stages. The renewals model, details of which are provided in the overview document, provides a long term view of the income required to ensure that a renewals fund is sufficient to enable future asset renewals, without needing to borrow. This is shown in Figure 4. The graph shows that the depreciation funding is sufficient to fully fund future renewals.

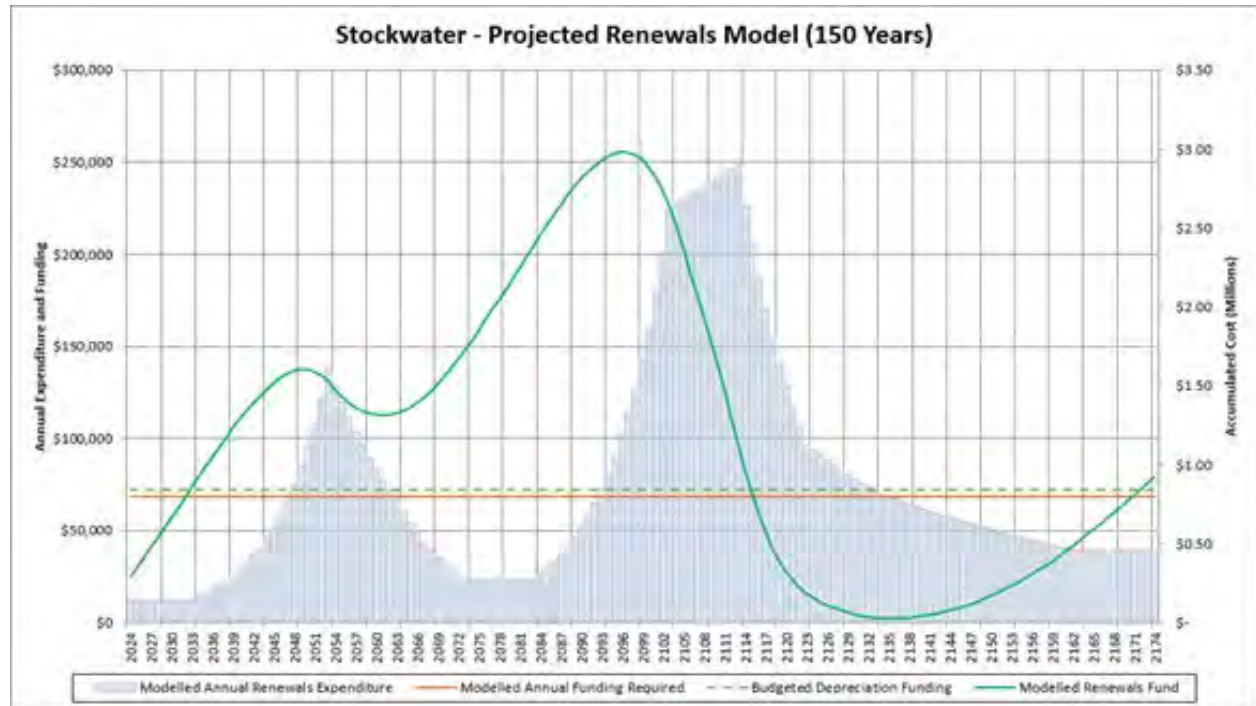
The model prioritises candidates for consideration by Asset Managers for renewal based on criticality, risk, and expected asset life. Asset managers will consider other factors such as roading resurfacing programmes, in prioritising the actual renewals programme.

The first ten years of the LTP programme are based on assessments by the Asset Manager (using the model outputs to inform this assessment, among other factors), but

from year 11 forward expenditure is taken directly from the model. Currently the culvert replacement programme is the only ongoing capital project to be funded by the WDC.

Figure 4 below only shows the output from the model. The final renewals budget put forward into the draft LTP, is included in the capital works graph, Figure 5.

Figure 4: Annual Stock Water Renewals 150-Year Budget



The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model. As can be seen, this account is maintained as a surplus, peaking later this century, before being drawn down as the first lifecycle of current assets is completed.

It is noted also that there are a wide number of factors influencing specific planning for renewals projects, which mean that the outputs from the renewals model are not strictly followed. In general, district wide final renewals budgets have been set at a higher level to that recommended by the renewals model (229% overall) for the next 10 years. The difference across the scheme is shown in the table below.

Table 5:Planned Budget versus Renewals Model Recommendations 2024-34

	Renewals model recommendation	Planned Budget	Budget as a percentage of model recommendation
Stockwater	\$120,000	\$275,000	229%

It is noted that beyond the first 10 year window, the outputs from the renewals model have been fully adopted to inform the renewals budgets for each scheme.

5.3 Capital Works

The following graph shows the 50 year budget for all capital works, including projects driven by growth and levels of service (Figure 5).

Figure 5: Projected Capital works Expenditure

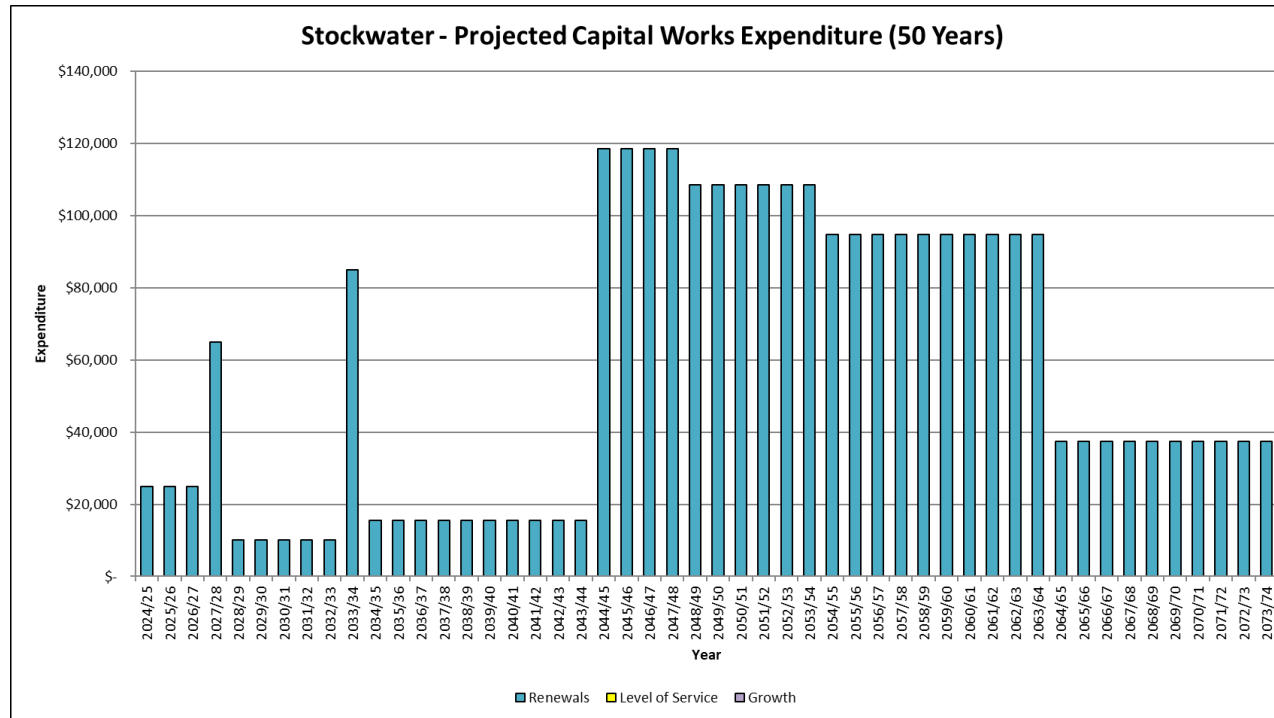


Table 6 summarises the projected capital works for the next 50 years, including renewals. The only capital works actively programmed at present for the stock water races relates to the ongoing culvert replacement programme. The programme is managed by WIL and includes culvert extensions to improve levels of service and replacing culverts. Renewal budgets out beyond the culvert replacement programme come from the renewals model.

The level of confidence in the budget for the works is presented in the table. For a more complete discussion on the level of optimisation, refer to the introductory chapter of the AMP. The figures in the table are not adjusted for inflation.

The renewals programme, which occurs over a number of years is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

Table 6: Summary of Capital Works (Includes Renewals)

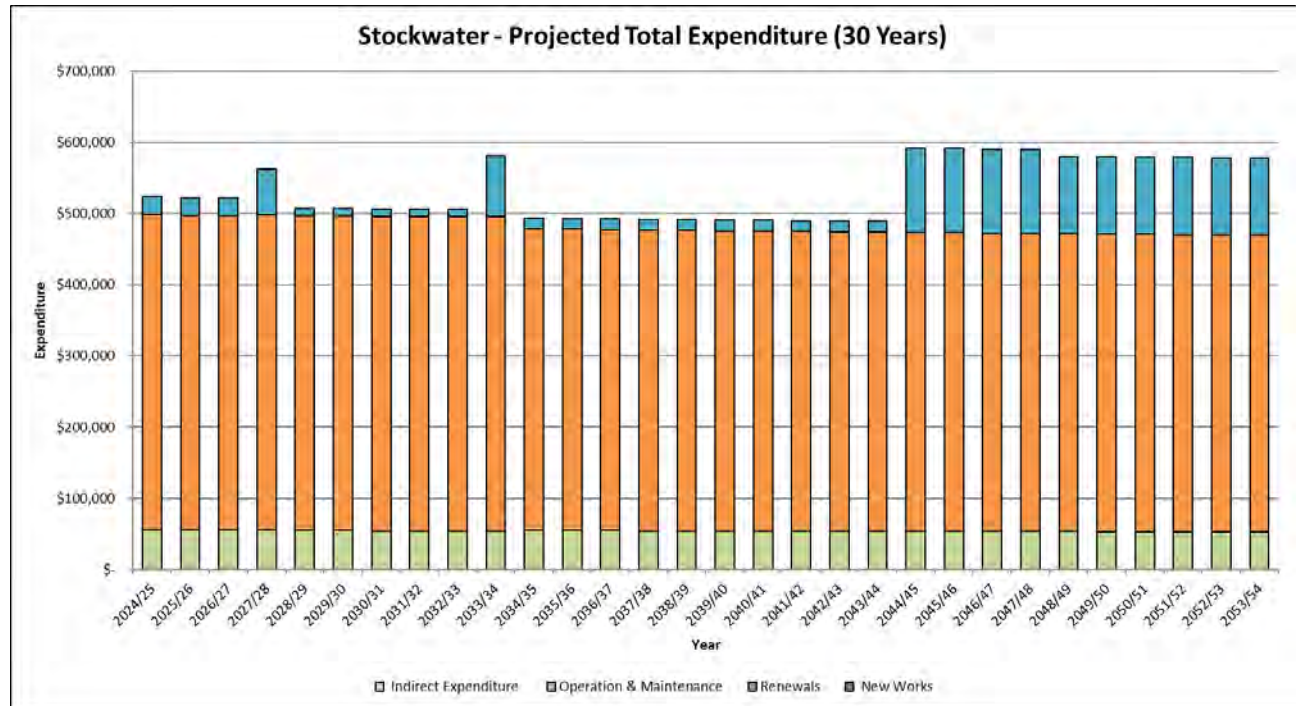
Year	Project ID	Project Name	Level of Confidence	Project Value	LOS Component	Renewals Component	Growth Component
Year 1 - 10							
2025	URT0002	Stockwater Culvert Replacement	3 - Low	\$ 300,000	\$ -	\$ 300,000	\$ -
2028	URT0001	Stockwater Long Term Renewals		\$ 2,578,079	\$ -	\$ 2,578,079	\$ -
Grand Total				\$ 2,878,079	\$ -	\$ 2,878,079	\$ -

Note: the Water Race Culvert Renewals item indicates the total projected renewals programme value over a period of 50 years, beginning in 2024/2025

5.4 Financial Projections

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure. Operational costs include operations and maintenance, and indirect expenditure. Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and internal overhead costs. Capital includes expenditure for growth, levels of service and renewals.

Figure 6: Projected Expenditure



5.5 Valuation

A full peer reviewed valuation of assets is usually carried out on a three yearly cycle, using the asset data in our asset management information system. Due to the high recent level of inflation the valuation interval was reduced to two years. Table 7 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for this scheme

Table 7: Replacement Costs and Annual Depreciation

Asset Type	2022 Replacement Cost	2022 Depreciated Replacement Cost	2022 Annual Depreciation
Resource Consents	\$708,568	\$231,566	\$20,245
Farm Crossing	\$825,214	\$531,550	\$12,801
Road Crossing	\$3,738,874	\$2,904,144	\$35,905
Water Races	\$12,611,112	\$12,611,112	\$0
Syphons	\$943,337	\$597,243	\$17,123
Other Structures	\$91,853	\$81,207	\$1,348
Total	\$18,918,959	\$16,956,822	\$87,422

5.6 Revenue Sources

Revenue for the stockwater portion of the costs is from targeted rates which are charged in accordance with Council's Revenue and Financing Policy, included in the Long Term Plan (TRIM 231114183205). Funding for the irrigation portion of the scheme comes from subscribers to the Waimakariri Irrigation Limited scheme, the company also managing the expenditure.

6. IMPROVEMENT PLAN

6.1 2021 Improvement Plan

Table 6 details the scheme specific improvements recommended to address issues identified earlier in this AMP. Each improvement item has been tagged to either a capital project or, a process improvement project to help manage and track Councils response. Expected timeframes are also shown.

Table 8: 2021 AMP Improvement Plan

Project Ref	Project name	Project description	Timeframe
IP055	Stockwater Reticulation AMS Improvements	Update spatial accuracy of GIS layers. Create spatial features in GIS for Tech1 assets.	2024-26 Work in progress
IP057	Stockwater service request management	Integrate WIL service request reporting with Asset Management System to improve LOS reporting. (May be appropriate to roll into the overall review of the WIL contract, creation of a SLA etc)	Ideally 2024-26, and integrated with implementation of new Asset Management System (ADAPT)
-	Culvert Replacement Programme	An ongoing replacement programme of old culverts on a like for like basis.	Ongoing

7. FUTURE CHALLENGES

- **Future Challenges and Key Decisions for Council**

The five most significant challenges facing Waimakariri District Council in the stockwater area are water take consents, Waimakariri Irrigation Ltd licence, climate change, Levels of Service, and how to best manage the tunnel intake.

- **Water Take Consents**

Council have two consents from Environment Canterbury to take and use surface water. One for the Browns Rock intake and the second for the two intakes on the Cust River. Both consents will expire in May 2039.

- **Waimakariri Irrigation Ltd licence**

In 1999, Council made the water race system available to Waimakariri Irrigation Ltd to construct and operate an irrigation scheme. This licence will expire in November 2031. On expiry of this licence, all assets owned by WIL transfer to Council, unless a renewal is negotiated.

- **Climate Change**

The potential impacts of climate change and global warming to water supplies requires consideration. Weather patterns, ground water allocation and minimum river flows may impact demand for stockwater supplies.

- **Levels of Service**

The levels of service are in need of a review. A review has not been done for some time and many of them lack clarity. Agreement will need to be reached with WIL and representatives of both stockwater and irrigation customers

- **Tunnel Intake**

An assessment of the old tunnel and associated assets should be made, and decisions made whether to continue their use, or decommission the tunnel

APPENDIX 1: LONG TERM PLAN STOCK WATER PERFORMANCE MEASURES

The following table outlines the Council's community outcomes and performance measures for its stock water activity. Monitoring results are reported annually in the Council's Annual Report. There are no mandatory reporting requirements applicable to the Council's management of the stock water races.

Stock Water			
Community Outcomes	Major Level of Service	Performance Measures	Targets
The natural and built environment in which people live is clean, healthy and safe.	The stockwater race system is managed to an appropriate standard.	*The number of water outages exceeding 24 hours in duration. *The percentage of service requests responded to within 48 hours.	Nil 95%



Activity Management Plan 2024

Rural Drainage

3 Waters | July 2024








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Document Acceptance

Action	Name		Signed	Date
Prepared by	Jason Recker	Stormwater and Waterways Manager		11/12/2023
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Adopted by		Utilities & Roding Committee		

Contents

1	Executive Summary.....	5
	What assets do we have?	5
	Levels of Service	5
	Asset Condition.....	5
	Risk.....	6
	Growth and Demand	6
	Capacity and Performance	7
	Operation and Maintenance	7
	Renewals.....	7
	Financial Forecasts	8
	Future Challenges and key Decisions	8
2	Introduction.....	10
	Document structure	10
	Improvement Plan	11
	Document Review Process	11
	Financial Forecasts	11
	District Overview- Key Projects	12
3	Scheme Description (What Do We Have?)	12
	Levels of Service	16
	Changes to LOS for 2024	16
	Mandatory Performance Measures	17
	Elective Levels of Service	17
	Community Engagement for Levels of Service.....	17
	2024 LTP Levels of Service.....	19
	Benchmarking.....	24
	Scheme differences	24
4	Asset Condition	26
	Remaining Useful Lives.....	26
5	Criticality	29
	District Overview – Criticality	30
	Criticality on GIS	30
6	Risk Assessment - Overview	31
7	Operational Risk Assessment.....	33
	Risk Matrix.....	33

	District Overview – Risk	34
8	Disaster Resilience Assessment	36
	Hazard Scenarios	36
	Individual Scheme – Disaster Resilience Results Summary	37
	Ohoka Rural	37
9	Corporate Risks & Assumptions	38
10	Climate Change	38
	Previous Climate Change Initiatives	39
	Future Climate Change Initiatives	40
	a) Mitigation	40
11	Demand	41
	Growth Uncertainty	42
	Significant Wet Weather Events	42
	This has been a significant driver of demand over the last 10 years. Typically such events may feature high intensity periods of rainfall in localised parts of a catchment that exposes deficiencies in particular parts of the drainage system. As noted in the level of service section, Council reacts to these events by additional programmes of works to alleviate the drainage system shortcomings.....	42
12	Capacity & Performance	43
	Schemes	43
	Consents	44
13	Operation and Maintenance.....	45
	District Overview – Operation & Maintenance Expenditure	45
14	Capital Works.....	47
15	Renewals	48
	District Overview – Renewals Expenditure	48
	Scheme – Reticulation Renewal Timelines – Spatial View	50
16	New Works	52
	Works Coordination	53
	Rural Capital Works	54
	Scheme – Capital Upgrade Works – Spatial view	56
17	Overall Financial Forecasts	56
	Financial Forecast Key Assumptions	56
	Funding/Revenue Sources	57
	Valuation	57
18	Data Confidence.....	59

19	Asset Management Systems	61
	Asset Management Maturity	61
20	Negative Effects	62
21	Service Delivery.....	63
22	Improvement Plan.....	63
23	Changes to AMP as a Result of Long Term Plan Consultation.....	67
	Appendix 8 Glossary Of Terms	79

Tables

Table 1: District Overview – Scheme Summary Information	13
Table 2: Pipe & Open Channel Data Summary.....	14
Table 3: Other Stormwater Assets Data Summary	14
Table 4: Data References	15
Table 6: Summary of Performance Measure Types, and Reporting.....	16
Table 7: Rural Scheme Performance Measures for the 2024 AMP	19
Table 8: District Overview - Levels of Service Performance - Rural Schemes.....	21
Table 9: 2022/23 Scheme Performance - elective measures	25
Table 10: Pipe Condition Summary	27
Table 12: Criticality Score Categories.....	30
Table 13: District Criticality Assessment	30
Table 14: Risk Events Considered.....	33
Table 15: District Overview – Risks (Operational).....	34
Table 16: New Works across Rural Drainage Schemes Over 50 Years.....	52
Table 17: Asset Valuation.....	57
Table 18: Data Confidence Levels	60
Table 19: 2021 AMP Improvement Plan	64
Table 20: Central Rural Drainage Scheme LoS Performance - Assessed June 2023	68
Table 21: Coastal Rural Drainage Scheme LoS Performance - Assessed June 2023	69
Table 22: Clarkville Rural Drainage Scheme LoS Performance - Assessed June 2023	71
Table 23: Ohoka Rural Drainage Scheme LoS Performance - Assessed June 2023	72
Table 24: Loburn Lea Rural Drainage Scheme LoS Performance - Assessed June 2023	74
Table 25: Cust Rural Drainage Scheme LoS Performance - Assessed June 2023.....	76
Table 26: Oxford Rural Drainage Scheme LoS Performance - Assessed June 2023.....	77

Figures

Figure 1: Asset Condition Summary	27
Figure 2: Asset Condition Summary - Schemes.....	28
Figure 3: WDC Risk Matrix.....	33
Figure 4: District Overview - Projected Operation & Maintenance Expenditure	47
Figure 5: District Overview - Projected Renewals Expenditure	49
Figure 6: Renewals Expenditure Model	51
Figure 7: District Overview - Projected New Works Expenditure	54
Figure 8: Projected District Wide Capital Works Expenditure	55
Figure 9: Projected Total Expenditure	56

1 EXECUTIVE SUMMARY

What assets do we have?

There are 7 rural and 5 urban rated drainage areas within the Waimakariri District. Together the 12 drainage schemes cover approximately 11% of the District's land area but service approximately 90% of the District's population. Two separate Activity Management Plans have been prepared, one each for the rural and urban drainage areas

The urban scheme assets include piped stormwater networks, treatment devices, basins, stormwater pump stations and open drains while in the rural schemes assets are primarily open drains and waterways which the Council maintains.

Each of the rural drainage schemes has a Drainage Advisory Group that meets three times per year with the Stormwater and Waterways Manager, and other staff.

Levels of Service

In the lead up to the updating of the 2024 AMP's, it was expected that the Council would not be preparing AMPs to support the 2024-2034 LTP, due to the 3 Waters Reform. When the situation changed in May 2023, it was too late to carry out a review of LoS. As a consequence the LoS in this AMP have remained largely unchanged when compared to the 2021 AMP version. The 2021 AMP levels of service were presented to the Council's Utilities and Roading Committee in July 2020, which recommended that the Council include them within the Draft 2021-31 Long Term Plan (refer to report 200406043184).

Error! **Reference source not found.** shows both the mandatory and elective levels of service achievement for those measures that are assessed at the district level. Appendices to this document can be referred to for the performance results for the individual schemes, which also show performance history.

in this document shows performance against the levels of service measured at district level, assessed for 2022/23. LOS relating to rural drain maintenance were met. Response times to service requests, and the overall satisfaction with the drainage services as measured by the community survey are the two main levels of service that were not met.

Asset Condition

The rural network comprises mostly of open drains, which are maintained in perpetuity. There is a limited quantity of more traditional assets such as culverts, and piped networks. There are an increasing number of Stormwater Management Areas

A condition assessment of all assets at headworks has not yet been carried out, so confidence in asset condition is only moderate. However, most of the hard drainage infrastructure is relatively new, and based on age 99.9% of pipe assets are considered to be in very, good, good or adequate condition. For headworks the percentage is 98%.

A full asset inventory has recently been compiled for all of the 3 Waters facilities, the scope of which included identifying assets in particularly poor condition. There were only 21 assets that fitted this category, less than 6 being drainage assets.

Risk

Historically a range of different types of risk assessments has been carried out for the District's drainage supply schemes. The operational risk assessment has previously generated a programme of work to resolve the identified high risks (There were no extreme risks recorded). This work is now largely complete but there are a few remaining issues:

- Mandeville remains at risk from flooding until the Mandeville Resurgence Channel Diversion project stages 1 and 2 are completed. (2024/25 to 2029/30).
- Earthquake risks to pipework and headwalls along the coast will be carried forward into the new risk assessment programme.
- Flap valve operation at the Ashley outfalls remains a risk that needs mitigation through improved maintenance operations
- Outfall failure at the Taranaki stream outlet due to high water levels on the downstream side, is subject to an active investigation project

A vulnerability assessment and criticality assessment provide input data to the renewals programme. The effect of the vulnerability assessment, which only applies to underground pipes, is to accelerate the renewal of old brittle pipework, in areas of high risk of liquefaction.

While in rural areas there is only a relatively small quantity of pipe in this category, it is expected that it will have been completely replaced by 2033 thereby increasing the resilience of the network.

The Disaster Resilience Assessment considers the risk to above ground assets from a broad range of potential natural disasters.

While much of the work from past assessments will remain relevant, they have become out of date. A new approach has been developed, which brings the three different methodologies noted above into a single risk assessment process. This is expected to make regular updating of the assessments more efficient. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

Growth and Demand

Growth projections have been updated with base population projections being calculated via a model that provides town by town projections. Subsequent modelling has been carried out to identify new works or upgrades that will be required in the future to service this growth while continuing to meet the agreed levels of service. Generally in rural schemes growth does not require Council to build new drainage infrastructure, but where appropriate the necessary works have been incorporated into the capital project budgets.

For all of Council's growth infrastructure, it is proposed to manage the inherent uncertainty in rate of growth, by carrying out an annual growth review in conjunction with the Development Planning Unit to enable short term capital planning adjustments to be made that respond to changing market requirements. This will avoid unnecessary expenditure on growth works before they are actually needed, or potentially ensure growth related projects are accelerated if growth occurs faster than anticipated.

New developments are required to construct drainage infrastructure that will ensure that discharge from development is treated to the quality standards required by the Regional Council's Land and Water Regional Plan, and also to not discharge at a rate greater than that which existed before the

development. Therefore nearly all the cost for capital works for growth falls directly to the developer, and works within the AMP's for growth are minimal.

Capacity and Performance

Significant rain events often provide information regarding performance below the required Level of Service, that is subsequently acted upon. There have been an increasing number of such events.

Subject to regular maintenance the Oxford, Loburn Lea, Cust, Clarkville, and Coastal Rural schemes are all expected to have sufficient capacity to provide the required level of service.

The Ohoka Rural Drainage Scheme has planned capital works to alleviate the flooding issues identified in Mandeville during the 2014 rain event. Stage 1 is programmed for completion in 2025/26 and Stage 2 in 2031/32.

Recent rain events have shown that the Central Rural Drainage Scheme has not had sufficient capacity to avoid flooding of private property and road surfaces during large storms. Most of the improvement work has now been completed with the remaining project of diverting Dockey Creek due for completion in 2026/27.

Under the Land and Water Regional Plan Council is required to obtain consents for discharge of its urban stormwater. Under these consents Council will be required to improve the quality of the water it discharges into streams and rivers. Equivalent consents are not required for rural schemes.

Operation and Maintenance

Operational and maintenance expenditure for drainage remains largely based on the previous year's expenditure carried forward. The biggest single expenditure item typically being spent on carrying out day to day maintenance - drain cleaning and the like. Rural drainage maintenance is carried out in association with the Roding maintenance contract.

In association with a district wide waterways maintenance consent from the Regional Council, Council has developed a [Drainage Maintenance Management Plan 2020](#). This provides a new direction for the way that waterways are to be maintained, with a new emphasis on maintaining and enhancing ecological values, as well as providing for the traditional drainage function. It is anticipated that over time, with increased planting, installation of sediment traps and other improvements, streams may be able to be left "unmaintained" in the traditional sense of being cleaned out by digger on a regular basis. Much of the impetus for these changes is being directed by the Canterbury Water Zone Committees, managed by Environment Canterbury, each of which now has a Zone Implementation Programme. [Waimakariri Zone Implementation Programme](#)

Renewals

Improvements have been made to the Council's risk based renewals model, so that different levels of acceptable risk can be applied to the various categories of criticality. For network assets the model includes that highly critical assets are renewed before 85% of their expected life, while the lowest criticality assets may not be replaced until 120% of their expected life. Based on these risk profiles the model provides a prioritised list of pipe renewals needed across the district, identified by scheme, which Asset Managers assess and adjust as necessary. The model provides an annual expenditure profile for the next 150 years, and also identifies the annual revenue required that will enable this renewals expenditure to be made without the renewals fund falling into debt.

There are no deferred renewals for rural drainage assets

Financial Forecasts

Financial forecasts included within the AMP show projected capital expenditure for growth, level of service, and renewals, together with operational and maintenance expenditure. Funds carried forward from previous years because capital projects have been delayed are not included.

Periods shown for the different categories of budget vary, from 30 years for operations and maintenance, through to the full life cycle of long lived assets such as pipelines – 150 years. Forecasts are aggregated up from the different schemes, district wide flood response projects included and then shown graphically. See The following graph shows the 30 year budget for all capital works funded by scheme rates, including projects driven by growth and levels of service.

Figure 7

Programmes of district wide improvement works developed in response to a number of flooding events since 2014 are typically funded by a district wide rate, which is part of the General Rate. Additional capital budgets are funded from ratepayers entirely within each scheme.

Future Challenges and key Decisions

Putting aside managing expectations around stormwater levels of service which will remain as an ongoing challenge, the four most significant challenges facing Waimakariri District Council in the rural drainage area are climate change effects, 3 Waters reform, effective management of growth, and the effects of the Freshwater National Environmental Standards.

- **Climate change**

Climate change adaptation is the most significant long term challenge. Research to date has indicated that while low lying coastal areas will remain protected by the dune system, increasing ground water levels will become an issue, and various combinations of storm tide, fluvial events and a rising mean sea level will potentially cause overtopping of stop banks and natural riverbanks. Farming in these areas may become problematic. Further assessment work is needed, and consideration given to the types of solutions that may be practical.

Potentially increased frequency of high intensity rain events, plus increased community expectations could also lead to pressure for higher levels of service away from the coast, with corresponding greater costs. Current levels of service in many older subdivisions are already not met.

There has already been an increased incidence of extraordinary rain events which have required capital works expenditure outside of that forecast in previous LTP's. A flood response fund is now proposed, with the fund being increased annually, and the expectation that it will be large enough to cope with future events.

The issues need to start being discussed with stakeholders, most notably the Regional Council, and affected communities. Major decisions will need to be made, to agree an adaptive strategy that is acceptable to both the affected communities and the wider district.

- **Water Reform**

The operative water reforms include Taumata Arowai having a role to monitor and report on the environmental performance of drainage networks. What this looks like is not yet known. The wider water reforms to be abandoned or significantly modified under the National led government also create significant uncertainty.

Growth Management

Growth outside of the planning parameters of the District Plan can be challenging, as final decisions are outside of Council's control. Even for growth within planned areas there is a tendency from developers to push back on the stormwater requirements, which can lead to sub-standard outcomes if a robust defence is not offered.

- **Changing Legislation**

There are a number of recent changes to legislation that have the potential to affect drainage infrastructure and asset management. In particular, the National Policy Statement for Freshwater, National Environmental Standards for Freshwater, and Plan Change 7 of the Canterbury Land and Water Regional Plan.

2 INTRODUCTION

The purpose of this Drainage Activity Management Plan (AMP) is to provide an overview of the Councils rural drainage assets, outline the issues associated with these assets and show how the Council proposes to manage them in the future, so as to continue to supply agreed levels of service.

The Activity Management Plan Utilities and Roding (U&R) Introductory Chapter provides the context for the suite of U&R activity management plans and gives an overview of the department's activities, and asset management practices and processes, and should be read in conjunction with this document.

This document outlines the management approach for the seven rural drainage schemes, all of which are rated separately, in addition to a District Wide drainage rate.

All drainage rated schemes are shown in the table below to provide context, although this AMP only covers the rural schemes.

Urban Schemes	Rural Schemes
Kaiapoi	Coastal Rural
Rangiora	Clarkville
Oxford	Central
Pegasus	Ohoka
Coastal	Loburn Lea
	Cust
	Oxford Rural

The 7 rural drainage schemes cover approximately 10% of the District's land area and service approximately 15% of the District's population.

The rural schemes assets are primarily open drains and waterways which the Council maintains.

Each of the rural drainage schemes has a Drainage Advisory Group that meets three times per year. Outside of these areas, the drainage features are predominantly natural and looked after by the riparian owner or as part of the roading infrastructure. The focus of the Drainage Advisory Groups generally centres on the operational maintenance of rural drains.

In recent years the issue of properties upstream of drainage rated areas contributing to stormwater problems within the rated area became an issue. In addition the problem of how to manage requests for minor drainage works in areas that are not inside a rated drainage area became more prominent. This latter issue has to some extent been alleviated by the introduction of a small fixed cost per property district wide rate. Moving more comprehensively to district wide rating has been toyed with for some time, but at the time of this AMP elected members have put consideration of that on hold.

With increasing public awareness and concern about stream water quality, stormwater and drainage management has a much higher profile across the district than was the case a few years ago.

Document structure

The main body of this document contains tables of infrastructure data at both a district wide level, and scheme level. Further detail of the individual schemes is provided by tables of links to other sources, where appropriate. These include:

- Network schematics,
- Pipe condition plans,
- Asset criticality plans
- Pipe renewal timeframes plan
- Capital upgrade works plan
- Scheme Serviced area

There is an appendix for each scheme which contains the Scheme Level of Service Performance table.

Improvement Plan

The assessments carried out as part of the asset management review process are intended to identify issues that need to be addressed. Resolution may include new capital works, or adjusted management or process practices. All these improvements are collated in Table 17

Document Review Process

Review of the AMPs has been carried out by a project team comprising the 3 Waters Manager, the 3 Waters Asset Management Advisor, Asset Managers (Water, Wastewater and Drainage), and the Network Planning Team Leader, with additional technical input from the Network Planning Team. Project Management has been led by the 3 Waters Asset Management Advisor.

The project team met fortnightly, and progress was tracked against a detailed programme that set out the review actions necessary for each section of the document.

Internal advice was sought from the Council's Development Planning Team for growth projections, and liaison with the Asset Management Information team occurred during the update of the valuations. Asset Managers worked closely with the Finance Unit during development of the budgets.

Information regarding progress and requirements for both the Infrastructure Strategy and the LTP development was provided via the LTP Project Manager.

Draft versions of the documents were presented to the Utilities and Roding Committee at the end of 2023, with an updated version presented to Council in late January for adoption. Any changes in the AMPs resulting from modifications to the LTP, have been incorporated in the final version by way of an additional section. The final document is published on the Council's webpages after adoption of the 2024-2034 LTP.

Financial Forecasts

None of the financial forecasts shown in the AMPs include inflation, or carry-forwards between the 2023/24 and 2024/25 financial years. Scheme financial forecasts, which are funded by ratepayers within the schemes, do not include works arising from the district wide flood response programme, which are shown separately.

District Overview- Key Projects

The two key projects planned within the boundaries of the rural drainage schemes are the long term solution for managing resurgence flows through the Mandeville area, and the project to divert Dockey Creek flows in storm events. The Mandeville Resurgence Channel Upgrade Project Stage 1 is programmed for completion in 2025/26, and stage 2 in 2029/30 and Dockey Creek are programmed for completion in 2026/27.

3 SCHEME DESCRIPTION (WHAT DO WE HAVE?)

The following table outlines the total area of each rural scheme (ha.) and outlines the total number of properties within each scheme at the time of the 2023/24 Rates Strike. The 7 rural drainage schemes, which are gravity systems, cover approximately 10% of the District's land area and service approximately 15% of the District's population. Table 1 provides an overall summary. Tables 2 and 3 summarise the districts rural network assets.

Error! Reference source not found. shows data references of technical reports and file numbers used to compile the AMP, with links should further details be sought.

An overall map of the District's Council drainage schemes is shown in the [AMP Plans and Figures Viewer](#). Scheme specific plans are also available in the viewer:

- Network Schematics
- Serviced area

Table 1: District Overview – Scheme Summary Information

Drainage Scheme	Coastal Rural	Clarkville	Central Rural	Ohoka	Cust	Loburn Lea	Oxford Rural
Drainage Area	4,767 Ha	835 Ha	5,601 Ha	4,612 Ha	371 Ha	41 Ha	5,301 Ha
Number of properties 2023/24 Rates strike	643	211	990	1,334	12	39	452
Drainage System Components	Open drains and watercourses, no formal treatment	Open drains and watercourses, no formal treatment	Open drains and watercourses, no formal treatment	1 Dry Detention Pond 1 Wet Detention Pond Open drains and watercourses	Open drains and watercourses, no formal treatment	2 Dry Detention Ponds Swales and Pipes	Open drains and watercourses, no formal treatment
Total Replacement Value (2022 Valuation)	\$3.59M	\$0.95M	\$3.12M	\$4.76M	\$0.46M	\$1.44M	\$3.11M
Depreciated Replacement Value (2022 Valuation)	\$3.31M	\$0.87M	\$2.86M	\$4.34M	\$0.40M	\$1.30M	\$2.77M

Table 2: Pipe & Open Channel Data Summary

Stormwater pipe length (m) by diameter and pipe material							
Pipe Material	Coastal Rural	Clarkville	Central Rural	Ohoka	Cust	Loburn Lea	Oxford Rural
Concrete	632	185	548	2,178	139	710	79
PE	-	-	22	-	-	-	-
PVC	424	55	36	696	228	98	-
Other	16	-	230	191	-	30	-
Total	1,072	240	836	3,064	367	839	79
Open Drain length (m) lined and unlined							
Unlined Drain	90,225	14,952	118,226	137,352	111,126	60,648	123,767
Lined Drain	1	-	-	-	37	-	-
Total	90,227	14,952	118,226	137,352	111,163	60,648	123,767

Table 3: Other Stormwater Assets Data Summary

Other Stormwater Assets Data Summary							
Asset Type	Coastal Rural	Clarkville	Central Rural	Ohoka	Cust	Loburn Lea	Oxford Rural
Inlet (Sump)	1	-	2	7	2	-	5
Manhole	10	-	2	18	-	11	18
Node	329	71	353	270	64	19	136

Valve	-	4	-	5	-	-	-
SMA's / Basins	2	-	3	2	-	1	-

Table 4: Data References

Data Reference	Trim Reference
2021-2022 Waters Asset Valuation	220803132120
2023: 30 year connection and rating unit projection	230413051831
2022 Customer Satisfaction Survey	230504063243
2014 Flood Mitigation Works and Funding	141009110892[v2]
2018 Flood Mitigation Works and Funding	180809090003
2019 Flood Mitigation Works and Funding	200709085254
2021 Flood Mitigation Works and Funding	210817135255[v2]
2022 Flood Mitigation Works and Funding	220825147219[v2]
2022 Flood Mitigation Works and Funding	220923165375
2023 Flood Mitigation Works and Funding	230921147926[v1]

Levels of Service

Levels of Service (LoS) are a measure of the standard of service being provided. The target levels of service are a significant factor in determining the size, capacity and cost of operating each scheme.

There is a hierarchy to the LoS. Some are measured at district wide level, some at scheme level, and some differ depending whether the scheme is urban or rural. The way that LoS measures are assigned, measured, and reported is summarised below, and explained in more detail in the following paragraphs.

Table 5: Summary of Performance Measure Types, and Reporting

	Mandatory Performance Measures	Elective Performance Measures
Set By:	These measures are set by the Department of Internal Affairs (DIA), but the targets set by individual local authorities.	These measures are set by individual local authorities.
Reporting:	Long Term Plan and Annual Report	Individual scheme Activity Management Plans Annual report to Council (future improvement). Some measures are also included within the Long Term Plan and Annual Report.

Changes to LOS for 2024

In early 2023, when the LOS and targets would normally have been reviewed again, the 3 Waters reform based on four new entities to manage 3 Waters infrastructure nationally, was going ahead. A National Transition Unit was operating under the Department of Internal Affairs, and the expectation was that the 2024 AMP's would be prepared by that Unit. By the time that the government changed the planned new structures, and delayed the entire programme it was too late to be able to review LoS, and have them approved by the U&R Committee/Council. Therefore the LoS and targets in the 2024 AMPs, both Mandatory and Elective, are generally unchanged from the 2021 AMPs.

The 2021 set of measures were approved by the Council's Utilities and Roading Committee for inclusion in the 2021 Draft Long Term Plan (report [200406043184\[v1\]](#)), before being approved by Council.

Mandatory Performance Measures

In 2010, the Local Government Act 2002 was amended (Section 261B) to require new rules specifying non-financial performance measures for local authorities. The measures are intended to help members of the public compare the level of service provided by different councils at District or City level. The Council is required to incorporate the performance measures into their long-term plans and report against them in their annual reports. The element that is measured cannot be changed (as this is mandatory) but the targets can be changed. Measures are reported at district wide level. This is provided to Council on a quarterly basis, and the annual results are included in Council's Annual Report. Note that Council has chosen to also include some elective LoS in its quarterly and annual reporting

Elective Levels of Service

The mandatory measures do not replace the scheme specific elective LoS reported in the AMPs and used by the Council to monitor and manage the performance of individual drainage schemes.

Elective LOS are motivated by either legislative requirements (for example, compliance with resource consent conditions) or by established best practice. These are categorised as technical levels of service, and they are to be reported to Council on an annual basis. They have been developed over time, and are guided by a number of factors, including:

- Customer Expectations
- Affordability
- Council Community Outcomes (Strategic goals and objectives)
- Legislative Requirements

Primary customers are households or businesses that are connected to Council drainage schemes, with key stakeholders being Community Boards, Councillors and the Regional Council.

Community Engagement for Levels of Service

The level of service component of the Activity Management Plans was consulted upon comprehensively as part of the 2005 review. While a comprehensive public review has not been carried out since then, levels of service are tested with the public in a number of ways.

- For general feedback the principle method of communicating proposed LoS to customers is via the LTP process. As noted, mandatory performance measures form part of the LTP documentation that goes out for public consultation, during preparation for the LTP.

- The Council's drainage AMP's, which are updated concurrently with preparation for the LTP are made available on Council's website, which allows a channel for feedback from customers who may be interested.
- The general satisfaction of customers with the level of service received is gauged through tracking of complaints through the service request system, as well as through the Council's customer satisfaction survey. Changes to this survey have been made so that information is now available on a per scheme basis. Trends in complaints are available through the Council's Business Intelligence reporting system, allowing easy analysis for trends both at a district level and a scheme level. Where upgrades to schemes have been completed, the positive impacts can be seen to flow through to complaint levels, which provides a useful measure of success of projects.

Council received considerable community criticism after the 2014 flood event, particularly from the Mandeville area. It responded with a new district wide flood rate introduced in the 2015-2025 LTP, and a programme of works to address the concerns of the affected communities.

There have been other significant rain events since that time, and Council now has an established follow up pattern for these events. Council initially carries out an analysis of all the drainage service requests received during the event. Issues relating to capacity (as against those relating to system blockage, which are mostly dealt with during the event) are investigated and, where warranted, improvements identified and submitted to Council for approval of additional funding. Some improvements are multi-year programmes of work, in which case the additional funding is incorporated in the financial information provided within the following AMP.

Summary reports to Council that have sought funding approvals in this way are TRIM [200709085254](#), [220825147219\[v2\]](#), [220923165375](#)

Each rural drainage scheme has a permanent engagement group in the form of Drainage Advisory Groups. These groups, for which new membership is sought on a three yearly cycle, meet at least three times per year, and enable local drainage concerns to be discussed, guided and resolved.

2024 LTP Levels of Service

Error! Reference source not found. is in three sections. The first part sets out the mandatory performance measures and targets for the 2024 AMP. The second part shows the elective performance measures that are included in the quarterly reporting, and the third part shows the remaining elective performance measures.

Table 6: Rural Scheme Performance Measures for the 2024 AMP

Level of Service	Performance Measure (2024)	Target	Community Outcomes that this LoS Contributes to
Mandatory Measures – reported quarterly and annually to Council at District level			
Flooding – Dwellings <i>Note: Assessment against target is carried out for Urban schemes only, but context provided by reporting rural results</i>	Urban stormwater a) The number of flooding events that occur* b) For each flooding event, the number of habitable floors affected, expressed per 1000 properties connected to a territorial authority's stormwater system.	a) Nil in less than 50 year storm events b) Nil per 1000 connected properties in less than 50 year storm events	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Elective Measures reported with Mandatory measures – quarterly and annually to Council at District level			
Response Time	Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days	95%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
	Rural Drainage Areas: The percentage of service requests for drain cleaning that are responded to within 5 working days.	95%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Consultation	Maintain dialogue and consultation with Te Ngai Tuahuriri Runanga	Drainage team represented at all scheduled Runanga meetings	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
	Facilitate and engage with all drainage and water race advisory groups	3 meetings per group per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Elective Measures – reported annually and in AMP			

Level of Service	Performance Measure (2024)	Target	Community Outcomes that this LoS Contributes to
Flooding - Nuisance or Carriageway (SCHEME LEVEL)	<u>For rural areas:</u> For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance flooding** caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	<i>The natural and built environment in which people live is clean, healthy, and safe.</i> <i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Complaints - Aesthetics - Drain Clearance (DISTRICT LEVEL)	Number of complaints, post cleaning, resulting from unsatisfactory drain cleaning operations or service	Nil per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Complaints - Odour or Insects - Open Network (DISTRICT LEVEL)	Number of complaints about odour, midges or insects in the open network including drains and ponds.	Nil per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Customers - % Satisfied (DISTRICT AND SCHEME LEVEL)	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	> 90%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Consent Breach (SCHEME LEVEL)	Percentage of the total number of Drainage consent conditions that have breaches that result in an Ecan report identifying compliance issues that require action.	0%	<i>The natural and built environment in which people live is clean, healthy and safe.</i>

*Flooding event defined as an overflow of stormwater from a territorial authority's stormwater system that enters a habitable floor

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

.District Overview: 2022/23 Levels of Service Performance

Error! Reference source not found. shows both the mandatory and elective levels of service achievement for those measures that are assessed at the district level. Appendices to this document can be referred to for the performance results for the individual schemes, which also show performance history.

Table 7: District Overview - Levels of Service Performance - Rural Schemes

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
<p>* Urban stormwater</p> <p>a) The number of flooding events that occur as a result of overflow from the stormwater system that enters a habitable floor</p> <p>b) For each flooding event, the number of habitable floors affected, expressed per 1000 properties connected to a territorial authority's stormwater system.</p>	<p>a) Nil in less than 50-year storm events</p> <p>b) Nil per 1000 connected properties in less than 50-year storm events</p>	<p>N/A</p> <p>N/A</p>	<p>(a) During the 26 July event there were two habitable floors flooded in rural areas (Greigs Rd and Tram Rd)</p> <p>b) There were no flooding events of habitable floor levels during this year.</p> <p><i>Note: Achievement for this measure is required for urban schemes only, but context is provided by reporting any habitable floors affected within rural schemes</i></p>	N/A
Rural Drainage Areas: Percentage of service requests for drain cleaning that are responded to within 5 working days	95% within 5 working days	N	<p>There were a total of 313 service requests relating to rural drainage during the year. 61.02% were responded to within 5 days.</p> <p>There is still a backlog of service requests that the Drainage Team and Flood Team have been working through following the July 2022 flood events.</p>	Council Staff have requested as part of the 24/34 LTP for the establishment of an Infrastructure Recovery Team of full time Council employees. This team will provide additional capacity to respond to service requests from events, the ability to commence the recovery works immediately without the

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
				delay of securing external assistance, and resources to implement ongoing upgrades to build resilience and prepare for future events.
Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days	95% within 5 working days	N	<p>62.67% of the service requests during the whole year met the target time. This number is for both urban and rural areas combined.</p> <p>There is still a backlog of service requests that the Drainage Team and Flood Team have been working through following the July 2022 flood events.</p>	Council Staff have requested as part of the 24/34 LTP for the establishment of an Infrastructure Recovery Team of full time Council employees. This team will provide additional capacity to respond to service requests from events, the ability to commence the recovery works immediately without the delay of securing external assistance, and resources to implement ongoing upgrades to build resilience and prepare for future events.
Maintain dialogue and consultation with Te Ngai Tuahuriri Runanga	Drainage team represented at all scheduled Runanga meetings	-	No scheduled Runanga meetings have been held to date this year for the Drainage team to attend.	None. The meetings are arranged by the Governance section of Council. 3 Waters attends if there are meetings to attend
Facilitate and engage with all drainage and water race advisory groups	3 meetings per group per year	Y	18 Meeting were held in the 22/23 year	N/A
Number of complaints, post cleaning, resulting from unsatisfactory drain cleaning operations or service	Nil	Y	No complaints reported	N/A

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
Number of complaints about odour, midges or insects in the open network including drains and ponds.	Nil	Y	No complaints reported	N/A
Percentage of respondents to a three-yearly community survey that have an opinion that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	N	Of those who identified themselves as being within a drainage area, on average (weighted by sample size) across the rural schemes the percentage of satisfied respondents was 51%	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.

Benchmarking

A number of the performance measures above are collated and reported nationally, and therefore can be benchmarked against other service providers to compare performance. Waimakariri District Council participates in Water NZ's annual national Performance Review (NPR). The customised 2020-21 report prepared for WDC can be found here: TRIM [230324041126](#)

The more general report for 2021-22, which still enables comparisons with other Councils can be found here: [2021-22 National Performance Review](#). Comparisons noted below may look slightly different to the comparisons in previous AMPs as different numbers of Council's participate in the review. (There are 67 territorial authorities in NZ)

Using the Water NZ National Performance Review most recent results (2021/22):

- 22% of WDC stormwater discharges are consented, with the remainder having been applied for. 8 TLA's have all of their discharges consented, 7 have more than 22% but not 100%, and the remaining 13 have fewer consents
- WDC is among the 21 TLAs which are monitoring stormwater quality, and the 27 that have stormwater catchment management plans in place.
- WDC average annual residential charges are higher at \$260 per annum than the average across all TLA's at \$193 per annum
- Operational cost per property at \$149 p.a. is higher than the national average of \$95
- Capital expenditure per property at \$347 p.a. is higher than the national average of \$129
- Capital expenditure on existing assets as a proportion of depreciation is 552%, indicating the increasing level of service

This survey function has recently been taken over by Taumata Arowai, and WDC will continue to participate

Scheme differences

Performance across the rural is generally fairly uniform, but the Mandeville settlement within the Ohoka rural area is a challenge. This settlement of some 700 properties comprises almost exclusively of rural residential type properties and covers a fairly large area. It suffers from bouts of resurgent ground water, for the which the original drainage systems were not adequately designed. In addition, among parts of the community there is a level of expectation that the service levels that Council should be achieving should be akin to urban levels of service.

The Covid 19 response funding from central government has enabled some improvement works to be brought forward.

Assessment of scheme level performance allows for a comparison between schemes to highlight areas where improvements are required. By addressing the relevant schemes where the scheme specific performance measures are not met, improvements will flow up into the district measure.

Table 8 below shows the 2022/23 elective performance measures for each scheme.

Table 8: 2022/23 Scheme Performance - elective measures

Performance Measure	Target	Coastal Rural	Central Rural	Clarkville	Ohoka	Loburn Lea	Cust	Oxford Rural
For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	72%	69%	22%	40%	67%	45%	0%
Percentage of the total number of Drainage consent conditions that have breaches that result in an Ecan report identifying compliance issues that require action.	0%					0%		

Note: Only one rural schemes has a relevant drainage consent. Shaded cells are indicative of this

4 ASSET CONDITION

The current assessment of asset condition is based on theoretical remaining useful life derived from component age and adopted useful life. Adjustments to the remaining life are made to individual components where information is available to suggest the theoretical remaining life is inappropriate.

A CCTV programme was started in 2008 to survey the reticulation network and assign evidence based condition ratings. Most rural scheme assets are open channels maintained in perpetuity, but culverts will be CCTV'd where warranted.

As noted in the 2021 AMP Council had not previously had appropriate software to effectively carry out analysis of the CCTV results, which is critical to assess the condition of the gravity network. The analysis has previously been outsourced, the outcome from which had been unsatisfactory. InfoAsset Manager has now been implemented which allows more efficient importing of CCTV data, and proper analysis of that data. When installed it had been the intention to integrate the data that will be imported into InfoAsset Manager with the main asset management system (Technology One) data. This project has been put on hold due to the Council commencing a process to replace the Technology One system, which is also the Council's enterprise wide business platform

Remaining Useful Lives

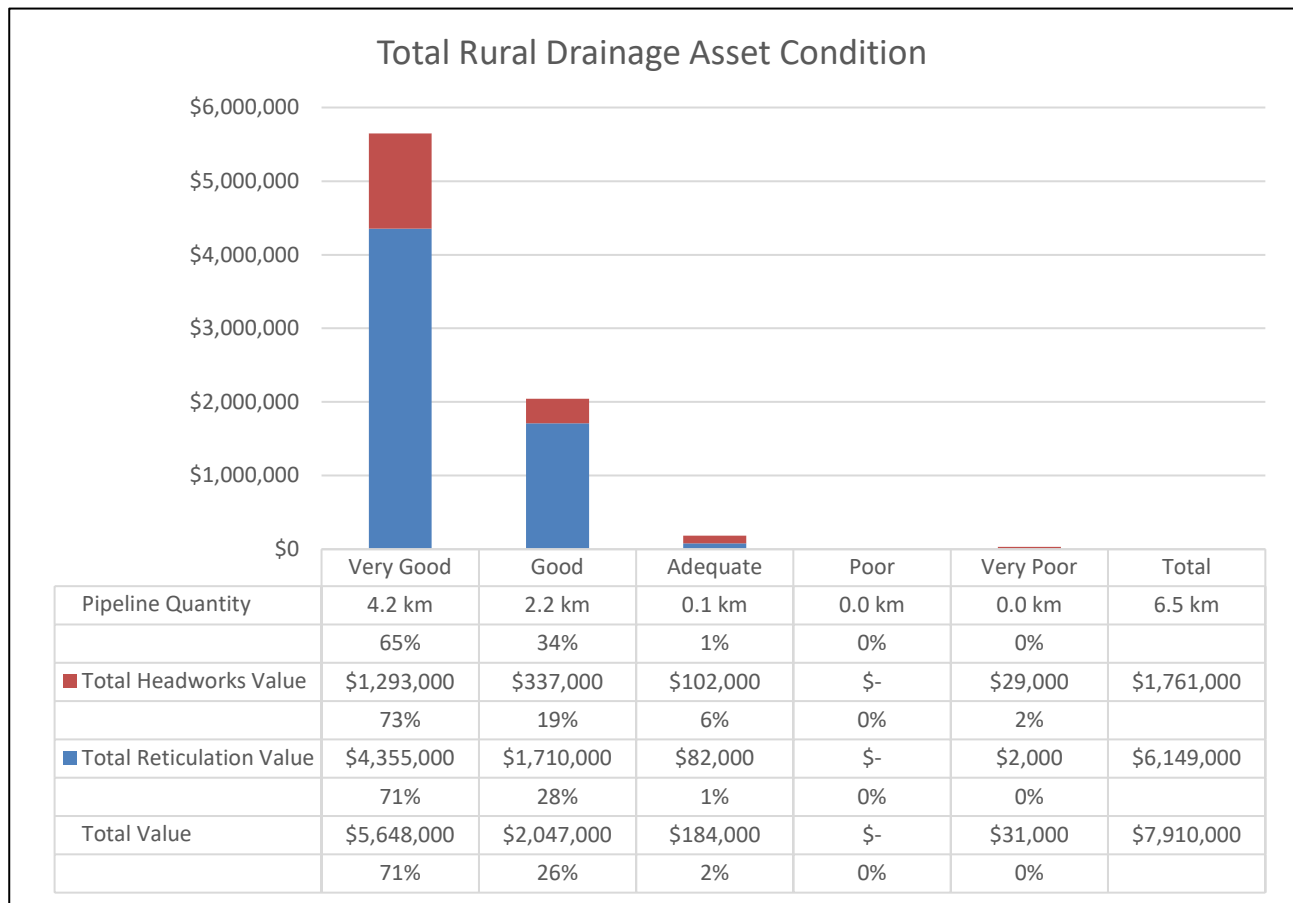
The useful lives of asset groups as shown in the valuation are consistent with the asset life assumptions used to develop the renewal forecasts. The assumptions about the remaining useful lives of the drainage assets will progressively be informed by the ongoing collation and analysis of the asset maintenance and repair data. Full details of the assumptions pertaining to the remaining useful lives of each asset category are included in the Valuation report (TRIM [220803132120](#)).

Assets are normally revalued on a three yearly valuation cycle, to coincide with the three yearly LTP cycle. However with increased inflation over the last few years, the most recent valuation was carried out a year earlier in 2022. The 2022 figures have been adjusted for 2023 using CPI factors.

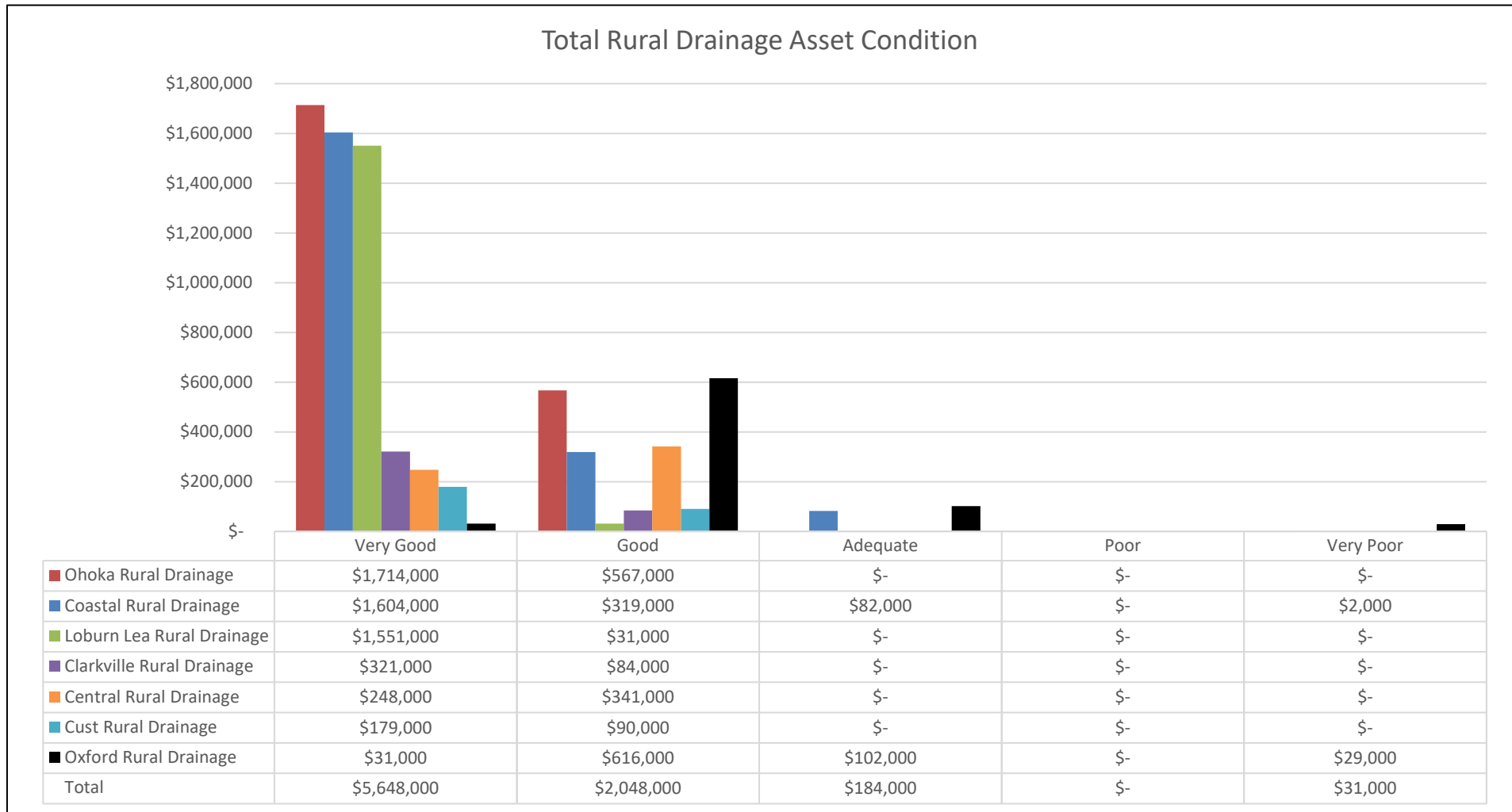
- **Reticulation** As noted most rural scheme reticulation assets are open drains. For pipework the approach of compiling better condition and maintenance information over time, has been considered relatively low risk as the average age relative to asset life is reasonably young. The majority of reticulation assets have more than 50% remaining useful life and are considered to be in good condition.

A CCTV programme is in place to assess the condition and expected life of gravity drainage assets, which will in time improve confidence in asset lives.

- **Headworks (pump stations)** The rural schemes contain no pump stations
- **District Overview** Figure 2 and Table 8 below summarises assessed asset condition for the 2023 AMP reviews. Note that "Headworks" is inclusive of all above ground assets, while "Reticulation" covers the remainder of the assets.

Figure 1: Asset Condition Summary**Table 9: Pipe Condition Summary**

Parameter	Very Good (Grade 1)	Good (Grade 2)	Adequate (Grade 3)	Poor (Grade 4)	Very Poor (Grade 5)
Definition	More than 80% of life remaining	Between 50% and 80% of life remaining	Between 20% and 50% of life remaining	Between 10% and 20% of life remaining	Less than 10% of life remaining

Figure 2: Asset Condition Summary - Schemes

5 CRITICALITY

Criticality is a measure of the importance of a given asset to the overall scheme and is determined by the consequence of failure. Assets for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation are considered more highly critical. Critical assets have a lower threshold for action than non-critical assets. Criticality is used as a means to:

- Identify the most important assets in the overall network
- Prioritise assets that warrant specific condition assessment
- Prioritise assets for repair following multiple failures, e.g. following an earthquake
- Quantify the relative consequence of failure, which can then be used to assess the risk of failure and prioritise renewals. Specifically this means that assets with higher criticality rating are renewed before their end of life, while renewal of low criticality assets will be delayed beyond theoretical end of life.
- As an input to the CCTV programme.
- To determine if a “stand over” is necessary by our in-house operations contractor, when external contractors are working on or near WDC assets.

The criticality assessment carried out on the reticulation uses an automated GIS model using both GIS and modelling data to determine the criticality of pipes.

For drainage assets “Failure” is defined as any single component malfunctioning causing a loss of service or significant impact to others under normal operating circumstances. “Impact” is defined as:

- Public health impact – the failure of the asset creates an unacceptable impact on public health.
- Socio-economic impact – the failure of the asset creates an unacceptable social and/or economic loss to the community. This includes disruption to essential services, significant economic activities and important roads.
- Financial Loss – The failure of the asset, or the repair of a failed asset, creates an unacceptable financial loss to the community, including the Council.
- Environmental impact – the failure of the asset creates an unacceptable environmental effect.

The stormwater assets are assessed by five main criteria:

- The number of customers potentially affected by failure of the main or facility
- The diameter of the gravity or pumped stormwater main
- The location of any potential flooding from main, manhole or pump station
- The depth of the stormwater main
- The location of the main, i.e. if it is located in a strategic road, near a train line or a stop bank

Each individual main is then graded between a most critical AA and least critical C category.

Table 10: Criticality Score Categories

Criticality Rank		Criticality Rank Code
High Criticality	Extreme Criticality	AA
	High Criticality	A
Moderate Criticality		B
Low Criticality		C

The table below shows the percentage of mains by length for each criticality rating. There are no facility sites within the district's rural drainage schemes. Because the pipe criticality assessment is undertaken using GIS data the assessment can be repeated and updated on a more regular basis. Annual updates are planned that will inform each years detailed renewals programme.

District Overview – Criticality

Error! Reference source not found. summaries the percentage of mains in each of the criticality classes:

Table 11: District Criticality Assessment

Scheme	AA	A	B	C
Central Rural Drainage	0%	21%	59%	19%
Clarkville Rural Drainage	0%	58%	42%	0%
Coastal Rural Drainage	0%	46%	15%	39%
Cust Rural Drainage	12%	0%	20%	68%
Loburn Lea Rural Drainage	0%	22%	67%	12%
Ohoka Rural Drainage	1%	28%	60%	11%
Oxford Rural Drainage	0%	76%	24%	0%
All Rural Schemes	1%	29%	50%	20%

Criticality on GIS

The [AMP Plans and Figures Viewer](#) contains spatial views of the criticality of pipe and facility assets for each scheme.

6 RISK ASSESSMENT - OVERVIEW

The purpose of carrying out risk assessments on drainage schemes is to identify any risks to the scheme which need to be mitigated, and to prioritise implementation of any mitigation plans.

A number of different risk assessment have been carried out, each one with a specific focus, although there is some overlap. A description, and the purpose of each assessment is provided below

- i. **Operational Risk Assessment:** This is the broadest scope assessment. Possible causes of failure of the drainage system are examined, together with the consequences of that failure. Failure includes failure caused by natural disasters. This assessment, was last carried out for the 2015 AMP review, but has not been updated for this review. It was originally the intention that a review of these operational risks be carried out in time for this AMP, but as it was subsequently expected that the next AMP would be written by the new entity being set up under the 3 Waters reforms, this was not carried out.
- ii. **Disaster Resilience Assessment (DRA):** Assesses the risk to above ground assets from a broad range of potential natural disasters. See Section 8
- iii. **Vulnerability Assessment:** Focuses solely on underground assets, assessing the vulnerability of pipes to damage from natural hazards, and uses an automated approach. For drainage there are no AC or earthenware pipes in areas assessed as vulnerable to liquefaction, so no vulnerability assessment has been needed
- iv. **Corporate Risk:** High level risk assessment carried out corporately in association with the development of the LTP and Infrastructure Strategy. Covers Environmental, Economic, and Social risks. Council updated its Risk Management Policy and Framework in 2022. TRIM [220428064824](#) and [220428064825](#). The most recent corporate risk assessment is available here: TRIM [230321039241](#)

Updating the 3 Waters risk assessments is now a priority. A new approach has been recently developed, which brings the Operational, Disaster Resilience and Vulnerability assessments into a single risk assessment process. This is expected to make regular updating of the assessments less of a hurdle. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

The new methodology enables consistent, measurable quantifying of risks for customers and the environment from operation of water supply (and also stormwater and wastewater) schemes. Key risks are presented as outcomes such as loss of, or contamination of water supplied to customers, or stormwater or wastewater discharges resulting in flooding or downstream environmental contamination.

The method achieves consistency by assigning numerical values to conditions that lead to events (for example – “pump station failure”) which causes the adverse outcome “loss of supply”.

Likelihood is determined by using preset data to assign values to conditions which are common across schemes. A typical condition is, for example, “average asset condition - % of life remaining”. For this example each percentage range specified in the condition receives a rating of between 1 and 5, with “1” being “almost certain” and “5” being “rare”. Likelihood scores for each condition are averaged to determine an overall likelihood rating for each event. Conditions are measurable,

using asset and scheme operating data, drawing from procedural, mechanical or structural factors or natural hazards which contribute to the events.

The resulting likelihood scores are averaged with consequence scores (comprising agreed severity values modified by scheme exposure) to determine final risk ratings for each event and scheme. "Scheme exposure" is determined by the number of connections to each scheme. This gives an indication of the scale of impact of an event and size of the likely Council response that would be required to resolve it.

Findings from these updated risk assessments will be compared with previous risk assessments, particularly the DRA work as a check.

7 OPERATIONAL RISK ASSESSMENT

The table below details the risks considered under the previous assessment methodology, which was last carried out for the 2015 AMPs. Natural disaster risks were also considered across all asset types: earthquake, tsunami, extreme weather events, and vandalism/terrorism.

Table 12: Risk Events Considered

Process	Event
Collection	Overflow or flooding stormwater from pipes or open drains
	Collapse or failure of pipe or open drains
	Overflow or flooding of stormwater from pump station
Treatment	Overflow or discharge of untreated stormwater
	Stormwater not sufficiently treated
Disposal	Stormwater unable to be discharged or discharged uncontrollably
General	Operations/management failures

Risk Matrix

Possible causes leading to the above events are rated for consequence (1 to 5) and likelihood (A to E) and then combined to give a risk score using the matrix in **Error! Reference source not found..** The three cells highlighted by a black frame show where the WDC matrix differs from the standard AS/NZ 4360 risk matrix. These changes were made as they better reflect the level of risk accepted by WDC on their 3 Waters assets.

Figure 3: WDC Risk Matrix

Risk Matrix		Consequences				
		Insignificant	Minor	Moderate	Major	Catastrophic
		1	2	3	4	5
Likelihood	A Almost certain	M	H	H	E	E
	B Likely	M	H	H	E	E
	C Possible	L	M	H	H	E
	D Unlikely	L	L	M	H	E
	E Rare	L	L	M	H	H

District Overview – Risk

Table 13 summarises the number of high risks identified in 2015 now remaining across the rural drainage schemes. All extreme risks have been mitigated.

Note that the planned new comprehensive risk assessment, with completion in 2024 anticipated, will incorporate these previously identified risks

Table 13: District Overview – Risks (Operational)

Risk Event & Cause	Specific Risk	2023 AMP Update	Project Details – Updated
Ohoka/Mandeville: Overflow or flooding of stormwater from pipes or open drains due to insufficient reticulation capacity	Risk increased due to 2014 flooding, drains generally have capacity for stormwater runoff, but no allowance for undercurrent flows	The Mandeville Resurgence Channel Upgrade Project is progressing and been split into two stages. Stage 1 is programmed for completion in 25/26. Stage 2 has been programmed for completion in 29/30 due to potential consenting and land owner challenges.	Stage 1 - Mandeville Resurgence Channel Diversion / Upgrade– Project URD0098
			Stage 2 - Mandeville Resurgence Channel Diversion / Upgrade – Project URD0184
Coastal Rural: Natural disaster & other due to earthquake	Liquefaction risk to open drains, could be cleared if blocked by ejected material post- quake.	Risk assessment methodology is being reviewed as part of 2021 AMP improvement plan. Risk will be carried forward into new programme, if warranted	Risk assessment update, being carried out by PDU
	Outfalls to Ashley River via Taranaki Stream and Leggets Drain. The southern portion drains via the McIntosh Drain which is prone to flooding.	Maintenance check on WDC flap valves, continue to liaise with ECan to ensure maintenance of their flap valves.	<ul style="list-style-type: none"> •Maintenance of WDC flap valves to be continued and strengthened. •Liaison with Ecan for maintenance of their flap valves to be ongoing.
	Failure of stopbanks and floodgates is a possibility. These are the responsibility of ECan.	Residual risk now considered acceptable. These assets are in any case not WDC assets. For the risk to eventuate, an	N/A

		earthquake that causes damage to these assets needs to then be followed by a significant rainfall event	
	Risk of flood in Waimakariri and Ashley rivers temporarily restricting outlet	In previous AMPs this was reassessed as low risk, but recent storms proved this premature. The Waimakariri risk has been mitigated with a new PS. The Taranaki stream outlet remains a risk	Active investigation under way to find the most cost effective solution for Taranaki stream outlet

8 DISASTER RESILIENCE ASSESSMENT

The 2009 Disaster Resilience Assessment (DRA) was a desktop assessment of the risk from natural hazard events for all Council operated water supply, wastewater and drainage schemes including above ground and reticulation assets.

In calculating risk the following factors were considered:

- The likelihood of the hazard event occurring, determined from return period
- The resilience or vulnerability of the asset to each hazard (desktop based)
- The consequence of asset failure to the community

The DRA was updated in 2012 to take into account new hazard assessments, in particular the increased seismic risk to the assets throughout the District including further work on areas susceptible to liquefaction. The outputs of new tsunami modelling, a rapid flood hazard assessment and, an updated wildfire threat assessment were also included. This update focused on above ground assets, as the assessment of risk to below ground assets became incorporated from this time on, into the renewals model. The report is available as [TRIM 160912093915](#)

A comprehensive review of the DRA Action Plan was carried out in 2014 to update progress made on tasks and prioritise future initiatives. As a result of the review, related tasks were consolidated into one of three improvement projects to be actioned over the following three years. Limited progress has been made on these improvements since the 2015 AMP revision, due to resource constraints.

The new risk assessment methodology described in section 7 above has been developed with the purpose of incorporating the DRA risk analysis within it. It is therefore expected that it will result in similar actions/improvement projects to the DRA, but integrated with the outcomes of the operational risk assessment.

The DRA, together with the risk based renewals assessment, were the Council's 3 Waters department's primary tools in meeting the obligations of the CDEM Act which requires that all lifeline utilities operate to the fullest possible extent before, during and after an emergency. The new risk assessment process and the risk based renewals assessment will be the tools used going forward to meet those obligations.

Hazard Scenarios

All above ground facilities were assessed for risk of failure against the following events.

Hazard Scenarios		
100 yr Local Flooding	Earthquake (50 yr)	Snow (150 yr)
475 yr Earthquake Induced Slope Hazard	Earthquake (150 yr)	Wind (150 yr)
Ashley Flood (100 yr)	Earthquake (475 yr)	Lightning (100 yr)
Ashley Flood (500 yr)	Tsunami (200 yr)	Pandemic (50 yr)
Waimakariri Flood (3,300 yr)	Wildfire (threat based)	Terrorism (100 yr)

Individual Scheme – Disaster Resilience Results Summary

Central Rural

Concrete drainage pipes on the eastern side of the scheme will be vulnerable to damage in such an earthquake but there is no intention to replace these types of pipes because (a) they are expected to be in good condition, and have a high residual value, and (b) the improvement in risk from using other pipe types would be marginal. A length of 0.64km of RRJ concrete pipes has been identified as being at high or extreme risk in these circumstances.

Oxford Rural

The Oxford scheme area is not susceptible to liquefaction, so the pipeline vulnerability assessment process carried out within other scheme boundaries is not relevant. However, reticulation mains were assessed for earthquake risk, and concluded to be moderate low risk. No specific mitigation actions were identified.

Coastal Rural

Concrete drainage pipes on the eastern side of the scheme will be vulnerable to damage in such an earthquake but there is no intention to replace these types of pipes because (a) they are expected to be in good condition, and have a high residual value, and (b) the improvement in risk from using other pipe types would be marginal. A length of 0.8km of RRJ concrete pipes has been identified as being at high or extreme risk in these circumstances.

Ohoka Rural

The Ohoka scheme area is not susceptible to liquefaction, so the pipeline vulnerability assessment process carried out within other scheme boundaries is not relevant. However reticulation mains were assessed for earthquake risk, and 200m were concluded to be moderate low risk. No specific mitigation actions were identified.

Clarkville Rural

The vulnerability assessment carried out for water and wastewater pipes in areas prone to liquefaction, has not been carried out for this stormwater network, as it contains no AC or earthenware pipes, which are those most vulnerable to damage in an earthquake strong enough to induce liquefaction. However, reticulation mains were assessed for earthquake risk, and concluded to be moderate low risk. No specific mitigation actions were identified.

Loburn Lea Rural

The Loburn Lea scheme area is not susceptible to liquefaction, so the pipeline vulnerability assessment process carried out within other scheme boundaries is not relevant. However reticulation mains were assessed for earthquake risk, and concluded to be moderate low risk. No specific mitigation actions were identified.

Cust Rural

At the time the scheme was assessed as consisting of open channels only, so no drainage assets for the scheme were included in the assessment.

9 CORPORATE RISKS & ASSUMPTIONS

An assessment of key risks and assumptions was prepared by the Council in preparation for the 2024-34 LTP, and is included in the Infrastructure Strategy. The assessment outlines all of the Key Assumptions and Risks that could potentially impact Council service delivery for the 3 Waters activities. Mitigation measures are explained in response to each identified risk.

The Key Risks and Assumptions table is available at TRIM 240611093590.

The definitions of likelihood and consequence and the overall risk priority used in the Corporate Risk Assessment are included in the Council's Risk Framework Document [TRIM 220428064825](#).

A number of the financial risks and assumptions identified in this document imply future uncertainty, with future changes potentially affecting the individual scheme financial projections. Changes to corporate assumptions have been taken note of as part of this AMP review and projections and budgets revised accordingly.

10 CLIMATE CHANGE

For some time Waimakariri District Council has been including the expected effects of climate change in both the hydraulic modelling that it carries out, and design work, and has assumed the worst case projection of RCP8.5.

Notwithstanding, in 2022 the Council commissioned NIWA to carry out a district specific climate report, and in June 2022 the Council resolved to

- *Adopt the NIWA climate projections for the RCP 8.5 Scenario as its baseline evidence for corporate planning, including District planning and the 2024 LTP suite of corporate documents (LTP, activity management plans and infrastructure strategy).*

The key findings of the NIWA report are as follows:

- The projected Canterbury temperature changes increase with time and increasing greenhouse gas concentrations. For RCP8.5 the mid-century mean air temperature is projected to increase by 0.9°, with an end of century increase of 2.4°. Diurnal temperature range (i.e., difference between minimum and maximum temperature of a given day) is expected to increase with time and increasing greenhouse gas concentrations.
- For RCP8.5 the mid-century mean maximum air temperature is projected to increase by 1.2°, with an end of century increase of 3.3°. Changes in mean minimum air temperature are largely uniform across the district
- For RCP8.5 the mid-century mean minimum air temperature is projected to increase by 0.5°, with an end of century increase of 1.6°. Changes in mean minimum air temperature are largely uniform across the district
- The average number of hot days (days $\geq 25^{\circ}\text{C}$) is expected to increase with time. 15 by mid century and 44 by end century. Hot days in the Lees Valley and western plains could see the largest increase by the end of century with upwards of 50 additional hot days projected per year.
- The number of frost days (days $< 0^{\circ}\text{C}$) is expected to decrease throughout the region. Largest decreases are expected in inland areas, with frost days reducing by up to 26 per annum by end century.

- Increased rainfall is projected across the lower altitude plains and coastal areas, and no change (or slight decreases) in annual rainfall are projected in the western high-altitude zones. However rainfall intensity is expected to increase. Extreme rainfall will likely increase by approximately 7% per 1 °C of climate warming, and shorter duration rainfall events (e.g., hourly) could increase by as much as 15% per 1 °C of climate warming.
- The future amount of accumulated PED (Potential Evapotranspiration Deficit) is projected to increase, therefore drought potential is projected to increase.
- Mean annual low flow in rivers generally decreases by late century, with decreases of 20%-50%.
- Floods (characterised by the Mean Annual Flood; MAF) are expected to become larger, with increases exceeding 50%. However, as noted in The Canterbury Regional climate change report (Macara et al., 2020), the mean annual flood “should not be considered a comprehensive metric for the possible impact of climate change on New Zealand flooding”.
- Sea-level rise will continually lift the base mean sea level on which the tide rides, which means there will be an increasing percentage of normal high tides which exceed a given present-day elevation e.g., street level, berm or stopbank crest.

This report validates the approach 3 Waters has been taking with it’s modelling and design work.

Previous Climate Change Initiatives

WDC’s initial studies carried out on the effects of climate change focused on the coastal fringe. An investigation into groundwater levels, (TRIM [191202168785](#)) concluded that rising groundwater levels will subject underground assets to more frequent inundation, and exacerbate surface flooding. Existing drainage systems are likely to become less effective. However a study of coastal erosion (TRIM [191202168789](#)) found that dune erosion is not likely to follow from sea level rise, as the Waikamariri River delivers enough additional material along the coast to the north of the river, to compensate for any increased rate of erosion. This study also considered coastal inundation, but a further more comprehensive study (TRIM [200312034365](#)) concluded that various combinations of storm tide, fluvial events and a rising mean sea level will cause overtopping of existing stop banks and natural river banks.

More recently a study (TRIM [231115183268](#)) has been carried out of the potential effects of climate change on the Council’s infrastructural assets. This study used Council’s previous risk assessment and criticality work to consider the likely increase in risk to assets arising from global warming. The conclusion is that the greatest risk come from the increased likelihood of flooding. The key outputs from the report are a comprehensive list of all the assets under threat from the higher flooding risk, and a high level assessment of costs to mitigate the danger. Solutions may include strengthening the asset to enable it to withstand the flooding, moving the facility/asset to a safer site, or accepting the damage, and repairing it when flooding does occur. For some solutions the work will be able to be integrated with the normal renewals programme. However this study is only a first screening, and the assets at risk will need case by case studies to further refine the actual threat, and commence development of a prioritised programme to mitigate risks.

It is proposed that this additional work will be carried out over the next three years. Notwithstanding this additional refining work, the report’s future costs to adapt have been included in the 30 year capital programme as place holders in years 11 to 20.

Design and modelling work carried out by WDC for its 3 Waters infrastructure allow for both increased rainfall intensity and sea level rise using the RCP8.5 scenario, but modelling has not yet incorporated the effect on higher ground water infiltration (GWI) that will be a potential consequence of the increased groundwater levels indicated by the above studies.

Overall the effects of climate change are expected to increase the frequency at which the existing drainage systems become overwhelmed

There were specific actions in the 3 Waters activity area that were identified in the 2021 AMPs that the WDC planned to carry out with respect to reduction of carbon emissions. None of these had any effect on drainage activities, which is a low emissions activity.

Future Climate Change Initiatives

a) Mitigation

Looking forward Council's 3 Waters team plans to carry out more with respect to mitigation and embed climate change consideration into its investment decisions. Within the three year term of the 2024 LTP it intends to use the guidance in the Water NZ publication Navigating to Net Zero to:

- Confirm the operational emissions boundary that 3 Waters intends to use.
- Develop an operational emissions forecast
- Develop a capital emissions baseline. Note the previous focus has been on operational emissions alone, but establishing a "business as usual" capital emissions baseline, will enable emission reduction opportunities from adopting alternative low-carbon approaches to be appropriately assessed. Establishing this baseline will be a significant body of work, and for it to be used effectively, the implication is that all future infrastructural projects will need to be assessed from both a climate and financial perspective once the baseline has been established.

Set carbon reduction targets

b) Adaptation

During the period of the 2024/2034 LTP further assessment work will need to be carried out, and consideration given to the types of solutions that may be practical. Since the Regional Council is responsible for management of the major rivers, Councils role with respect to these will be an advocacy one. The issues will need to start being discussed with affected communities.

11 DEMAND

There are a number of factors that may influence future demand on drainage systems in the district:

- Population trends or increases in population
- Changes in land use
- Changes in legislation
- Climate change
- Changes in public awareness/opinion
- Significant Wet Weather Events

Growth

The overall district population growth scenario used for the 2024 AMPs update was calculated by the consultant Formative under direction from Council's Development Planning Unit (DPU). The Formative data, which shows the population broken down into towns and rural areas is available here: <https://formative.shinyapps.io/InformProfile-WaimakaririDistrict/>.

To calculate the growth, population increases were applied to planned growth areas at a densities agreed with the DPU. Typically growth in rural areas is restricted to lifestyle blocks and Rural Residential developments with section sizes in the order of 4000m². This type of development has been strong within the district for a number of decades and is expected to continue

Where appropriate account is also taken of the capacity for infill to absorb the necessary increases. In cases where the required increase in population could not be fitted inside growth areas, further discussions were held with the Development Planning Unit to agree on locations where the additional growth should be applied. Drainage scheme growth in connections was then calculated based on the growth areas.

The following growth projection horizons were used;

1	1 – 3 years	(2024/25 to 2026/27)
2	4 – 10 years	(2027/28 to 2033/34)
3	11 – 20 years	(2034/35 to 2043/44)
4	21 – 30 years	(2044/45 to 2053/54)
5	31 – 50 years	(2054/55 to 2073/74)

TRIM [230905137205](#) shows the projected 50 year increase in drainage serviced properties, by scheme.

Notwithstanding the above growth calculation process, as part of all new development work, each development area must ensure that there are appropriate stormwater retention and treatment facilities created that both treat stormwater run-off and ensure that run-off from newly developed areas does not increase pre-existing stormwater flows

The requirement for developers to build infrastructure to manage increased stormwater applies equally to rural and urban developments.

Stormwater treatment and retention ponds are built or funded by each developer in a development area. The Council takes over the maintenance of these assets once constructed.

The drainage rated boundary areas shown on the drainage servicing plans for each scheme include any new stormwater management areas and their serviced properties.

Growth Uncertainty

The corporate growth model developed by the Council for assessing growth related works is by its nature uncertain as it relies on population projections that are highly dependent on both changing economic and social factors, and changing legislation, for example the 2020 National Policy Statement on Urban development 2020. Generally however, there is a greater degree of certainty in initial years, and greater levels of uncertainty when looking forward to the future. This means that over time, there is the ability for growth projections to be updated and refined over time as contributing factors evolve. There are also a number of other strategies employed to manage this uncertainty, which are outlined below.

A key means of managing this uncertainty has been to use the best available data and consult widely with Council staff in the policy and planning fields for the best information. It should be noted here that the policy of requiring developments to undertake work on the development site to ensure stormwater site runoff is not increased by the development, does to a large degree reduce uncertainties for stormwater planning.

Changes in Land Use

WDC is currently undertaking a District Plan review. The only expected effect on land use from a drainage perspective is the move from the currently permitted 4 hectare minimum lot size for rural subdivisions, to 20 hectares. This will have the beneficial effect of reducing potential increased runoff from such developments. The review also includes for a number of smaller lot sized rural residential developments (approx. 5000m²). The effect of these changes may encourage those seeking a lifestyle block to accept smaller lots, from which it is easier to manage overall runoff.

Changes in Public Awareness

There is increasing demand for an improvement to water quality in lowland streams, which is translating into new legislation. Further comment on the effect of this on drainage activity management is provided in the section on consents.

Significant Wet Weather Events

This has been a significant driver of demand over the last 10 years. Typically such events may feature high intensity periods of rainfall in localised parts of a catchment that exposes deficiencies in particular parts of the drainage system. As noted in the level of service section, Council reacts to these events by additional programmes of works to alleviate the drainage system shortcomings.

12 CAPACITY & PERFORMANCE

District

The Council has a number of drainage hydraulic models constructed and maintained by its in house team. Relevant to the rural areas is the District flood hazard mapping which has been carried out for the Development Planning/District Plan team, and made publicly available (for 100/200 & 500 year events). These are used in rural areas to set floor levels for new dwellings.

However rural drainage works are often developed in the aftermath of significant rain events, rather than in advance, based on models.

Since a major event in 2014 there have been a regular succession of such events. Details of the programmes of ongoing work that followed these events is provided in the scheme summaries below. Scheme budgets are adjusted accordingly within the next LTP. Funding is from a mixture of scheme specific rating , and the district wide rate

Schemes

1. Oxford Rural

The Oxford Rural Drainage Scheme is expected to have sufficient capacity for the target Levels of Service. As most of the system consists of open drains, regular maintenance is required so that the capacity can be maintained.

The system has two significant structures (the Bennetts Diversion Drop Structures and the Deep Creek Spillway). Whilst these assets are aging, the current condition of each remains good at the present time and no further major maintenance is expected for at least a further five years.

2. Ohoka

Following drainage problems that occurred in the June 2014 rainfall event, investigations into land drainage improvements were initiated, and a subsequent programme of works developed. These were designed to address the insufficient drain capacity and resurgent groundwater, and have mostly been completed. (TRIM 141009110892). The 2017 events identified some other issues in the Mandeville area. The major outstanding project to resolve issues is the Mandeville Resurgence Channel Diversion / Upgrade, planned between 2024/25 and 2031/32.

3. Loburn Lea

The scheme is relatively new and is designed to cope with the target service levels. For the 2022/23 year there are no complaints recorded for flooding, or drainage issues within this scheme

4. Cust

The Cust Rural Drainage Scheme is expected to have sufficient capacity for the target Levels of Service. As most of the system consists of open drains, regular maintenance is required so that the capacity can be maintained.

5. Clarkville

The open drain stormwater system in Clarkville generally works well and there have been no reported cases of flooding from the drains.

6. Coastal Rural

The existing drainage system is adequate for the needs of the local farming community. The stormwater and land drainage system is working and there have been no reported cases of flooding property damage.

7. Central Rural

The Central Rural Drainage Scheme does not currently provide sufficient capacity to avoid flooding of private property and road surfaces during large storms. Some surface ponding and nuisance flooding occurs due to the low lying nature of the area. Whether this ponding is outside the target storm event level of service has not been investigated. With the introduction of the recent Freshwater National Policy Statement and accompanying regulations, the status of some of these flooding areas may have changed. As the legislation is interpreted and applied, it may be that they officially become wetlands, for which the ability to drain them in storm events will be limited.

Following the June 2014 rainfall event, investigations into land drainage improvements were carried out, the subsequent works from which are now mostly completed. This includes improvements to drainage on Mairaki, O’Roarkes and Oxford Roads, and deepening and widening the channel from Swannanoa to Johns Roads in Fernside. The remaining work of diverting Dockey Creek is due for completion in 2026/27

As most of the system consists of open drains, regular maintenance is required so that capacity can be maintained.

Consents

Only the Loburn Lea scheme has a consent associated with stormwater management areas. No non-compliance reports have been received from the Regional Council over the period of the last LTP regarding these consents.

Council’s recent engagement of a dedicated consents officer is expected to improve the way it manages it’s consents overall.

13 OPERATION AND MAINTENANCE

Operation and maintenance expenditure incorporates the day to day running of the drainage schemes and allows the system to carry on functioning to deliver the agreed levels of service.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised below:

Task	Planned	Reactive
Pipe/culvert repairs	No planned repairs	Repairs undertaken in response to service requests / leaks.
Open drain maintenance	Regular schedules of drain maintenance	Repairs undertaken in response to service requests.

As noted earlier a significant shift in emphasis in the way that waterway maintenance is carried out has occurred recently, with a much greater emphasis on ecological values. This is explained in detail in the Council's [Drainage Maintenance Management Plan 2020](#), which covers not only the philosophy supporting this change, but also describes planned best practice for all of Council's waterway maintenance activities. These may need adjustment following the National Environment Standards regulations having recently become operational.

District Overview – Operation & Maintenance Expenditure

Budgets are largely based on past expenditure carried forward, which has also been the case for the 2024/34 LTP. However consideration of the effect on drainage maintenance costs of rising groundwater levels in coastal areas caused by sea level rise should be made during the three year period before the next LTP, so that likely increasing costs can start to be factored in

The operation and maintenance (O&M) budgets are currently set up to automatically account for inflation and growth. Inflation is accounted for with a factor set by the Council's Finance Unit, but this is not used in the development of the graphs and tables in the AMP's so as to provide a clearer picture of asset O&M costs year to year

In general for 3 Waters AMPs the implication of growth on O&M budgets is accounted for with the inclusion of a formula that increases the O&M costs on a pro rata basis proportionally with the population (as new developments come online). Depending on asset class the increase in O&M costs may be reduced from being directly proportional.

For rural drainage schemes this approach is not especially applicable, as the majority of the maintenance costs are related to length of open drains rather than population numbers. Increases in drain maintenance costs is therefore accounted for through separately forecasting the costs of the maintenance contract.

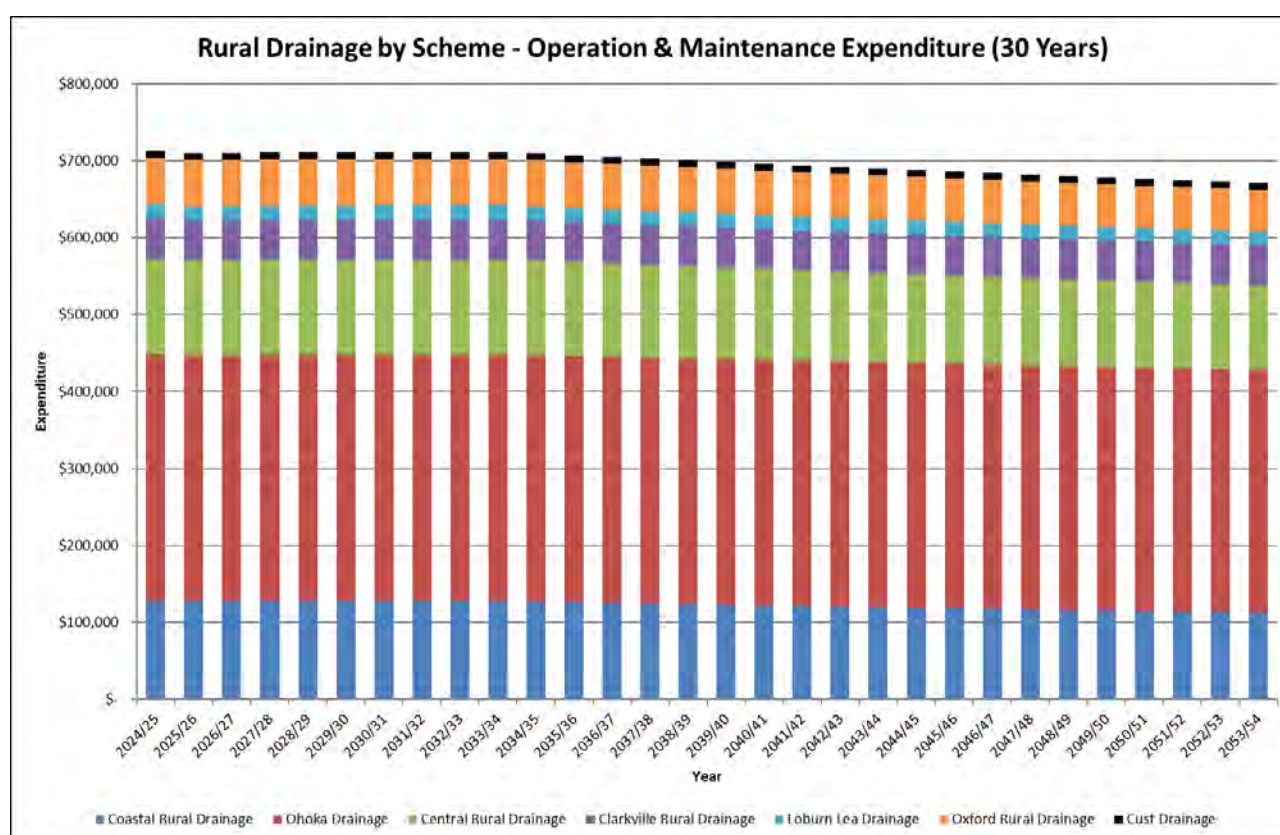
In addition, part of the consideration when setting the O&M budgets across the district's schemes is the potential impact of any new capital projects coming on line. Typically for stormwaters these

are capital projects completed by private developers . These increases are accounted for in two ways:

- Direct O&M Increases: Through Asset Managers calculating what areas of the budget that may increase, and manually adjusting the appropriate parts of the budgets from the year following when the capital project will be completed. An example of this would be a new Stormwater Management Area being constructed. This would require new maintenance of the (typically) large grassed area.
- Depreciation Increases: Changes in depreciation as a result of new capital projects are accounted for by the Council's Finance Team. As a new capital budget is introduced to a scheme, there is a formula to increase the depreciation amount for that scheme based on the size of the capital budget being assumed to represent the value of the assets being added, and the asset life being assigned a representative figure for that scheme (depreciation rates are typically in the order of 1.5% to 2.5% of the value of assets added for example). Normally a comprehensive valuation is carried out every three years, which then assigns accurate valuation rates and base lives to any new assets created in the last 3 years. This refines the accuracy of the depreciation rates further. With increased inflation over the last few years, the most recent valuation has been carried out a year earlier.

At the end of each FY, a stocktake of new assets is undertaken, including vested assets, and the value included in the Council's financial system

Figure 4 presents the forecast Operations and Maintenance Expenditure across all the Council's drainage schemes for the following 30 year period.

Figure 4: District Overview - Projected Operation & Maintenance Expenditure

14 CAPITAL WORKS

The Waimakariri District Council has previously developed a process for justifying any new capital works projects being submitted for inclusion in the draft Annual Plan or LTP. However, this has so far not become well embedded in the Council's processes, and so improvements are now being made, and rolled out in time for the 2024-34 LTP.

In particular, projects in years 1-3 of the LTP with value greater than \$500,000 require a "Business Case Light" application, and projects of a greater value than \$4M in years 1-3 require a full business case to be written. Projects in years 4-10 with a value greater than \$500,000 require a slightly less robust 'Justification Form' application.

In general the forms require:

- Project description and scope;
- Strategic case – LOS, growth or renewal. Contribution to Community Outcomes, national programmes and public value benefits;
- Risks and assumptions;
- Economic case – Preferred option and alternatives considered;
- Financial case – Requested budget, (components –LOS, growth, renewal), expensed component, funding sources (DC's if relevant), effect on rates and budget confidence;
- Management Case – ability to deliver and how.

Through each Annual Plan and Long Term Plan process, Project Justification forms are prepared for projects that meet the criteria for requiring them. These require the relevant Department Manager's approval before being presented to the Council's Management Team as part of submitting the overall budget proposal from each service area. Ultimately what is approved by the Management Team is presented to Council to review as the Draft Long Term Plan or Annual Plan budget.

15 RENEWALS

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it restores the system to its original capacity. Renewal work is funded from a budget generated by the depreciation component of the rates.

Council uses a risk based model for pipework renewals which incorporates the following criteria:

- Condition Rating – standard scoring from pipe inspection manual based on CCTV data, where available.
- Remaining Useful Life – based on the design life, as used previously.
- Vulnerability – a function of location, material and joint type calculated as part of the DRA review, which assesses the risk of earthquake damage in areas subject to liquefaction.
- Criticality – the criticality score calculated for each main.

The process uses a GIS model that incorporates the above factors and utilises existing Asset Management Information System data in the GIS.

The model enables an assessment to be made of the depreciation required to fund future replacement costs, for different levels of risk. This allows risk and affordability to be balanced. Key outputs from the model are a prioritised list of pipe renewals needed across the district, identified by scheme, and an annual expenditure profile for the next 150 years. A schematic of the modelling process is shown below in Figure 7.

The final decision about pipe renewals to be carried out in a particular year is made by the Asset Manager, taking into account factors such as Roading projects and other utilities renewals and any operational requirements.

There are few other asset types within the rural schemes, but the model used incorporates the same methodology as the pipe renewals model, except that criticality is not yet factored in. This is planned for the future. Since knowledge of facility asset condition is not high, standard industry lives for the relevant asset classes have been used as inputs to this model.

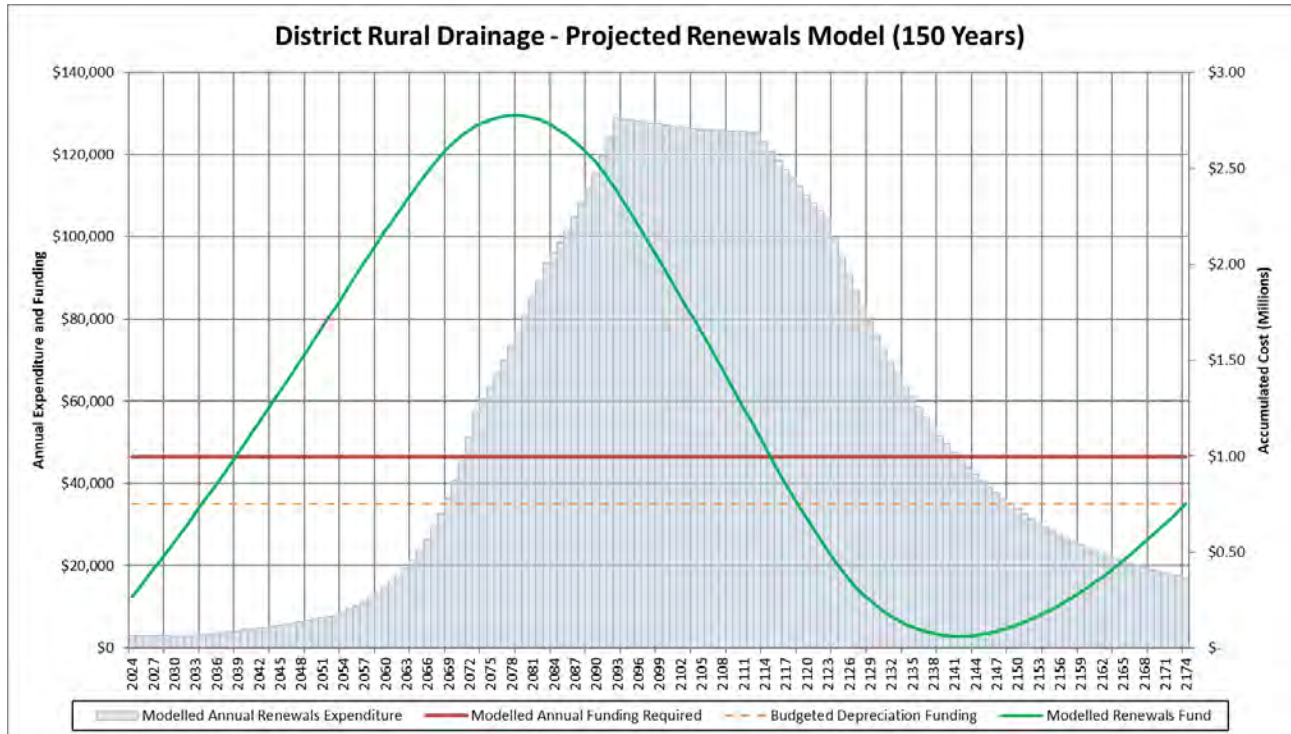
District Overview – Renewals Expenditure

Figure 5 presents the forecast Renewals Expenditure across all the Council's rural drainage schemes for the following 150 year period. The horizontal red line is the required level of funding to ensure that renewals are not deferred, and current levels of service are maintained.

The figure only shows the output from the model, so expenditure shown in the graph for the first ten years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager to the direct renewals model outputs.

The model is operated at a district wide level. Renewals expenditure by scheme is then determined by breaking down the district wide expenditure in relation to the value and type of the assets within each scheme. Scheme level graphs tend to be less smooth.

Figure 5: District Overview - Projected Renewals Expenditure



The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model. As can be seen, this account is maintained as a surplus, peaking at approximately \$2.75 million in the year 2080, before being drawn down over the following 95 years.

The key point to note is that the Budgeted Depreciation Funding is less than the Modelled Annual Funding Required. The reason for this discrepancy is as follows:

Depreciation Discount Factor: Council's financing of future renewals incorporates the expectation that depreciation funding can be invested at a higher rate of return over the life of the assets than inflation. Further information regarding this approach is provided in the Finance Policy. This concept is embodied in the scheme budgets in the form of a discount rate (referred to in the budgets as the 'Depreciation Discount Factor'). This reduces the annual depreciation funding required from rates, while still ensuring that there will be sufficient funding available to renew assets at the end of their useful life. The renewals model assumes funds can be invested at a 1% marginal interest rate higher than inflation when considered over the long term.

It is noted also that there are a wide number of factors influencing specific planning for renewals projects, which mean that the outputs from the renewals model are not strictly followed. For this LTP overall expenditure matches the model, but there are differences as shown in the table below.

Table 15 : Planned Budget versus Renewals Model Recommendation 2024-34

	Renewals model recommendation	Planned Budget	Budget as a percentage of model recommendation
Reticulation	\$10,000	-	0%
Headworks	\$20,000	\$30,000	150%
Total	\$30,000	\$30,000	100%

It is noted that beyond the first 10 year window, the outputs from the renewals model have been fully adopted to inform the renewals budgets for each scheme.

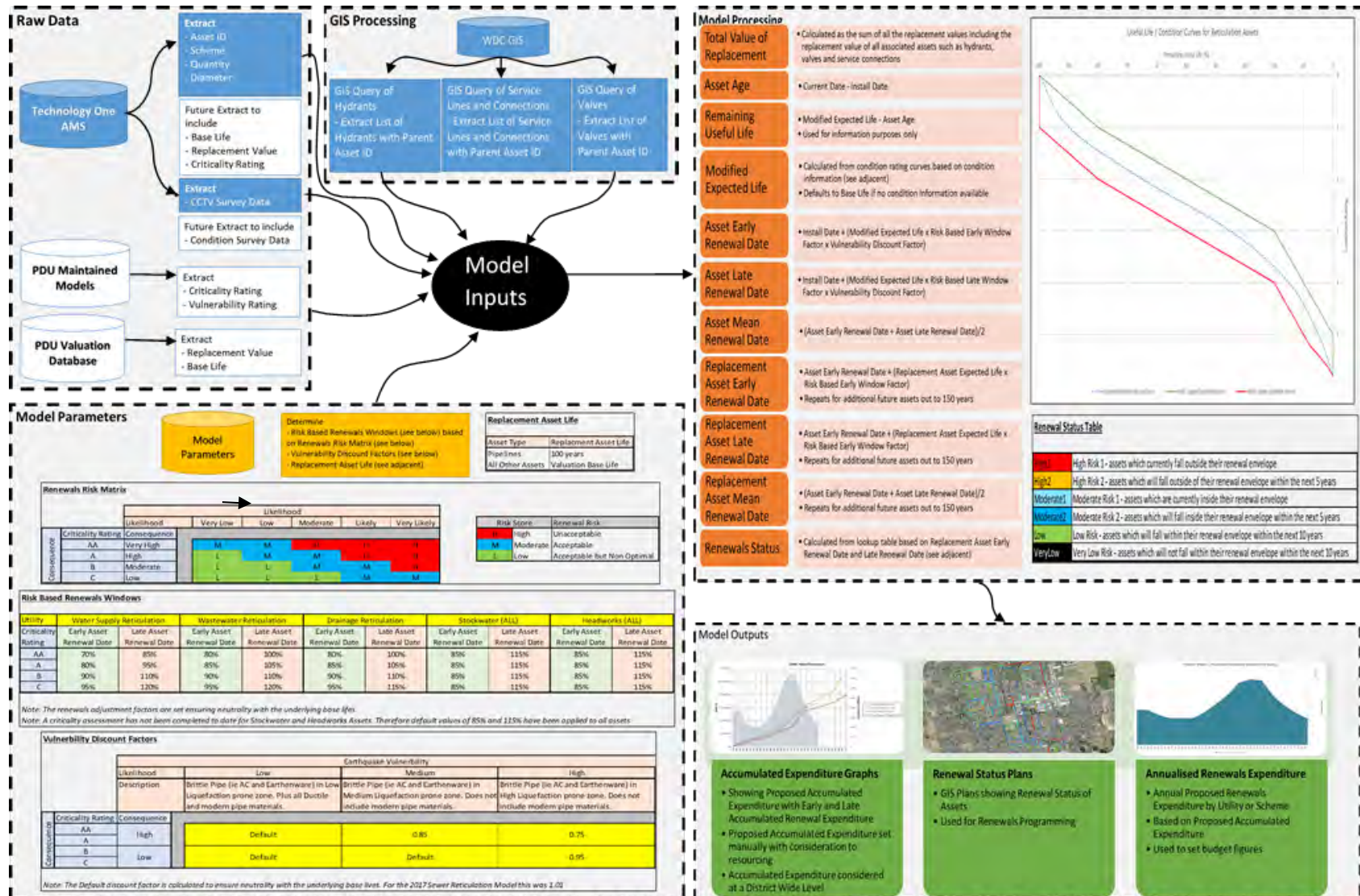
There are no known deferred renewals of assets across the district.

Scheme – Reticulation Renewal Timelines – Spatial View

The GIS viewer at the following link shows plans by scheme of the pipe renewal timeframes generated by the model, in three bands; within 5 years, 15 years and 25 years.

[Asset Management Plans GIS Viewer](#)

Figure 6: Renewals Expenditure Model



16 NEW WORKS

There are five main sources of new works in the District that come together to produce the new works programme. These are:

- Modelled capacity assessments provide details on any LOS shortfall on the schemes and new works are prioritised to address these.
- Flooding events. These are the primary source of improvement programmes, an example of which is the 2014 Flood Response Programme.
- The Risk Assessments provide information on the highest risk areas on each drainage scheme, with any extreme or high risks requiring works to mitigate against those risks.
- Works are also identified through the operation of the schemes rather than being identified through the assessment of level of service, capacity, or risk. These works are normally identified by an operator or Asset Manager and include such works as health and safety improvements, and works to ensure assets are maintained in an acceptable condition.

These sources all provide new works projects that populate the budget for the next 50 years. The table below shows the projected budgets for new works for the next 50 years for all the district's rural drainage schemes, including renewals.

When any significant project is being planned, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. The detailed capital works table which is available in the [Asset Management Plans GIS Viewer](#) , shows the project ID for each project. Each project has an entry in the budget spreadsheets [Capital Works Budget Sheets](#) , which in turn provide references to supporting documentation.

Table 14: New Works across Rural Drainage Schemes Over 50 Years

Scheme	2021 - 2030	2031 - 2040	2041 - 2050	2051 - 2070	Total
Ohoka Drainage	\$0	\$0	\$0	\$31,985	\$31,985
Central Rural Drainage	\$0	\$0	\$0	\$46,944	\$46,944
Clarkville Rural Drainage	\$0	\$0	\$0	\$0	\$0
Coastal Rural Drainage	\$0	\$0	\$0	\$18,178	\$18,178
Cust Drainage	\$0	\$0	\$0	\$61,603	\$61,603
Loburn Lea Drainage	\$0	\$0	\$1,725	\$1,283	\$3,008
Oxford Rural Drainage	\$30,000	\$0	\$106,019	\$539,775	\$675,793
Total	\$30,000	\$0	\$107,743	\$699,767	\$837,511

Note: Dates refer to beginning of financial year (e.g. 2024 is 2024/25 financial year).

The figures in the table above are based on the assumption that LOS do not change significantly into the future, and that growth forecasts are accurate. Growth projects may be delayed to fit actual growth patterns.

All projects are included in a central database of capital works projects, including renewals.

The front end of the data base has recently been updated to ensure that relevant data to the projects is captured in one place as a “single source of truth”. Where possible this data will also be used to populate the “WDC Capital Works Project Justification” template that is required to be filled in for any new project of a higher capital value than \$500,000.

When a scheme upgrade is undertaken, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. These investigative reports are referenced in **Error! Reference source not found.** in Section 3, Scheme Description.

Works Coordination

As well as the processes above identifying works on a scheme by scheme basis, or by service type, further consideration is required to coordinate work programmes between a combination of service types. Utilities Providers Coordination meetings are held quarterly between 3 Waters, Roading, power and telecommunication providers. This enables opportunities for collaboration to be identified. In addition, Council has a GIS tool where future planned works can be overlaid to optimise the coordination process further.

Rural Capital Works

The following graph shows the 30 year budget for all capital works funded by scheme rates, including projects driven by growth and levels of service.

Figure 7: District Overview - Projected New Works Expenditure

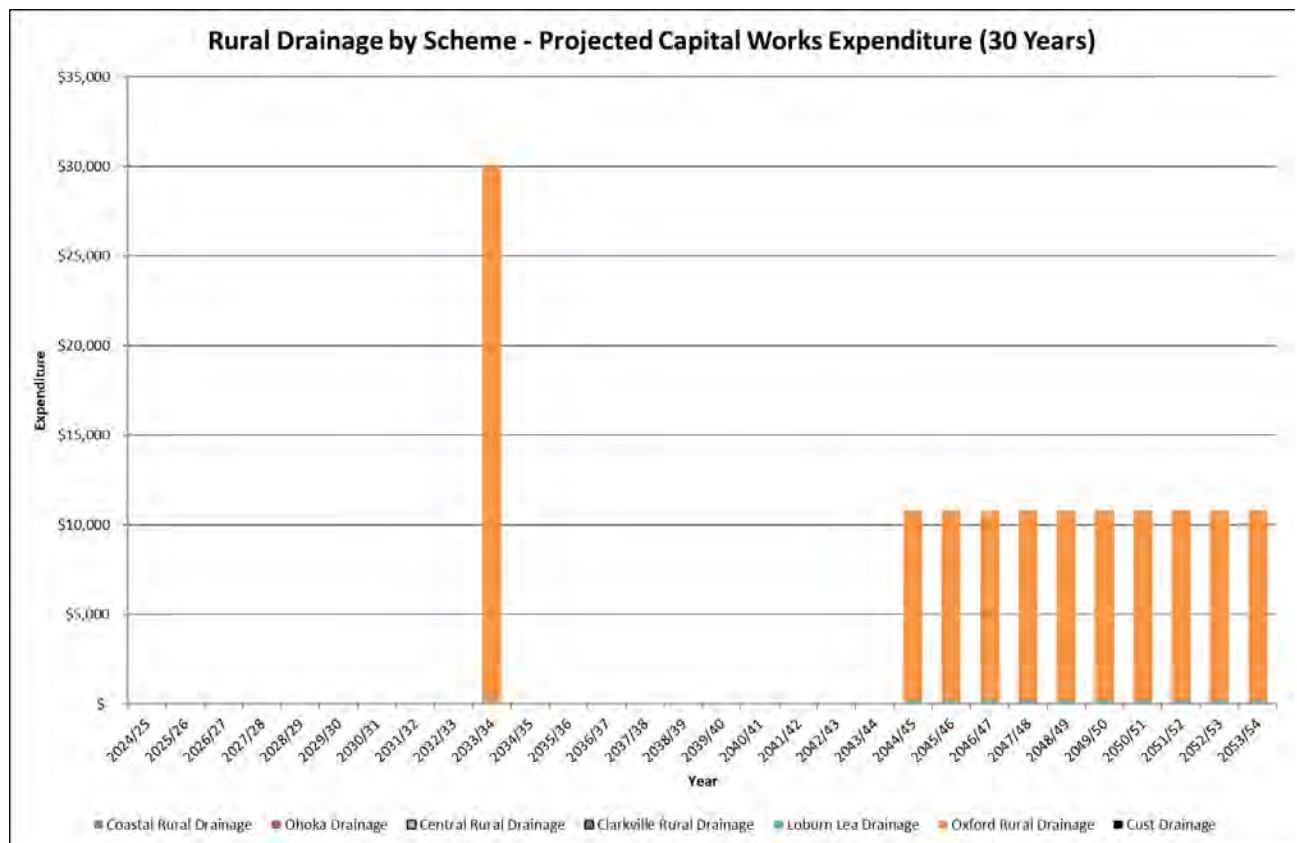


Figure 7 shows a peak in 33/34 that represents a headworks renewal project in Oxford Rural Drainage Scheme.

The graph below shows the additional capital budget for projects funded by the district wide rate. It includes both urban and rural area projects. Geographically the majority of these projects are in rural areas.

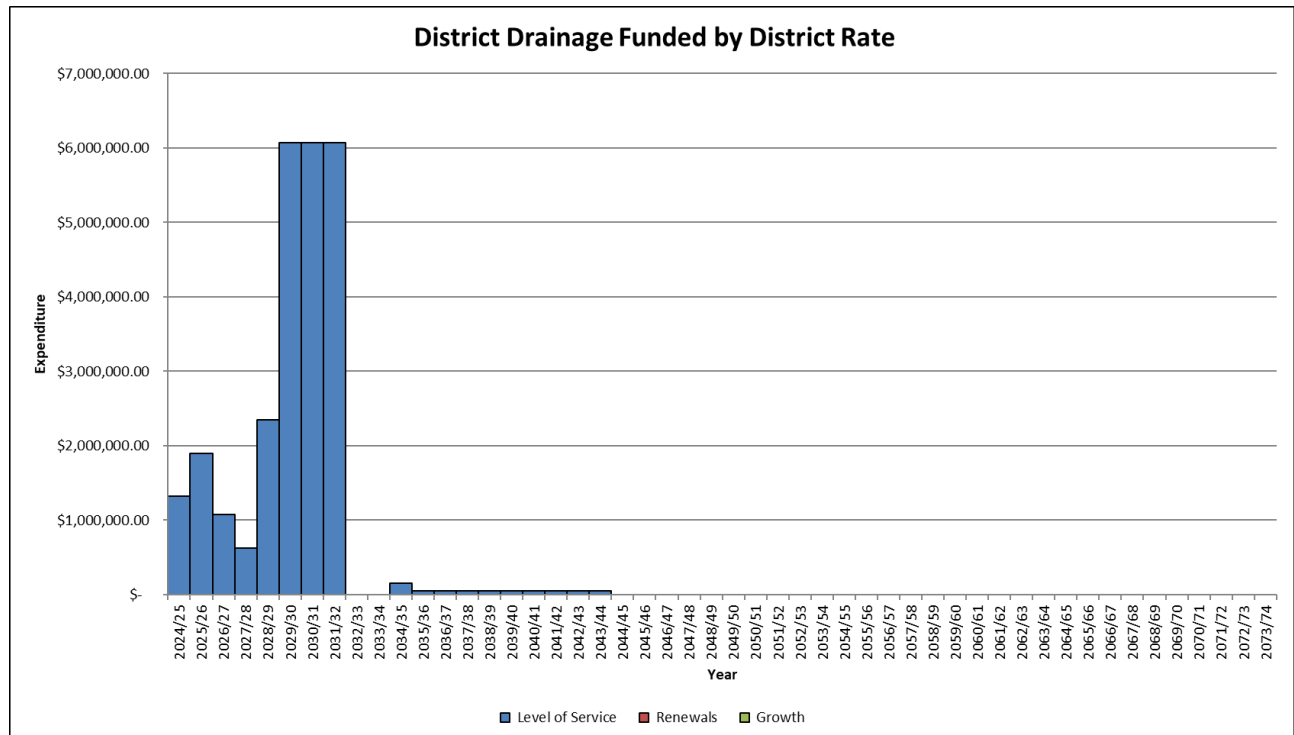
Figure 8: Projected District Wide Capital Works Expenditure

Figure 9 displays peaks corresponding to the Mandeville Resurgence Channel Upgrade Project's Stage 1 (2024-2026) and Stage 2 (2028-2032). Following flooding in June 2014, budget was allocated to improve the drainage in the Mandeville and Ohoka areas. Additionally, a budget of \$20 million spread over the first 10 year (2024/34) of the Long Term Plan is included for Flood Resilience Projects to implement future works cater for the implications of increased weather patterns, climate change and associated impact on our services.

Over the past 10 years additional budget has had to be approved reactively by Council following significant rainfall and flooding events, including \$21.5 million following June 2014 event, \$3.5 million following May 2021 event, \$3.8 million following July 2022 event and \$4.0 million following July 2023 event. While some of this expenditure was funded from external sources, such as NZTA Waka Kotahi, a larger portion of the expenditure was funded from rates as unbudgeted expenditure.

The proposed Flood Resilience Projects capital works budget will ensure that there is existing budget available for immediate works and also risk and resilience improvement projects identified following future events.

Included in the [Asset Management Plans GIS Viewer](#) is a table that shows all of the planned projects over a 50 year time horizon for all of the urban drainage schemes, and how the cost is spread across the three components - LOS, renewals and growth. The level of confidence in the budget for the works is also presented in the table, as well as references to other documents relevant to the works, such as options studies. The figures presented in the table exclude inflation for ease of comparison across years.

For a discussion on the level of optimisation in project selection, refer to the introductory chapter of the AMP.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

Scheme – Capital Upgrade Works – Spatial view

The GIS viewer at the following link shows plans by scheme of the planned capital upgrades in 5 temporal bands over a 50 year time horizon.

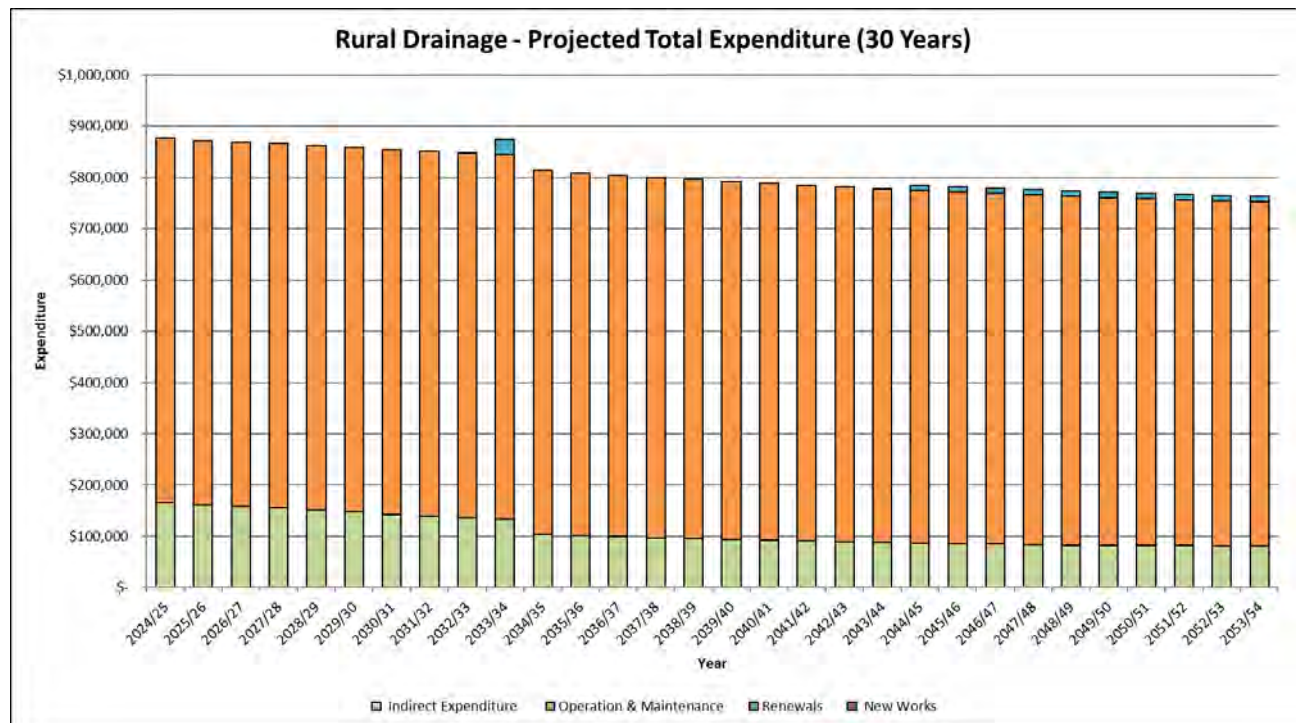
[Asset Management Plans GIS Viewer](#)

17 OVERALL FINANCIAL FORECASTS

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure. Operational costs include operations and maintenance, and indirect expenditure.

Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and internal overhead costs. Capital includes expenditure for growth, levels of service, and renewals, (excluding carry forwards) but excludes Flood Response Programme works funded by the district wide rate.

Figure 9: Projected Total Expenditure



Financial Forecast Key Assumptions

1. Asset data in the asset register is fit for purpose.
2. Asset lives based on nominal material life, are reasonably accurate.
3. LOS will not change, for example required by legislation.

4. WDC does not suffer any major natural disaster during the period of the financial forecasts.
5. Effects of climate change are not felt during the term of this LTP
6. Growth matches the projected profiles.
7. Maintaining Operational and Maintenance costs at current levels is cost effective

Funding/Revenue Sources

An explanation of the sources of funding for the activity is fully detailed in the Council's Revenue and Financing Policy, published within the 2024-2034 LTP (TRIM 231114183205). This includes the rationale for each source of funding for each scheme, and an explanation of how the different funding methods are applied to each scheme in relation to the service delivered.

Primary sources of funding for all schemes are targeted rates and development contributions for works required to accommodate growth.

In addition a district wide drainage rate, included as part of the General Rate funds drainage upgrades district wide, both rural and urban areas, and without regard to drainage rated areas. Projects are primarily flood response works, but minor drainage works are also included.

All capital works budgets are split into three components, Level of Service, Renewal and Growth. The division may be seen for scheme projects in the Capital Works table contained within the [AMP Plans and Figures Viewer](#)

The growth component is recovered through development contributions (DC's), calculated in accordance with Council's Development Contributions Policy, which can be accessed via the link below. For those projects with a growth component an assessment has been made for the 2024-2034 LTP of the value of the DC required per future connection to the scheme, to fully recover the growth component of the capital work. These assessments are updated as part of the Annual Plan process, and are published on the Council's website at the following link <https://www.waimakariri.govt.nz/consents-and-licences/resource-consents-and-planning/development-contributions>

Summary calculation sheets for individual schemes can be viewed by clicking on links within the main document.

Valuation

A full peer reviewed valuation of assets is normally carried out on a three yearly cycle, using the asset data in our asset management information system. Due to the current much more rapid inflation than has been usual, the most recent valuation has been carried out in 2022 ([TRIM 220803132120](#)). The rates from that valuation have been adjusted by the CPI to arrive at "valuation" figures for 2023. Table 15 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for the district, and scheme by scheme (rural only) .

Table 15: Asset Valuation

Scheme		District	Central Rural	Clarkville Rural	Cust Rural	Loburn Lea Rural	Ohoka Rural	Oxford Rural	Coastal Rural
Manholes	Quantity	39	-	-	-	11	15	-	13
	Replacement Cost	\$456.0k	-	-	-	\$128.6k	\$175.4k	-	\$152.0k
	Depreciated Replacement Cost	\$408.3k	-	-	-	\$113.1k	\$157.7k	-	\$137.5k
	Annual Depreciation	\$4.6k	-	-	-	\$1.3k	\$1.8k	-	\$1.5k
Sumps	Quantity	8	-	-	-	-	7	-	1
	Replacement Cost	\$19.6k	-	-	-	-	\$17.1k	-	\$2.4k
	Depreciated Replacement Cost	\$19.2k	-	-	-	-	\$17.0k	-	\$2.2k
	Annual Depreciation	\$196	-	-	-	-	\$171	-	\$24
Valves	Quantity	8	-	4	-	-	4	-	-
	Replacement Cost	\$40.3k	-	\$28.8k	-	-	\$11.5k	-	-
	Depreciated Replacement Cost	\$28.0k	-	\$16.5k	-	-	\$11.4k	-	-
	Annual Depreciation	\$403	-	\$288	-	-	\$115	-	-
Main	Quantity	5,770 m	813 m	240 m	367 m	839 m	2,351 m	79 m	1,081 m
	Replacement Cost	\$5.1M	\$515.0k	\$289.9k	\$238.1k	\$776.6k	\$1.4M	\$253.2k	\$1.6M

	Depreciated Replacement Cost	\$3.8M	\$268.6k	\$224.2k	\$172.2k	\$650.2k	\$1.0M	\$130.4k	\$1.3M
	Annual Depreciation	\$53.2k	\$6.1k	\$2.9k	\$2.6k	\$7.8k	\$15.4k	\$2.5k	\$16.0k
Open Channel	Quantity	260.4 km	63.1 km	14.2 km	5.7 km	993 m	68.8 km	61.3 km	46.3 km
	Replacement Cost	\$10.3M	\$2.5M	\$561.1k	\$224.4k	\$39.1k	\$2.7M	\$2.4M	\$1.8M
	Depreciated Replacement Cost	\$10.3M	\$2.5M	\$561.1k	\$224.3k	\$39.1k	\$2.7M	\$2.4M	\$1.8M
	Annual Depreciation	\$302	\$231	\$0	\$54	\$0	\$0	\$0	\$17
Facilities	Replacement Cost	\$1.6M	\$105.9k	\$69.3k	-	\$500.6k	\$425.9k	\$440.3k	\$29.7k
	Depreciated Replacement Cost	\$1.3M	\$104.8k	\$69.3k	-	\$497.8k	\$417.6k	\$215.6k	\$26.9k
	Annual Depreciation	\$9.8k	\$1.6k	\$0.0k	-	\$1.3k	\$2.1k	\$4.6k	\$297
Totals	Replacement Cost	\$17.4M	\$3.1M	\$949.2k	\$462.4k	\$1.4M	\$4.8M	\$3.1M	\$3.6M
	Depreciated Replacement Cost	\$15.8M	\$2.9M	\$871.2k	\$396.5k	\$1.3M	\$4.3M	\$2.8M	\$3.3M
	Annual Depreciation	\$68.6k	\$7.9k	\$3.2k	\$2.6k	\$10.3k	\$19.5k	\$7.2k	\$17.8k

18 DATA CONFIDENCE

Data confidence is assessed as part of the AMP review, across a range of asset data and processes. The confidence grading used has been taken from the IIMM as follows:

Confidence Grade	Description
A Highly Reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset accuracy \pm 2%

B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Data set accuracy $\pm 10\%$
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample. Up to 50% data is extrapolated and accuracy estimated at $\pm 25\%$
D Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis, Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated at $\pm 40\%$
E Unknown	None or very little data held

Confidence grades have been assessed as:

Table 16: Data Confidence Levels

Element		Grade
Asset Inventory	Reticulation	B
	Headworks	A
Performance and service gap interpretation		B
Asset condition	Reticulation	D
	Headworks	C
Asset remaining lives	Reticulation	C
	Headworks	C
Demand forecasts		B
Valuation and depreciation		B
Financial forecasts		B

Confidence in headworks assets can be seen to be generally lower than reticulation assets. This is a reflection of more focus being placed historically on network assets rather than facilities, as that is where the majority of the maintenance effort is expended. However confidence in the headworks asset inventory has increased considerably since the last LTP, as a full asset inventory has been carried out, although this did not include asset condition assessment.

It is worth noting that most rural drainage facility assets are above ground, and therefore any assets in poor condition can be readily identified and the risk associated with asset failure mitigated through regular visual inspections.

Note that demand forecasts and financial forecasts sections have been assessed on the basis of the confidence in our infrastructure planning given a particular growth scenario. Growth predictions themselves are always inherently uncertain, and elastic. If actual growth is faster or slower than the growth scenario selected, projects to cope with the demand, provided they have been well scoped, can be readily brought forward or delayed as necessary.

19 ASSET MANAGEMENT SYSTEMS

A register of drainage supply assets is held within the Councils Financial Management System and referred to as the Asset Management Information System (AMIS). The register is maintained by the Asset Information Management (AIM) Team on behalf of the 3 Waters Team. The platform is the Council's Finance Management System, Technology One.

The AMIS provides the base data used for the asset criticality model, the drainage network models and RAMM roading data, so it is essential that every effort is made to ensure the dataset in the AMIS is accurate. Current process to deliver the required outcome is as follows.

For new assets, built as part of development, or as stand alone capital projects, the AIM team collates as-built data from as-built engineering plans and incorporates this data into the GIS system and asset database. This data then feeds through into the Council's asset valuation process.

The in-house works order system integrates with the asset management system. Maintenance activity, for example in the form of a pipe fault repair by the Council Water Unit under instruction from a work order is now entered digitally via mobile devices in the field. The field devices record job costs, asset location and any changes to assets, and the information is direct uploaded into asset register. Costs are recorded against the repaired assets.

Service requests are generated out of Council's Property and Rates System and for certain job types automatically raise a work order to be sent to the Water Unit via email. Other service request types are forwarded to 3 Waters team members for triage.

Unfortunately the Council's enterprise system, Technology One is in the process of being replaced, as the company advised that it was moving entirely to a cloud based new platform.

Asset Management Maturity

Asset management maturity assessments (AMMA) have been carried out on two previous occasions, most recently in 2021. The assessment was carried out in house, and a subsequent peer review of the self assessment was carried out. The assessment showed that the Drainage activity was generally operating asset management at a core level of maturity, and scored overall a 57 against a target of 78.

The key areas for improvement for drainage were : *"the asset register data, condition information, risk management and capital works planning"*.

The table below shows further high priority improvement recommendations, together with the actions taken since the assessment.

AM Function	Recommendation	Action
<i>Policy and Strategy</i>	Develop an Asset Management Strategy.	No Progress
	Incorporate a workshop with AMP authors early in the AMP development to explain overall themes (in the IS) and ensure they are included in the AMP.	Being integrated with the AMP planning meetings
<i>Forecasting Demand</i>	Undertake sensitivity testing for growth or demand change scenarios such as population demographic shifts and climate change. Incorporate the results into the AMP.	The 3 Waters reform process has left insufficient time for sensitivity analysis, on top of the normal growth work required
<i>Asset Register data</i>	Complete the facilities and headworks asset data and condition information improvements.	Will be complete by end 2023
<i>Asset Performance and Condition</i>	Improve use of asset condition data	InfoAsset Manager is now in operation to make better use of CCTV data. Facilities asset condition assessment yet to be carried out
<i>Decision Making</i>	Introduce a cross activity project prioritisation process to enable better decision making, focusing on the relative priority of level of service improvements.	No formal process developed. Prioritisation carried out by Management Team and elected members
<i>Managing Risk</i>	Review the format, and content of the risk registers and introduce processes to regularly review them and escalate key risks to the corporate register.	Review under way. Expected to be complete late 2023

The self assessment AMMA is available in TRIM [210506072305](#) and the peer review documents in TRIM [220506071089](#)

20 NEGATIVE EFFECTS

At the District level the activity of providing a drainage service to the various communities has the following negative effects:

- Potential damage to private property through access of machinery used to clean drains
- Increased silt load in streams, following drain cleaning , particularly if operator not properly aware of the issue
- Potential ecological damage, including fish spawning habitats from drain maintenance activities

21 SERVICE DELIVERY

Delivery of most capital works is via competitive tendering practice in accordance with the Council's procurement policy ([TRIM 220303030172](#)). Design is usually carried out in house, or where resources are insufficient, via external consultants, again engaged in accordance with the procurement policy.

Routine maintenance of the rural drainage network is carried out via a long term contract, competitively tendered at the end of its term. The contract is included as a component of the district wide roading maintenance contract, put out for tender in 2020. The service provided is reactive, but well regarded within the community serviced. One of the objectives of including the contract within the roading maintenance was to place a higher emphasis on planned maintenance.

22 IMPROVEMENT PLAN

Error! Reference source not found. below summarises the planned AMP improvements applicable district wide, identified as each section has been reviewed. Many of these have been carried forward from the 2021 AMPs. The 3 Waters reform programme meant that little focus was provided on the Improvement Programme from the 2021 AMP.

Projects will be managed under the 2024-27 AMP Improvement Programme full details of which are provided in [2024 Improvement Programme](#). The summary table below shows which section the AMP that the improvement project was derived from and includes projects that have been completed since the 2021 AMP.

Table 17: 2021 AMP Improvement Plan

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP002	Asset Management System	Carry out asset inventory check at all facility sites. Record key attributes and condition, and functional descriptions	High	Largely complete	Asset inventory complete. Plan to use TRAKK software to start collecting condition data
IP004	Asset Management System	Integrate Rooding & 3 Waters Renewals Programmes	High	Planned for 2024/25	Physical works layer in GIS now used for planning, but further Rooding/3 Waters work needed to complete
IP006	Asset Management System	Verify location of critical assets	Medium	Planned 2024-2026	Higher priority now - arising from the Utilities Code of Practice
IP008	Asset Management System	Unify various existing documents into a 3 Waters Emergency Response Plan or Business Continuity Plan	Medium	Planned 2024-2026	A cascading hierarchy of documents for emergency response is required for Council. At 3 Waters a "Business Continuity Plan" is required
IP011	Disaster Resilience	Confirm natural hazard information at facilities sites as part of the site by site asset risk assessment for climate change effects.	High	Incorporated into IP054	Original site risk assessment project now incorporates climate change risk and priority has been increased
IP020	Asset Management System	Ensure AMIS functionality transferred over to new Asset Management System/Council Enterprise system	High	2024/25 onwards	Necessitated by Council's enterprise system changing from Tech One to Datacom
IP022	Asset Management System	Develop system to store and manage consent information	High	2024/25 onwards	Dedicated staff member has been engaged to implement and maintain
IP027	Asset Management System	Establish documentation that specifies asset data that must be included in As Built information supplied to AIM team	High	Planned for 2024/25 onwards	Multi faceted project including updating the Engineering Code of Practise, and them promulgating Council's requirements
IPO34	Asset Management System	3 Waters Strategy	High	2025/26	What do WDC water services look like in 2053 and 2073?

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP045	Risk Assessment	Update DRA in parallel with Risk Assessment Update using common risk approach. Develop high level framework, seek update of hazard information.	High	Planned for 2024/25	PDU have progressed . To be followed up
IP048	Operations and Maintenance	Standardise operational and maintenance items used in the budget to enable better expenditure monitoring	Medium	On hold	Still nice to have but only medium priority
IP053	Climate groundwater modelling	Work with the Regional Council regarding GW modelling and consideration of effects of SL rise on their infrastructure	High	Planned for 2024/25 onwards	Ongoing
IP054	Risk Assessment	Carry out an assessment of the likely operational and asset management risks associated with climate change in affected areas.	High	Phase 1 complete	Initial screening carried out. Further more detailed work on site by site basis to follow

As an adjunct to this section the 10 key questions that Audit NZ have advised should be responded to, as a high level check on the adequacy of Asset Management Plans has been reproduced below with responses. Additional improvement projects are included in the Improvement Plan table that fill gaps identified through this process.

Audit NZ Question	Response
1. Have you got a strategy for the long-term sustainability of your assets?	Council has Activity Management Plans that are reviewed in house, at three yearly intervals, that include a well-developed renewals assessment and funding model that ensures the long term sustainability of its 3 waters assets. The Council does not have an Asset Management Strategy document however
2. Have you set an asset management policy?	Yes. TRIM link to policy
3. Do you have good quality up-to-date asset management plans for achieving your strategy?	Yes. These are comprehensively reviewed every three years and submitted for peer review.
4. Does your organisation have appropriate asset management skills and experience?	Yes. For 3 waters each of the activity areas – water supply, wastewater and drainage, has a dedicated asset manager responsible for the management of the relevant assets
5. Do you know the reliability of your asset information?	Reasonably well. Asset data for our reticulation network is reliable and being improved through analysis of maintenance data. Facility asset data is also reliable, with a comprehensive facilities asset inventory just having been completed
6. Do you have a structured approach to assessing the condition and performance of your assets?	<p>Yes. Noting that the average age of its network assets is relatively young, the condition of water supply reticulation assets has been the subject of recent analysis through examination of pipe performance. This has enabled condition to be inferred in more detail than has previously been the case. For gravity pipes, Council has recently invested in InfoAssets software, which will enable improved management of gravity pipe condition data.</p> <p>A facility assets condition assessment has not yet been carried out.</p> <p>The system that records repair costs against assets, would have improved understanding of performance, especially as it was further developed, but unfortunately it's future is in jeopardy. This is because the Council's enterprise system is to be replaced.</p>
7. Have you defined a clear and comprehensive set of service levels to be delivered or supported by the assets?	Yes. These are generally reviewed and approved by Council in conjunction with the three yearly AMP review. As noted in the LoS section this has not been possible for the 2024 AMP

8. How well do you forecast future demand for the services that are delivered or supported by your assets?	Demand forecast is largely based on growth projections. Improvements could be made by considering other factors such as for example demographic changes, and changing technologies
9. Do you report, and get reports, on achievement of your asset management plan(s)?	Key Levels of Service are reported quarterly to Council, and other LOS are reported annually to Council. Asset Management Plans themselves are generally peer reviewed, although this has not been carried out for the 2024 AMP due to the effect of the 3 Waters Review on AMP timing.
10. Do you have a backlog of repairs, maintenance, and asset renewals? And what are you doing about it?	No. The Asset Management Plan process delivers approved budgets that to date have been sufficient to ensure that there is no appreciable maintenance backlog, and that fully funds future renewals

23 CHANGES TO AMP AS A RESULT OF LONG TERM PLAN CONSULTATION

Some changes to budgets have arisen as a consequence of a staff submission report to Council during LTP hearings 21-23 May (TRIM 240501068341):

The draft 2024-34 long term plan budgets were assessed utilising the average drain maintenance expenditure of the past two years, as the district has experienced a significant increase in drain maintenance expenditure due to recent flood events.

Since then, staff have assessed the average three-year drain maintenance expenditure, which includes the past two years as well as the forecasted 2023/24 year expenditure based on the spend to date. Subsequently, it was recommended to implement further budget increases in the identified schemes outlined below:

Increase in Rural Drain Maintenance Budgets

- Oxford Rural Drain Maintenance operational budget increased by \$9,950, for a total of \$70,000 (annually).
- Central Rural Drain Maintenance operational budget increased by \$16,770, for a total of \$150,000 (annually).

Scheme	Budget 23/24	Average Expenditure (Previous 3 years)	Current Budget in Draft LTP	Recommended Budget
Oxford Rural	\$48,050	\$84,290	\$60,050	\$70,000
Central Rural	\$128,970	\$166,554	\$133,230	\$150,000

Appendix 1: Central Rural Scheme Performance

Table 18: Central Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	69%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 69% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results “Y” indicates that the LOS has been met, and “N” indicates it has not been met . Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

Appendix 2: Coastal Rural Scheme Performance

Table 19: Coastal Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	72%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 72% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met . Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

Appendix 3: Clarkville Scheme Performance

Table 20: Clarkville Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	22%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 22% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been use

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

Appendix 4: Ohoka Rural Scheme Performance

Table 21: Ohoka Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	40%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 40% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works (Mandeville Project) have been completed.? ??					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

Appendix 5: Loburn Lea Rural Scheme Performance

Table 22: Loburn Lea Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	67%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 67% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works (Cones Road/Ashley area) have been completed.					

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Consents	Percentage of the total number of Drainage consent conditions that have breaches that result in an Ecan report identifying compliance issues that require action.	0%			Achieved		Y	Y	-	-	-

* Note for previous results “Y” indicates that the LOS has been met, and “N” indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

Appendix 6: Cust Rural Scheme Performance

Table 23: Cust Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	45%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 45% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met . Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

**** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"**

Appendix 7: Oxford Rural Scheme Performance

Table 24: Oxford Rural Drainage Scheme LoS Performance - Assessed June 2023

Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
			Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Complaints	For properties or carriageways within rural drainage schemes, the percentage of complaints, about nuisance** flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events less than a mean annual flood.	100%	Not known	Insufficient data	Not Achieved	System needs to be put in place to obtain data	*	*	*	*	*
Customer Satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	0%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. 0% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

** Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met . Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)*

** Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used*

*** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"*

Appendix 8 Glossary Of Terms

The following terms and acronyms (in brackets) are used in this Activity Management Plan.

Activity	As defined in the <i>Local Government Act 2002</i> : 'Goods or services provided by, or on behalf of a local authority or council-controlled organisation and includes: a) The provision of facilities and amenities; b) The making of grants; and The performance of regulatory and other governmental functions.
Activity Management Plan (AM Plan)	Activity Management Plans are key strategic documents that describe all aspects of the management of assets and services for an activity (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. The documents are an information source for the Council's LTP and IS, and place an emphasis on long term financial planning, community consultation, and a clear definition of service levels and performance standards.
Asset Condition	This describes an asset's structural integrity or ability to deliver the service required from it. The condition can deteriorate slowly over the life of an asset or rapidly if it is damaged.
Annual Plan	The Annual Plan has the meaning given to it in the <i>Local Government Act 2002</i> .
Asset	A physical item that enables provision of services and has an economic life of greater than 12 months, has value of at least \$250 and is recorded in the asset register.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied systematically to physical assets with the objective of providing the required level of service in the most cost-effective and sustainable manner.
Asset Management System (AMS) (also known as asset register)	A system (usually computerised) for collecting analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Management Plan (AMP)	In the Waimakariri District Council's context, this is referred to as an activity management plan.
Asset Management Planning	A set of interrelated or interacting elements of an organisation, including the AM policy, AM objectives, AM Strategy, AM Plans, and the processes to achieve these objectives.
Ancillary	A structure or an arrangement within the drainage collection system such as a pumping station, weir, syphon, or pond.
ARI	Average Recurrence Interval. The statistical period between events (e.g. rainfall or overflows) occurring.
Brownfields	Previously developed land with potential for new development.

Capital Expenditure (CAPEX)	Expenditure used to create new assets, renew assets, expand or upgrade assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
CCTV	Closed Circuit Television. It is used to visually assess the condition inside pipe networks.
Condition Monitoring	The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Connection	From the point of view of the utility provider this relates to the physical connection of a particular customer to the service.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify prioritisation for inspection, rehabilitation or replacement ahead of other assets.
Current Replacement Cost	The cost of replacing an existing asset with an appropriate modern equivalent asset to deliver the same level of service.
Customer	A customer is an individual or business that creates the demand for and is the recipient of goods or services. Customers can be internal or external.
Deferred Maintenance	The shortfall in maintenance or rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management may be 'SUPPLY-SIDE' demand management (for example minimising wastage through pipe leak detection) or customer DEMAND-SIDE management, to reduce demand for over-utilised assets or vice versa (for example, through pricing, regulation, education and incentives).
Depreciation	The annual sum budgeted to enable the assets to be replaced at the end of their economic life. It is generally based on the value of the asset divided by its remaining life at that point in time.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Disaster Resilience Assessment (DRA)	An assessment first carried out in 2007 and updated in 2011/12 to determine the risk to assets from natural hazards.
Disposal	Activities necessary to decommission and dispose of assets that are no longer required.
Economic life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to physical life, however obsolescence will often ensure that the economic life is less than the physical life.
Facility	A complex comprising many assets (eg. swimming pool complex, sewage treatment plant etc.) which represents a single management unit for financial, operational, maintenance or other purposes.

Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic data-base
Greenfield Development Area	Existing undeveloped land with potential for development or newly rezoned land that has yet to be developed with the appropriate infrastructure to support a residential or commercial land use.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components.
Key Performance Indicator (KPI)	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Key performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction. Some of these may be mandatory performance measures as prescribed by central government. Also referred to as performance indicators (PI) or performance measures (PM).
Level of Service (LOS)	A measure of the standard of service that the Council intends to provide. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Life Cycle	The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset ie. from planning and design to decommissioning or disposal.
Life Cycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
Life Cycle Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Long Term Plan (LTP)	The Long Term Plan (LTP) has the meaning given to it in the Local Government Act 2002.
LGA	Local Government Act 2002.
Maintenance Plan	Details the specific planned or reactive maintenance actions for the optimum maintenance of an asset, or group of assets.
Network Utility Operator	A person or in many cases a local authority that provides a reticulated sewer system.
NZ Treasury Asset Management Maturity Assessment Tool (AMMA)	A tool (in spreadsheet format) that allows organisations to assess the maturity of their current Asset Management Plans, and to define a target maturity to which future Asset management Plans can aspire to, that is appropriate to the activity under consideration.
Optimised Renewal Decision Making (ORDM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.

Performance Monitoring	Quantitative and qualitative assessments of the actual performance compared with specific objectives, measures, targets or standards.
Planned Maintenance	Day to day operational activities to keep the asset operating (fixing potholes, clearing drains, repairing leaks, mowing etc.) and which form part of the annual operating budget. These may be cyclic, e.g. on specific timeframe, or needs-based, i.e. where a fault is monitored until it reaches a point at which some action must be taken to ensure continued performance/life of asset.
Rating Charges	This is the unit charge applied to rate payers for a particular service. On some drainage schemes this is per property. On other schemes this is the area of land contributing to the discharge.
Renewal	Works to upgrade, refurbish, rehabilitate or replace existing assets with ones of equivalent capacity or performance capability.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
Renewal Programme	This is the programmed replacement of like asset with like asset (as opposed to an upgrade), when it reaches the end of its useful life due to deterioration of its condition.
Remaining Economic Life	The time remaining until an asset ceases to provide service level or economic usefulness.
Reticulation	The network of pipes that collects, stores and delivers stormwater to the point of discharge. It includes gravity pipes, open drains, manholes and pump stations.
Risk Assessment	The process of looking at all possible events that might cause the failure of a given asset or component. The risk assessment considers both the probability and consequences of an event occurring. Risks are assessed and prioritised, and appropriate reduction or mitigation measures are implemented.
Risk Cost	The assessed annual cost or benefit relating to the consequence of an event. Risk cost equals the costs relating to the event multiplied by the probability of the event occurring.
Risk Management	Risk management is the identification, assessment, and prioritisation of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events.
Routine Maintenance	Day to day operational activities to keep the asset operating such as replacement of minor equipment, oil and greasing pumps and motors, cleaning of equipment, repairing leaks, etc. It forms part of the annual operating budget, including preventative maintenance.
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
SMA	Stormwater Management Area.
SS	Suspended Solids.
Stormwater / Drainage Catchment	An area containing properties that are connected to the stormwater collection system upstream of a particular point whether it is a particular manhole or a network pumping station.

Unplanned Maintenance (or repair)	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrade	The addition or replacement of an asset, or component of that asset, that materially improves its original service potential.
Valuation	The process of determining the worth of an asset or liability. Assessed asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for life cycle costing or replacement plus a percentage for insurance purposes.



Activity Management Plan 2024 Water Supply

3 Waters | July 2024



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Contents

1 EXECUTIVE SUMMARY	9
Levels of Service.....	9
Asset Condition.....	10
Risk 10	
Growth and Demand.....	10
Operation and Maintenance	11
Renewals	11
Financial Forecasts	11
Future Challenges	11
2 INTRODUCTION	13
Document Structure.....	13
Improvement Plan	14
Document Review Process	14
Financial Forecasts	14
3 SCHEME DESCRIPTION (WHAT DO WE HAVE?).....	16
Scheme Statistics	16
4 LEVELS OF SERVICE.....	23
Changes to LoS for 2024	23
Mandatory Performance Measures	23
Elective Levels of Service	25
Community Engagement	26
District Overview: 2022/2023 Performance: Mandatory Levels of Service	30
Scheme Differences.....	33
5 ASSET CONDITION	37
Base Life Calculation for Pressure Pipe Assets.....	37
Asset Condition Calculation.....	38
Headworks Asset Condition.....	38
Useful Lives on GIS	39
District Overview	39
6 CRITICALITY	41
District Overview – Criticality	43
7 RISK ASSESSMENT - OVERVIEW	44
8 OPERATIONAL RISK ASSESSMENTS	46

Operational Risk	46
Risk Matrix.....	46
District Overview – Operational Risk	47
9 DISASTER RESILIENCE ASSESSMENT.....	49
10 CORPORATE RISK AND ASSUMPTIONS	50
11 CLIMATE CHANGE	51
12 DEMAND	54
Managing Uncertainty.....	55
District Overview – Growth Forecasts.....	55
Capacity & Performance.....	60
Source 61	
14 OPERATION AND MAINTENANCE	69
Operation & Maintenance Expenditure	70
15 CAPITAL WORKS APPROVAL.....	72
16 RENEWALS.....	73
District Wide – Renewals Expenditure	73
Scheme – Reticulation Renewal Timelines – Spatial view.....	77
17 NEW WORKS	78
Works Coordination	79
District Overview – Capital Works	80
Scheme – Capital Upgrade Works – Spatial view.....	81
18 OVERALL FINANCIAL FORECASTS.....	82
Financial Forecast Key Assumptions	82
Funding/Revenue Sources.....	82
Valuation	83
19 DATA CONFIDENCE	86
20 ASSET MANAGEMENT SYSTEM.....	88
Asset Management Maturity.....	88
21 NEGATIVE EFFECTS.....	90
22 SERVICE DELIVERY	91
23 IMPROVEMENT PLAN	92
24 CHANGES TO AMP AS A RESULT OF LONG TERM PLAN CONSULATION	97
Appendix 1: Rangiora Scheme Performance	98
Appendix 2: Kaiapoi Scheme Performance.....	102
Appendix 3: Woodend-Pegasus Scheme Performance	106

Appendix 4: Oxford Urban Scheme Performance (includes Oxford Rural No 2).....	110
Appendix 5: Waikuku Beach Scheme Performance	114
Appendix 6: Cust Scheme Performance	119
Appendix 7: Mandeville - Fernside Scheme Performance	123
Appendix 8: West Eyreton-Summerhill Scheme Performance	127
Appendix 9: Oxford Rural No 1 Scheme Performance	131
Appendix 10: Ohoka Scheme Performance	135
Appendix 11: Poyntzs Scheme Performance	139
Appendix 12: Garrymere Scheme Performance.....	143
Appendix 13: Glossary of Terms	147

Tables

Table 1: District Overview – Key Projects	15
Table 2: District Overview – Scheme Summary Information	17
Table 3: District Scheme Statistics for 2022/2023	18
Table 4: Links to Scheme Operational Descriptions	20
Table 5: District Water Supply Pipe Data Summary	21
Table 6: District Water Supply Valve Data Summary	21
Table 7: Data References	22
Table 8: Summary of Performance Measure Types and Reporting	23
Table 9: Water Supply Mandatory Performance Measures for 2024 AMP (unchanged from 2021 AMP)	24
Table 10: Elective Performance Measures for Water Supply for the 2024 AMP	27
Table 11: District Overview 2022/23 Performance: Mandatory Levels of service	30
Table 12: 2022/23 Scheme Performance - Elective Levels of Service (measured against the 2021 LTP LOS)	34
Table 13: Adopted Reticulation Asset base Lives for Pressure Pipes	38
Table 14: Criticality Assessment Criteria	42
Table 15: Criticality Score Categories	42
Table 16: District Overview – Mains Criticality % by Category (% shown by length)	43
Table 17: Risk Events Considered	46
Table 18: District Overview – High Risks remaining (Operational)	48
Table 19: Climate Change Actions from 2021 AMP	53
Table 20 Summary of the Growth Forecast for the Waimakariri Districts Water Schemes	57
Table 21: Scheme Capacities and Growth Forecasts	61
Table 22: Scheme Storage Requirements and Capacity	64
Table 23: Scheme Surface Pump Requirements and Capacity	65
Table 24: Overview of Planned and Reactive Maintenance Tasks	69
Table 25: Planned Budget Versus Renewals Model Recommendation 2024-34	75
Table 26: New Works across Water Schemes Over 50 Years	79
Table 27: Asset Valuation	84
Table 28: Data Confidence Levels	86
Table 29: 2024 AMP Improvement Plan	93
Table 30: Audit NZ Questions and Responses	95
Table 31: A1 - Rangiora Elective LoS Performance - Assessed June 2023	98
Table 32: Kaiapoi Elective LoS Performance - Assessed June 2023	102
Table 33: Woodend-Pegasus Elective LoS Performance - Assessed June 2023	106
Table 34: Oxford Urban Elective LoS Performance - Assessed June 2023	110
Table 35: Waikuku Beach Elective LoS Performance - Assessed June 2023	114

Table 36: Cust Elective LoS Performance - Assessed June 2023	119
Table 37: Mandeville-Fernside Elective LoS Performance - Assessed June 2023.....	123
Table 38: West Eyreton-Summerhill LoS Performance - Assessed June 2023	127
Table 39: Oxford Rural No1 Elective LoS Performance - Assessed June 2023	131
Table 40: Ohoka Elective LoS Performance - Assessed June 2023	135
Table 41: Poyntzs Elective LoS Performance - Assessed June 2023	139
Table 42: Garrymere Elective LoS Performance - Assessed June 2023	143

Figures

Figure 1: District - Asset Condition Summary	39
Figure 2: Asset Condition Summary - Schemes	40
Figure 3: Water Connection Projection	59
Figure 4: District Overview - Projected Operation & Maintenance Expenditure.....	71
Figure 5: District Wide Projected Renewals Expenditure	74
Figure 6: Renewals Expenditure Models	76
Figure 7: District Overview - Projected Capital Works Expenditure	80
Figure 8: District Overview - Total Projected Expenditure	82

1 EXECUTIVE SUMMARY

What Assets do we have?

Waimakariri District Council owns and operates 11 separate water supplies, which provide water to approximately 80% of the population, or about 55,900 people. There are a total of about 21,500 connections. Some of the connected supplies have been physically connected relatively recently, but they remain financially separate.

Schemes are either “on demand” (unrestricted), “restricted” (a specific amount of water per day is made available to the customer), or “semi restricted” (connections are allocated 19 m³ per day which is close to an on demand supply).

The Ashley Rural Water Supply, which supplies water to about 1,680 properties within the WDC boundaries, is owned managed and operated by the Hurunui District Council. This water supply services the Ashley, Sefton and Loburn residential village areas and a number of rural residential lifestyle blocks north of the Ashley River.

Levels of Service

In the lead up to the updating of the 2024 AMP's, it was expected that the Council would not be preparing AMPs to support the 2024-2034 LTP, due to the 3 Waters reform. When the situation changed in May 2023, it was too late to carry out a review of LoS. As a consequence, the LoS in this AMP have remained largely unchanged when compared to the 2021 AMP version. The only difference being minor amendments arising from the introduction of the new Drinking Water Quality Assurance Rules (DWQAR). The 2021 AMP levels of service were presented to the Council's Utilities and Roading Committee in July 2020, who recommended that the Council include them within the Draft 2021-31 Long Term Plan (refer to report 200406043184).

Historically, the primary driver of change to the LoS has been an ongoing programme of upgrades to achieve compliance with the Drinking-water Standards for New Zealand (DWSNZ). These standards have been replaced by the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and Drinking Water Quality Assurance Rules (DWQAR). The measures relating to bacterial, protozoal, chemical, radiological, and aesthetic compliance remain in the new standards, but the testing regime has become considerably more extensive. In addition, testing for compliance for some parameters in distribution networks is now required.

Until mid-2023, there was some uncertainty for the Council regarding chlorination, as it took some time for the new regulator (Taumata Arowai) to respond to Council's first application for an exemption from chlorination. This was ultimately declined, and in October 2023 Council resolved to progressively turn on chlorination for all of its supplies, over an eight week period. Council will continue to explore options for chlorination exemptions, however.

Budget provision has already been made to install UV treatment on all water supplies. It is expected that all of these treatment plant upgrades will be completed by year 1 of the 2024-34 LTP.

Asset Condition

Asset condition for the pipework assets has been determined based on detailed analysis of pipe burst data to inform expected lives of all assets, which in turn informs pipe condition rating. In 2020, work was completed by the Council's Network Planning Team to assess burst data collected on Council water mains to determine expected useful life by asset category. This useful life was then converted to a condition rating, based on criteria provided in the IPWEA International Infrastructure Management Manual (IIMM) to assign a condition score to all pipeline assets. This gives a more informed remaining useful life, and proxy condition score, as it is now derived from actual pipe performance data across the district. To verify the assigned asset life and condition score, individual pipe condition assessments are done on specific samples of AC pipe, as the opportunity arises when repairing breaks.

Risk

Historically a range of different types of risk assessments have been carried out for the District's water supply schemes. The operational risk assessment has previously generated a programme of work focussed primarily on improving security of supply and meeting the Drinking Water Standards. This work is now largely complete.

The vulnerability assessment and criticality assessments provide input data to the renewals programme. The effect of the vulnerability assessment, which only applies to underground pipes, is to accelerate the renewal of old brittle pipework, in areas of high risk of liquefaction.

The Disaster Resilience Assessment considers the risk to above ground assets from a broad range of potential natural disasters.

While much of the work from past assessments will remain relevant, they have become out of date. A new approach has been developed, which brings the three different methodologies noted above into a single risk assessment process. This is expected to make regular updating of the assessments more efficient. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

For water supplies the Drinking Water Safety Plans also contain a rigorous risk assessment with an emphasis on health and safety. The new methodology will not override those assessments.

Growth and Demand

Growth projections have been updated with base population projections being calculated via a model, that provides town by town projections. Subsequent modelling has been carried out to identify new works or upgrades that will be required in the future to service this growth while continuing to meet the agreed levels of service. The necessary works have been incorporated into the capital project budgets.

Planning for growth is inherently uncertain. To respond to growth and enable short term capital planning adjustments to be made in response to changing market requirements, the Development Team works with Network Planning and the relevant Asset team when a major new development proposal is received to confirm infrastructure requirements and identify if any capital works programmes require adjustment in response. This avoids unnecessary expenditure on growth works before they are actually needed, and potentially ensure growth related projects are accelerated as necessary if growth occurs faster than anticipated.

Water source supply for the coastal towns of Kaiapoi, Woodend and Pegasus is from ample artesian aquifers for Kaiapoi, and deep sources for Woodend and Pegasus. Kaiapoi source wells are also used to supply Rangiora, via a pressure main from Kaiapoi. Finding additional water to

cater for growth for these communities is therefore not seen as a significant issue, although there will be ongoing projects to extend existing well fields.

The regulatory authority to protect both the availability of water and its quality lies with Environment Canterbury (ECan). Council works closely with Ecan in protecting the quality of the aquifers that supply water to the majority of the district's inhabitants.

Operation and Maintenance

In 2021 Council was in a transitional phase, moving from predominantly reactive works, to a system in which individual asset performance can be better understood and future costs more accurately forecast.

This view was based on the new ability to capture data in the field, and a works management system implemented with the Asset Management Information System (AMIS). That system has provided useful short-term data, but it was embedded in the Council's enterprise software system. Unexpectedly that system is in the process of being replaced, and it is not currently known what functionality will be retained when the new enterprise software becomes operative.

Renewals

Prior to the previous (2018-28) Long Term Plan, improvements were made to the Council's risk based renewals model, so that different levels of acceptable risk can be applied to the various categories of criticality. This included the proposal that highly critical assets are renewed before 85% of their expected life, while the lowest criticality assets may not be replaced until 120% of their assigned base life. Based on these risk profiles the model provides a prioritised list of pipe renewals needed across the district, identified by scheme. The model also provides an annual expenditure profile for the next 150 years, and identifies the annual revenue required that will enable this renewals expenditure to be made without the renewals fund falling into debt.

The system described above relies upon an accurate understanding of expected useful life of each asset. As the understanding of useful life has improved through the burst history analysis (described under Asset Condition), the renewals model is now able to better forecast which assets are required to be renewed within a certain time period. This helps ensure the optimum balance is achieved between assets being left in service longer than they should be, leading to unacceptable failure rates, versus assets being replaced prematurely meaning the full value of assets is not realised.

Financial Forecasts

Financial forecasts included in the AMP show projected capital expenditure for growth, level of service, and renewals, together with operational and maintenance expenditure. Funds carried forward from previous years because capital projects have been delayed (carry overs) are not included, and none of the forecasts shown include inflation.

Periods shown vary, from 30 years for operations and maintenance, through to the full life cycle of long lived assets such as pipelines – 150 years. Scheme forecasts are aggregated up to provide a district wide view and shown graphically. See Section 18.

Future Challenges

The following are the key upcoming challenges relating to water supply that require managing:

- **Changes to Regulation:** In 2021 the new drinking-water regulator (Taumata Arowai) commenced their responsibility taking over from the previous Drinking-water Assessors which came under the Ministry of Health. Taumata Arowai augmented the DWSNZ in 2022 with its Drinking Water Quality Assurance Rules. Council has not yet fully implemented the required testing regimes for all of its supplies and is a little behind in its annual update of Drinking Water Safety Plans. While Council has now made the decision to chlorinate all of its water supplies, it wants to explore options for gaining exemptions in the future. It is expected that the transition to the new environment will continue to provide some challenges.
- **Three Waters reform:** The Governments Three Waters Reform, which was initiated following the Havelock North Drinking-water contamination event and subsequent inquiry, has had a difficult path. With a change of government, what will replace that initiative is not clear, and realistically may not be known for some time. This uncertainty brings challenges, such as the need to prepare 2024 AMPs at relatively short notice, which it had previously been assumed would be the responsibility of the new South Island 3 waters entity.
- **Climate Change:** The potential impacts of climate change and sea level rise to water supplies requires further work. A broad-brush risk assessment of infrastructural assets, arising from climate change, has been completed, but this is essentially a first screening. Case by case studies of facilities and other assets identified as “at risk” in the initial screening work are planned for the coming three years.

Council will continue to work closely with Environment Canterbury regarding the allocation of groundwater to ensure there is adequate resource available going forward.

Community expectations may change, and there could be pressure to extend serviced areas, should shallow groundwater sources start to be problematic.

- **Sustainability:** Climate change may affect source supply, and nitrate concentrations may increase in groundwater sources affecting both public and private supplies. Source supply issues could put increasing pressure for Council to reduce its water use and regulation may ultimately require an improvement in network leakage, and/or water charging. For some supplies Council barely meets its leakage LOS, and for a realistic attempt at gaining chlorine exemptions, scheme leakages would need to be considerably reduced. Staff have investigated options for metering and volumetric charging, with a view to presenting the information to elected members for consideration. Growth must also be planned for in this context.

2 INTRODUCTION

The purpose of the Water Supply Activity Management Plan (AMP) is to provide a summary of the Council's water supply assets, outline the issues associated with these assets and show how the Council proposes to manage them in the future, so as to continue to supply agreed levels of service, or to demonstrate how levels of service that are not currently met will be achieved going forward.

The Activity Management Plan Utilities and Roading (U&R) Introductory Chapter provides the context for the suite of U&R activity management plans and gives an overview of the department's activities, and asset management practices and processes, and should be read in conjunction with this document.

The Council operates 11 public water supply schemes servicing a total of approximately 21,500 connections. This equates to around 55,900 people, which is about 80% of the population of the Waimakariri District. The remaining 20% of the population are supplied by either the Hurunui District Council as part of the Ashley Rural Water Supply (approximately 4,500 people) or private schemes and wells in the district. Note that some schemes which were historically separate schemes have recently been joined physically but are still rated separately. This means there are 11 physical schemes but 14 financial schemes.

Schemes are either "on demand" (unrestricted), "restricted" (a specific amount of water per day is made available to the customer), or a small number of properties within certain schemes are "semi restricted" (connections are allocated a flow equivalent to 19 m³ per day which is similar to an on-demand supply)

The Ashley Rural Water Supply is owned, managed and operated by the Hurunui District Council. This water supply services the Ashley, Sefton and Loburn residential village areas and a number of rural residential lifestyle blocks north of the Ashley River. As this supply is managed by the Hurunui District Council, it is not covered by this document.

Document Structure

The main body of this document contains tables of infrastructure data at both a district wide level, and scheme level. Further detail of the individual schemes is provided in the [AMP Plans and Figures Viewer](#). This includes:

- Network schematics,
- Pipe condition plans,
- Asset criticality plans
- Pipe renewal timeframes plan
- Capital upgrade works plan
- Detailed capital works table
- Scheme Serviced area
- Fire Districts

There is an appendix for each scheme which contains the Scheme Level of Service Performance table.

Improvement Plan

The assessments carried out as part of the asset management review process are intended to identify issues that need to be addressed. Resolution may include new capital works, or adjusted management or process practices. All these improvements are collated in Table 29.

Document Review Process

Review of the AMP has been carried out by a project team comprising the 3 Waters Manager, the 3 Waters Asset Management Advisor, the Water and Wastewater Asset Manager, and the Network Planning Team Leader, with additional technical input from the Network Planning Team. Project Management has been led by the 3 Waters Asset Management Advisor.

The project team met fortnightly, and progress was tracked against a detailed programme that set out the review actions necessary for each section of the document.

Internal advice was sought from the Council's Development Planning Team for growth projections, and liaison with the Asset Information Management team occurred during the update of the valuations. Asset Managers worked closely with the Finance department during development of the budgets.

Information regarding progress and requirements for both the Infrastructure Strategy and the LTP development was provided via the LTP Project Manager.

Draft versions of the documents were presented to the Utilities and Roading Committee at the end of 2023, with an updated version presented to Council in late January 2024 for adoption. Any changes in the AMPs resulting from modifications to the LTP, have been incorporated in the final version by way of an additional section. The final document is published on the Council's webpages after adoption of the 2024-2034 LTP.

Financial Forecasts

The financial forecasts shown in this AMP exclude inflation and any carry-forwards between the 2023/24 and 2024/25 financial years.

District Overview – Key Projects

Over the last 10 years, the key focus for water supply schemes has been upgrading schemes to comply with the Drinking-water Standards for New Zealand (DWSNZ). These projects have now nearly been completed. Chlorination equipment is operative for all previously non chlorinated supplies. There is a programme of works to install and commission UV at all treatment works with completion expected in 2024. However while the new infrastructure will soon be operative, the full effects of the new regulatory environment are not yet bedded in. Council also remains committed to exploring options for achieving exemptions to chlorination in the future.

Specific projects are expected to be in the following key areas:

- Implementing the full required water sampling/testing and reporting regime, and getting the new infrastructure operating efficiently
- Projects to improve the resilience and allow for growth, where there is not adequate redundancy in terms of source capacity or storage, or where growth is anticipated.
- Renewals projects to continue to renew assets as they deteriorate.
- Exploring options for achieving exemptions from chlorination, which will include reducing system leakage.

There are annual budgets for renewal projects which are relatively consistent from year to year. Known key projects that are not renewals are shown in Table 1 below

Table 1: District Overview – Key Projects

Scheme/s	Project	Reason	Timeframe
Ohoka	UV Treatment Installation	Provide treatment to supplies which are chlorinated only (no protozoal treatment), as required by Taumata Arowai	Complete in 2024/25
West Eyreton			
Oxford Urban – Rural No.2	New Reservoirs	To renew aging infrastructure, and accommodate future growth	2031/32
Oxford Urban – Rural No.2	New Well	To provide sufficient levels of redundancy, and allow for growth	2023/24 – 2024/25
Mandeville – Fernside	New Well	To provide sufficient levels of redundancy, and allow for growth	2023/24 – 2024/25
Garrymere	New Well	To provide sufficient levels of redundancy, and allow for growth	2023/24 – 2024/25
Oxford Rural No.1	New Well	To provide sufficient levels of redundancy	2023/24 – 2024/25
Kaiapoi	New Well	To provide sufficient levels of redundancy, and allow for growth	2023/24 – 2024/25
Rangiora	New Reservoir	To allow for growth	2035/36
Rangiora	New Well	To provide sufficient levels of redundancy, and allow for growth	2023/24 – 2024/25

All projects driven by growth are subject to growth occurring at the expected frequencies determined by population forecasts. The timing of these projects may be adjusted through future Annual Plans or Long Term Plans as actual growth rates are compared to current forecasts.

3 SCHEME DESCRIPTION (WHAT DO WE HAVE?)

Table 2 outlines, for each Council managed water supply scheme, total connection numbers as of June 2023, scheme type (on-demand, restricted or semi-restricted), treatment, and scheme value.

In the cases where two schemes have been joined, but they are still treated as separate schemes financially, these have been split into a main scheme and a sub-scheme.

A table of scheme statistics follows (Table 3), providing scheme by scheme information regarding scheme sources, flow rates and nominal storage.

Table 4 provides links to the Component 2 section of the Water Safety Plans, which provide a comprehensive description of the scheme's operation.

Asset tables follow which provide pipe and valve statistics by scheme. Table 7 shows data references of technical reports and file numbers used to compile the AMP, with links should further details be sought.

An overall map of the District's Council water schemes is shown in the [AMP Plans and Figures Viewer](#). Scheme specific plans are also available in the viewer:

- Network Schematics
- Serviced area
- Fire serviced area

Scheme Statistics

Up to date scheme statistics are also available in document TRIM [121108078783](#) which is updated quarterly. (Note - the file needs to be opened in "edit" mode not "view".)

Table 2: District Overview – Scheme Summary Information

Main Scheme	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2		Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill- Poyntzs Road			Ohoka	Garrymere
Sub scheme	NA	NA	NA	Oxford Urban	Rural No 2	NA	NA	NA	NA	West Eyreton	Summerhill	Poyntzs Rd	NA	NA
Level of Service	On-Demand	On-Demand	On-Demand	On-Demand	Restricted	On-Demand	On-Demand	Restricted	Restricted	Restricted	Restricted	Restricted with some Semi-Restricted	Restricted with some Semi-Restricted	Restricted with some Semi-Restricted
No of connections (2023/24 rates strike)	7975	5782	3847	909	362	481	141	986	427	80	214	98	124	42
No of rating charges (2023/24 rates strike)	8780	6060	3965	1023	1094	569	153	2084	1667	270	584	385	1778	532
Total replacement value (2022 valuation)	\$108.8M	\$63.1M	\$66.9M	\$15.4M	\$9.0M	\$6.3M	\$4.1M	\$13.1M	\$15.6M	\$2.4M	\$5.6M	\$2.0M	\$2.5M	\$0.9M
Depreciated replacement value (2022 valuation)	\$80.0M	\$46.1M	\$55.8M	\$9.0M	\$6.0M	\$4.2M	\$3.0M	\$10.3M	\$10.7M	\$1.9M	\$4.5M	\$1.7M	\$1.9M	\$0.7M
Treatment	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Chlorine disinfection and UV disinfection	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Filtration, UV disinfection, chlorine disinfection and pH correction	Chlorine disinfection with UV disinfection to be implemented in 2023/24	Chlorine disinfection with UV disinfection to be implemented in 2024/25			Chlorine disinfection with UV disinfection to be implemented in 2024/25	UV disinfection, chlorine disinfection and pH correction.

Table 3: District Scheme Statistics for 2022/2023

Scheme Parameter	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2		Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill-Poyntz Road			Ohoka	Garrymere
Principle Source	Smith Street wells (4 primary wells)	Six deep artesian wells which feed the Peraki Street and Darnley Square headworks.	Gladstone Park 1, Gladstone Park 2, EQ1, EQ2, EQ3, PW1	Domain Rd Well 1 and Domain Road Well 2 (secure groundwater)		Kings Ave Well 1 and 2 (artesian groundwater) Camping Ground well (artesian groundwater)	Springbank Well No. 2	Two Chain Road No. 2	McPhedrons Road Well (secure) Rockford Road Deep Well (secure)	2 x deep groundwater wells at West Eyreton headworks			Ohoka Well No. 2	Single well
Back up Source	Smith Street No 5 Well (high manganese) Ayers Street wells (2 wells) Dudley Park wells (2 wells) Western Wells (3 wells)	Either of two headworks Darnley & Peraki in Kaiapoi provide redundancy to each other. Rinaldi Ave well can provide backup to the Pines – Kairaki part of the system.	Chinnerys Rd well No. 2	Gammans Creek Well 1 and Gammans Creek Well 2)		Either of two headworks Kings Ave and Camping Ground provide redundancy to each other	Springbank Well No. 1	Two Chain Road Well No.1 and Tram Road Well (Fernside well)	Rockford Road No. 1 and No.2 infiltration gallery wells (surface water)	Shallow well at West Eyreton headworks Shallow well at Poyntz Road			Ohoka Well No.1	None
Average Daily flow (5 year average)	6,967 m ³ /day	4,481 m ³ /day	2,969 m ³ /day	1,069 m ³ /day	1,796 m ³ /day	552 m ³ /day	175 m ³ /day	1,402 m ³ /day	1,297 m ³ /day	89 m ³ /day	333 m ³ /day	135 m ³ /day	139 m ³ /day	136 m ³ /day
Peak daily flow (5 day average)	14,464 m ³ /day	10,481 m ³ /day	6,825 m ³ /day	2,695 m ³ /day	3,617 m ³ /day	1,490 m ³ /day	467 m ³ /day	1,820 m ³ /day	1,700 m ³ /day	144 m ³ /day	557 m ³ /day	218 m ³ /day	448 m ³ /day	256 m ³ /day
Resource Consent abstraction limit (principle source)	30,100 m ³ /day (Smith Street wells) (expires 2/10/2044)	Multiple consents with combined max abstraction rate of 472 L/s, and combined max daily take of 30,788m ³ / day.	6,912 m ³ /day, Chinnerys Rd (expires 28/02/2043) 12,288 m ³ /day, Pegasus (expires)	4,760 m ³ /day (expires 13/06/2041)		3,456 m ³ /day (expires 16/04/2032)	1,900 m ³ /day (expires 27/08/2034)	3,024 m ³ /day (expires 22 Dec 2039) combined for both Two Chain Road wells	1,987 m ³ /day (expires 4/08/2034) 864 m ³ /day, Rockford Deep Well (expires 14/12/2050) 2,592 m ³ /day, McPhedrons Rd Well	15,120 m ³ per 7 day period (2,160 /day) (expires 10 Dec 2044)			1,555 m ³ /day	389 m ³ /day (expires 2/04/2032)

Scheme Parameter	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2		Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill-Poyntzs Road			Ohoka	Garrymere
		Expiry dates from 2031 to 2037	21/11/2043)						(expires 06/07/2053)					
Average Daily Flow per Connection (5 year average)	898 L/con/day	800 L/con/day	859 L/con/day	1,178 L/con/day	1,429 L/con/day	1,258 L/con/day	1,220 L/con/day	1,453 L/con/day	3,510 L/con/day	1,215 L/con/day	1,699 L/con/day	1,435 L/con/day	1,165 L/con/day	3,254 L/con/day
Peak daily Flow per Connection (5 year average)	1,931 L/con/day	1,936 L/con/day	2,009 L/con/day	3,171 L/con/day	3,024 L/con/day	3,386 L/con/day	3,362 L/con/day	1,897 L/con/day	4,756 L/con/day	1,978 L/con/day	2,891 L/con/day	2,281 L/con/day	3,810 L/con/day	6,093 L/con/day
Nominal Storage	8,800 m ³	800 m ³	4,960 m ³	850 m ³		-	180 m ³	335 m ³	342 m ³	289 m ³			120 m ³	120 m ³

Table 4: Links to Scheme Operational Descriptions

Scheme	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill-Poyntzs Road
Link to Component 2 of the Scheme Water Safety Plan	TRIM 230712105096	TRIM 230712105098	TRIM 230712105102	TRIM 230712105105	TRIM 230712105106	TRIM 230712105111	TRIM 230712105113	TRIM 230712105115	TRIM 230712105116

Scheme	Ohoka	Garrymere
Link to Component 2 of the Scheme Water Safety Plan	TRIM 230712105119	TRIM 230712105121

Table 5: District Water Supply Pipe Data Summary

Water pipe length (m) by pipe material											
Pipe Material	Rangiora	Kaiapoi	Woodend-Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville Fernside	Oxford Rural No 1	West Eyreton Summerhill Poyntzs Rd	Ohoka	Garrymere
Asbestos Cement	29,359	23,858	5,050	11,241	1,677	-	-	7,423	-	-	-
PE	64,418	85,920	76,870	49,752	3,807	1,105	41,059	76,889	47,712	2,238	779
PVC	134,964	53,880	73,998	58,571	9,413	9,851	41,833	53,184	30,992	4,112	4,014
Other	930	654	1,019	73	84	106	70	186	35	73	3
Total	229,672	164,311	156,937	119,638	14,981	11,062	82,963	137,682	78,740	6,424	4,796

Table 6: District Water Supply Valve Data Summary

Water pipe length (m) by pipe material											
Item	Rangiora	Kaiapoi	Woodend-Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville Fernside	Oxford Rural No 1	West Eyreton Summerhill Poyntzs Rd	Ohoka	Garrymere
Total Valves	2,162	1,520	1,704	408	129	90	249	254	218	72	15
Fire Hydrants	957	598	483	137	60	12	32	15	24	26	1

Table 7: Data References

Data References - Common	Trim Reference
Water Supply Flow Data Analysis	121108078783
2021-22 3 Waters Asset Valuation	220803132120
2022 Customer Satisfaction Survey	230504063243
2020 Water Conservation Strategy	200501050668
2023 50 Year Water and Sewer Growth Forecast	230413051831
2020 Fire Fighting Code of Practice Compliance Update	200904117110
Water Supply 50 Year Scheme Upgrades	230413051831
Data References – By Scheme	Trim Reference
2023 Rangiora Water Safety Plan	230901135436
2023 Kaiapoi Water Safety Plan	230630097997
2023 Woodend-Pegasus Water Safety Plan	230621092399
2022 Waikuku Beach Water Safety Plan	220905153030
2022 Mandeville-Fernside Water Safety Plan	221103192305
2022 Ohoka Water Safety Plan	220705113627
2022 Oxford Urban/Oxford Rural No 2 Water Safety Plan	220915160099
2023 Oxford Rural No 1 Water Safety Plan	230920147042
2022 Summerhill/West Eyreton Water Safety Plan	221108194377
2022 Garrymere Water Safety Plan	220707115417
2023 Cust Water Safety Plan	230609085367
Kaiapoi - New Beach Road pipeline and water source	140228019601
Operation and Maintenance Manuals	190402048261 (Sladdens PS) 190402048258 (Gammans PS) 190402048253 (Bay Rd PS) 171214136062 (Domain Bore 2) 160928100322 (Domain Rd)

4 LEVELS OF SERVICE

Levels of Service (LoS) are a measure of the standard of service being provided. The target levels of service are a significant factor in determining the size, capacity and cost of operating each scheme.

There is a hierarchy to the water supply LoS. Some are measured at district wide level, some at scheme level, and some differ depending on the type of water supply. The way that LoS measures are assigned, measured, and reported is summarised below, and explained in more detail in the following paragraphs.

Table 8: Summary of Performance Measure Types and Reporting

	Mandatory Performance Measures	Elective Performance Measures
Set By:	These measures are set by the Department of Internal Affairs (DIA), but the targets set by individual local authorities.	These measures are set by individual local authorities.
Reporting:	Long Term Plan and Annual Report. Quarterly reports to Council	Activity Management Plans Annual report to Council (future improvement). Some measures are also included within the Long Term Plan and Annual Report.

Changes to LoS for 2024

In early 2023, when the LOS and targets would normally have been reviewed again, the 3 Waters reform based on four new entities to manage 3 Waters infrastructure nationally, was going ahead. A National Transition Unit was operating under the Department of Internal Affairs, and the expectation was that the 2024 AMPs would be prepared by that Unit. By the time that the government changed the planned new structures, and delayed the entire programme it was too late to be able to review LoS, and have them approved by the U&R Committee/Council. Therefore the LoS and targets in the 2024 AMPs, both Mandatory and Elective, are generally unchanged from the 2021 AMPs.

The 2021 set of measures were approved by the Council's Utilities and Roading Committee for inclusion in the 2021 Draft Long Term Plan (report [200406043184\[v1\]](#)), before being approved by Council.

Some minor changes have been necessary to align the LOS with the new Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and Drinking Water Quality Assurance Rules (DWQAR), which have replaced the previous drinking water standards (DWSNZ) current at the time of the last LTP. These have been noted in the sections that follow.

Mandatory Performance Measures

In 2010, the Local Government Act 2002 was amended (Section 261B) to include new rules specifying non-financial performance measures for local authorities. The measures are intended to help members of the public compare the level of service provided by different councils at District or City level. The Council is required to incorporate the performance measures into their long-term plans and report against them in their annual reports. The element that is measured cannot be changed (as this is mandatory) but the targets can be changed. Measures are reported at both

district wide level, and at scheme level. This is provided to Council on a quarterly basis, and the annual results are included in Council's Annual Report. It is anticipated that the DiA will make some minor modification to the mandatory measures at some stage, so that they align with the new drinking water regulatory regime brought in by Taumata Arowai. Reporting will be modified as required at that time.

Table 9 sets out the full set of mandatory performance measures and targets for the 2024 AMP, but which will be subject to minor change, as noted above.

Table 9: Water Supply Mandatory Performance Measures for 2024 AMP (unchanged from 2021 AMP)

Level of Service	Performance Measure	2024 Target	Community Outcome that this LoS Contributes to
Safety of Drinking Water All public water supplies comply with the Water Services (Drinking Water Standards for New Zealand) Regulations 2022	The extent to which drinking water complies with the Water Services (Drinking Water Standards for New Zealand) Regulations 2022* for a) Bacterial compliance b) Protozoal compliance *The Non-Financial Performance Measures Rules 2013 required local authorities to report their compliance with the bacterial and protozoal contamination criteria of the New Zealand Drinking Water Standards 2005. These standards have been superseded by the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 (per practice notes issued by Taituara (Local Government Professionals Aotearoa) in April 2024) and therefore the Council is reporting against these measures relying upon the relevant incorporation by reference provisions in New Zealand law."	a) 100% compliant b) 100% compliant (Measured across all supplies combined)	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Maintenance of the Reticulation Network All public supplies are actively maintained to minimise the loss of water leakage	The percentage of real water loss from the networked reticulation system	Less than 22%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Fault Response Times All public water supplies are actively maintained to minimise the outage of water	The median response times to attend a call-out in response to a fault or unplanned interruption to the network reticulation system:		<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
	a) Attendance for urgent call-outs: from the time that the local authority receives notification to the time that the service personnel reach the site, and	less than 60 minutes	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

Level of Service	Performance Measure	2024 Target	Community Outcome that this LoS Contributes to
	b) Resolution of urgent call outs : from the time that the local authority receives notification to the time that the service personnel confirm resolution of the fault or interruption, and	less than 480 minutes	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
	c) Attendance for non-urgent call-outs: from the time that the local authority receives notification to the time that the service personnel reach the site, and	Less than 2160 minutes (36 hours)	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
	d) Resolution of non-urgent call outs : from the time that the local authority receives notification to the time that the service personnel confirm resolution of the fault or interruption.	Less than 2880 minutes (48 hours)	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Customer satisfaction All public water supplies are managed to an appropriate quality of service	The total number of complaints received by the local authority about any of the following : (a) drinking water clarity (b) drinking water taste (c) drinking water odour (d) drinking water pressure or flow (e) continuity of supply, and (f) Council's response to any of these issues Expressed per 1000 connections to the networked reticulation system	Aggregate of a) to f) to be < 5 per 1000 connections	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
All public water supplies are managed to ensure demand does not outstrip capacity	The average consumption of drinking water per day per resident within the district.	Less than 450 L/person/day	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Level of Service	Performance Measure (Non Mandatory but reported with the Mandatory measures at District level)	2024 Target	Community Outcome that this LoS Contributes to
Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil / year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

Elective Levels of Service

The mandatory measures do not replace the scheme specific elective LoS reported in the AMPs and used by the Council to monitor and manage the performance of individual water supply schemes.

Elective LoS are motivated by either legislative requirements (for example, compliance with resource consent conditions) or by established best practice (for example, provide a minimum water pressure of 250kPa at the boundary for urban supplies). These are categorised as technical levels of service, and they are to be reported to Council on an annual basis. They have been developed over time, and are guided by a number of factors, including:

- Customer Expectations
- Affordability
- Council Community Outcomes (strategic goals and objectives)
- Legislative Requirements

Primary customers are households or businesses that are connected to Council water supply schemes, with key stakeholders being Community Boards and Councillors, and the Regional Council.

Community Engagement

The level of service component of the Activity Management Plans were consulted upon comprehensively as part of the 2005 review. While a comprehensive public review has not been carried out since then, levels of service are tested with the public in a number of ways:

- For general feedback the principal method of communicating proposed LoS to customers is via the LTP process. As noted, mandatory performance measures form part of the LTP documentation that goes out for public consultation, during preparation for the LTP.
- The Council's water supply AMPs, which are updated concurrently with preparation for the LTP, are made available on Council's website, which allows a channel for feedback from customers who may be interested.
- More specific consultation is carried out when significant changes in the LoS are proposed. For example upgrades have recently been undertaken for a number of water supplies, driven primarily by the need to meet the Drinking Water Standards for New Zealand. Where there have been options available to meet this requirement, with different costs and risks associated with each option, a specific detailed engagement programme has been carried out to seek the views of those affected.
- The general satisfaction of customers with the level of service being received is gauged through tracking of complaints through the service request system, as well as through the Council's customer satisfaction survey. Changes to this survey have been made so that information is now available on a per scheme basis. Trends in complaints are available through the Council's Business Intelligence reporting system, allowing easy analysis for trends both at a district level and a scheme level. Where upgrades to schemes have been completed, the positive impacts can be seen to flow through to complaint levels, which provides a useful measure of success of projects.
- Both LoS were reviewed, in house, in 2020 and the proposed changes put to the U&R Committee for approval before going to Council for final approval. Refer to Council report 200406043184 for the changes made and the motivation for those changes.

Table 10 shows the 2024 AMP adopted set of performance measures, unchanged since the 2021 AMP except as required to align with DWQAR.

The performance results as assessed for the 2022/23 year for each scheme, are included in the relevant scheme appendix to this document. Each table includes proposed actions to address situations where the performance measure targets have not been met.

Table 10: Elective Performance Measures for Water Supply for the 2024 AMP

Level of Service	Performance Measure (2024 AMP)	Target	Community Outcome that this LoS Contributes to
Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Customers % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	> 90%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil / year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWQAR , measured on a daily basis (Note: measure modified to align with Taumata Arowai drinking water requirements)	Complies for 365 days	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWQAR	Complies	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWQAR	Complies	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
DWSNZ - Bacterial Compliance	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWQAR , measured on a daily basis, and for each component of the scheme. (Note: measure modified to align with Taumata Arowai drinking water requirements)	Complies for 365 days	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

Level of Service	Performance Measure (2024 AMP)	Target	Community Outcome that this LoS Contributes to
Flow - Allocated Units	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Losses	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value in further leak detection work	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/connection/day	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Pressure - Boundary - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits.	>150kPa for all connections at peak demand	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for all connections at peak demand >300kPa for 99% of connections at peak demand	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme by scheme basis, depending on resiliency and redundancy of source infrastructure	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

District Overview: 2022/2023 Performance: Mandatory Levels of Service

Table 11 shows the recent levels of service achievement for those measures that are assessed at the district level. Measures shown are all the mandatory ones, plus two non-mandatory. Two tables are necessary to accommodate the change in the drinking water regulatory regime that occurred during the year. Appendices to this document can be referred to for the performance results for the individual schemes. Community outcomes shown are from the 2021-31 LTP.

Table 11: District Overview 2022/23 Performance: Mandatory Levels of service

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
<p>The extent to which drinking water complies with the drinking water standards/quality assurance rules for:</p> <p>a) Bacterial compliance b) Protozoal compliance</p>	<p>a) Fully compliant b) Fully compliant</p>	<p>a) No b) No</p>	<p>New Drinking Water Assurance rules operative from Nov 2022, which have higher thresholds than the previous Drinking Water Standards have resulted in non compliance from that date. It is expected this will continue until planned new treatment infrastructure has been completed. The evidence to date is that applications for chlorine exemptions are unlikely to be successful.</p> <p>Protozoal non compliance will also continue until planned UV treatment is in place</p>	<p>UV treatment for all supplies is planned and is expected to be completed by FY24/25.</p> <p>Chlorine exemption was applied for for Cust as a test case but was declined. Chlorine is now being used for all supplies.</p>
The percentage of real water loss from the networked reticulation system	Less than 22% (based on 240 l/connection /day)	Yes	This figure of 22% was re-calculated in Jan 2023 for the 2022 year. A peer review was undertaken in March 2023, the recommendations of the review are yet to be assessed. The reported figure may be updated depending on the outcome.	Budgets made available for planned leakage improvement works.
The median response times to attend a call-out in response to a fault or unplanned interruption to the network reticulation system:	See below	N/A	N/A	N/A
a) Attendance for urgent call-outs: from the time that the local authority receives notification to the time that the service personnel reach the site, and	less than 60 minutes	Yes	The result for the year was 48.25 minutes	NA
b) Resolution of urgent call outs : from the time that the local authority receives notification to the time that the service personnel confirm	less than 480 minutes	Yes	The result for the year was 89.4 minutes	NA

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
resolution of the fault or interruption, and				
c) Attendance for non-urgent call-outs: from the time that the local authority receives notification to the time that the service personnel reach the site, and	Less than 2160 minutes (36 hours)	Yes	The result for the year was 3.3 hours	NA
d) Resolution of non-urgent call outs : from the time that the local authority receives notification to the time that the service personnel confirm resolution of the fault or interruption.	Less than 2880 minutes (48 hours)	Yes	The result for the year was 5.73 hours	NA
<p>The total number of complaints received by the local authority about any of the following:</p> <p>a) <i>drinking water clarity</i></p> <p>b) <i>drinking water taste</i></p> <p>c) <i>drinking water odour</i></p> <p>d) <i>drinking water pressure or flow</i></p> <p>e) <i>continuity of supply, and</i></p> <p>f) <i>Council's response to any of these issues</i></p> <p><i>Expressed per 1000 connections to the networked reticulation system</i></p>	Less than 5 complaints	No	<p>Actual results per 1000 connections were:</p> <p>a) 0.71</p> <p>b) 0.99</p> <p>c) 0.19</p> <p>d) 1.74</p> <p>e) 1.46</p> <p>f) 0</p> <p>Aggregate = 5.08</p>	Taste and Odour complaints can be related to the recent chlorination in schemes where chlorine residual was not present before.
The average consumption of drinking water based	Less than 450 L/person/day	No	470.5	With recent changes in weather patterns, including temperature

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
on litres per day per person within the District.				and precipitation fluctuations, water demand has increased in the warmer and drier years. Increased water conservation campaigns through Council communications media.
Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	No	87% of respondents from the 2022 survey indicated that they were either Very Satisfied (40%), or Satisfied (47%).	Council will continue in its efforts to meet all its LOS, which may lift overall satisfaction. However the introduction of chlorine will be seen negatively.
Number of events that cause water not to be available to any connection for >8 hours	Nil / yr	No	There were two events in February and April. There was a communication failure in both events between the after-hours call service and the Water Unit, who did not receive notification that water was out until the day following the initial phone call.	We are working with our customer service to avoid missing track of the after-hours service requests.

Benchmarking

A number of the performance measures above are collated and reported nationally, and therefore can be benchmarked against other service providers to compare performance. Waimakariri District Council participates in Water NZ's annual national Performance Review (NPR). The customised 2020-21 report prepared for WDC can be found here: TRIM [230324041126](#)

The more general report for 2021-22, which still enables comparisons with other Councils can be found here: [2021-22 National Performance Review](#)

This survey function has recently been taken over by Taumata Arowai, and WDC will continue to participate.

Scheme Differences

As well as assessing the performance measures included within the AMP at a district level, there are a number of related measures assessed at scheme level. This allows for a comparison between schemes to highlight areas where improvements are required. For example, in terms of the leakage performance measure, while this is just met at a district level, there are also related performance measures at scheme level (i.e leakage in terms of litres per connection per day is a performance measure at scheme level). By addressing the relevant schemes where the scheme specific performance measures are not met, improvements will flow up into the district measure.

Another example where scheme specific improvements flow up to district level measures is in respect to DWQAR compliance. At each scheme, performance is assessed in terms of bacterial and protozoal compliance with the DWQAR. There is then a district wide performance measure that all schemes achieve compliance. So, in this case, by addressing non-performances at scheme level, district wide performance measures will also be achieved.

Table 12 below shows the 2022/23 elective performance measures for each scheme .

The scheme appendices contain tables that show scheme performance history going back to 2008

Table 12: 2022/23 Scheme Performance - Elective Levels of Service (measured against the 2021 LTP LOS)

Level of Service	Target	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill-Poyntz Road	Ohoka	Garrymere
Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	Not Achieved 50%	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	Achieved	Not Achieved 78%	Not Achieved 77%	Not Achieved 82%	Achieved	Not Achieved 71%	Achieved	Not Achieved 78%	Not Achieved 79% (Summerhill 100% West Eyreton and Poyntz 58%)	Not Achieved 71%	NA - (Not Assessed)
Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Not Achieved – 79%	Achieved	Achieved	Achieved
Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	Not Achieved ¹	Not Achieved 1	Not Achieved ¹	Not Achieved ¹	Not Achieved ¹	Not Achieved ¹	Not Achieved ¹	Not Achieved 1	Not Achieved ¹	Not Achieved 1	Not Achieved ¹
Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	Not Achieved ¹	Not Achieved 1	Not Achieved ¹	Not Achieved ¹	Not Achieved ¹	Not Achieved ¹	Not Achieved ¹	Not Achieved 1	Not Achieved ¹	Not Achieved 1	Not Achieved ¹

Level of Service	Target	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill-Poyntz Road	Ohoka	Garrymere
Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	Achieved	Achieved	Achieved	Achieved	N/A although 94% is provided	Not Achieved (2%)	N/A	N/A	N/A	N/A	N/A
Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	Achieved	Achieved	Achieved	Not Achieved (91%)	N/A although 95.5% is provided	Not Achieved (49%)	N/A	N/A	N/A	N/A	N/A
Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	Not Achieved – 86%	Not Achieved – 63%	Not Achieved – 77%	Not Achieved - 43%	Not Achieved – 97%	Not Achieved – 0%	Not Achieved – 21%	Not Achieved – 27%	Not Achieved – 33%	Not Achieved – 17%	Not Achieved – 16%
Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value in further leak detection work	Achieved	Achieved	Achieved	Not Achieved (C) Assessment planned	Achieved	Achieved	Not Achieved (D) Assessment planned	Not Achieved (C) Assessment planned	Achieved	Achieved	Achieved
Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Achieved	Achieved	Achieved	Achieved	Achieved	Not Achieved - 1	Achieved	Achieved	Achieved	Not Achieved -1	Achieved
Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/connection/day	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	N/A	N/A	N/A	N/A	N/A
Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/day	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Not Achieved	Achieved	Achieved	Achieved	Not Achieved (68%)

Level of Service	Target	Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No.2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No. 1	West Eyreton – Summerhill-Poyntz Road	Ohoka	Garrymere
Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for all connections at peak demand >300kPa for 99% of connections at peak demand	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	N/A	N/A	Not Achieved. (long term will move to all restricted connections)	Achieved	Not Achieved. (long term will move to all restricted connections)
Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure ³	Achieved	Achieved	Achieved	Achieved	N/A (storage not required)	Achieved	Achieved	Achieved ²	Achieved	Achieved	Achieved
Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Not Achieved
Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	Achieved	Achieved	Achieved	Not Achieved	Achieved	Not Achieved (135%)	Achieved	Achieved	Achieved	Not Achieved (190%)	Not Achieved (208%)

¹The requirements of the new Water Quality Assurance Rules are unable to be met for bacterial and protozoal parameters until additional treatment equipment is in place. Necessary infrastructure expected to be completed in 2024/25 for all supplies.

² Oxford Rural No. 1 available volume will be reduced in the short term, as Chalk Hills tanks are decommissioned. Further storage planned 2029. As an interim measure to overcome the shortfall, a new generator at Rockford Rd HW is being provided, and the Woodstock Rd supply pipe is being upgraded.

³ See Table 28 for details

5 ASSET CONDITION

The asset condition for the reticulation has been determined based on criteria set out in the International Infrastructure Management Manual (IIMM), published by the Institute of Public Works Engineering Australasia (IPWEA), combined with updated calculations of base lives for the pipeline asset types.

The IIMM sets out criteria for converting remaining useful life as a percentage to a Condition Grade from 1 (Very Poor) to 5 (Very Good). This is a relatively simple conversion. However the determination of the base lives, which in turn gives remaining useful life, is a more complex process.

Base Life Calculation for Pressure Pipe Assets

A significant body of work has been completed in 2020 by the Council's Network Planning Team to better understand expected reticulation asset lives, to inform the asset condition calculation. This work has provided a more complete understanding of the performance of various asset types, and also sets up a correlation between failure rates and expected lives. This will ensure that decisions on pipework replacements are optimised, with assets not left in service longer than intended, or not replaced prematurely when they still have a large degree of remaining useful life.

The work undertaken to achieve the outputs described above, is detailed below:

- Review of failure rates (pipe bursts) by asset type across all WDC water supply pipe assets. Pipe failure data has been analysed from 2007 to 2019.
- Incorporation of mechanism of failure, but excluding failures not related to asset condition (i.e. third party damage).
- Introduction of a greater number of bands of asset type, based not only on material type, but allowing for differing performance within a particular material. For example asbestos cement pipes differentiated by diameter, and plastic pipes differentiated by the generation of plastic used.
- Each asset type category was then analysed for accumulated failures over a period of time, and matched to an exponential curve to plot past performance and expected future performance for each of the asset categories selected.
- A rate of 7 failures of pipe per km of main accumulated over the asset life was deemed to represent the end of life of an asset. A sensitivity analysis was carried out on adjusting this failure rate, and 7 failures of pipe per km of main was found to achieve a practical balance between cost and level of service.
- Verification of the model results was completed by comparing the asset lives generated by the model with typical asset lives provided from a combination of sources, including:
 - Previous valuation data;
 - Water New Zealand National Asbestos Cement Pressure Pipe Manual (the AC Pipe Manual)
- The benefits of the new process are that it provides a more accurate estimate of pipe performance by taking into account actual performance of each asset group across the district, as well as referencing a more broad range of reference material (including the AC Pipe Manual). This is more accurate compared to the previous asset base lives which were based off more broadly defined 'text book' values, which had not been calibrated against the performance of assets within the district.

This process generated the following expected asset lives, for the asset types analysed.

Table 13: Adopted Reticulation Asset base Lives for Pressure Pipes

Pipe Category and Definition	Calculated Asset Life (years)
PVC Modern (PVC pipe installed post 1997)	100
PVC Old (PVC pipe installed prior to 1997)	60
PE Modern (PE pipe installed post 1990)	100
PE Old (PE pipe installed prior to 1990).	35
AC Small (AC pipe with diameter < 100mm)	55
AC Medium (AC pipe with diameter 100mm to 150mm)	60
AC Large (AC pipe with diameter >= 200mm)	90

Asset Condition Calculation

With the asset base lives calculated as per the process described above, and the condition defined as a function of remaining useful life, the remaining data required to calculate the condition of each asset is the year of installation of the asset. This information is held for each asset within the Council's TechOne asset database. Thus, through a combination of expected asset life, year of installation, remaining useful life of asset, the condition grade for each asset is able to be assigned.

The results of this analysis at a District level are presented in Figure 1. It is noted that "Headworks" is inclusive of all above ground assets associated with the water supply scheme (e.g. reservoirs, buildings, pump sets). "Reticulation" covers the remainder of the assets, which are typically below ground pipework related assets.

Headworks Asset Condition

Headworks asset condition is determined using asset age and asset class. No comprehensive asset condition assessment at facilities has yet been carried out so confidence in asset condition is not high. However field staff are required to take note of assets that are deteriorating, when carrying out their normal regular maintenance checks/inspections. In the recent complete facilities asset inventory work that has been undertaken the scope included identifying assets in particularly bad condition. Only 21 assets were found that fitted this criteria, and steps are being taken to attend to them.

In the absence of a formal assessment it is believed that the majority of headworks assets have more than 50% remaining useful life (based on age).

Electrical componentry at headworks has received more attention, and a regular inspection programme is in place to identify renewal needs, managed through Council's electrical servicing contractor. Works identified from these assessments are programmed and budgets incorporated in the ten year plan.

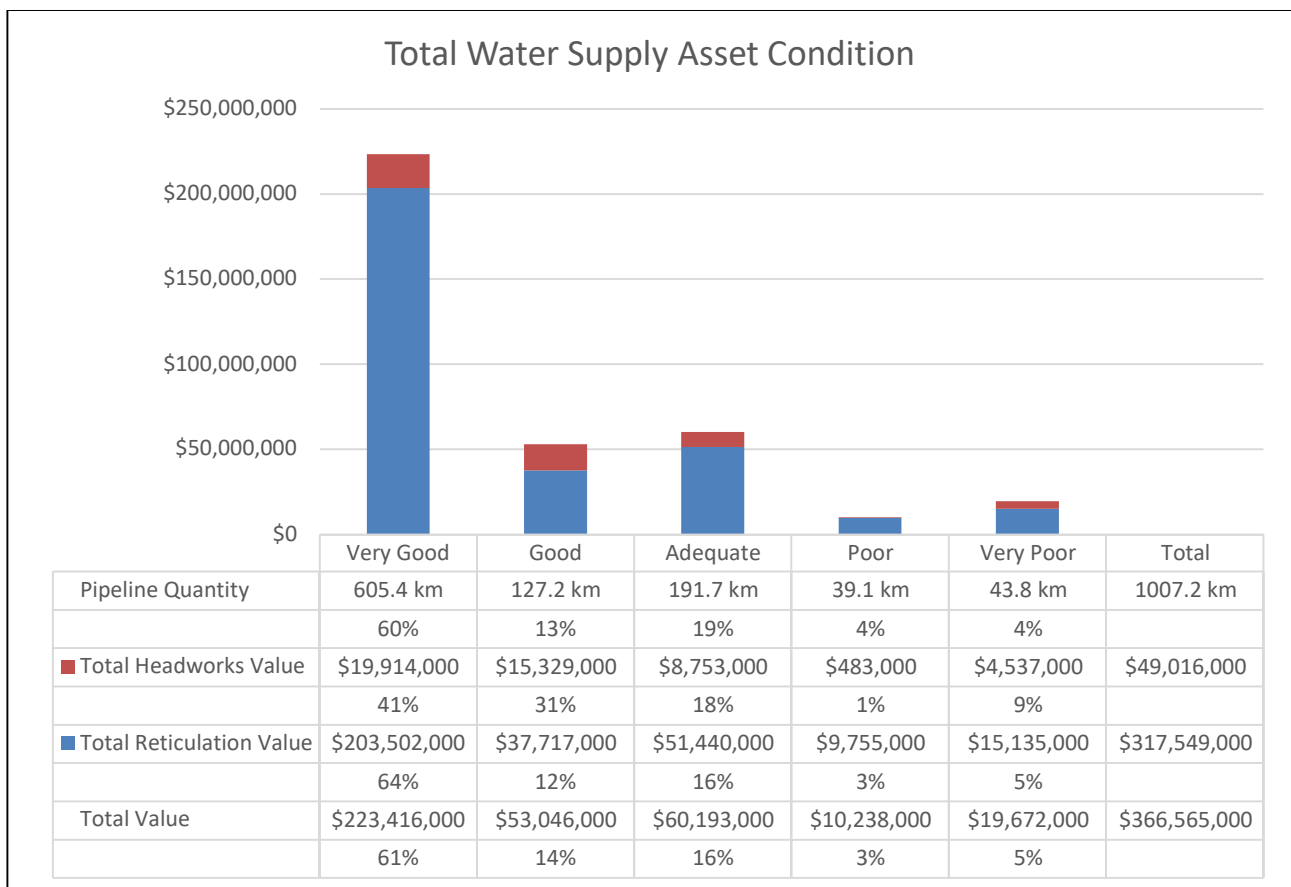
Useful Lives on GIS

The [AMP Plans and Figures Viewer](#) contains a GIS plan for each scheme that spatially illustrates the remaining useful life of the reticulation assets within the network. Included on each plan is the location of any repair activity recorded since 2007. This provides a useful picture of the relative asset age, condition and performance.

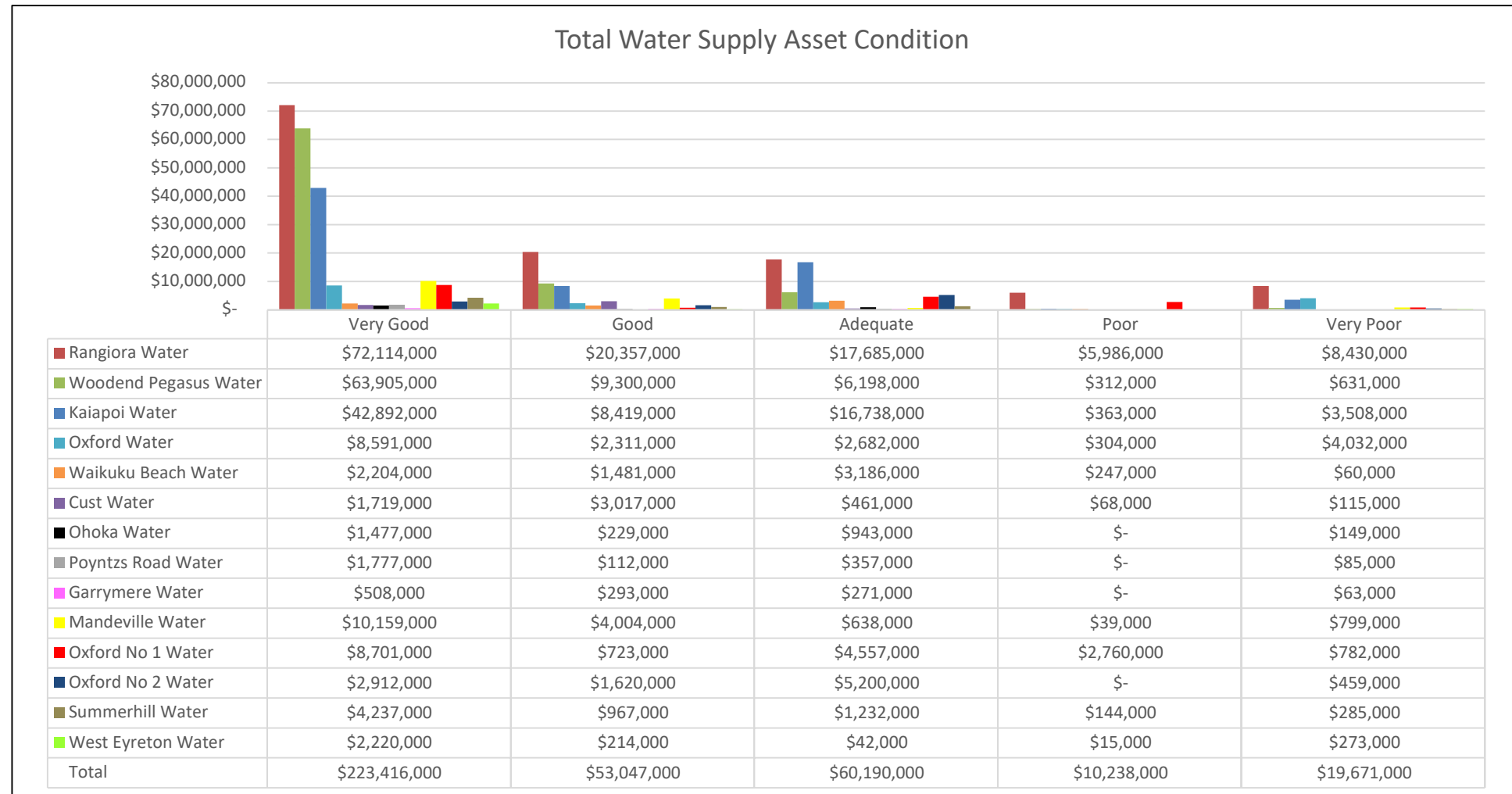
District Overview

Asset condition for both headworks and reticulation are shown graphically in Figure 1, and detail is provided in the Viewer. Note that “Headworks” is inclusive of all above ground assets, while “Reticulation” covers the remainder of the assets, which are typically below ground pipework related assets.

Figure 1: District - Asset Condition Summary



Parameter	Very Good (Grade 1)	Good (Grade 2)	Adequate (Grade 3)	Poor (Grade 4)	Very Poor (Grade 5)
Definition	More than 80% of life remaining	Between 50% and 80% of life remaining	Between 20% and 50% of life remaining	Between 10% and 20% of life remaining	Less than 10% of life remaining

Figure 2: Asset Condition Summary - Schemes

6 CRITICALITY

Criticality is a measure of the importance of a given asset to the overall scheme and is determined by the consequence of failure. Assets for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation are considered more highly critical. Critical assets have a lower threshold for action than non-critical assets. Criticality is used as a means to:

- Identify the most important assets in the overall network;
- Prioritise assets that warrant specific condition assessment;
- Prioritise assets for repair following multiple failures, e.g. following an earthquake;
- Quantify the relative consequence of failure, which can then be used to assess the risk of failure and prioritise renewals. Specifically this means that assets with higher criticality rating are renewed before their end of life, while renewal of low criticality assets will be delayed beyond theoretical end of life.

The criticality assessment carried out on the reticulation uses an automated GIS model using both GIS and modelling data to determine the criticality of pipes. The previous criticality assessment model for treatment plants and pump stations has been updated and used again in this document, but now that a comprehensive asset stocktake at facilities has been completed, it will enable a new model for assessing the criticality of pump stations and treatment plants to be developed.

WDC have chosen to use a component failure and public-impact based approach to identify and rank critical assets.

For water assets “Failure” is defined as any single component malfunctioning causing a loss of service or significant impact to others under normal operating circumstances. The criticality assessment was undertaken assuming an average peak daily demand. “Impact” is defined as:

- Public health impact – the failure of the asset creates an unacceptable impact on public health.
- Socio-economic impact – the failure of the asset creates an unacceptable social and/or economic loss to the community. This includes disruption to essential services, significant economic activities and important roads.
- Financial loss – The failure of the asset, or the repair of a failed asset, creates an unacceptable financial loss to the community, including the Council.
- Environmental impact – the failure of the asset creates an unacceptable environmental effect.

The criticality of water mains is assessed using seven key criteria:

Table 14: Criticality Assessment Criteria

Criteria	Assessment Notes
Loss of Service	The number of customers to lose water supply in the event of a single pipe failure. This was determined by modelling data assuming average peak daily flow.
Crossings	The disruption caused by a pipe failure on a major crossing point. Railways, Motorways, State Highways and Major Waterways were all considered under this item and identified using GIS queries. The disruption under this item relates to both the other service and the difficulty and time to make repairs to the water main.
Private Land	Pipes on private land were given a higher criticality rating based on the difficulties associating with making repairs to the pipe and the impact on the private landowner of a pipe failure. These pipes were identified using GIS queries.
Diameter	Large diameter water mains were given a higher criticality rating to reflect the difficulty and time required to repair these mains and to reflect the intrinsic importance of these mains in the network.
CBD	Pipes within CBD or retail shopping areas were given a higher criticality rating to reflect the financial impact of water shutdown in these areas and the likely effect of a pipe repair on pedestrian traffic. These pipes were identified using GIS queries.
Roads	The location of the pipe in the road corridor and the nature of the road was considered here. A pipe within the road carriageway and pipes on high volume strategic roads were given a higher rating to reflect the greater impact on road users. These pipes will also likely be more expensive and time consuming to repair.
Material	Where a pipe was identified as a large diameter spiral steel pipe this was given a higher criticality rating to reflect the difficulties associated with repairing these pipes.

Table 15: Criticality Score Categories

Criticality Rank		Criticality Rank Code
High Criticality	Extreme Criticality	AA
	High Criticality	A
Moderate Criticality		B
Low Criticality		C

Because the pipe criticality assessment is undertaken using GIS data the assessment can now be repeated and updated on a more regular basis. Annual updates are therefore planned that will inform each year's detailed renewals programme.

Operations

Criticality is used to determine if a "stand over" is necessary by our in-house operations contractor, when external contractors are working on or near WDC assets. This effectively means that there is a greater level of oversight for works near critical assets relative to non-critical.

District Overview – Criticality

Table 16 summarises the percentage of mains in each of the criticality classes:

Table 16: District Overview – Mains Criticality % by Category (% shown by length).

Scheme	AA	A	B	C
Cust Water	0%	34%	24%	42%
Garrymere Water	0%	0%	42%	58%
Kaiapoi Water	5%	4%	22%	69%
Mandeville Water	5%	6%	25%	64%
Ohoka Water	3%	15%	47%	35%
Oxford No 1 Water	1%	4%	23%	72%
Oxford No 2 Water	10%	8%	29%	53%
Oxford Water	6%	5%	29%	60%
Poyntzs Road Water	0%	0%	19%	81%
Rangiora Water	7%	12%	14%	67%
Summerhill Water	2%	9%	35%	54%
Waikuku Beach Water	4%	0%	16%	79%
West Eyreton Water	0%	0%	36%	64%
Woodend Pegasus Water	1%	8%	15%	76%
All Schemes	4%	7%	21%	67%

Criticality on GIS

The [AMP Plans and Figures Viewer](#) contains spatial views of the criticality of pipe and facility assets for each scheme.

7 RISK ASSESSMENT - OVERVIEW

The purpose of carrying out risk assessments on water supply schemes is to identify any risks to the scheme, which need to be mitigated and to prioritise implementation of any mitigation plans.

Historically a number of different risk assessments have been carried out, each one with a specific focus, although there is some overlap. A description, and the purpose of each assessment is provided below

- i. *Operational Risk Assessment*: This is the broadest scope assessment. Possible causes of failure of the water supply system were examined, together with the consequences of that failure. Failure includes contamination, or treatment failures as well as failure caused by natural disasters. This assessment was last carried out for the 2015 AMP review, but has not been updated for this review. It was the intention that a review of these operational risks be carried out in time for this AMP, but as it was expected that the next AMP would be written by the new entity being set up under the 3 Waters reforms, this was not carried out.
- ii. *Disaster Resilience Assessment (DRA)*: Assessed the risk to above ground assets from a broad range of potential natural disasters. See 9 DISASTER RESILIENCE ASSESSMENT section
- iii. *Vulnerability Assessment*: Focuses solely on underground assets, assessing the vulnerability of pipes to damage from natural hazards, and uses an automated approach. One of the principal inputs to the risk based methodology for determining the renewals programme. See 16 RENEWALS section.
- iv. *Corporate Risk*: High level risk assessment carried out corporately in association with the development of the LTP and Infrastructure Strategy. Covers Environmental, Economic, and Social risks. Council updated its Risk Management Policy and Framework in 2022. TRIM [220428064824](#) and [220428064825](#). The most recent corporate risk assessment is available here: TRIM [230321039241](#)
- v. All water supply schemes have Water Safety Plans, and with the new regulatory requirements of Taumata Arowai they are required to be updated annually. Further information is provided in the Water Safety Plans section

Updating the 3 Waters risk assessments is now a priority. A new approach has been recently developed, which brings the Operational, Disaster Resilience and Vulnerability assessments into a single risk assessment process. This is expected to make regular updating of the assessments less of a hurdle. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

The new methodology enables consistent, measurable quantifying of risks for customers and the environment from operation of water supply (and also stormwater and wastewater) schemes. Key risks are presented as outcomes such as loss of, or contamination of water supplied to customers, or stormwater or wastewater discharges resulting in flooding or downstream environmental contamination.

The method achieves consistency by assigning numerical values to conditions that lead to events (for example – “pump station failure”) which causes the adverse outcome “loss of supply”.

Likelihood is determined by using preset data to assign values to conditions which are common across schemes. A typical condition is, for example, “average asset condition - % of life remaining”. For this example each percentage range specified in the condition receives a rating of between 1 and 5, with “1” being “almost certain” and “5” being “rare”. Likelihood scores for each condition are averaged to determine an overall likelihood rating for each event. Conditions are measurable,

using asset and scheme operating data, drawing from procedural, mechanical or structural factors or natural hazards which contribute to the events.

The resulting likelihood scores are averaged with consequence scores (comprising agreed severity values modified by scheme exposure) to determine final risk ratings for each event and scheme. "Scheme exposure" is determined by the number of connections to each scheme. This gives an indication of the scale of impact of an event and size of the likely Council response that would be required to resolve it.

Findings from these updated risk assessments will be compared with outcomes of the Water Safety Plan source water risk assessments, to support prioritisation of future actions to improve the safety and reliability of the water supplies.

8 OPERATIONAL RISK ASSESSMENTS

Operational Risk

The table below details the risks considered under the previous assessment methodology, which was last carried out for the 2015 AMPs.

Table 17: Risk Events Considered

Process	Event
Source	Contamination
	Insufficient Water
	Natural disaster and Other
Treatment	Protozoa contamination
	Inadequate chlorination
	Insufficient pH correction
	Too much pH correction
	Filtration ineffective
	Elevated turbidity
	Natural disaster
Distribution	Inadequate supply
	Pipeline breakages causing contamination or loss of supply
	Contamination from back flow
	Insufficient firefighting supply
	Natural Disaster
General	Operation/Management failures

Risk Matrix

Each of the 58 possible causes for the events shown are rated for consequence (1 to 5) and likelihood (A to E) and then combined to give a risk score using the matrix shown below. The three cells highlighted by a black frame show where the WDC matrix differs from the standard AS/NZ 4360 risk matrix. These changes were made as they better reflect the level of risk accepted by WDC on their 3 Waters assets.

Risk Matrix		Consequences				
		Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	A Almost certain	M	H	H	E	E
	B Likely	M	H	H	E	E
	C Possible	L	M	H	H	E
	D Unlikely	L	L	M	H	E
	E Rare	L	L	M	H	H

District Overview – Operational Risk

The 2015 assessment identified 32 high risks remaining across all the water supply schemes in the district, with all the extreme risks having been previously attended to. The high risks have largely been dealt with now too, but in some cases the risk has changed, due to changing legislative requirements, and further work is now required.

Table 18 summarises the current status of the high operational risks identified in 2015 across all the water supply schemes. It should be noted that operational risks relating to the safety of the drinking water, will have been separately assessed and recorded in the Water Safety Plans.

Since a completely new comprehensive risk assessment is about to be embarked upon, with completion in 2024 anticipated, the medium and low risks identified in the 2015 assessment have been removed from this 2024 version of the AMP.

Table 18: District Overview – High Risks remaining (Operational)

Scheme	2015 Risk Assessment	Operational Risk Assessment update	Comment
Cust	3	1 (insufficient fire fighting supply)	Further upgrades still required to achieve full firefighting compliance (delivery main upgrade, and retic upgrades). These are in the forward works programme already, but almost impossible to deliver with our current rating structure.
Fernside	3	0	Amalgamated with Mandeville, to mitigate risks
Garrymere	5	0	No remaining high risk, but note a further well is planned in 2024/25 to increase resilience
Kaiapoi	0	0	
Mandeville	0	0	
Ohoka	3	0	UV treatment planned in 2024/25 to meet requirements of DWQAR
Oxford Rural 1	9	1 (insufficient storage)	Second well needed to improve redundancy as there are current issues where we can't take the current source offline to do maintenance on well. No new storage, but instead alternative projects to improve redundancy with a second primary well currently in design with construction in 24/25, plus a generator to be installed in 23/24 to reduce the reliance on storage.
Oxford Rural 2	5	0	Joined to Oxford Urban scheme to mitigate risks
Oxford Urban	0	0	
Pegasus	0	0	
Poyntzs Road	3	0	Joined to West Eyreton scheme to mitigate risks
Rangiora	0	0	
Summerhill	0	0	
Waikuku Beach	1	0	Campground WTP upgraded to provide full redundancy to scheme.
West Eyreton	0	0	
Woodend	0	0	

9 DISASTER RESILIENCE ASSESSMENT

The 2009 Disaster Resilience Assessment (DRA) was a desktop assessment of the risk from natural hazard events for all Council operated water supply, wastewater and drainage schemes including above ground and reticulation assets.

In calculating risk the following factors were considered:

- The likelihood of the hazard event occurring, determined from return period
- The resilience or vulnerability of the asset to each hazard (desktop based)
- The consequence of asset failure to the community

The DRA was updated in 2011 to take into account new hazard assessments, in particular the increased seismic risk to the water supply assets throughout the District including further work on areas susceptible to liquefaction. The outputs of new tsunami modelling, a rapid flood hazard assessment and, an updated wildfire threat assessment were also included.

This update focused on above ground assets, as the assessment of risk to below ground assets became incorporated from this time on, into the renewals model. Risk from earthquake events that could induce liquefaction, on brittle pipes (AC and earthenware) is managed using a reticulation vulnerability score. This is used as an input to the risk based renewals assessment. See the 16 RENEWALS section.

A comprehensive review of the DRA Action Plan was carried out in 2014 to update progress made on tasks and prioritise future initiatives. As a result of the review, related tasks were consolidated into a reduced number of improvement projects to be actioned. Limited progress has been made on these improvements since the 2015 AMP revision, due to resourcing constraints.

The new risk assessment methodology described in section 7 above has been developed with the purpose of incorporating the DRA risk analysis within it. It is therefore expected that it will result in similar actions/improvement projects to the DRA, but integrated with the outcomes of the operational risk assessment.

The DRA, together with the risk based renewals assessment, were the Council's 3 Waters department's primary tools in meeting the obligations of the CDEM Act which requires that all lifeline utilities operate to the fullest possible extent before, during and after an emergency. The new risk assessment process and the risk based renewals assessment will be the tools used going forward to meet those obligations.

10 CORPORATE RISK AND ASSUMPTIONS

An assessment of key risks and assumptions was prepared by the Council in preparation for the 2024-34 LTP, and is included in the Infrastructure Strategy. The assessment outlines all of the Key Assumptions and Risks that could potentially impact Council service delivery for the 3 Waters activities. Mitigation measures are explained in response to each identified risk.

The Key Risks and Assumptions table is available at TRIM 240611093590.

The definitions of likelihood and consequence and the overall risk priority used in the Corporate Risk Assessment are included in the Council's Risk Framework Document [TRIM 220428064825](#).

A number of the financial risks and assumptions identified in this document imply future uncertainty, with future changes potentially affecting the individual scheme financial projections. Changes to corporate assumptions have been taken note of as part of this AMP review and projections and budgets revised accordingly.

Drinking Water Safety Plans

Drinking Water Safety Plans (DWSPs) provide a summary of how the scheme is operated, including a risk assessment for the scheme, identification of preventative measures, and recommendations for any upgrades to address unacceptable risks. They are required under the Water Services Act 2022, and administered by Taumata Arowai. They are required to be updated annually. The Nov 2023 due date will not be met for all of Council's supplies, but it is expected they will all be completed early in 2024.

Budgetary requirements arising from the plan are incorporated into the draft LTP.

11 CLIMATE CHANGE

For some time Waimakariri District Council has been including the expected effects of climate change in both the hydraulic modelling that it carries out, and design work, and has assumed the worst-case projection of RCP8.5.

Notwithstanding, in 2022 the Council commissioned NIWA to carry out a district specific climate report, and in June 2022 the Council resolved to

Adopt the NIWA climate projections for the RCP 8.5 Scenario as its baseline evidence for corporate planning, including District planning and the 2024 LTP suite of corporate documents (LTP, activity management plans and infrastructure strategy).

The key findings of the NIWA report are as follows:

- The projected Canterbury temperature changes increase with time and increasing greenhouse gas concentrations. For RCP8.5 the mid-century mean air temperature is projected to increase by 0.9°, with an end of century increase of 2.4°. Diurnal temperature range (i.e., difference between minimum and maximum temperature of a given day) is expected to increase with time and increasing greenhouse gas concentrations.
- For RCP8.5 the mid-century mean maximum air temperature is projected to increase by 1.2°, with an end of century increase of 3.3°. Changes in mean minimum air temperature are largely uniform across the district.
- For RCP8.5 the mid-century mean minimum air temperature is projected to increase by 0.5°, with an end of century increase of 1.6°. Changes in mean minimum air temperature are largely uniform across the district.
- The average number of hot days (days $\geq 25^{\circ}\text{C}$) is expected to increase with time. 15 by mid century and 44 by end century. Hot days in the Lees Valley and western plains could see the largest increase by the end of century with upwards of 50 additional hot days projected per year.
- The number of frost days (days $< 0^{\circ}\text{C}$) is expected to decrease throughout the region. Largest decreases are expected in inland areas, with frost days reducing by up to 26 per annum by end century.
- Increased rainfall is projected across the lower altitude plains and coastal areas, and no change (or slight decreases) in annual rainfall are projected in the western high-altitude zones. However rainfall intensity is expected to increase. Extreme rainfall will likely increase by approximately 7% per 1 °C of climate warming, and shorter duration rainfall events (e.g., hourly) could increase by as much as 15% per 1 °C of climate warming.
- The future amount of accumulated PED (Potential Evapotranspiration Deficit) is projected to increase, therefore drought potential is projected to increase.
- Mean annual low flow in rivers generally decreases by late century, with decreases of 20%-50%.
- Floods (characterised by the Mean Annual Flood; MAF) are expected to become larger, with increases exceeding 50%. However, as noted in The Canterbury Regional climate change report (Macara et al., 2020), the mean annual flood “should not be considered a comprehensive metric for the possible impact of climate change on New Zealand flooding”.
- Sea-level rise will continually lift the base mean sea level on which the tide rides, which means there will be an increasing percentage of normal high tides which exceed a given present-day elevation e.g., street level, berm or stop bank crest.

This report validates the approach 3 Waters has been taking with it's modelling and design work.

Previous Climate Change Initiatives

WDC's initial studies carried out on the effects of climate change focused on the coastal fringe. An investigation into groundwater levels, (TRIM [191202168785](#)) concluded that rising groundwater levels will subject underground assets to more frequent inundation, and exacerbate surface flooding. Existing drainage systems are likely to become less effective. However a study of coastal erosion (TRIM [191202168789](#)) found that dune erosion is not likely to follow from sea level rise, as the Waikamariri River delivers enough additional material along the coast to the north of the river, to compensate for any increased rate of erosion. This study also considered coastal inundation, but a further more comprehensive study (TRIM [200312034365](#)) concluded that various combinations of storm tide, fluvial events and a rising mean sea level will cause overtopping of existing stop banks and natural river banks.

More recently a study (TRIM [231115183268](#)) has been carried out of the potential effects of climate change on the Council's infrastructural assets. This study used Council's previous risk assessment and criticality work to consider the likely increase in risk to assets arising from global warming. The conclusion is that the greatest risk come from the increased likelihood of flooding. The key outputs from the report are a comprehensive list of all the assets under threat from the higher flooding risk, and a high level assessment of costs to mitigate the danger. Solutions may include strengthening the asset to enable it to withstand the flooding, moving the facility/asset to a safer site, or accepting the damage, and repairing it when flooding does occur. For some solutions the work will be able to be integrated with the normal renewals programme. However this study is only a first screening, and the assets at risk will need case by case studies to further refine the actual threat, and commence development of a prioritised programme to mitigate risks.

It is proposed that this additional work will be carried out over the next three years. Notwithstanding this additional refining work, the report's future costs to adapt have been included in the 30 year capital programme as place holders in years 11 to 20.

Overall the effects of climate change are expected to increase pressure on water supplies, with potential effects near the coast from sea level rise, and away from the coast from potentially lower levels of groundwater recharge. Discussions have been held with ECan regarding the impact this may have on groundwater resources, and how this will be managed. The following key points can be made:

- Although predications are for the Canterbury Plains groundwater recharge to decrease, the large alpine rivers are predicted to increase flows so that the steady recharge the aquifers receive from them is expected to be the same. This means that shallower groundwater may become more vulnerable, but the deeper sources (which supply the vast majority of Council's public water supplies) will be less vulnerable to increased frequency of low recharge. Refer 201029145198.
- The intention in terms of allocation of the groundwater resource going forward is to have an adjustable allocation accounting for climate change, which also acknowledges the priority the drinking-water has in the Resource Management Act (RMA). Refer 201029145198.

Ongoing engagement with ECan is required to keep abreast of any work they are doing in this area.

There were specific actions in the 3 Waters activity area that were identified in the 2021 AMPs that the WDC planned to carry out with respect to reduction of carbon emissions. Table 19 below provides an update on progress made against those actions

Table 19: Climate Change Actions from 2021 AMP

Item	2023 Update for Water Supply. (Progress for wastewater assets reported in WW AMP)
Investigate technology and improvements which help reduce greenhouse gas emissions from treatment plants and other 3 Waters infrastructure via energy efficiency improvements.	No progress made
Record nitrogen, BOD and other parameters influent and effluent to enable accurate calculation of greenhouse gas emissions from large wastewater treatment plants. Provide an updated greenhouse gas emission profile to Management Team as result of the assessment.	Not relevant for water supply
Report progress quarterly on preparation and process for installation and initial operation of solar power array project (Rangiora WWTP)	Not relevant for water supply
Identify appropriate targets for reduction of greenhouse gas emissions from Council's corporate and infrastructure facilities.	No progress made

Future Climate Change Initiatives

Looking forward Council's 3 Waters team plans to carry out more with respect to mitigation and embed climate change consideration into its investment decisions. Within the three year term of the 2024 LTP it intends to use the guidance in the Water NZ publication Navigating to Net Zero to:

- Confirm the operational emissions boundary that 3 Waters intends to use.
- Update and refresh the 3 Waters operational emissions inventory, including biogenic emissions – using the guidance in “Water NZ Carbon Accounting Guidelines for Wastewater treatment CH₄ and N₂O. This work to be aligned with the corporate climate change work programme.
- Develop an operational emissions forecast.
- Develop a capital emissions baseline. Note the previous focus has been on operational emissions alone, but establishing a “business as usual” capital emissions baseline, will enable emission reduction opportunities from adopting alternative low-carbon approaches to be appropriately assessed. Establishing this baseline will be a significant body of work, and for it to be used effectively, the implication is that all future infrastructural projects will need to be assessed from both a climate and financial perspective once the baseline has been established.
- Set carbon reduction targets.

12 DEMAND

Growth projections were updated in 2023 to determine the expected growth on each water scheme in order to understand what upgrade works are required to meet the agreed levels of service. There are a number of factors that influence future demand on water in the District:

- Population trends or increases in population
- Changes in water use practices
- Changes in legislation
- Advancements in technology
- Implementation of water conservation measures (such as water metering)

To date only growth has been considered in establishing the district's future demand for water. A more complex approach is planned for the future with consideration of the effects of the factors noted above.

The overall district population growth scenario used for the 2024 AMP update was calculated by the consultant Formative under direction from Council's Development Planning Unit (DPU). The Formative data, which shows the population broken down into towns and rural areas is available here: [Population Forecasts report](#). The "50 Year Water and Sewer Growth Forecast" report, was updated using this data (TRIM [230413051831](#)) which was the basis for the infrastructure planning.

To calculate the growth for the water supply schemes, population increases were applied to planned growth areas at densities agreed with the DPU. Account was also taken of the capacity for infill to absorb the necessary increases. In cases where the required increase in population could not be fitted inside growth areas, further discussions were held with the Development Planning Unit to agree on locations where the additional growth should be applied. Water supply scheme growth in connections was then calculated based on the growth areas.

The following growth projection horizons were used;

1	1 – 3 years	(2024/25 to 2026/27)
2	4 – 10 years	(2027/28 to 2033/34)
3	11 – 20 years	(2034/35 to 2043/44)
4	21 – 30 years	(2044/45 to 2053/54)
5	31 – 50 years	(2054/55 to 2073/74)

A project shown in the 2021 Improvement Plan section followed on from Council's Water Conservation Strategy (TRIM 200501050668). The project aimed to investigate current water usage and then review and refine the reasonable water use targets used in the Water Conservation Strategy, which act as a benchmark against which future water conservation programmes can be measured. This will allow for future changes in water demand for new connections, which may be different from historical demand, to be factored into future demand assessments. While the project remains relevant to future water demand issues it has been placed on hold following a related project arising from the new Taumata Arowai requirements. Council wishes to fully investigate achieving chlorine free status for one of its schemes by way of a pilot (Cust). This will involve elements of demand reduction, information from which will inform the original project when it is taken off hold.

Managing Uncertainty

The corporate growth model developed by the Council for assessing growth related works is by its nature uncertain as it relies on population projections that are highly dependent on changing economic and social factors. Generally however, there is a greater degree of certainty in initial years, and greater levels of uncertainty when looking forward to the future. This means that over time, there is the ability for growth projections to be updated and refined over time as contributing factors evolve. There are also a number of other strategies employed to manage this uncertainty, which are outlined below.

A key means of managing this uncertainty has been to use the best available data and consult widely with Council staff in the policy and planning fields for the best information.

As part of the 2024 AMPs, a sensibility analysis was also undertaken by comparing the past 5 years of actual scheme connection growth with the future growth projections. The projections are seen to generally align well with recent growth that has occurred.

Long term, the 2024 projections are very similar to the 2021 AMP projections, and thus as a whole there are not significant changes to the overall capital work programme, however some changes have been recommended for particular projects.

To further reduce the uncertainties from the model in terms of the timing of when a growth project may actually be required, when a project is recommended by the Network Planning Team, a catalyst for the project is always included (for example, when a certain parcel of land begins to develop, when connection numbers exceed a certain value). This means that as a project comes up in an Annual Plan to be constructed, the documented catalyst is reviewed and discussions held with the Network Planning Team to verify that the project is genuinely required to be constructed at that time, or whether it be pushed out further in the budget.

District Overview – Growth Forecasts

The district water connections are predicted to grow by approximately 85% over the 50 year projection period. This is slightly less than the 2021 projections, in which there was a projected 90% increase over the 50 year time period.

It is predicted that in the first 10 year projection (up to 2033/34) the Waimakariri District is to grow on average by 493 new water connections annually. However in the long term (2034/35 to 2073/74), the rate of growth is expected to be approximately 338 new connections annually.

Table 20 presents the growth forecast for the Waimakariri District’s water supply schemes.

Table 20 Summary of the Growth Forecast for the Waimakariri Districts Water Schemes

Scheme		District	Rangiora	Kaipoi	Woodend Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No 1	West Eyreton – Summerhill- Poyntzs	Ohoka	Garrymere
Projected Connections	Current	21,614	8,191	5,866	3,735	1,275	483	133	974	405	376	124	42
	3 yrs (2026)	23,540	8,883	6,231	4,376	1,344	501	135	1,055	430	400	140	45
	10 yrs (2033)	26,547	10,093	6,827	5,204	1,464	529	139	1,156	476	442	167	49
	20 yrs (2043)	29,926	11,447	7,430	6,177	1,602	566	143	1,287	527	490	203	55
	30 yrs (2053)	33,247	12,735	8,038	7,150	1,752	605	146	1,420	572	530	239	59
	50 yrs (2073)	40,048	15,484	9,292	9,051	2,067	678	153	1,670	663	615	307	69
Projected Average Daily Flow	Current	222 L/s	83 L/s	51 L/s	36 L/s	16.8 L/s	9.1 L/s	2.0 L/s	8.4 L/s	7.9 L/s	4.3 L/s	1.6 L/s	1.5 L/s
	10 yrs (2033)	297 L/s	107 L/s	68 L/s	57 L/s	19.8 L/s	9.3 L/s	2.2 L/s	13.3 L/s	10.6 L/s	5.3 L/s	2.8 L/s	1.6 L/s

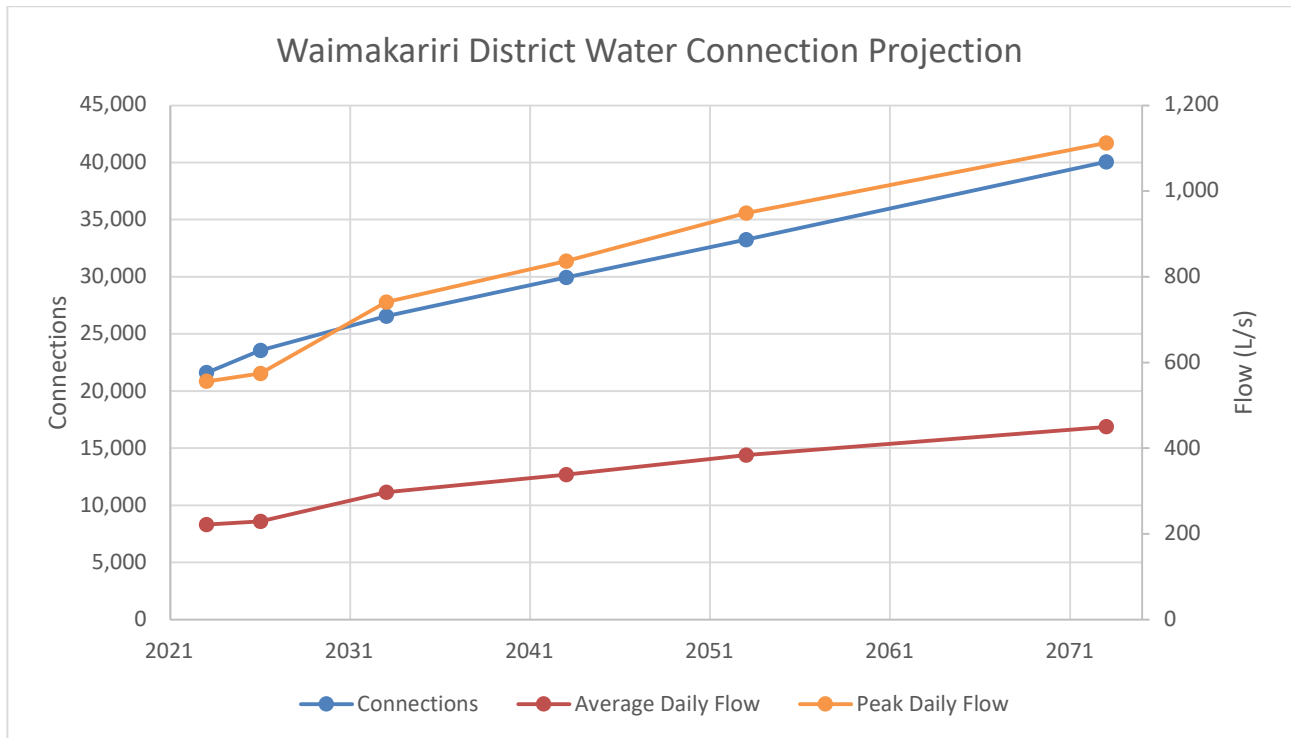
Scheme		District	Rangiora	Kaipoi	Woodend Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No 1	West Eyreton – Summerhill- Poyntzs	Ohoka	Garrymere
	20 yrs (2043)	338 L/s	128 L/s	73 L/s	61 L/s	24.1 L/s	9.7 L/s	2.2 L/s	14.7 L/s	12.1 L/s	7.4 L/s	3.6 L/s	1.7 L/s
	30 yrs (2053)	384 L/s	143 L/s	81 L/s	78 L/s	25.0 L/s	10.2 L/s	2.3 L/s	16.3 L/s	13.2 L/s	8.4 L/s	4.3 L/s	1.8 L/s
	50 yrs (2073)	450 L/s	176 L/s	92 L/s	92 L/s	27.3 L/s	11.0 L/s	2.4 L/s	18.1 L/s	15.2 L/s	9.3 L/s	4.9 L/s	1.9 L/s
Projected Peak Daily Flow	Current	556 L/s	208 L/s	127 L/s	91 L/s	41.9 L/s	22.7 L/s	5.4 L/s	21.0 L/s	19.8 L/s	10.8 L/s	5.2 L/s	3.3 L/s
	10 yrs (2033)	741 L/s	267 L/s	171 L/s	138 L/s	49.5 L/s	23.3 L/s	5.5 L/s	33.2 L/s	26.6 L/s	16.6 L/s	6.9 L/s	3.3 L/s
	20 yrs (2043)	836 L/s	321 L/s	183 L/s	144 L/s	60.1 L/s	24.3 L/s	5.6 L/s	36.8 L/s	30.4 L/s	18.4 L/s	9.0 L/s	3.3 L/s
	30 yrs (2053)	948 L/s	356 L/s	201 L/s	189 L/s	62.4 L/s	25.5 L/s	5.7 L/s	40.7 L/s	32.9 L/s	21.0 L/s	10.9 L/s	3.3 L/s
	50 yrs (2073)	1,112 L/s	440 L/s	229 L/s	219 L/s	68.4 L/s	27.6 L/s	5.9 L/s	45.3 L/s	37.9 L/s	23.1 L/s	12.3 L/s	3.3 L/s

Note that the above growth forecasts will not necessarily directly match the number of growth connections shown in the LTP or financial sections of the Infrastructure Strategy. The above figures were generated based on growth forecasts provided by the Development Planning Unit, in January 2023, which allows sufficient time to carry out the work necessary reticulation modelling to plan the infrastructure upgrades required to accommodate the growth. Capital budgets are then developed from this planning work, which feed into the recommended capital projects within the AMPs and LTP.

Late in 2023 the Finance department carry out a separate process, using the same base growth data, to estimate the number of connections for rate income forecasts. Not only do Finance have more recent data to base their forecasts on (for example whether a particular subdivision is / is not going ahead) but they also have a different perspective. To be conservative they will tend to minimise the connection numbers (to be conservative in terms of expected rating income), whereas for infrastructure planning, being conservative will tend to maximise the potential numbers to ensure that growth can be accommodated without compromising levels of service.

Figure 3 presents the projected growth for the Waimakariri District's Water Supply connections.

Figure 3: Water Connection Projection



CAPACITY & PERFORMANCE

This section of the AMP considers the capacity and performance of the Council's Water Supply Schemes, for current demand, and forecast growth. The specific aspects of the scheme that have been considered are the source, treatment, storage, headworks, and reticulation system. All of the upgrades mentioned in the text have been included in the Capital Programme detailed in this AMP and the Long Term Plan budgets

Capacity and performance, and LOS deficiency, are monitored and analysed using hydraulic water models developed and maintained by the Council for each scheme. The demand profiles in the models are based on flow records collected from the Council's SCADA system and analysed by the Project Delivery Unit to obtain peak daily diurnal flow profiles.

The Council models and flow data that supports the models, are updated approximately quarterly and the capacity assessments undertaken for this AMP represent the latest available information.

A Growth report is produced every three years in advance of the AMP reviews, from which the summary information set out below is taken. The report which details the 50 year growth modelling and required upgrades can be viewed on TRIM [231206196569](#)

Future demands are considered across 5 development horizons

- 0 Years (existing)
- 0-10 Years
- 10-20 Years
- 20-30 Years
- 30-50 years

For redundancy purposes Council plans capacity for its water supply sources on the basis that one of the primary wells is out of operation at any given time, and a further contingency is introduced through assuming 10% down time, which increases required source capacity above the Peak Daily Flow.

Source

Source capacities and growth forecasts are summarised in Table 21 below.

Table 21: Scheme Capacities and Growth Forecasts

Scheme		Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No 1	West Eyreton – Summerhill- Poyntzs	Ohoka	Garrymere
Source Capacity	Total Primary Capacity	320 L/s	333 L/s	185 L/s	89 L/s	61 L/s	8.5 L/s	25 L/s	36 L/s	46 L/s	12.8 L/s	4.5 L/s
	Available Primary Capacity*	270 L/s	255 L/s	148 L/s	44 L/s	35 L/s	8.5 L/s	25 L/s	30 L/s	30 L/s	12.8 L/s	4.5 L/s
	Total Backup Capacity	86 L/s	26 L/s	25 L/s	23 L/s	-	6.1 L/s	14 L/s	40 L/s	8 L/s	18.0 L/s	-
Growth Forecast Required Capacity	Current	229 L/s	140 L/s	100 L/s	46 L/s	25 L/s	5.9 L/s	23 L/s	22 L/s	12 L/s	5.7 L/s	3.6 L/s
	10 yrs (2033)	294 L/s	188 L/s	152 L/s	54 L/s	26 L/s	6.1 L/s	37 L/s	29 L/s	18 L/s	7.6 L/s	3.6 L/s

	20 yrs (2043)	353 L/s	201 L/s	158 L/s	66 L/s	27 L/s	6.2 L/s	40 L/s	33 L/s	20 L/s	9.9 L/s	3.6 L/s
	30 yrs (2053)	392 L/s	221 L/s	208 L/s	69 L/s	28 L/s	6.3 L/s	45 L/s	36 L/s	23 L/s	12.0 L/s	3.6 L/s
	50 yrs (2073)	484 L/s	252 L/s	241 L/s	75 L/s	30 L/s	6.5 L/s	50 L/s	42 L/s	25 L/s	13.5 L/s	3.6 L/s
Projected Upgrades		70 L/s (2024) 70 L/s (2050) 70 L/s (2060)	70 L/s (2024) 70 L/s (2035)	50 L/s (2025) 50 L/s (2050)	45 L/s (2024)	45 L/s (2070)	-	2 x 25 L/s (2024)	30 L/s (2025) 10 L/s (2040)	-	12.5 L/s (2061)	-
Future 50 yrs Source Capacity		480 L/s	395 L/s	248 L/s	89 L/s	80 L/s	8.5 L/s	50 L/s	46 L/s	30 L/s	25.3 L/s	4.5 L/s

*Available Primary Source capacity assumes n+1 redundancy is maintained in the primary sources

Note that during some growth periods the projected source upgrades may significantly exceed the required capacity to reduce operational storage requirements and offset storage upgrades on the scheme

The theoretical required source capacity is calculated based on the projected peak daily flow for each scheme with the assumption that storage is used to buffer variable demand throughout the day. Due to the availability of significant artesian groundwater sources in Kaiapoi and Waikuku Beach these schemes have minimal or no above ground storage so the projected upgrades to source capacity on these schemes are significantly higher to offset the lack of available storage.

Treatment

Currently all of the Council supplies are chlorinated. Council will continue to explore options for obtaining exemptions to chlorination, but this is likely to be cost prohibitive

UV equipment is being installed at all headworks sites, with completion expected in 2024/25.

Under DWSNZ it was assumed that all water supplies were plumbosolvent, which is defined as water that is able to dissolve lead easily. Water that has low pH tends to be slightly corrosive and therefore plumbosolvent. Risk was mitigated through a requirement for water suppliers to notify customers regularly of the risk, and how to manage it at the consumer level.

That requirement no longer applies, and Councils are now required to have sampling plans in place, and to ensure water is supplied with plumbosolvent metals at less than the MAV.

No budget provision has been made for fluoridation equipment.

Storage

Storage is supplied to meet the level of service target. Required storage is calculated to meet

- Operational Requirements
- Emergency Storage Requirements including
 - Loss of Source
 - Fire Fighting

Table 22 below presents the storage capacity required to meet the level of service, versus the projected increases in available storage over the coming 50 years, taking into account planned storage upgrades.

Table 22: Scheme Storage Requirements and Capacity

Scheme		Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No 1	West Eyreton – Summerhill-	Ohoka	Garrymere
Current Storage Volume		8,800 m ³	800 m ³	4,990 m ³	830 m ³	-	162 m ³	353 m ³	250 m ³	304 m ³	108 m ³	81 m ³
Growth Forecast Required Volume	Current	4,830 m ³	420 m ³	3,080 m ³	600 m ³	-	95 m ³	285 m ³	359 m ³	219 m ³	74 m ³	61 m ³
	10 yrs (2033)	5,940 m ³	390 m ³	6,410 m ³	790 m ³	-	101 m ³	319 m ³	418 m ³	245 m ³	107 m ³	65 m ³
	20 yrs (2043)	9,870 m ³	280 m ³	5,670 m ³	980 m ³	-	107 m ³	353 m ³	477 m ³	271 m ³	140 m ³	69 m ³
	30 yrs (2053)	10,770 m ³	287 m ³	6,440 m ³	1,080 m ³	-	111 m ³	391 m ³	517 m ³	306 m ³	173 m ³	73 m ³
	50 yrs (2073)	12,660 m ³	430 m ³	8,860 m ³	1,250 m ³	-	122 m ³	435 m ³	596 m ³	340 m ³	191 m ³	77 m ³
Projected Upgrades		4,300 m ³ (2034)	-	2 x 1,350 m ³ (2032)	500 m ³ (2039)	-	-	353 m ³ (2043)	350 m ³ (2029)	30 m ³ (2050)	30 m ³ (2033)	-
		4,300 m ³ (2070)	-	2 x 1,350 m ³ (2058)	-	-	-	-	-	30 m ³ (2060)	200 m ³ (2070)	-
Future 50 yrs Storage Capacity		17,400 m ³	800 m ³	9,490 m ³	1,330 m ³	-	162 m ³	706 m ³	600 m ³	364 m ³	200 m ³	81 m ³

Note that during some growth periods the required storage volume may decrease in response to planned source upgrades or network amalgamations reducing the operational storage requirement on the scheme

The 2058 planned storage upgrade on the Woodend Pegasus scheme features the replacement of two existing 450 m³ tanks at the Chinnerys Road headworks site with two 1,350 m³ tanks, increasing the total storage by 1,800 m³.

The 2070 planned storage upgrade on the Ohoka scheme features the replacement of five 30 m³ tanks (including the planned 2033 upgrade) with a single 200 m³ tank.

Oxford Rural No. 1 available volume will be reduced in the short term due to planned decommissioning of existing Chalk Hill storage tanks. Storage upgrade for the scheme has been planned for 2028/29 and a second source and pipe upgrade works is underway to be completed in 2024/25 to maintain level of service and provided redundancy for the supply.

Peak Demand

Table 23 presents the surface pump capacity required to meet the level of service, versus the projected increases peak hourly flow over the coming 50 years, taking into account planned upgrades.

Table 23: Scheme Surface Pump Requirements and Capacity

Scheme		Rangiora	Kaiapoi	Woodend Pegasus	Oxford Urban – Rural No 2	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No 1	West Eyreton – Summerhill-	Ohoka	Garrymere
	Total Pump Capacity	700 L/s	340 L/s	272 L/s	-	47 L/s	25.5 L/s	54 L/s	-	35.0 L/s	31.3 L/s	7.5 L/s

Headworks Surface Pump Capacity	Available Pump Capacity*	600 L/s	255 L/s	237 L/s	-	35 L/s	17.0 L/s	36 L/s	-	21.5 L/s	15.3 L/s	5.5 L/s
	Total Backup Capacity	86 L/s	-	-	-	-	-	8 L/s	-	-	-	-
Growth Forecast Required Capacity	Current	408 L/s	220 L/s	172 L/s	55 L/s	33 L/s	8.7 L/s	31 L/s	24 L/s	11.6 L/s	8.1 L/s	4.6 L/s
	10 yrs (2033)	518 L/s	323 L/s	268 L/s	76 L/s	35 L/s	8.9 L/s	33 L/s	27 L/s	12.9 L/s	9.2 L/s	4.6 L/s
	20 yrs (2043)	626 L/s	348 L/s	281 L/s	97 L/s	37 L/s	9.1 L/s	37 L/s	30 L/s	14.2 L/s	11.3 L/s	4.6 L/s
	30 yrs (2053)	703 L/s	386 L/s	366 L/s	101 L/s	39 L/s	9.3 L/s	41 L/s	33 L/s	16.9 L/s	13.2 L/s	4.6 L/s
	50 yrs (2073)	884 L/s	444 L/s	433 L/s	106 L/s	44 L/s	9.7 L/s	45 L/s	38 L/s	18.0 L/s	14.6 L/s	4.6 L/s
Projected Upgrades		100 L/s (2030)	85 L/s (2038)	66 L/s (2026)		45 L/s (2070)		18 L/s (2040)		4.0 L/s (2045)		
		100 L/s (2068)	85 L/s (2038)	44 L/s (2027)								
		100 L/s (2068)	19 L/s (2068)	44 L/s (2032)								
				42 L/s (2043)								
				55 L/s (2048)								

			33 L/s (2058)								
Future 50 yrs Available Pump Capacity	900 L/s	444 L/s	440 L/s	-	80 L/s	17.0 L/s	54 L/s	-	25.5 L/s	15.3 L/s	5.5 L/s

*Available Pump capacity assumes n+1 redundancy is maintained in the surface pumps at each scheme

Oxford Urban and Oxford No 2 are supplied via reservoirs that fed via gravity into the network. This is supplemented by flow from the Domain Road well pumps. There are no surface pumps on the system other than two sets of booster pumps to boost pressures in the Oxford Rural No 2 part of the scheme. The required capacity figures for the scheme represent the forecast peak hourly flow demand.

Oxford No 1 is supplied directly from well pumps at McPhedrons Road and the deep well at Rockford Road. There are no surface pumps on the scheme other than a booster pumpset to pump water to the Chalk Hill tanks. These booster pumps are programmed to be removed along with the Chalk Hill tanks. The required capacity figures for the scheme represent the forecast peak hourly flow demand.

Reticulation

The capacity of all the water supply headworks and reticulation has been assessed using calibrated reticulation models. The models confirm that all the existing reticulation systems have adequate capacity for the existing demands. However, substantial reticulation upgrades will be required to accommodate future growth on the scheme.

There are 85 growth related reticulation upgrades recommended in the LTP period. The larger reticulation upgrades are the 375mm/300mm diameter Northeast Rangiora Supply Main (URW0123) and the 100mm/200mm diameter Merton and Priors Road upgrades to service the proposed Rangiora Airfield development (URW0290). These are both anticipated to be upgrades triggered by growth, and partly developer and development contribution funded.

Cost estimates have been undertaken for all projects and included in the 2024-34 LTP.

Consents

A consent is required for the water abstraction at each source within the District. The effect on the water source is considered as part of the assessment of environmental effects. This includes an assessment of impact on other users. The conditions of consent also require that the Council has in place measures to conserve water. The consent process, which is the responsibility of the Regional Council (ECan), is intended to ensure that the long-term abstraction and water use by multiple users from water sources is sustainable.

A spreadsheet of the Council's water supply takes for the Council's 11 schemes is available at [TRIM 230621091962](#). The Levels Of Service section has LOS related to meeting consent requirements.

14 OPERATION AND MAINTENANCE

Operation and maintenance (O&M) expenditure incorporates the day to day running of the water supply network and allows the system to carry on functioning to deliver the agreed levels of service.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised below:

Table 24: Overview of Planned and Reactive Maintenance Tasks

Task	Planned	Reactive
Headworks Maintenance	Frequent inspections (typically weekly) and basic maintenance	If required for particular headworks items in response to alarms, or defects noted as part of inspections.
Water Quality Sampling	Planned samples are taken in accordance with DWQAR requirements	If required in response to an event, triggered by planned sampling
Generator Checks	Planned monthly, quarterly and annual checks	If required in response to alarms
Chemical Monitoring	Monitoring and top-ups are part of planned headworks inspections	If required in response to alarms
Restrictor Checks	Planned periodic checks are undertaken to ensure correct flow received.	If required in response to customer complaints
Backflow Preventer Tests	Annual testing is completed in accordance with Water Services Act (2021).	If required in response to a suspected backflow event.
Pipe repairs	No planned repairs	Repairs undertaken in response to service requests / leaks.
Valve repairs	No planned repairs	Repairs undertaken in response to service requests / leaks.

Council has recently implemented additional asset management functionality to its asset register, via the Asset Management Information System (AMIS) project.

Water supply pipe burst costs are now automatically linked to pipe asset ID's and mapped, to help better understand the performance of the network and in particular the performance of the different pipe materials being used throughout the district. The devices field workers use to record these costs, are also configured to enable the field recording of asset data. This automatically updates the asset register, and will allow faulty asset data to be readily corrected directly from the field. It had been expected that in time, this new functionality will enable Council to better understand it's maintenance costs, and move towards more informed asset management decision making. Identifying burst history, critical assets, assessing the risks and replacing mains prior to failure would ultimately reduce operational repair work. Unfortunately there is some doubt about

the continuation of the system as Council's enterprise software, to which the asset management system is linked, is to be replaced.

3 Water has a Service Level Agreement with its in house operations arm, The Water Unit, which includes a fully priced schedule of works. Prices are reviewed annually. Scheduled prices have been incorporated into the works order system associated with the Asset Management Information System.

The SLA includes comprehensive KPI's to be monitored, which are expected to improve accountability and quality assurance, over time.

Operation & Maintenance Expenditure

The operation and maintenance (O&M) budgets are currently set up to automatically account for inflation and growth. Inflation is accounted for with a factor set by the Council's Finance Unit, but this is not used in the development of the graphs and tables in the AMPs to provide a clearer comparative picture of asset O&M costs year to year.

The implication of growth on O&M budgets is accounted for with the inclusion of a formula that increases the O&M costs on a pro rata basis proportionally with the population (as new developments come online). However, depending on asset class the increase in O&M costs may be reduced from being directly proportional.

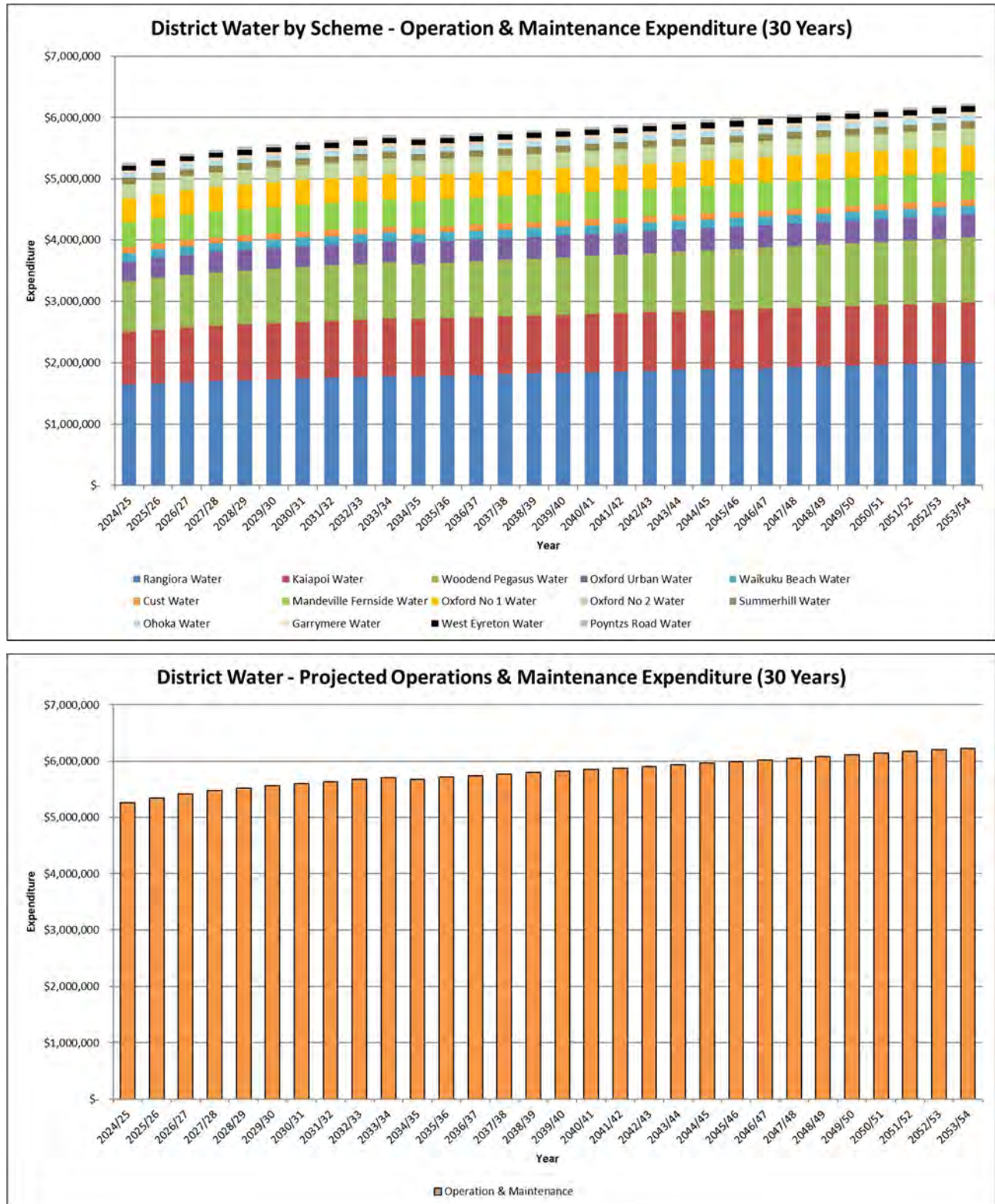
This is adjusted using a 'Demand Factor'. So for example costs for a particular scheme to maintain the network pipes and valves is expected to increase directly in proportion to increasing numbers of connections, but maintenance of pump maintenance costs are only expected to increase at 50% of the rate of the increasing number of connections.

In addition to the automated increases, part of the consideration when setting the O&M budgets across the district's schemes is the potential impact of any new capital projects. These increases are accounted for in two ways:

- **Direct O&M Increases:** Through Asset Managers calculating what areas of the budget may increase, and manually adjusting the appropriate parts of the budgets from the year following when the capital project will be completed. An example of this would be a new headworks being constructed. This would require power costs to be reviewed (as the new headworks would consume power), as well as items related to headworks inspections and maintenance.
- **Depreciation Increases:** Changes in depreciation as a result of new capital projects are accounted for by the Council's Finance team. As a new capital budget is introduced to a scheme, there is a formula to increase the depreciation amount for that scheme based on the size of the capital budget being assumed to represent the value of the assets being added, and the asset life being assigned a representative figure for that scheme (depreciation rates are typically in the order of 1.5% to 2.5% of the value of assets added for example). Normally a comprehensive valuation is carried out every three years, which then assigns accurate valuation rates and base lives to any new assets created in the last years, to refine the accuracy of the depreciation rates further. With increased inflation over the last few years, the most recent valuation was carried out a year earlier

Figure 4 presents the forecast Operations and Maintenance Expenditure across all the Council's water schemes for the following 30 year period. Maintenance budgets are sufficient to carry out maintenance of the system, which remains largely reactive and there are no known items of maintenance which have been deferred from budgetary constraints.

Figure 4: District Overview - Projected Operation & Maintenance Expenditure



15 CAPITAL WORKS APPROVAL

The Waimakariri District Council has previously developed a process for justifying any new capital works projects being submitted for inclusion in the draft Annual Plan or LTP. However, this has so far not become well embedded in the Council's processes, and so improvements are now being made, and rolled out in time for the 2024-34 LTP.

In particular, projects in years 1-3 of the LTP with value greater than \$500,000 require a "Business Case Light" application, and projects of a greater value than \$4M in years 1-3 require a full business case to be written. Projects in years 4-10 with a value greater than \$500,000 require a slightly less robust 'Justification Form' application.

In general the forms require:

- Project description and scope;
- Strategic case – LOS, growth or renewal. Contribution to Community Outcomes, national programmes and public value benefits;
- Risks and assumptions;
- Economic case – Preferred option and alternatives considered;
- Financial case – Requested budget, (components –LOS, growth, renewal), expensed component, funding sources (DC's if relevant), effect on rates and budget confidence;
- Management Case – ability to deliver and how.

Through each Annual Plan and Long Term Plan process, Project Justification forms are prepared for projects that meet the criteria for requiring them. These require the relevant Department Manager's approval before being presented to the Council's Management Team as part of submitting the overall budget proposal from each service area. Ultimately what is approved by the Management Team is presented to Council to review as the Draft Long Term Plan or Annual Plan budget.

16 RENEWALS

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it is work to replace existing assets and maintain the original capacity of the system. Renewal work is funded from a budget generated by the depreciation component of the rates.

Council uses a risk-based renewals programme for pipework which incorporates the following criteria:

- Burst History – the number of bursts in the previous three years collected as part of the new maintenance data collection programme. Includes analysis work explained in the Asset Condition section
- Remaining Useful Life – based on the design life, as used previously.
- Vulnerability – a function of location, material and joint type.
- Criticality – the criticality score calculated for each main which is determined from various factors e.g. pipe material type. Details are shown in Table 14

The process uses a GIS model that incorporates the above factors and utilises existing Asset Management Information System data in the GIS.

The model enables an assessment to be made of the depreciation required to fund future replacement costs, for different levels of risk. This allows risk and affordability to be balanced. Key outputs from the model are a prioritised list of pipe renewals needed across the district, identified by scheme, and an annual expenditure profile for the next 150 years. A schematic of the modelling process is shown below in Figure 6.

A potential emerging pipe renewals risk is the health issue associated with the replacement of asbestos cement pipes in private property that will be coming to the end of their lives in the medium term future. A policy has not yet been established as to the approach to be taken with abandoned pipes, but the potential exists to significantly increase renewal costs above those currently used.

The model developed for headworks uses the same methodology as the pipe renewals model, but as knowledge of the headworks condition is not to as high a standard as the reticulation, standard industry lives for the relevant asset classes have been used as inputs to the headworks renewals model. As the headworks criticality model is still under development, a simplified renewals assessment methodology has been used in the interim, which does not factor in criticality.

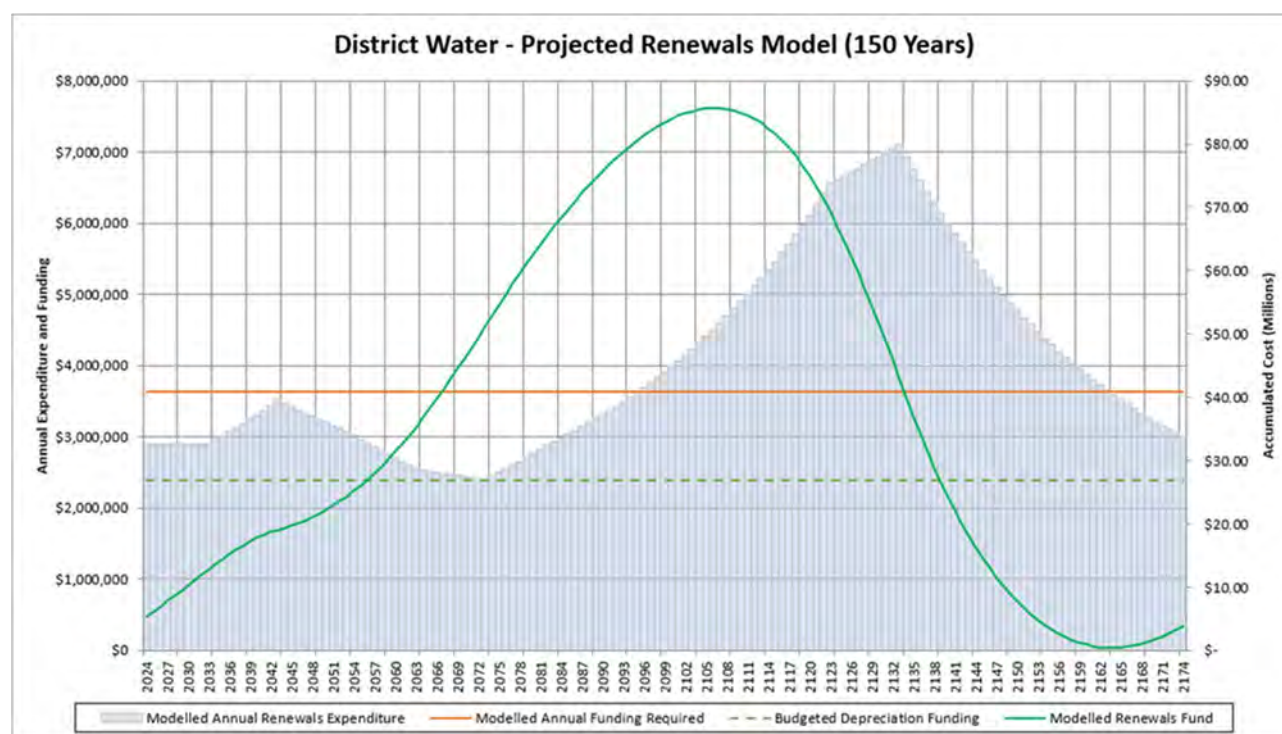
The final decision about pipe renewals to be carried out in a particular year is made by the Asset Manager, taking into account opportunities for coordination of works (i.e. Roading projects and other utilities renewals that may be planned) and any other operational requirements.

District Wide – Renewals Expenditure

Figure 5 presents the forecast Renewals Expenditure across all the Council's water schemes for the following 150 year period. The horizontal line is the required level of funding to ensure that renewals are not deferred, and current levels of service are maintained.

The figure only shows the output from the model, so expenditure shown in the graph for the first ten years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager to the direct renewals model outputs.

Figure 5: District Wide Projected Renewals Expenditure



The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model. As can be seen, this account goes into surplus, peaking at approximately \$50 million in the year 2105, before being drawn down over the following 50 years.

The key point to note is that the Budgeted Depreciation Funding is less than the Modelled Annual Funding Required. The reason for this difference is the use of a discount factor.

- **Depreciation Discount Factor:** Council's financing of future renewals incorporates the expectation that depreciation funding can be invested at a higher rate of return over the life of the assets than inflation. Further information regarding this approach is provided in the Finance Policy. This concept is embodied in the scheme budgets in the form of a discount rate (referred to in the budgets as the 'Depreciation Discount Factor'). This reduces the annual depreciation funding required from rates, while still ensuring that there will be sufficient funding available to renew assets at the end of their useful life. The renewals model assumes funds can be invested at a 1% marginal interest rate higher than inflation when considered over the long term.

There are a wide number of factors influencing specific planning for renewals projects, which means that the outputs from the renewals model may not be strictly followed, at least in the first ten years. Where specific projects have not been identified in the first three years of the LTP, the total recommended budget from the first ten years of the model are redistributed over years 4 to 10. Funding can be brought forward if and when specific projects are identified. For water supply the difference between model outputs and the planned budget is shown in the table below

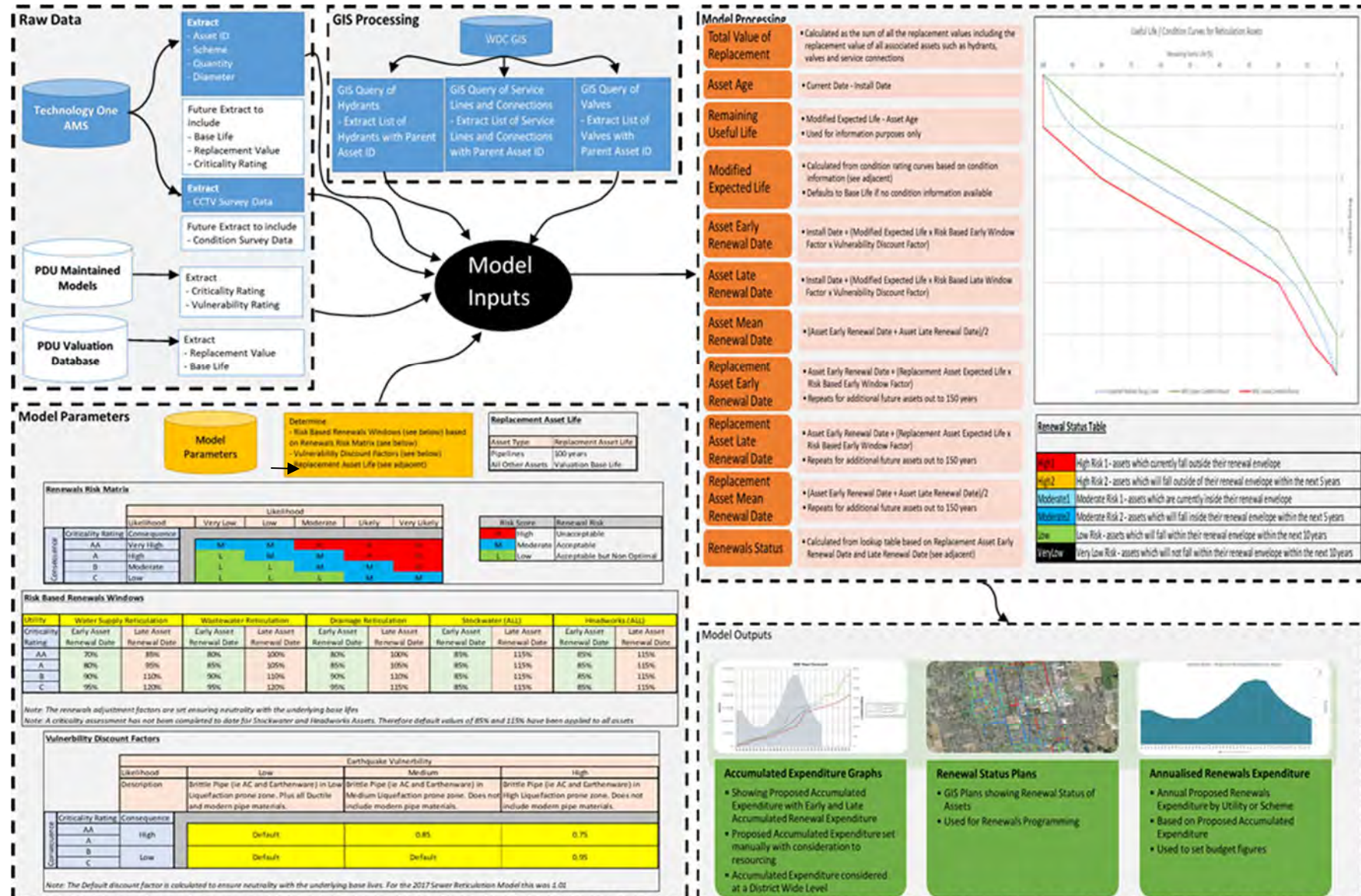
Table 25: Planned Budget Versus Renewals Model Recommendation 2024-34

	Renewals model recommendation	Planned Budget	Budget as a percentage of model recommendation
Reticulation	\$18,000,000	18,807,000	104%
Headworks	\$11,000,000	11,453,000	104%
Total	\$29,000,000	30,260,000	104%

Beyond the first 10 year window, the outputs from the renewals model have been fully adopted to inform the renewals budgets for each scheme. There are no known deferred renewals of assets across the district.

The mechanics of the renewals model are outlined further in Figure 6.

Figure 6: Renewals Expenditure Models



Scheme – Reticulation Renewal Timelines – Spatial view

The [AMP Plans and Figures Viewer](#) contains plans by scheme of the pipe renewal timeframes generated by the model, in three bands; within 5 years, 15 years and 25 years.

17 NEW WORKS

There are a number of drivers for new works in the District that come together to produce the capital works programme, in addition to renewals. These are:

1. The capacity assessments provide details on any shortfall on the schemes and new works are prioritised to address these, the primary influence being growth.
2. The Levels of Service highlight any deficiencies in the quality of service provided to customers, which can then trigger new projects to address any highlighted deficiencies.
3. Risk assessments (including those incorporated in the Water Safety Plans) generate projects and works required to mitigate risk, and ensure drinking water safety standards are met.
4. Works are also identified through the operation of the schemes rather than being identified through the assessment of level of service, capacity, or risk. These works are normally identified by an operator or Asset Manager and include such works as health and safety improvements, and works to ensure assets are maintained in an acceptable condition.

These sources all provide new works projects that provide a budget for the next 50 years.

When any significant project is being planned, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. The detailed capital works table which is available in the [Asset Management Plans GIS Viewer](#) , shows the project ID for each project. Each project has an entry in the budget spreadsheets [Capital Works Budget Sheets - Water](#), which in turn provide references to supporting documentation.

Table 26 below shows the projected budgets for new works for the next 50 years for all of the District water supply schemes, including renewals. Note that while Oxford Rural Number 2, Summerhill and Poyntzs Rd are physically connected to other schemes, they are shown separately here, as they remain financially separate schemes.

The final row of the table is not a physical scheme. The District Water account was established to fund UV related upgrades equally across the district. The purpose being to manage affordability concerns particularly for small schemes with already high rates, if they were required to fund UV upgrades in addition to existing infrastructure.

Table 26: New Works across Water Schemes Over 50 Years

Scheme	2024 - 2033	2034 - 2043	2044 - 2053	2054 - 2073	Total
Rangiora Water	\$22,574,874	\$21,046,683	\$12,288,192	\$22,216,726	\$78,126,476
Kaiapoi Water	\$5,585,442	\$7,054,804	\$5,745,173	\$11,641,103	\$30,026,522
Woodend Pegasus Water	\$9,398,164	\$8,216,756	\$5,246,140	\$11,057,271	\$33,918,331
Oxford Urban Water	\$5,365,676	\$6,497,988	\$2,584,469	\$2,976,967	\$17,425,100
Waikuku Beach Water	\$562,998	\$1,086,706	\$1,663,845	\$3,214,978	\$6,528,527
Cust Water	\$812,273	\$3,797,488	\$662,164	\$3,172,230	\$8,444,154
Ohoka Water	\$1,089,368	\$1,416,218	\$444,260	\$1,183,580	\$4,133,426
Mandeville Fernside Water	\$2,033,085	\$2,086,914	\$1,913,388	\$2,140,417	\$8,173,804
Oxford No 1 Water	\$3,560,962	\$5,630,300	\$3,063,065	\$2,892,284	\$15,146,612
Oxford No 2 Water	\$2,901,304	\$1,576,192	\$2,612,602	\$2,206,762	\$9,296,860
Summerhill Water	\$642,999	\$676,939	\$896,264	\$1,109,835	\$3,326,038
West Eyreton Water	\$390,898	\$147,084	\$206,733	\$572,801	\$1,317,517
Poyntz Road Water	\$136,681	\$149,096	\$464,438	\$335,018	\$1,085,233
Garrymere Water	\$233,942	\$110,681	\$345,601	\$655,335	\$1,345,558
District Water	\$1,724,613	\$2,195,467	\$0	\$0	\$3,920,080
Total	\$57,013,279	\$61,689,316	\$38,136,335	\$65,375,310	\$222,214,240

Note: Dates refer to beginning of financial year (e.g. 2024 is 2024/25 financial year).

The figures in the table are based on the assumption that LOS requirements do not change significantly into the future, and that growth forecasts are accurate. Growth projects may be accelerated or delayed to fit actual growth patterns.

All projects are included in a central database of capital works projects, including renewals.

The front end of the data base is configured with the objective of ensuring that relevant data to the projects is captured in one place as a “single source of truth”. Where possible this data will also be used to populate the “WDC Capital Works Project Justification” template that is required to be filled in for any new project of a higher capital value than \$500,000.

When a scheme upgrade is undertaken, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. These investigative reports are referenced in Table 7: Data References in Section 3, Scheme Description.

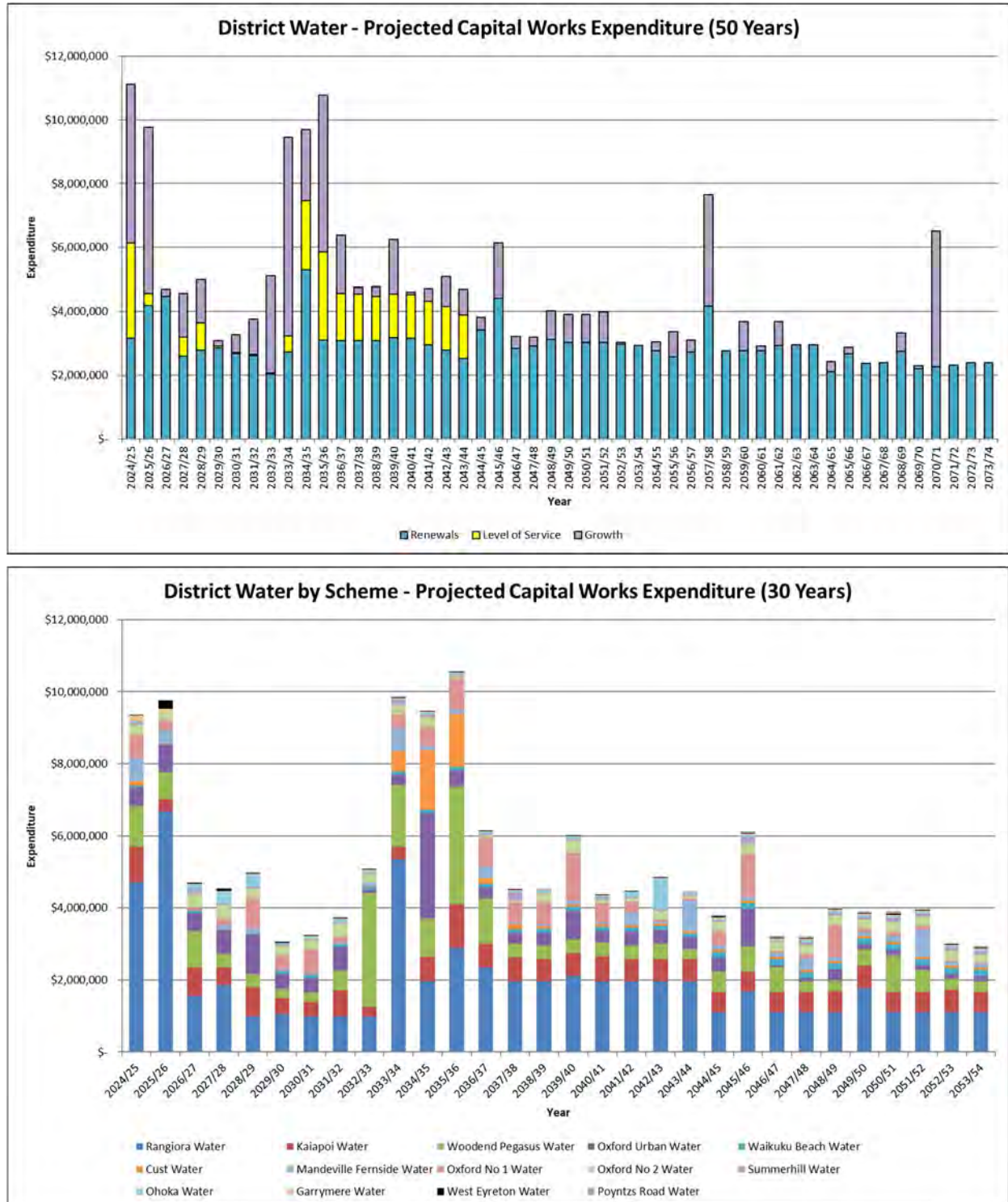
Works Coordination

Work programmes between a combination of service types and activity areas requires appropriate coordination. Utilities Providers Coordination meetings are held quarterly between 3 Waters, Roding, power and telecommunication providers. This enables opportunities for collaboration to be identified. In addition, Council has a GIS tool where future planned works can be overlaid to optimise the coordination process further.

District Overview – Capital Works

The following graph shows the 50 year budget for all capital works, including projects driven by growth and levels of service, including carry forwards.

Figure 7: District Overview - Projected Capital Works Expenditure



The table available within the [AMP Plans and Figures Viewer](#) shows all of the planned projects over a 50 year time horizon for all of the schemes, and how the cost is spread across the three components - LOS, renewals and growth. The level of confidence in the budget for the works is also presented in the table, as well as references to other documents relevant to the works, such

as options studies. The AMP appendices include maps that show the location of the planned capital works. The figures presented in the table exclude inflation for ease of comparison across years.

For a more complete discussion on the level of optimisation, refer to the introductory chapter of the AMP.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

Scheme – Capital Upgrade Works – Spatial view

The [AMP Plans and Figures Viewer](#) contains plans by scheme of the planned capital upgrades in 5 temporal bands over a 50 year time horizon.

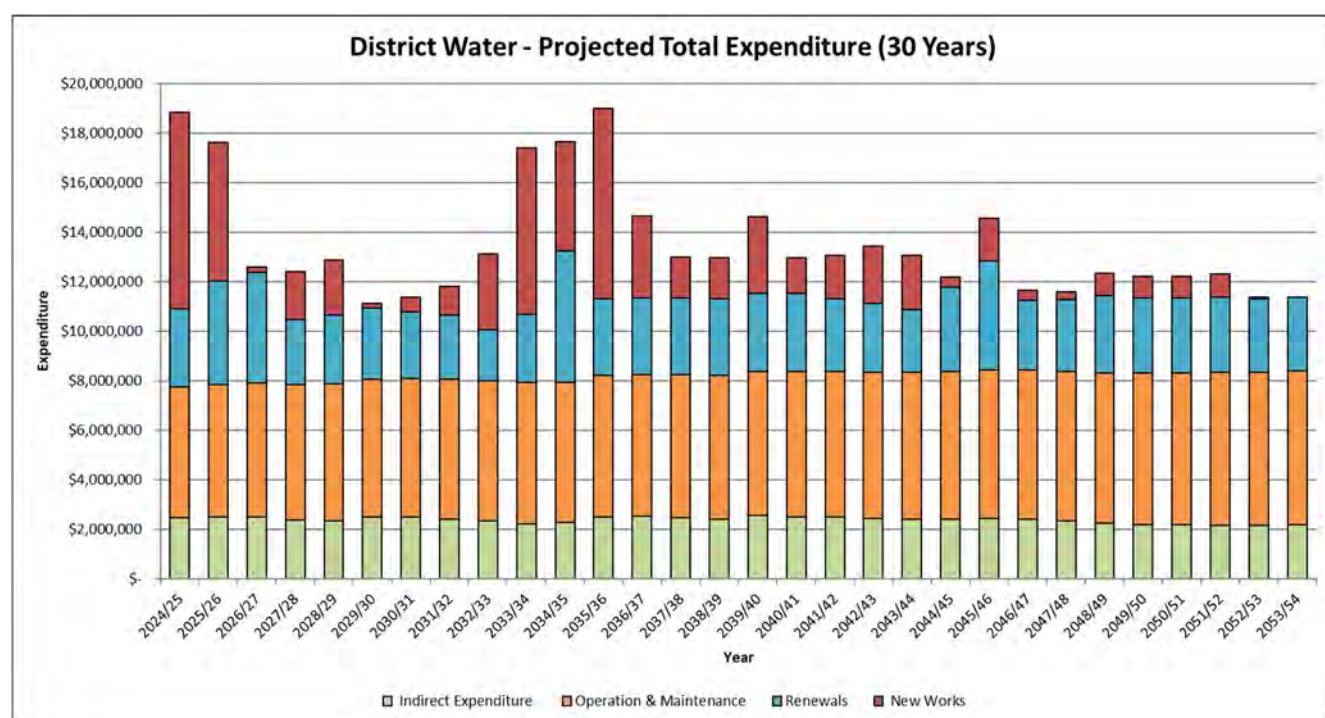
18 OVERALL FINANCIAL FORECASTS

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure.

Operational costs include operations and maintenance, and indirect expenditure. Indirect expenditure includes interest rating collection costs, costs associated with maintaining the Asset Register, interest and internal overhead costs.

Capital costs include expenditure for growth, levels of service and renewals, (including carry forwards).

Figure 8: District Overview - Total Projected Expenditure



Financial Forecast Key Assumptions

The following key assumptions have been made in preparing the financial forecasts.

1. Asset data in the asset register is fit for purpose.
2. Asset lives based on nominal material life, are reasonably accurate.
3. LOS will not change, for example required by legislation.
4. WDC does not suffer any major natural disaster during the period of the financial forecasts.
5. Effects of climate change are not felt during the term of this LTP
6. Growth matches the projected profiles.
7. Maintaining Operational and Maintenance costs at current levels is cost effective.

Funding/Revenue Sources

An explanation of the sources of funding for the activity is fully detailed in the Council's Revenue and Financing Policy published within the 2024-2034 LTP (TRIM 231114183205). This includes the rationale for each source of funding for each scheme, and an explanation of how the different funding methods are applied to each scheme in relation to the service delivered.

Primary sources of funding for all water supply schemes are targeted rates and Development Contributions for works required to accommodate growth.

All capital works budgets are split into three components, Level of Service, Renewal and Growth. The division may be seen for scheme projects in the Capital Works table contained within the [AMP Plans and Figures Viewer](#)

The growth component is recovered through development contributions (DC's), calculated in accordance with Council's Development Contributions Policy, which can be accessed via the link below. For those projects with a growth component an assessment has been made for the 2024-2034 LTP of the value of the DC required per future connection to the scheme, to fully recover the growth component of the capital work. These assessments are updated as part of the Annual Plan process, and are published on the Council's website at the following link [Development Contributions](#)

Summary calculation sheets for individual schemes can be viewed by clicking on links within the main document.

A further revenue source is the district wide rate that has been set up specifically to fund installation of UV disinfection at all schemes that do not already have it, although it is noted this is simply an alternative type of targeted rate, rather than a separate type of funding source.

Valuation

A full peer reviewed valuation of assets is normally carried out on a three yearly cycle, using the asset data in our asset management information system. Due to the current much more rapid inflation than has been usual, the most recent valuation has been carried out in 2022 ([TRIM 220803132120](#)). The rates from that valuation have been adjusted by the CPI to arrive at "valuation" figures for 2023. Table 27 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for the district, broken down by scheme.

Table 27: Asset Valuation

Scheme		District	Rangiora	Kaipoi	Woodend Pegasus	Oxford Urban	Waikuku Beach	Cust	Mandeville - Fernside	Oxford Rural No 1	Oxford Rural No 2	Summerhill	West Eyreton	Poyntzs Road	Ohoka	Garrymere
Valves and Hydrants	Quantity	9,135	3,127	2,080	2,086	410	196	107	300	316	165	115	48	68	101	16
	Replacement Cost	\$33.7M	\$12.0M	\$7.9M	\$8.2M	\$1.5M	\$656.3k	\$253.5k	\$915.8k	\$940.9k	\$491.2k	\$355.5k	\$121.6k	\$159.5k	\$270.0k	\$20.9k
	Depreciated Replacement Cost	\$26.3M	\$9.0M	\$6.0M	\$7.1M	\$0.9M	\$445.2k	\$214.1k	\$768.1k	\$715.3k	\$347.9k	\$290.4k	\$106.6k	\$148.9k	\$232.3k	\$15.2k
	Annual Depreciation	\$372.0k	\$131.0k	\$90.7k	\$85.8k	\$18.7k	\$7.6k	\$3.0k	\$9.6k	\$10.6k	\$5.4k	\$3.6k	\$1.3k	\$1.8k	\$2.8k	\$0.2k
Main	Quantity	978 km	228 km	152 km	149 km	37.9 km	14.9 km	10.8 km	81.1 km	139 km	79.0 km	46.9 km	12.9 km	15.1 km	6.7 km	4.8 km
	Replacement Cost	\$218.1M	\$77.4M	\$44.0M	\$43.9M	\$10.7M	\$4.0M	\$2.6M	\$8.9M	\$11.7M	\$6.6M	\$4.2M	\$1.6M	\$1.2M	\$1.1M	\$266.8k
	Depreciated Replacement Cost	\$164.6M	\$57.4M	\$32.3M	\$37.7M	\$6.2M	\$2.6M	\$1.8M	\$7.2M	\$8.1M	\$4.5M	\$3.4M	\$1.3M	\$1.1M	\$0.8M	\$194.4k
	Annual Depreciation	\$2,397k	\$846.7k	\$518.9k	\$452.8k	\$133.4k	\$45.4k	\$27.1k	\$94.9k	\$124.8k	\$67.6k	\$42.4k	\$18.1k	\$11.6k	\$10.8k	\$2.7k

Service Lines	Quantity	19,699	7,066	5,189	3,707	853	454	152	944	416	366	205	76	102	126	43
	Replacement Cost	\$24.0M	\$8.4M	\$6.2M	\$4.4M	\$1.0M	\$539.0k	\$180.5k	\$1.4M	\$613.2k	\$539.5k	\$302.2k	\$112.0k	\$150.3k	\$185.7k	\$63.4k
	Depreciated Replacement Cost	\$18.3M	\$6.1M	\$4.7M	\$3.8M	\$0.6M	\$359.8k	\$120.7k	\$1.1M	\$506.1k	\$420.6k	\$248.8k	\$79.6k	\$127.6k	\$146.0k	\$48.7k
	Annual Depreciation	\$264.0k	\$91.7k	\$71.0k	\$45.5k	\$12.4k	\$6.0k	\$1.9k	\$14.8k	\$6.3k	\$5.6k	\$3.0k	\$1.4k	\$1.5k	\$1.9k	\$0.6k
Facilities	Replacement Cost	\$39.9M	\$11.1M	\$5.0M	\$10.4M	\$2.2M	\$1.1M	\$1.1M	\$1.9M	\$2.4M	\$1.4M	\$729.1k	\$523.8k	\$508.0k	\$995.7k	\$554.5k
	Depreciated Replacement Cost	\$26.6M	\$7.5M	\$3.1M	\$7.2M	\$1.3M	\$0.8M	\$0.9M	\$1.2M	\$1.4M	\$0.8M	\$474.8k	\$388.3k	\$324.5k	\$722.7k	\$426.5k
	Annual Depreciation	\$896k	\$190.9k	\$108.0k	\$228.9k	\$52.8k	\$40.4k	\$36.1k	\$50.2k	\$66.1k	\$33.7k	\$18.5k	\$13.8k	\$14.8k	\$23.7k	\$17.5k
Totals	Replacement Cost	\$315.7M	\$108.8M	\$63.1M	\$66.9M	\$15.4M	\$6.3M	\$4.1M	\$13.1M	\$15.6M	\$9.0M	\$5.6M	\$2.4M	\$2.0M	\$2.5M	\$0.9M
	Depreciated Replacement Cost	\$235.9M	\$80.0M	\$46.1M	\$55.8M	\$9.0M	\$4.2M	\$3.0M	\$10.3M	\$10.7M	\$6.0M	\$4.5M	\$1.9M	\$1.7M	\$1.9M	\$0.7M
	Annual Depreciation	\$3,928k	\$1260k	\$788.7k	\$813.0k	\$217.2k	\$99.3k	\$68.1k	\$169.5k	\$207.8k	\$112.3k	\$67.6k	\$34.6k	\$29.7k	\$39.3k	\$21.0k

19 DATA CONFIDENCE

Data confidence has been assessed across a range of asset data and processes. The confidence grading used has been taken from the IIMM as follows:

Confidence Grade	Description
A Highly Reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset accuracy $\pm 2\%$
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Data set accuracy $\pm 10\%$
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample. Up to 50% data is extrapolated and accuracy estimated at $\pm 25\%$
D Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis, Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated at $\pm 40\%$
E Unknown	None or very little data held

Confidence grades have been assessed as:

Table 28: Data Confidence Levels

Element		Grade
Asset Inventory	Reticulation	B
	Headworks	A
Performance and service gap interpretation		B
Asset condition	Reticulation	B
	Headworks	C
Asset remaining lives	Reticulation	B
	Headworks	C
Demand forecasts		B
Valuation and depreciation		B
Financial forecasts		B

Confidence in headworks assets can be generally seen to be consistently lower than reticulation assets. This is a reflection of more focus being placed historically on network assets rather than facilities, as that is where the majority of the maintenance effort is expended. However confidence in the headworks asset inventory has increased considerably since the last LTP, as a full asset inventory has been carried out, although this did not include asset condition assessment.

It is worth noting that because headworks assets are above ground, any assets in poor condition can be readily identified and the risk associated with asset failure mitigated through regular visual inspections that can be carried out when operations staff are carrying out routine maintenance operations.

Note that demand forecasts and financial forecasts sections have been assessed on the basis of the confidence in our infrastructure planning given a particular growth scenario. Growth predictions themselves are always inherently uncertain, and elastic. If actual growth is faster or slower than the growth scenario selected, projects to cope with the demand, provided they have been well scoped, can be readily brought forward or delayed as necessary.

20 ASSET MANAGEMENT SYSTEM

A register of water supply assets is held within the Council's Financial Management System and referred to as the Asset Management Information System (AMIS). The register is maintained by the Asset Information Management (AIM) Team on behalf of the 3 Waters Team. The platform is the Council's Finance Management System, Technology One.

The AMIS provides the base data used for the asset criticality model, the water network models and RAMM Roding data, so it is essential that every effort is made to ensure the dataset in the AMIS is accurate. Current process to deliver the required outcome is as follows.

For new assets, built as part of development or as stand-alone capital projects, the AIM team collates as-built data from as-built engineering plans and incorporates this data into the GIS system and asset database. This data then feeds through into the Council's asset valuation process.

The in-house works order system integrates with the asset management system. Maintenance activity, for example in the form of a pipe fault repair by the Council Water Unit under instruction from a work order is now entered digitally via mobile devices in the field. The field devices record job costs, asset location and any changes to assets, and the information is direct uploaded into asset register. Costs are recorded against the repaired assets.

Service requests are generated out of Council's Property and Rates System and for certain job types automatically raise a work order to be sent to the Water Unit via email. Other service request types are forwarded to 3 Waters team members for triage.

Unfortunately the Council's enterprise system, Technology One is in the process of being replaced, as the company advised that it was moving entirely to a cloud based new platform.

Asset Management Maturity

Asset management maturity assessments (AMMA) have been carried out on two previous occasions, most recently in 2021. The assessment was carried out in house, and a subsequent peer review of the self assessment was carried out. The assessment showed that the water supply activity was generally operating asset management at an intermediate level of maturity, and scored overall a 63 against a target of 78.

The key areas for improvement for water supply were *"improving the asset data for facilities and headworks, updating the risk register content and process and completing and embedding the ability to capture maintenance costs against assets"*. These have all been completed.

The table below shows further high priority improvement recommendations, together with the actions taken since the assessment.

AM Function	Recommendation	Action
<i>Policy and Strategy</i>	Develop an Asset Management Strategy.	No Progress
	Incorporate a workshop with AMP authors early in the AMP development to explain overall themes (in the IS) and ensure they are included in the AMP.	Being integrated with the AMP planning meetings

AM Function	Recommendation	Action
<i>Forecasting Demand</i>	Undertake sensitivity testing for growth or demand change scenarios such as population demographic shifts and climate change. Incorporate the results into the AMP.	The 3 Waters reform process has left insufficient time for sensitivity analysis, on top of the normal growth work required
<i>Asset Register data</i>	Complete the facilities and headworks asset data and condition information improvements.	Will be complete July 2023
<i>Decision Making</i>	Introduce a cross activity project prioritisation process to enable better decision making, focusing on the relative priority of level of service improvements.	No formal process developed. Prioritisation carried out by Management Team and elected members
<i>Managing Risk</i>	Review the format, and content of the risk registers and introduce processes to regularly review them and escalate key risks to the corporate register.	Review under way. Expected to be complete late 2023

The self assessment AMMA is available in TRIM [21050607230](#) and the peer review documents in TRIM [220506071089](#)

21 NEGATIVE EFFECTS

At the District level the activity of providing a water supply to the various communities has the following negative effects:

- Demand for continuity of community supplies may have an adverse effect on groundwater resources over time.
- Major industrial or commercial users that use large quantities of water may have their economic potential curtailed by a restriction in the amount of water available

22 SERVICE DELIVERY

Delivery of most capital works is via competitive tendering practice in accordance with the Council's procurement policy ([TRIM 220303030172](#)). Design is usually carried out in house, or where resources are insufficient, via external consultants, again engaged in accordance with the procurement policy.

Routine maintenance is carried out by Council's in house Water Unit. A Service Level Agreement exists that defines the relationship between 3 Waters and the Water Unit. Some specific challenges faced by the Water Unit relate to carrying out maintenance in rural areas over a widely dispersed geographical area. With the District having a particularly high number of lifestyle and rural residential properties there is a considerable network of small bore pipes providing the water service, and the GIS location of assets in some instances is less than desirable. Locating breaks in the field, when service has been lost, can be a time consuming and inefficient process.

23 IMPROVEMENT PLAN

Table 29 below summarises the planned AMP improvements applicable district wide, identified as each section has been reviewed. Many of these have been carried forward from the 2021 AMPs. The 3 Waters reform programme meant that little focus was provided on the Improvement Programme from the 2021 AMP.

Projects will be managed under the 2024-27 AMP Improvement Programme full details of which are provided in [2024 Improvement Programme](#) . The summary table below shows which section the AMP that the improvement project was derived from and includes projects that have been completed since the 2021 AMP.

Table 29: 2024 AMP Improvement Plan

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP002	Asset Management System	Carry out asset inventory check at all facility sites. Record key attributes and condition, and functional descriptions	High	Largely complete	Asset inventory complete. Plan to use TRAKK software to start collecting condition data
IP004	Asset Management System	Integrate Rooding & 3 Waters Renewals Programmes	High	Planned for 2024/25	Physical works layer in GIS now used for planning, but further Rooding/3 Waters work needed to complete
IP006	Asset Management System	Verify location of critical assets	Medium	Planned 2024-2026	Higher priority now - arising from the Utilities Code of Practice
IP008	Asset Management System	Unify various existing documents into a 3 Waters Emergency Response Plan or Business Continuity Plan	Medium	Planned 2024-2026	A cascading hierarchy of documents for emergency response is required for Council. At 3 Waters a "Business Continuity Plan" is required
IP011	Disaster Resilience	Confirm natural hazard information at facilities sites as part of the site by site asset risk assessment for climate change effects.	High	Incorporated into IP054	Original site risk assessment project now incorporates climate change risk and priority has been increased
IP020	Asset Management System	Ensure AMIS functionality transferred over to new Asset Management System/Council Enterprise system	High	2024/25 onwards	Necessitated by Council's enterprise system changing from Tech One to Datacom
IP022	Asset Management System	Develop system to store and manage consent information	High	2024/25 onwards	Dedicated staff member has been engaged to implement and maintain
IP027	Asset Management System	Establish documentation that specifies asset data that must be included in As Built information supplied to AIM team	High	Planned for 2024/25 onwards	Multi faceted project including updating the Engineering Code of Practise, and then promulgating Council's requirements
IP028	Demand	Review and define appropriate average and peak water use targets for urban schemes to support LoS & WCS reporting, and future water take applications	Medium	On hold	Linked to test case investigation of what would be required to gain chlorine exemption. See IP059

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP033	Operations and Maintenance	Develop and implement a process for sampling and storing water mains for condition assessment (incl AC and PVC data)	Medium	2025/26	Current ad hoc system needs update to ensure data more readily available
IPO34	Asset Management System	3 Waters Strategy	High	2025/26	What do WDC water services look like in 2053 and 2073?
IP045	Risk Assessment	Update DRA in parallel with Risk Assessment Update using common risk approach. Develop high level framework, seek update of hazard information.	High	Planned for 2024/25	PDU have progressed . To be followed up
IP048	Operations and Maintenance	Standardise operational and maintenance items used in the budget to enable better expenditure monitoring	Medium	On hold	Still nice to have but only medium priority
IP049	Asset Management System	Review costs and benefits of universal water metering and charging for water	High	On hold	Linked to test case investigation of what would be required to gain chlorine exemption. See IP059
IP050	Risk Assessment	Dwelling floor level surveys Kaiapoi and Rangiora (Phase 1 scoping only)	High	2025/26	Needs sensitive management
IP053	Climate groundwater modelling	Work with the Regional Council regarding GW modelling and consideration of effects of SL rise on their infrastructure	High	Planned for 2024/25 onwards	Ongoing
IP054	Risk Assessment	Carry out an assessment of the likely operational and asset management risks associated with climate change in affected areas.	High	Phase 1 complete	Initial screening carried out. Further more detailed work on site by site basis to follow
IP059	Asset Management System	Carry out investigation of changes needed to secure a chlorine exemption for Cust. Will involve elements of IP028 and IP049	Medium	2026/27	Elected member requested ongoing work to establish what would be required and the cost

As an adjunct to this section the 10 key questions that Audit NZ have advised should be responded to, as a high level check on the adequacy of Asset Management Plans, has been reproduced below with responses. Additional improvement projects are included in the Improvement Plan table that fill gaps identified through this process.

Table 30: Audit NZ Questions and Responses

Audit NZ Question	Response
1. Have you got a strategy for the long-term sustainability of your assets?	Council has Activity Management Plans that are reviewed in house, at three yearly intervals, that include a well-developed renewals assessment and funding model that ensures the long term sustainability of its 3 waters assets. The Council does not have an Asset Management Strategy document however
2. Have you set an asset management policy?	Yes. TRIM link to policy
3. Do you have good quality up-to-date asset management plans for achieving your strategy?	Yes. These are comprehensively reviewed every three years and submitted for peer review.
4. Does your organisation have appropriate asset management skills and experience?	Yes. For 3 Waters each of the activity areas – water supply, wastewater and drainage, has a dedicated asset manager responsible for the management of the relevant assets
5. Do you know the reliability of your asset information?	Reasonably well. Asset data for our reticulation network is reliable and being improved through analysis of maintenance data. Facility asset data is also reliable, with a comprehensive facilities asset inventory just having been completed
6. Do you have a structured approach to assessing the condition and performance of your assets?	<p>Yes. Noting that the average age of its network assets is relatively young, the condition of water supply reticulation assets has been the subject of recent analysis through examination of pipe performance. This has enabled condition to be inferred in more detail than has previously been the case. For gravity pipes, Council has recently invested in InfoAssets software, which will enable improved management of gravity pipe condition data.</p> <p>A facility assets condition assessment has not yet been carried out.</p> <p>The system that records repair costs against assets, would have improved understanding of performance, especially as it was further developed, but unfortunately it's future is in jeopardy. This is because the Council's enterprise system is to be replaced.</p>
7. Have you defined a clear and comprehensive set of service levels to be delivered or supported by the assets?	Yes. These are generally reviewed and approved by Council in conjunction with the three yearly AMP review. As noted in the LoS section this has not been possible for the 2024 AMP

Audit NZ Question	Response
8. How well do you forecast future demand for the services that are delivered or supported by your assets?	Demand forecast is largely based on growth projections. Improvements could be made by considering other factors such as for example demographic changes, and changing technologies
9. Do you report, and get reports, on achievement of your asset management plan(s)?	Key Levels of Service are reported quarterly to Council, and other LOS are reported annually to Council. Asset Management Plans themselves are generally peer reviewed, although this has not been carried out for the 2024 AMP due to the effect of the 3 Waters Review on AMP timing.
10. Do you have a backlog of repairs, maintenance, and asset renewals? And what are you doing about it?	No. The Asset Management Plan process delivers approved budgets that to date have been sufficient to ensure that there is no appreciable maintenance backlog, and that fully funds future renewals

24 CHANGES TO AMP AS A RESULT OF LONG TERM PLAN CONSULATION

This section outlines any significant changes to the AMP as a result of the 2024-34 Long Term Plan consultation period.

Some changes to budgets have arisen as a consequence of a staff submission report to Council during LTP hearings 21-22 May (TRIM 240404051976).

Note that the projects themselves have not changed, but budgets have been modified as a consequence of detailed designs progressing.

The table below provides a summary of the changes to capital budgets across the various district schemes.

Budget Name	Draft 2024-34 LTP (2024/25)	Proposed Revised Budget (2024/25)	Difference	Notes
South Belt Link Main	\$164,379	\$249,375	\$85,000	Cost estimates revised based on more current information
Ohoka WTP Upgrade	\$350,000	\$250,000	-\$100,000	Project timeframe extended to allow for land acquisition for the WTP upgrade.
Ohoka UV Upgrade	\$900,000	\$600,000	-\$300,000	Project timeframe extended to allow for land acquisition for the WTP upgrade
Total	\$1,414,379	\$1,099,375	-\$315,000	

APPENDIX 1: RANGIORA SCHEME PERFORMANCE

Table 31: A1 - Rangiora Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	50%	(Rangiora Backup Wells: CRC160704) - Minor non-compliance questions to be answered on the flow meters and consent requirements.	Not Achieved	Follow up with ECan. Project to install flow meter in Western wells	Y	N	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	N/A	Unchlorinated scheme	N/A	N/A	Y	Y	Y	N	N
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoa treatment in place	Not Achieved	UV installation 2023/24	Y	Y	Y	N	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results#				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		radiological requirements of DWSNZ										
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	No chlorine treatment in place	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	N
Fire Fighting	Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	97%	From Fire Hydrant Analysis Tool last updated early 2022. 220304031019	Achieved	N/A	N	N	N	N	N
Fire Fighting	Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	100%		Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results#				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value in further leak detection work	B	15.6%. Scheme divided in seven sectors with two Orange and Grey_A exhibiting the lowest performance (C).	Achieved	N/A	Y	Y	Y	N	Y
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	N	Y	N	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for 100% of the time >300kPa for 99% of the time	100%		Achieved	N/A	Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/ connection/day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	167%	Requires 7.34 hours at ADF/ 5285 m3 total. Have 8800 m3	Achieved	N/A	Y	Y	N	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	71%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	103%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	N	Y	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	98%	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 2: KAIAPOI SCHEME PERFORMANCE

Table 32: Kaiapoi Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	N	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoa treatment in place	Not Achieved	UV installation 2023/24	Y	Y	Y	Y	Y
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Plant offline for month with reservoir repairs Only plant operating for month, impacting T3.2 and T3.4	Not Achieved	Improve water compliance processes	Y	Y	Y	Y	N
Fire Fighting	Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	97.5%		Achieved	N/A	N	N	N	N	N
Fire Fighting	Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	100%		Achieved	N/A	Y	Y	Y	Y	Y
Water Losses	Water losses as determined by measured or calculated	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D",	A		Achieved	N/A	Y	Y	Y	Insuf. data	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	minimum flow		an economic assessment shall be carried out to determine the value in further leak detection work									
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf. data	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for 100% of the time >300kPa for 99% of the time	100%		Achieved	N/A	Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/ connection/day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	189%	Requires 0 hours at ADF (aquifer storage)/ 422 m3 total (working storage). Have 798 m3	Achieved	N/A	Y	Y	N	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	61%		Achieved	N/A	Y	Y	Y	Y	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	97%		Achieved	N/A	Y	Y	Y	Y	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	78%	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.	Not achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 3: WOODEND-PEGASUS SCHEME PERFORMANCE

Table 33: Woodend-Pegasus Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No treatment for protozoa and bore heads do not meet sanitary criteria.	Not Achieved	UV installation 2023/24	Y	Y	Y	Y	Y
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	100%		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	100%		Achieved	N/A					
	DWSNZ – Bacterial Compliance (previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Distribution Zone is compliant. Bacterial treatment was compliant 98% of time.	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	N
Fire Fighting	Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	97%	From Fire Hydrant Analysis Tool last updated early 2022. 220304031019	Achieved	N/A	N	N	N	N	N
Fire Fighting	Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	100%		Achieved	N/A	Y	Y	Y	Y	Y
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D" , an economic assessment shall be carried out to	A		Achieved	N/A	Y	Y	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			determine the value in further leak detection work									
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf. Data	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for 100% of the time >300kPa for 99% of the time	100%		Achieved	N/A	Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/ connection/day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	162%	Requires 6.99 hours at ADF/ 3080 m3 total. Have 4990 m3	Achieved	N/A	Y	N	N	Y	Y
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed	73%	Calculated as part of Water conservation strategy last	Achieved	N/A	Y	Y	Y	Y	NA

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			reasonable water use		generated 2020							
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	87%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	N	N	Y	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	77%		Not achieved	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 4: OXFORD URBAN SCHEME PERFORMANCE (INCLUDES OXFORD RURAL NO 2)

Table 34: Oxford Urban Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	98%		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	N	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoa treatment in place	Not Achieved	UV installation 2023/24	Y	Y	Y	Y	Y
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Unchlorinated Oxford Urban supply, pending outcome of CI exemption application	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	N
Fire Fighting	Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	91%	From Fire Hydrant Analysis Tool last updated early 2022. 220304031019	Not Achieved	Capital projects in the long term capital works program to increase protection in the medium-term.	N	N	N	N	N
Fire Fighting	Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	99%	A few properties at edges of Oxford Urban network not meeting	Achieved		N	N	N	N	N
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be	C	Oxford Urban scores (C). Oxford Rural No. 2 scores (B)	Not Achieved	Assessment planned. Increase the leak detection budget	N	N	Y	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			carried out to determine the value in further leak detection work				throughout the district.					
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf Data	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for 100% of the time >300kPa for 99% of the time	100%		Achieved	N/A	Y	Y	N	N	N
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/ connection/day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	135%	Requires 9.52 (weighted average of 2 schemes by number of connections) hours at ADF/ 672 m3 total. Have 904 m3	Achieved	N/A	N	N	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	70%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	111%	Calculated as part of Water conservation strategy last generated 2020	Not Achieved		N	N	N	N	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	Oxford Urban 95% Oxford Rural No 2 68%		Not achieved	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 5: WAIKUKU BEACH SCHEME PERFORMANCE

Table 35: Waikuku Beach Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%	Unchlorinated Scheme	Achieved	N/A	N	Y	N	N	N
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	Kings' Av complaint for treatment 99.9% of time. Campground complaint for treatment 100% of time.	Not Achieved	UV installation 2023/24	Y	Y	N	N	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		radiological requirements of DWSNZ										
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	No chlorine in place in distribution zone	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	N
Fire Fighting	Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	95.5%	From Fire Hydrant Analysis Tool last updated early 2022. 220304031019 Despite the scheme not being classified as an urban fire district, a protection level of 95.5% is provided	N/A	N/A	N	Y	Y	Y	Y
Fire Fighting	Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code	95%	94%	Some hydrants at extremities of network can't deliver 25 l/s from 2 hydrants.	N/A	N/A	Y	N	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		of Practice for flow from system			Despite the scheme not being classified as an urban fire district, a protection level of 94% is provided							
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value in further leak detection work	A		Achieved	N/A	Y	N	N	N	Y
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf. Data	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for 100% of the time >300kPa for 99% of the time	100%		Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/ connection/day	100%		Achieved		Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	N/A	Doesn't have or require storage (aquifer storage) From Growth work. Total includes all required volume – emergency, operational, working, and dead.	N/A		Y	Y	Y	Y	Y
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	104%	Calculated as part of Water conservation strategy last generated 2020	Not Achieved		N	Y	Y	Y	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	159%	Calculated as part of Water conservation strategy last generated 2020	Not Achieved		N	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	91%		Achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 6: CUST SCHEME PERFORMANCE

Table 36: Cust Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	Compliant 34% of time. The UV upgrade took place recently	Not Achieved	Improve water compliance processes	Y	N	N	Y	Y
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Compliant 91% of time. The UV upgrade related works contributed to low FAC related non-compliances.	Not Achieved	Improve water compliance processes	Y	Y	Y	Y	Y
Fire Fighting	Fire CoP - Hydrant Placement - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants	100%	49%	From Fire Hydrant Analysis Tool last updated early 2022. 220304031019	Not Achieved	Network upgrades are budgeted in the medium future, but funding issues prevent likely construction.	N	N	N	N	N
Fire Fighting	Fire CoP – System Flow - Urban	Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system	95%	2%	Have hydrants but network is not sized for fire flow so only properties next to headworks meeting requirement	Not Achieved	Network upgrades are budgeted in the medium future, but funding issues prevent likely construction.	N	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value in further leak detection work	B		Achieved	N/A	Y	Y	Y	Y	Y
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	1	After hours request not passed on time to the water unit. Attendance time out of target.	Not Achieved		Y	Y	Insuf. Data	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for 100% of the time >300kPa for 99% of the time	100%		Achieved	N/A	Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>2500 litres/ connection/day	100%		Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	160%	Requires 9.15 hours at ADF/ 101 m3 total. Have 162 m3	Achieved	N/A	N	N	N	N	N
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	68%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	N	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	135%	Calculated as part of Water conservation strategy last generated 2020	Not achieved		N	N	N	N	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	71%		Not achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 7: MANDEVILLE - FERNSIDE SCHEME PERFORMANCE

Table 37: Mandeville-Fernside Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	N	Y	Y	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	N	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	Treatment compliant 99.9% of time	Not Achieved	Improve water compliance processes	Y	Y	N	Y	Y
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		radiological requirements of DWSNZ										
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Treatment compliant 99.9% of time. Residual disinfectant in Distribution zone compliant 33% of time due to Scada data outages	Not Achieved	Supply to be chlorinated last quarter 2023	N	Y	Y	N	Y
Flow	System Flow - Restricted	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	N	21.4%	Not Achieve		N	N	-		
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value	D	Mandeville graded D, Fernside graded B.	Not Achieve	Assessment planned. Increase the leak detection budget throughout the district.	N	N	Y	Insuf. data	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			in further leak detection work									
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	0		Achieved	N/A	Y	Y	Insuf. data	Y	Y
Water Pressure	Pressure - Point of Supply - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	99%	A few properties along boundary Rd below 150 kPa	Not Achieved		Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	129%	Requires 4.94 hours at ADF/ 273 m3 total. Have 353 m3	Achieved	N/A	N	N	-		
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	59%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	NA

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	64%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	N	Y
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	100%		Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 8: WEST EYRETON-SUMMERHILL SCHEME PERFORMANCE

Table 38: West Eyreton-Summerhill LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	96%		Achieved	N/A	Y	Y	Y	Y	N
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoa treatment in place.	Not Achieved	UV installation 2023/24	Y	Y	Y	Y	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	No treatment compliance achieved, reservoir size unable to comply; distribution zone bacterial and residual compliance achieved 80% and 75% of the time respectively, this is due to Scada outages.	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	Y
Flow	System Flow - Restricted	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	24%		Not Achieved		N	Insuf. Data	-		
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D", an economic assessment shall be	B		Achieved	N/A	N	N	Insuf. Data	Insuf. data	Insuf. Data

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			carried out to determine the value in further leak detection work									
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf. data	Y	Y
Water Pressure	Pressure - Point of Supply - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	100%		Achieved	N/A	Y	N	Y	Y	Y
Scheme Capacity	Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	>100%	System connected to Poyntzs Rd. Combined system meets requirements. See table 27 for detail	Achieved	N/A	Summerhill – Y West Eyreton - Y	Y	-		
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	68%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	NA

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	83%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	Summer hill 100% West Eyreton 58% (Note, includes Poyntz Rd)		Not achieved	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 9: OXFORD RURAL NO 1 SCHEME PERFORMANCE

Table 39: Oxford Rural No1 Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	Y	N	N	N	N
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoa treatment in place.	Not Achieved	UV installation 2023/24	Y	N	N	N	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Chlorine in place at plant, but no reservoir so unable to comply with contact time. High turbidity incidents 31 May and 27 Jun, with BWN issued.	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	Y
Flow	System Flow - Restricted	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	27%		Not Achieved		N	Insuf Data	-		
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D" , an economic assessment shall be carried out to determine the value	C		Not Achieved	Assessment planned. Increase the leak detection budget throughout the district. Desktop exercise to	N	Y	Y	Insuf. data	Insuf Data

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			in further leak detection work				review and refine water losses methodology for restricted schemes.					
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	0		Achieved	N/A	Y	Y	Insuf data	Y	Y
Water Pressure	Pressure - Point of Supply - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	100%	a few lower pressure locations in the model but these are where we are modelling laterals. They are all >150kPa at street	Achieved	N/A	Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	101%	Requires 7.8 hours at ADF/ 356 m3 total. Current storage at Chalk Hill to be decommissioned soon, which	Achieved	Interim measure to maintain LOS until new storage provided in 2029 is a generator at Rockford Rd HW	Y	Y	-		

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
					will create a shortfall		and Woodstock Rd pipe upgrade					
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	60%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	61%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	78%	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.	Not Achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 10: OHOKA SCHEME PERFORMANCE

Table 40: Ohoka Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	N	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoal treatment.	Not Achieved	UV installation 2023/24	Y	Y	N	N	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	Distribution zone not yet assessed. Chlorine in place at plant, but inadequate contact time. SCADA outage on 30th April. Not all continuous data recovered.	Not Achieved	Supply to be chlorinated last quarter 2023	Y	Y	Y	Y	Y
Flow	System Flow - Restricted	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	17%		Not Achieved		N	Insuf. Data	-		
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D" , an economic assessment shall be carried out to determine the value	A		Achieved	N/A	Y	Y	Insuf. Data	Insuf. data	Insuf. Data

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			in further leak detection work									
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	1	After hours request not passed on time to the water unit. Attendance time out of target	Not Achieved		Y	Y	Insuf. data	Y	Y
Water Pressure	Pressure - Point of Supply - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	100%		Achieved	N/A	Y	Y	Y	Y	NA
Scheme Capacity	Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	117%	Requires 8.12 hours at ADF/ 92 m3 total. Have 108 m3	Achieved	N/A	N	N	N	N	N
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed	68%		Achieved	N/A	Y	N	Y	Y	NA

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
			reasonable water use									
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	190%		Not achieved		N	N	N	N	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	71%		Not achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 11: POYNTZS SCHEME PERFORMANCE

Table 41: Poyntzs Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	-	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	N	Y	N	Y	Y
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf. Data	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	N	No protozoa treatment in place	Not Achieved	UV installation 2023/24	N	N	Y	N	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	N	No treatment compliance achieved, not able to provide contact time. Distribution zone compliant 83% of time, and residual compliant 50% of time.	Not Achieved	UV installation 2023/24	Y	Y	Y	Y	Y
Flow	System Flow - Restricted	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	59%		Not Achieved		N	Insuf. Data	N		
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR; b) For schemes with an ILI of "C" or "D" , an economic assessment shall be carried out to determine the value in further leak detection work	B		Achieved	N/A	N	Y	N	Y	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	Y	Insuf data	Y	Y
Water Pressure	Pressure - Point of Supply – OnDemand and Semi Restricted	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for all connections at peak demand >300kPa for 99% of connections at peak demand	60%	There are 5 semi restricted connections left. 3 meet the requirement , 2 do not	Not Achieved	The response in the long term is to convert the 5 semi-restricted connections to fully restricted.	N	N	N	N	N
Water Pressure	Pressure - Point of Supply - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	100%		Achieved	N/A	Y	Y	Y	Y	Y
Scheme Capacity	Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	100%		Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure. 91 m3 required	148% Have 135 m3	Requires 9.72 hours at ADF/ 91 m3 total. Have 135 m3 (81 m3 of this is shared with Summerhill and West Eyreton)	Achieved		N	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	74%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	Y	Y	Y	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	94%	Calculated as part of Water conservation strategy last generated 2020	Achieved	N/A	Y	N	N	Y	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	58% (Note, included with West Eyreton)	Customer satisfaction is expected to drop, with the increase in water quality complaints. Chlorination in schemes is considered the main cause of water quality complaints.	Not achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 12: GARRYMERE SCHEME PERFORMANCE

Table 42: Garrymere Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consents	Consent Breach – Action Required	Percentage of the total number of WS consent conditions that have breaches that result in an ECan report identifying compliance issues that require action.	0%	0%	There were no breaches of consent this year, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
DWSNZ	DWSNZ - Aesthetic Compliance	Water is supplied that is within the guideline range in the DWSNZ for aesthetic parameters, with the exception of pH.	95% of samples comply	100%		Achieved	N/A	Y	N	N	N	N
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/year	Nil		Achieved	N/A	Y	Y	Y	Y	Y
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the protozoal requirements of DWSNZ	Complies	Y		Achieved	N/A	N	N	N	N	N
	DWSNZ - Radiological Compliance	Water supply delivers water that achieves a standard suitable for compliance with the radiological requirements of DWSNZ	Complies	Y		Achieved	N/A					

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	DWSNZ - Chemical Compliance	Water supply delivers water that achieves a standard suitable for compliance with the chemical requirements of DWSNZ	Complies	Y		Achieved	N/A					
	DWSNZ – Bacterial Compliance (Previously all sampling non-compliance)	Water supply delivers water that achieves a standard suitable for compliance with the bacterial requirements of DWSNZ	Complies	Y		Achieved	N/A	Y	Y	Y	Y	Y
Flow	System Flow - Restricted	Percentage of properties where flow received is consistent with allocated units at the point of supply in Restricted or Semi Restricted schemes, (excluding outages) as demonstrated by restrictor checks completed at not more than 5 yearly intervals	100% of restrictors tested at no more than 5 yearly intervals	16%		Not Achieved		N	N	-		
Water Losses	Water losses as determined by measured or calculated minimum flow	Water losses as determined by the Infrastructure Leakage Index (ILI) based on an annual assessment	Scheme shall either: a) achieve an ILI of "A" or "B", OR. b) For schemes with an ILI of "C" or "D", an economic assessment shall be carried out to determine the value in further leak detection work	B		Achieved	N/A	N	Y	Y	Y	No Data

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/year	Nil		Achieved	N/A	Y	N	Insuf data	Y	Y
Water Pressure	Pressure - Point of Supply – OnDemand and Semi Restricted	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as demonstrated by a reticulation model or audits.	>250kPa for all connections at peak demand >300kPa for 99% of connections at peak demand	0%	Current policy is to convert to restricted when subdivision occurs, so may take a long time to resolve	Not Achieved	The response in the long term is to convert semi-restricted connections to fully restricted.	N	N	N	N	N
Water Pressure	Pressure - Point of Supply - Restricted	Water pressure at the point of supply of Restricted connections, excluding outages, as demonstrated by a reticulation model or reactive audits	>150kPa for all connections 100% of the time at peak demand	68%	When all connections are restricted the headworks will be capable of meeting the LOS	Not Achieved	No immediate action	N	N	N	N	N
Scheme Capacity	Scheme Capacity - Restricted	Actual peak capacity of the scheme for domestic use - Restricted	>1150 litres/allocated unit/ day	100%	Met for all schemes. For some schemes (e.g., Garrymere) we can deliver enough flow, but pressure will be below our LoS	Achieved	N/A	Y	Y	Y	Y	Y
Storage Volume	Storage -	Volume of available and usable storage for On Demand and Semi-Restricted schemes meets the calculated scheme specific value	Target calculated on scheme-by-scheme basis, depending on resiliency and redundancy of source infrastructure	119%	Requires 11.33 hours at ADF/ 68 m3 total. Have 80.7 m3	Achieved	N/A	Y	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	149%		Not Achieved		N	N	N	N	NA
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	208%		Not Achieved		N	N	N	N	N
Customer satisfaction	Customer satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	Data not recorded separately		N/A						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

APPENDIX 13: GLOSSARY OF TERMS

The following terms and acronyms (in brackets) may have been used in this Activity Management Plan

Activity	As defined in the Local Government Act 2002: ‘Goods or services provided by, or on behalf of a local authority or council-controlled organisation and includes: a) The provision of facilities and amenities; b) The making of grants; and The performance of regulatory and other governmental functions.
Activity Management Plan (AM Plan)	Activity Management Plans are key strategic documents that describe all aspects of the management of assets and services for an activity (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. The documents are an information source for the Council’s LTP and IS, and place an emphasis on long term financial planning, community consultation, and a clear definition of service levels and performance standards.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied systematically to physical assets with the objective of providing the required level of service in the most cost-effective and sustainable manner.
Advanced Asset Management	Asset management, which employs predictive modelling, risk management and optimised renewal decision-making techniques to establish asset lifecycle treatment options and related long term cash flow predictions.
Asset Management System (AMS) (also known as asset register)	A system (usually computerised) for collecting analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Management Planning	A set of interrelated or interacting elements of an organisation, including the AM policy, AM objectives, AM Strategy, AM Plans, and the processes to achieve these objectives.
Asset Management Plan (AMP)	In the Waimakariri District Council’s context, this is referred to as an activity management plan.
Aesthetic Determinant	A constituent or property of the water that can adversely affect the taste, odour, colour, clarity or general appearance of the water. These include substances such as manganese and iron compounds that can stain washing and utensils.
Aggressiveness	A measure of the tendency of water to corrode pipes and fittings, which can cause heavy metal concentrations to rise above 50% of their MAV.
Alkalinity	Alkalinity is a measure of the buffering capacity. A buffer limits the change in pH that occurs when water comes into contact with acidic or alkaline substances.
Annual Plan	The Annual Plan has the meaning given to it in the Local Government Act 2002.
Asset	A physical item that enables provision of services and has an economic life of greater than 12 months, has value of at least \$250 and is recorded in the asset register.
Asset condition	This describes an asset’s structural integrity or ability to deliver the service required from it. The condition can deteriorate slowly over the life of an asset or rapidly if it is damaged.

Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Average Daily Flow (ADF)	The recorded flow over a year divided by the number of days in a year and generally expressed as volume/day or litres/second.
Brownfields	Previously developed land with potential for new development.
Chlorination	Part of a water treatment process that involves the injection of chlorine into the water supply to kill potentially harmful micro-organisms.
Capital Expenditure (CAPEX)	Expenditure used to create new assets, renew assets, expand or upgrade assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Community Drinking Water Supply	A publicly or privately owned drinking water supply which serves more than 25 people for at least 60 days of the year.
Compliance	A drinking water is said to be in compliance with the standards when the results of monitoring of bacteriological and chemical determinants show that the water supply satisfies the requirements of the Drinking Water Standards for New Zealand 2005 (revised 2008) (DWSNZ).
Condition Monitoring	The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Connection	From the point of view of the utility provider this relates to the physical connection of a particular customer to the service.
Consumer	The owner or resident of a property who has a connection to a water supply and is provided with potable water at an agreed level of service
Contaminant	A substance or organism in the water which can cause undesirable public health or aesthetic effects.
CPH	Community and Public Health. An organisation working for the Ministry of Health. Health Protection Officers are engaged by CPH.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify prioritisation for inspection, rehabilitation or replacement ahead of other assets.
Customer	A customer is an individual or business that creates the demand for and is the recipient of goods or services. Customers can be internal or external.
Current Replacement Cost	The cost of replacing an existing asset with an appropriate modern equivalent asset to deliver the same level of service.
Deferred Maintenance	The shortfall in maintenance or rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management may be 'SUPPLY-SIDE' demand management (for example minimising wastage through pipe leak detection) or customer DEMAND-SIDE management, to reduce demand for over-utilised assets or vice versa (for example, through pricing, regulation, education and incentives).

Depreciation	The annual sum budgeted to enable the assets to be replaced at the end of their economic life. It is generally based on the value of the asset divided by its remaining life at that point in time.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Disaster Resilience Assessment (DRA)	An assessment first carried out in 2007 and updated in 2011/12 to determine the risk to assets from natural hazards.
Disinfection	The process used to inactivate micro-organisms in a drinking water supply. Council uses chlorination and UV at all of its supplies
Disinfection Residual	The amount of disinfection that is still present in the water at any time. After disinfection is added to drinking water it is used up by the disinfection process and other chemical reactions. More disinfection is usually added than is initially needed so that enough disinfectant remains to guard against post treatment contamination.
Disposal	Activities necessary to decommission and dispose of assets that are no longer required.
Distribution system	All the trunk main, storage, and distribution system components which follow a treatment facility at the treatment station.
Diurnal Pattern	The variation in daily flow pattern generated within the system related to varying demands throughout the day.
Drinking-water	Potable water intended to be used for human consumption, food preparation, utensil washing, oral hygiene or personal hygiene.
DWS or DWSNZ	The Drinking Water Standards for New Zealand 2005 (revised 2008). The yardstick to assess the quality of drinking water. The Standards define the MAVs of health significance and specify methods for determining whether a drinking water supply complies with the standards.
E coli	A bacterium used as an indicator that faecal Coliform contamination of the water may have occurred and that, therefore there is a possibility that pathogens are present. The ratio of E.coli to harmful bacteria is on the order of 10,000 to 1 and its concentration in liquids is easily determined. Therefore E.coli is the principle indicator for the presence of harmful bacteria.
Economic life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to physical life, however obsolescence will often ensure that the economic life is less than the physical life.
Facility	A complex comprising many assets (eg. swimming pool complex, sewage treatment plant etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
Faecal coliforms	A subgroup of total coliforms, which will grow on a specific selective medium. The presence of faecal coliforms indicates that faecal contamination may have occurred and that steps need to be taken to ensure pathogens are not present.
Free Available Chlorine (FAC)	The residual chlorine left in the water at any point in time.
Fully Chlorinated Water Supply	Water in which the FAC concentration exceeds the equivalent of 0.2 mg /L free available chlorine at pH 8.0

Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic data-base.
Greenfield Development Area	Existing undeveloped land with potential for development or newly rezoned land that has yet to be developed with the appropriate infrastructure to support a residential or commercial land use.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components.
Key Performance Indicator (KPI)	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Key performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction. Some of these may be mandatory performance measures as prescribed by central government. Also referred to as performance indicators (PI) or performance measures (PM).
Guideline value	The value for an aesthetic determinant specified in the DWSNZ, which if exceeded will render the water unattractive to consumers.
Headworks	<p>Headworks are the heart of a water supply system and fall into two categories. They may be combined on one site or at two separate locations. The first category contains all the pumps, treatment processes, electrical controls and switchboards and is normally housed in a pump station building. Any flow control/storage reservoirs are commonly at the sites.</p> <p>The second category contains the well(s), their associated pump(s), electrical controls and switchboards and if at a separate location deliver the water to the first category headworks.</p>
Health Drinking Water Amendment Act 2007 (HDWAA)	This Act is aimed at ensuring communities have safe water to drink. A key requirement of the HDWAA will be that all water suppliers must take all practicable steps to comply with the DWSNZ.
Iron (Fe)	This is a metal (often associated with manganese) that can be found dissolved in water sourced from underground. It can cause aesthetic problems in reticulated water supplies, but it can be removed with appropriate treatment.
Level of service (LoS)	A measure of the standard of service that the Council intends to provide. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
LGA	Local Government Act 2002.
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Life Cycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
Life Cycle Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Life Cycle Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Long Term Plan (LTP)	The Long Term Plan (LTP) has the meaning given to it in the Local Government Act 2002.

Maintenance Plan	Details the specific planned or reactive maintenance actions for the optimum maintenance of an asset, or group of assets.
Manganese (Mn)	This is a metal (often associated with iron) that can be found dissolved in water sourced from underground. It can cause odour, taste and aesthetic problems in reticulated water supplies, but it can be removed with appropriate treatment.
Maximum Acceptable Value (MAV)	The concentration of a determinant (specified in the DWSNZ), below which the presence of the determinant does not result in any significant risk to the consumer over a lifetime of consumption. For carcinogenic chemicals, the MAVs set in the New Zealand Drinking Water Standards generally represent a risk of one additional incidence of cancer per 100,000 people ingesting the water at the concentration of the MAV for 70 years.
Maintenance Plan	Details the specific planned or reactive maintenance actions for the optimum maintenance of an asset, or group of assets.
Medical Officer of Health (MOH)	The Medical Officer of Health appointed for a health district under the Health Act 1956, and includes any Deputy Medical Officer of Health; and, for the purposes of Part IV of the act, includes any medical Practitioner acting under the direction of the Medical Officer of Health.
Micro-organism	A very small (microscopic) organism, including viruses, bacteria, protozoa, algae and helminthes.
Ministry of Health (MoH)	The government agency responsible for implementing the Health Act 1956.
Network Utility Operator	A person or in many cases a local authority that provides a reticulated water supply.
NTU	See turbidity.
NZ Treasury Asset Management Maturity Assessment Tool (AMMA)	A tool (in spreadsheet format) that allows organisations to assess the maturity of their current Asset Management Plans, and to define a target maturity to which future Asset management Plans can aspire to, that is appropriate to the activity under consideration.
Optimised Renewal Decision Making (ORDM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.
Peak Daily Flow	The highest recorded daily flow in a year generally expressed as volume/day or litres/second or litres/connection/day.
Performance Monitoring	Quantitative and qualitative assessments of the actual performance compared with specific objectives, measures, targets or standards.
pH	A measure of the concentration of hydrogen ions in water. It is the negative logarithm to base of 10 of the concentration H^{+1} in the water. A low pH indicates an acidic water, a high pH shows the water is alkaline. A pH of 7 is neutral. The pH of the water is particularly important in water treatment processes such as disinfection.
pH Correction	Potable water has a narrow acceptable range on the acidity/alkalinity scale. Too high alkalinity can cause scale build-up in the reticulation and digestion problems and too high acidity can erode parts of the reticulation system. pH correction is a treatment process that shifts a water supply into the correct range if necessary.
Potable water	Drinking water that does not contain contaminants, which exceed the Maximum Acceptable Values (MAVs) given in the DWSNZ.

Planned Maintenance	Day to day operational activities to keep the asset operating (fixing potholes, clearing drains, greasing pumps and motors, mowing etc.) and which form part of the annual operating budget. These may be cyclic, e.g. on specific timeframe, or needs-based, i.e. where a fault is monitored until it reaches a point at which some action must be taken to ensure continued performance/life of asset.
Presumptive Coliforms	Bacteria whose identification in the early stages of bacteriological examination highlight the need for further identification of coliform organisms.
Protozoa	One of several types of micro-organism found in water, some of which can be harmful if ingested. Protozoa are larger than bacteria and include species like Giardia and Cryptosporidium.
Rating Charges	<p>The annual amount charged to a customer for the provision of a reticulated water supply. In the Waimakariri District a fixed amount is charged on each rating unit or separately used or inhabited parts of a rating unit in the Rangiora, Kaiapoi, Woodend (including Tuahiwi), Waikuku Beach, Pines-Kairaki, Cust, Oxford township, Ohoka, Garrymere, Fernside, Mandeville, Pegasus and West Eyreton supplies.</p> <p>A fixed amount per unit of water allocated to the property is charged on the Oxford Rural No 1 and Oxford Rural No 2 supplies.</p> <p>A combination of a fixed amount per rating unit (to collect 75% of costs) plus a fixed amount per unit of water (to collect 25% of costs) allocated to the property is charged on the Summerhill Rural Water Supply and the Poyntzs Road Water Supply.</p>
Raw water	Water, which has not received any treatment to make it suitable for drinking.
Renewal	Works to upgrade, refurbish, rehabilitate or replace existing assets with ones of equivalent capacity or performance capability.
Renewal Programme	This is the programmed replacement of like asset with like asset (as opposed to an upgrade), when it reaches the end of its useful life due to deterioration of its condition.
Remaining Economic Life	The time remaining until an asset ceases to provide the required level of service or economic usefulness.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement or renewal of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
Reservoir	A storage facility present in the network reticulation for the purpose balancing peak demands, maintaining a constant pressure, and providing storage for emergency and fire-fighting purposes.
Risk Cost	The assessed annual cost or benefit relating to the consequence of an event. Risk cost equals the costs relating to the event multiplied by the probability of the event occurring.
Risk Assessment	The process of looking at all possible events that might cause the failure of a given asset or component. The risk assessment considers both the probability and consequences of an event occurring. Risks are assessed and prioritised, and appropriate reduction or mitigation measures are implemented.
Risk Management	Risk management is the identification, assessment, and prioritisation of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events.
Restrictor	A flow control device fitted to the service pipe to limit the flow rate of water to a customer's premises. This device is owned and maintained by the Council. The device

	maintains a constant flow over the normal operating pressure of the scheme, allowing a fixed volume of water to be delivered over a 24 hour period. Restrictors are designed to deliver differing volumes of water to suit differing allocations (units of water) to customers.
Reticulation	The network of pipes that delivers drinking water from the treatment plant to the customer's point of supply. It includes pumps, pipes, and reservoirs.
Routine Maintenance (can be planned or unplanned)	Day to day operational activities to keep the asset operating such as replacement of minor equipment, oil and greasing pumps and motors, cleaning of equipment, repairing leaks, etc. It forms part of the annual operating budget, including preventative maintenance.
Semi-Restricted Supply	A rural water supply that has restrictors to limit the peak flow of water at each connection. Each connection receives normal urban pressures and is not required to have an individual tank. Each connection is restricted to 13 litres per minute (this is a supply of up to 19 units per day per property, where 1 unit is equivalent to 1,000 litres per 24 hours).
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
Restricted Supply / Rural Restricted Supply	A rural or rural-residential water supply that has restrictors at each connection to limit the total volume of water supplied over a 24 hour period. Each connection is required to have its own tank. Residential properties are normally restricted to two cubic metres per day. On some Rural Schemes customers are able to purchase additional units for stock use.
Rural Water Supply (RWS)	Rural water supplies are designed to deliver potable water to rural areas. Each consumer is provided with a restricted connection and required to provide onsite storage for peak flows.
Secure Groundwater	<p>Water contained beneath the land surface which is abstracted via a secure well head or similarly proven structure. It must not be under the direct influence of surface water or demonstrate any significant and rapid shift in characteristics such as turbidity, temperature, conductivity or pH which closely correlate to any climatological conditions, surface water conditions or land use practices, as demonstrated by :</p> <p>Less than 0.005 percent of the water having been present in the aquifer for less than one year as demonstrated by the tritium and CFC methods.</p> <p>Variations in the groundwater characteristics not exceeding a coefficient of variation of more than:</p> <ul style="list-style-type: none"> 3.0 percent in conductivity 4.0 percent in chloride concentration 2.5 percent in nitrate concentration (standardised variance) <p>There must also be no insects, other macro-organisms such as algae/ organic debris, large diameter pathogens, or E-coli in 12 successive monthly samples.</p>
Surface Water	The water on the land surface. Surface water is produced by rainfall runoff and by groundwater seeping through the top layers of soil. Surface water can also be defined as all water open to the atmosphere.
Secure Well Head	<p>A well head that incorporates appropriate measures to prevent or minimise risk of groundwater contamination. Measures include:</p> <ol style="list-style-type: none"> 1) Sealed pumping and piping system including backflow prevention. 2) Seals between the well casing, pipework and surrounding ground. 3) Restrictions on any potentially contaminating land use in the vicinity of the well head.

Surrogate	A determinant used to assess the likely presence or concentrations of another determinant which is difficult to determine directly. For example, E-coli is used to assess the likely presence of specific pathogen organisms, as they are good indicator organisms and are easier to test for than pathogens themselves.
Total Coliforms	Genera in the family enterobacteriaceae, the total coliforms are bacteria which will grow on a specific selective medium when incubated at 35 degrees centigrade + or – 0.2 degrees centigrade. They are used to indicate the probable contamination of water by organic material, and that the possibility of faecal contamination needs to be checked. Total coliforms include the genera; Erwinia, Klebsiella, Escherichia, Citrobacta and Enterobacta.
Transgression	A drinking-water sample is said to transgress the Standards when a determinant of any priority class that is present in the sample exceeds the Maximum Acceptable Value (MAV) or the compliance criteria requirements.
Turbidity (NTU)	A measure of the clarity of water. High turbidity means low clarity (poor aesthetics) and is generally caused by very fine suspended particles in the water (as opposed anything dissolved in the water). It is not harmful. Suitable treatment processes can reduce turbidity. NTU is the measure of turbidity, higher values mean the water is more cloudy or has lower clarity.
Unit of Water	One cubic metre (1,000 litres) of water per day delivered over a 24 hour period. The normal minimum is two units for domestic consumption but additional water units can be purchased on some restricted water schemes to supplement a properties water demand.
Unplanned Maintenance (or repair)	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrade	The addition or replacement of an asset, or component of that asset, that materially improves its original service potential.
Urban Supply	An on-demand supply that has no flow restriction. Connections receive normal urban pressures and are not required to have their own tank. Fire Fighting capacity is normally also provided.
Valuation	The process of determining the worth of an asset or liability. Assessed asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for life cycle costing or replacement plus a percentage for insurance purposes.
Water Conservation Strategy (WCS)	A strategy adopted by Waimakariri District Council in 2010 to adopt appropriate water conservation measures throughout the district.
Water Information New Zealand (WINZ)	A computer database that assesses compliance of monitoring results of water supplies with the DWSNZ 2000.
Water Safety Plan (WSP)	<p>A document written by the Water Supply Authority to assess all potential risks in the process of abstracting, treating and distributing water to the consumers in a particular water supply. The plans identify events, their cause/s, preventative measures and the corrective action to be undertaken. The preparation of a WSP is a requirement of the HDWAA.</p> <p>Water Safety Plans were previously described as Public Health Risk Management Plans in earlier versions of the Council's AMP's.</p>
Water Supply Authority	Any person or entity that owns, or is responsible for operating, a drinking-water supply. For example, the Waimakariri District Council is the principal Water Supply Authority in the Waimakariri district.

Water Treatment Plant	The point where raw water is treated to make it potable. Note that not all raw waters require treatment (for example, secure groundwater often requires no treatment).
Well Head	The physical structure, facility or device at the land surface from which groundwater is abstracted.
WHO	World Health Organisation
Wholesome Drinking Water	Potable water which does not contain any determinants which exceed the Guideline Values for Aesthetic Determinants given in the DWSNZ 2000.

The following acronyms may also appear in Council activity management plans.

AM	Asset management
AMMA	NZ Treasury asset management maturity assessment
CAPEX	Capital expenditure
CE	Chief Executive
GIS	Geographic Information System
IIMM	International Infrastructure Management Manual
KPI	Key performance indicator
LGA	<i>Local Government Act</i>

Activity Management Plan 2024

Wastewater

3 Waters | July 2024







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Contents

1. Executive Summary	7
What assets do we have?	7
Levels of Service	7
Asset Condition.....	8
Risk.....	8
Growth and Demand	8
Capacity and Performance	9
Operation and Maintenance	9
Renewals.....	9
Financial Forecasts	9
Future Challenges.....	10
The following are the key future challenges relating to wastewater that will require managing:	10
2. Introduction	11
Document Structure	11
Improvement Plan	12
Document Review Process	12
Financial Forecasts	12
District Overview- Key projects	12
3. Scheme Description (What Do We Have?).....	14
4. Levels Of Service.....	20
Changes to LOS for 2024	20
Mandatory Performance Measures	20
Community Engagement.....	22
District Overview: 2022/2023 Levels of Service Performance.....	26
Benchmarking.....	28
Scheme Differences.....	28
5. Asset Condition	31
Remaining Useful Lives.....	31
6. Criticality.....	35
District Overview – Criticality	38
Criticality on GIS	38
7. Risk Assessment - Overview.....	39
8. Operational Risk Assessment.....	41
Risk Matrix.....	42

District Overview – Operational Risk.....	42
9. Disaster Resilience Assessment.....	44
10. Corporate Risk & Assumptions.....	45
11. Climate change.....	46
Previous Climate Change Initiatives	47
Future Climate Change Initiatives	48
12. Demand	49
Growth Uncertainty.....	49
District Overview – Growth Forecasts.....	50
13. Capacity & Performance	54
Networks	54
Treatment.....	56
Consents	56
14. Operation and Maintenance	57
Operation & Maintenance Expenditure	58
15. Capital Works	61
16. Renewals.....	62
District Wide – Renewals Expenditure	63
17. Scheme – Reticulation Renewal Timelines – Spatial view	66
18. New Works.....	66
Works Coordination	67
District Overview – Capital Works.....	68
Scheme – Capital Upgrade Works – Spatial view	69
19. Overall Financial Forecasts.....	69
Financial Forecast Key Assumptions	69
Funding/Revenue Sources.....	70
Valuation	70
20. Data Confidence	73
21. Asset Management Systems	75
Asset Management Maturity	75
22. Negative effects.....	77
23. Service Delivery.....	77
24. Improvement Plan.....	77
25. Changes to AMP as a Result of Long Term Plan Consultation	81
Appendix 1: Rangiora (including Fernside) Scheme Performance	82

Appendix 2: Kaiapoi Scheme Performance	85
Appendix 3: Woodend Scheme Performance	88
Appendix 4: Pegasus Scheme Performance	91
Appendix 5: Waikuku Beach Scheme Performance	93
Appendix 6: Tuahiwi Scheme Performance	96
Appendix 7: Woodend Beach Scheme Performance	98
Appendix 8: The Pines/Kairaki Beach Scheme Performance	100
Appendix 9: Mandeville Scheme Performance	102
Appendix 10: Loburn Lea Scheme Performance	105
Appendix 11: Oxford Scheme Performance	108

Tables

Table 1: District Overview – Scheme Upgrades.....	12
Table 2: District Overview – Scheme Summary Information	16
Table 3 : Gravity Pipe Data Summary	17
Table 4 : Pressure Pipe Data Summary.....	17
Table 5 : Valve and Manhole summary	17
Table 6 : Data References	18
Table 7: Summary of Performance Measure Types, and Reporting.....	20
Table 8: Mandatory Performance Measures for 2024 (unchanged from 2021 AMP)	21
Table 9: Elective Performance Measure for 2024	24
Table 10: District Overview 2022/23 : Levels of Service Performance.....	26
Table 11 : 2022/23 Scheme Performance - Elective Levels of service	29
Table 12: Criticality Assessment Criteria	36
Table 13: Criticality Score Categories	37
Table 14: District Overview – Mains Criticality % by Category.....	38
Table 15: Risk Events Considered	41
Table 16: District Overview – High Risks remaining (Operational).....	43
Table 17: Climate Change Actions from 2021 AMP.....	48
Table 18: Summary of the Growth Forecast for the Waimakariri Districts Wastewater Schemes.....	52
Table 19: Overview of Planned and Reactive Maintenance Tasks	57
Table 20: Planned Budget Versus Renewals Model Recommendation 2024-34	64
Table 21: New Works across Wastewater Schemes Over 50 Years	67
Table 22: Asset Valuation	71
Table 23: Data Confidence Levels	73
Table 24: 2024 AMP Improvement Plan.....	78
Table 25: A1 - Rangiora Elective Levels of Service Performance - Assessed June 2023.....	82
Table 26: A2 - Kaiapoi Elective LoS Performance - Assessed June 2023	85

Table 27: A3 Woodend Elective LoS Performance - Assessed June 2023	88
Table 28: A4 Pegasus Elective LoS Performance - Assessed June 2023	91
Table 29: A5 Waikuku Beach Elective LoS Performance - Assessed June 2025	93
Table 30: A6 Tuahiwi Elective LoS Performance - Assessed June 202.....	96
Table 31: A7 Woodend Beach Elective LoS Performance - Assessed June 2023.....	98
Table 32: A8 The Pines/Kairaki Beach Elective Performance - Assessed June 2023	100
Table 33: A9 Mandeville Elective LoS Performance - Assessed 2023.....	102
Table 34: A10 Loburn Lea Elective LoS Performance - Assessed June 2023	105
Table 35: A11 Oxford Elective LoS performance - Assessed June 2023	108

Figures

Figure 1: Eastern District's Scheme: Overview Schematic	19
Figure 2: District - Asset Condition Summary	33
Figure 3: Asset Condition Summary - Schemes	34
Figure 4: WDC Risk Matrix	42
Figure 5: Wastewater Connection Projection.....	53
Figure 6: District Overview - Projected Operation & Maintenance Expenditure.....	59
Figure 7: Projected Operations and Maintenance Expenditure (30 years)Project	60
Figure 8: District Wide Projected Renewals Expenditure.....	63
Figure 9: Renewals Expenditure Models	65
Figure 10: District Overview - Projected Capital Works Expenditure.....	68
Figure 11: Projected Expenditure	69

1. EXECUTIVE SUMMARY

What assets do we have?

Waimakariri District Council owns and operates 2 separate wastewater schemes. One of these, the Eastern Districts Sewerage Scheme (EDSS), comprises 10 schemes which have been physically connected together, but still retain elements of financial separation relating to past loans. The other separate scheme is at Oxford.

Altogether the schemes provide wastewater services to approximately 18,800 properties, with just under 18,000 of those serviced by the EDSS. These connections in total service approximately 73% of the population. The remaining 18,000 people in the district are serviced by private wastewater schemes, or privately owned septic tanks on rural properties.

Schemes in the main towns have conventional gravity flow-based collection systems, but in more rural areas, two other scheme types are used. Septic Tank Effluent Pumping systems, whereby effluent treated through individually owned septic tanks, is then pumped into the community based reticulation system, and Pressure Sewer Systems whereby raw sewage is discharged into the community reticulation system via small grinder pumps located on individual properties.

Treatment of the wastewater for the EDSS comprises four treatment plants, at Rangiora, Kaiapoi, Woodend and Waikuku Beach. Treated effluent from all four plants is discharged into a 1.5km long Ocean Outfall pipe.

Oxford has its own treatment plant, which discharges to land.

Consideration of Levels of Service, Growth and the Renewals programme in previous Asset Management Plans have led to the programming of two significant wastewater upgrade projects. Construction of one (multiyear) is now nearly complete and the second of which is in the planning stage.

- Reticulation upgrades in Rangiora (in construction)
- Reticulation upgrade in Kaiapoi (planned)

Completion of these works will enable levels of service to be met (particularly with respect to overflow frequency in wet weather events) and capacity for growth to be available.

Levels of Service

In the lead up to the updating of the 2024 AMP's, it was expected that the Council would not be preparing AMPs to support the 2024-2034 LTP, due to the 3 Waters Reform. When the situation changed in May 2023, it was too late to carry out a review of LoS. As a consequence, the LoS in this AMP have remained largely unchanged when compared to the 2021 AMP version. The 2021 AMP levels of service were presented to the Council's Utilities and Roading Committee in July 2020, which recommended that the Council include them within the Draft 2021-31 Long Term Plan (refer to report 200406043184).

Table 10 in this document shows performance against the levels of service measured at district level, assessed for 2022/23. All levels of service were met but one, relating to response time to loss of service > 8 hours. There were four occasions, with 2 in Rangiora, 1 in Kaiapoi and 1 in Waikuku. These all related to the flooding events in July 2022.

Asset Condition

The sewerage pipe network is primarily assessed for condition via wastewater CCTV programme started in 2008. On average pipes are inspected every 30 years, but assessment priority is based on criticality, age and operational issues and is also integrated with the road reconstruction programme. The CCTV condition information is complemented with maintenance activity records from the field recording wastewater mains blockage and overflow records.

A condition assessment of all assets at headworks has not yet been carried out, so confidence in asset condition is only moderate. However, a full asset inventory has been compiled for all of the 3 Waters facilities, the scope of which included identifying assets in particularly poor condition. There were less than 15 wastewater assets in this category.

Risk

Historically a range of different types of risk assessments have been carried out for the District's wastewater schemes. The operational risk assessment has previously generated a programme of work to resolve the identified high risks. This work is now largely complete but there are two remaining issues. One is the under capacity of the Kaiapoi network in wet weather events. Investigations are ongoing and \$17M has been budgeted for capacity upgrades commencing 2025/26. The second is earthquake risk for the Ocean outfall pipework and drop structure. This needs further work.

The vulnerability assessment and criticality assessments provide input data to the renewals programme. The effect of the vulnerability assessment, which only applies to underground pipes, is to accelerate the renewal of old brittle pipework, in areas of high risk of liquefaction.

The Disaster Resilience Assessment considers the risk to above ground assets from a broad range of potential natural disasters.

While much of the work from past assessments will remain relevant, they have become out of date. A new approach has been developed, which brings the three different methodologies noted above into a single risk assessment process. This is expected to make regular updating of the assessments more efficient. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

Growth and Demand

Growth projections have been updated with base population projections being calculated via a model that provides town by town projections. Subsequent modelling has been carried out to identify new works or upgrades that will be required in the future to service this growth while continuing to meet the agreed levels of service. The necessary works have been incorporated into the capital project budgets. It is proposed to manage the inherent uncertainty in rate of growth, by carrying out an annual growth review in conjunction with the Development Planning Unit to enable short term capital planning adjustments to be made that respond to changing market requirements. This will avoid unnecessary expenditure on growth works before they are actually needed, or potentially ensure growth related projects are accelerated if growth occurs faster than anticipated.

Capacity and Performance

The existing capacity and performance of the wastewater schemes throughout the district are monitored using hydraulic models constructed and maintained by the Council for each scheme. Where a scheme has been identified as performing below the required levels of service, either currently or with the inclusion of future growth, upgrades have been subsequently modelled and budgets to carry out the upgrades included in the Long-Term Plan.

With the current upgrades either underway or planned for the main towns of Rangiora, Kaiapoi and Woodend, sufficient capacity will be available in both the reticulation and treatment plants until at least 2038.

A review of the of the Ocean Outfall wastewater network was completed in January 2020 (Trim 200214019934). The network has capacity until at least 2069 with opportunities to extend this with better management of storage and pumping control.

The Oxford wastewater treatment plant has limited capacity to deal with wet weather flows, with the storage pond periodically overflowing during heavy rain events. The consent for the plant expires in 2031 and as part of the consent renewal, a treatment plant upgrade has been planned for completion in 2027/28 which will address the existing capacity issues.

Operation and Maintenance

While some asset performance data is captured and analysed, (blockages), operational and maintenance expenditure remains largely based on previous years expenditure carried forward.

With the introduction of the ability to capture data in the field, and the implementation of a works management system associated with the Asset Management Information System (AMIS), a start has been made towards more robust operation and maintenance planning, including both planned and unplanned. Also new is the implementation of the InfoAsset Manager software which allows CCTV data to be analysed to identify and schedule maintenance of serviceability faults.

Renewals

Improvements have been made to the Council's risk-based renewals model, so that different levels of acceptable risk can be applied to the various categories of criticality. The model includes that highly critical assets are renewed before 85% of their expected life, while the lowest criticality assets may not be replaced until 120% of their expected life. Based on these risk profiles the model provides a prioritised list of pipe renewals needed across the district, identified by scheme, which Asset Managers assess and adjust as necessary. The model provides an annual expenditure profile for the next 150 years, and also identifies the annual revenue required that will enable this renewals expenditure to be made without the renewals fund falling into debt. The employment of InfoAsset Manager to manage and analyse CCTV pipe inspection data will improve the modelling of pipe renewals through a better understanding of the remaining asset life.

Financial Forecasts

Financial forecasts included in the AMP show projected capital expenditure for growth, level of service, and renewals, together with operational and maintenance expenditure. Funds carried

forward from previous years because capital projects have been delayed (carry overs) are not included, and none of the forecasts shown include inflation.

Periods shown vary from 30 years for operations and maintenance, through to the full life cycle of long lived assets such as pipelines – 150 years. Scheme forecasts are aggregated up to provide a district wide view and shown graphically. See Figure 10.

Future Challenges

The following are the key future challenges relating to wastewater that will require managing:

- **Water Reform:** The operative water reforms include Taumata Arowai having a role to monitor and report on the environmental performance of wastewater networks. What this looks like is not yet known. The wider water reforms to be abandoned or significantly modified under the National led government also create significant uncertainty.
- **Ocean Outfall Discharge Consent:** The Ocean Outfall Discharge Consent Expires in 2039. The process to renew the consent will need to begin well in advance, as there is likely to be opposition to the continued discharge to sea. Decisions regarding the consent also need to be integrated with the proposed pond upgrades planned for the Woodend and Rangiora treatment plants, with greenhouse gas emissions being factored into the decision making.

Any changes to consent conditions related to effluent quality may have a significant impact to existing treatment plants.

- **Oxford WWTP Discharge Consent:** The Oxford WWTP discharge consent expires in 2031, but upgrades are already required to enable current conditions to be met. Possible changes to future discharge consent conditions may require further work which could result in the Oxford sewer rates increasing.
- **Climate Change:** The potential impact of climate change requires further consideration. Initial screening has been carried out to identify assets at high risk from the effects of climate change, but further detailed work is required on a site-by-site basis to properly quantify the risk and select the most cost effective mitigation option.

In addition, in the next three years, using the guidance in the Water NZ publication Navigating to Net Zero Council plans to:

- Confirm the operational emissions boundary that 3 Waters intends to use.
- Update and refresh the 3 Waters operational emissions inventory, including biogenic emissions.
- Develop an operational emissions forecast
- Develop a capital emissions baseline.
- Set carbon reduction targets.

2. INTRODUCTION

The purpose of this Activity Management Plan (AMP) is to provide an overview of the Council's wastewater assets, outline the issues associated with these assets and show how the Council proposes to manage them in the future, to ensure levels of service are met, growth demand is accommodated, and renewals carried out at the appropriate time.

The Activity Management Plan Utilities and Roading (U&R) Introductory Chapter provides the context for the suite of U&R activity management plans and gives an overview of the department's activities, and asset management practices and processes, and should be read in conjunction with this document.

This document outlines the management approach for all of the schemes, including the Eastern Districts Wastewater Scheme. It describes the processes and asset management practices common to all of the wastewater schemes.

There are 18,756 wastewater connections to serviced properties throughout the District. Of these, 17,851 are properties connected to the EDSS. These connections in total service approximately 73% of the population. The remaining 18,000 people are serviced by private wastewater schemes, or privately owned septic tanks on rural properties.

The Council provides three types of wastewater service connections within the District. These are:

- 1) Gravity Connections: conveys effluent away from connected properties directly to the council gravity reticulation for treatment and disposal.
- 2) Septic Tank Effluent Pumping (STEP) systems: raw sewage is collected in privately owned septic tank and pumping systems for primary treatment and filtering, then pumped to a designated community treatment plant for treatment and disposal.
- 3) Pressure Sewer Systems (PSS): raw sewage is accumulated in a privately owned single storage and pumping unit located on each property, is macerated into slurry and then pumped under pressure to a designated community treatment plant for treatment and disposal.

Document Structure

The main body of this document contains tables of infrastructure data at both a district wide level, and scheme level. Further detail of the individual schemes is provided by tables of links to other sources. These include:

- Network schematics,
- Pipe condition plans,
- Asset criticality plans
- Pipe renewal timeframes plan
- Capital upgrade works plan.
- Detailed capital works table
- Scheme Serviced area.

There is an appendix for each scheme which contains the Scheme Level of Service Performance table.

Improvement Plan

The assessments carried out as part of the asset management review process are intended to identify issues that need to be addressed. Resolution may include new capital works, or adjusted management or process practices. All these improvements are collated in Table 24

Document Review Process

Review of the AMPs has been carried out by a project team comprising the 3 Waters Manager, the 3 Waters Asset Management Advisor, Asset Managers (Water, Wastewater and Drainage), and the Network Planning Team Leader, with additional technical input from the Network Planning Team. Project Management has been led by the 3 Waters Asset Management Advisor.

The project team met fortnightly, and progress was tracked against a detailed programme that set out the review actions necessary for each section of the document.

Internal advice was sought from the Council's Development Planning Team for growth projections, and liaison with the Asset Management Information team occurred during the update of the valuations. Asset Managers worked closely with the Finance Unit during development of the budgets.

Information regarding progress and requirements for both the Infrastructure Strategy and the LTP development was provided via the LTP Project Manager.

Draft versions of the documents were presented to the Utilities and Roothing Committee at the end of 2023, with an updated version presented to Council in late January for adoption. Any changes in the AMPs resulting from modifications to the LTP, have been incorporated in the final version by way of an additional section. The final document is published on the Council's webpages after adoption of the 2024-2034 LTP.

Financial Forecasts

The financial forecasts shown in this AMP exclude inflation and any carry-forwards between the 2023/24 and 2024/25 financial years.

District Overview- Key projects

There are several major wastewater scheme and facility upgrades programmed over the next 10 years, some of which are now under construction. These are intended to reduce costs, increase resilience, improve environmental compliance and in some cases provide a higher level of service. The key schemes/ facility upgrades for the District are:

Table 1: District Overview – Scheme Upgrades

Scheme(s) / Facility Upgrades	Reason	Timeframe
Treatment Plant Upgrades (Rangiora)	Aeration basin upgrade to cater for growth	2024/25 to 2026/27
Network Upgrades (Rangiora)	Complete capacity upgrade in trunk mains to cater for new growth areas in Rangiora, and to reduce wet weather overflows	2024/25 to 2051/52

Network Upgrade (Kaiapoi)	Investigate and upgrade the network to ensure wet weather overflow levels of service are met	2025/26 to 2030/31
Oxford WWTP plant upgrade	Upgrade the plant and terminal pump station to meet current consent conditions and provide for potentially more stringent conditions at consent renewal (2031)	2024/25 to 2027/28
Commencing work to service Ashley Village and Waikuku townships	No service at present. Community consultation would be required to determine demand before proceeding	2033/34 to 2040/41
WW assets climate change protection	To mitigate increased risks to wastewater assets arising from climate change effects.	2034/35 to 2043/44

3. SCHEME DESCRIPTION (WHAT DO WE HAVE?)

The District's wastewater networks consist of one independent system including a treatment plant at Oxford, and then a much larger interconnected system near the coast called the Eastern Districts Wastewater Scheme (EDSS) servicing all the towns in that part of the district

The Eastern Districts Wastewater Scheme combines ten communities in the eastern portion of the Waimakariri District. The specific communities included within the EDSS are:

- Rangiora
- Kaiapoi
- Woodend
- Pegasus
- Waikuku Beach
- Tuahiwi
- Woodend Beach
- The Pines / Kairaki Beach
- Mandeville (including Millfield and Mandeville Park, Ohoka Meadows and Swannanoa)
- Loburn Lea

The total number of properties on the EDSS was approximately 17,851 on 30 June 2023.

Connection of the original independent schemes to the EDSS has been progressive since 2012/13, with the last two, Fernside and Loburn Lea, being connected onto the EDSS in 2021/22.

The EDSS has the objective of conveying wastewater from all connected customers to its four treatment plants at Rangiora, Kaiapoi, Woodend and Waikuku Beach, and discharging the treated effluent at a single point to the ocean.

Error! Reference source not found. below outlines, for each wastewater scheme in the District, total connection numbers, scheme type (gravity, pressure or Septic Tank Effluent Pumping (STEP) system) and treatment method. Additional tables summarise the district wide network assets.

Asset tables follow which provide pipe, valve and manhole statistics by scheme. The final table (Table 6) shows data references of technical reports and file numbers used to compile the AMP, with links should further details be sought.

Figure 1 Shows a schematic of the EDSS.

An overall map of the District's Council wastewater schemes is shown in the [AMP Plans and Figures Viewer](#). Scheme specific plans are also available in the viewer:

- Network Schematics
- Serviced area

Scheme Statistics

Up to date scheme statistics, are available in document TRIM [121108078891](#) which is updated quarterly. (The file needs to be opened in “edit” mode not “view”).

Table 2: District Overview – Scheme Summary Information

Scheme	Eastern Districts										Oxford
Sub Scheme	Rangiora	Mandeville	Loburn Lea	Kaiapoi	The Pines/Kairaki Beach	Woodend	Pegasus	Tuahiwi	Woodend Beach	Waikuku Beach	NA
Level of Service	Urban Gravity / Pressure Sewer (Fernside)	Urban Gravity / Pressure Sewer / STEP System	Urban Gravity / STEP System	Urban Gravity / Pressure Sewer (Beach Grove)	Urban Gravity	Urban Gravity	Urban Gravity / Pressure Sewer / STEP System	Pressure Sewer	Urban Gravity	Urban Gravity / Pressure Sewer	Urban Gravity
Connections (2023/24 Rates Strike)	7,728	611	38	5,360	169	1,743	1,579	80	77	466	905
Total Scheme Connections	17,851										
Treatment Facility	Rangiora WWTP			Kaiapoi WWTP		Woodend WWTP				Waikuku WWTP	Oxford WWTP
Treatment Method	Screens Aeration Basin Facultative ponds Maturation Ponds Pumped to Kaiapoi wetlands			Screens Aeration Basin Oxidation Ponds Wetlands UV Treatment if required		Screens Aeration Basin Oxidation Ponds Wetlands UV Treatment				Screens Oxidation Ponds Discharge to Woodend Plant	Activated Sludge UV Treatment

Table 3 : Gravity Pipe Data Summary

Wastewater Gravity pipe length (m) by pipe material											
Pipe Material	Rangiora	Mandeville	Loburn Lea	Kaiapoi	The Pines/Kairaki Beach	Woodend	Pegasus	Tuahiwi	Woodend Beach	Waikuku Beach	Oxford
Asbestos Cement	6,774	-	-	1,550	1,170	6,263	-	-	1,009	3,598	-
Concrete	25,456	-	-	15,621	-	148	-	-	-	-	-
Earthenware	9,012	-	-	248	-	107	-	-	-	-	-
PE	561	8	-	187	-	51	3	-	-	135	-
PVC	65,221	37	3,641	40,052	1,993	20,2023	21,115	-	107	2,408	17,779
Other	119	12	-	354	20	880	172	15	10	183	36
Total	107,143	57	3,641	58,013	3,183	27,652	21,290	15	1,126	6,324	17,815

Table 4 : Pressure Pipe Data Summary

Wastewater Pressure pipe length (m) by pipe material											
Pipe Material	Rangiora	Mandeville	Loburn Lea	Kaiapoi	The Pines/Kairaki Beach	Woodend	Pegasus	Tuahiwi	Woodend Beach	Waikuku Beach	Oxford
Asbestos Cement	-	-	-	822	182	713	-	1,178	1,917	1,526	-
PE	9,021	20,831	-	19,332	843	10,551	13,033	7,116	272	2,618	478
PVC	5,970	27,235	324	10,619	1,665	1,705	132	362	-	126	2,572
Other	172	332	-	2,872	10	1,060	-	-	4	27	271
Total	15,163	48,399	324	33,645	2,699	14,029	13,165	8,655	2,193	4,298	3,320

Table 5 : Valve and Manhole summary

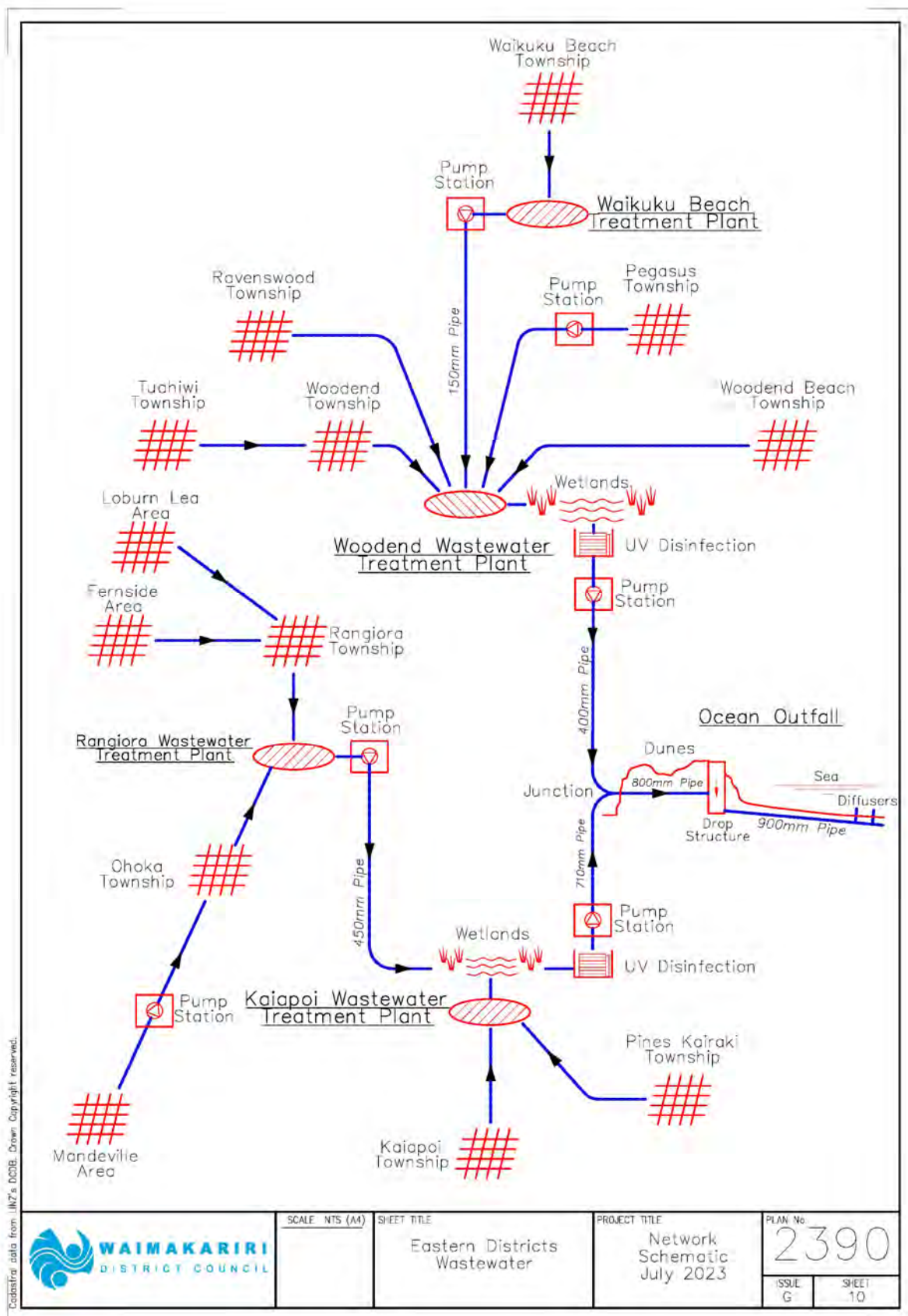
Wastewater Valve and Manhole Data Summary											
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Item	Rangiora	Mandeville	Loburn Lea	Kaipoi	The Pines/Kairaki Beach	Woodend	Pegasus	Tuahiwi	Woodend Beach	Waikuku Beach	Oxford
Valve Count	131	276	-	332	7	101	96	28	6	25	42
Manhole Count	1,886	37	50	1,313	63	582	409	9	19	99	267

Table 6 : Data References

Data References - Common	Trim Reference
2021-22 3 Waters Asset Valuation	220803132120
2023 50 Year Water and Sewer Growth Forecast report	230413051831
Sewer flow data analysis	121108078891
2022 Customer Satisfaction Survey	230504063243
Data References – By Scheme	Trim Reference
Oxford WWTP – Oxford WWTP Strategic Plan Report	210810131225
Oxford WWTP – Apex review and update of previous GHD upgrade options report	230808120833

Figure 1: Eastern District's Scheme: Overview Schematic



4. LEVELS OF SERVICE

Levels of Service (LoS) are a measure of the standard of service being provided. The target levels of service are a significant factor in determining the size, capacity and cost of operating each scheme.

There is a hierarchy to the LoS. Some are measured at district wide level, some at scheme level, and some differ depending on the type of service provided. The way that LoS measures are assigned, measured, and reported is summarised below, and explained in more detail in the following paragraphs.

Table 7: Summary of Performance Measure Types, and Reporting

	Mandatory Performance Measures	Elective Performance Measures
Set By:	These measures are set by the Department of Internal Affairs (DIA), but the targets set by individual local authorities.	These measures are set by individual local authorities.
Reporting:	Long Term Plan and Annual Report. Quarterly reports to Council	Activity Management Plans Annual report to Council (future improvement). Some measures are also included within the Long Term Plan and Annual Report.

Changes to LOS for 2024

In early 2023, when the LOS and targets would normally have been reviewed again, the 3 Waters reform based on four new entities to manage 3 Waters infrastructure nationally, was going ahead. A National Transition Unit was operating under the Department of Internal Affairs, and the expectation was that the 2024 AMP's would be prepared by that Unit. By the time that the government changed the planned new structures, and delayed the entire programme it was too late to be able to review LoS, and have them approved by the U&R Committee/Council. Therefore, the LoS and targets in the 2024 AMPs, both Mandatory and Elective, are unchanged from the 2021 AMPs.

Mandatory Performance Measures

In 2010, the Local Government Act 2002 was amended (Section 261B) to require new rules specifying non-financial performance measures for local authorities. The measures are intended to help members of the public compare the level of service provided by different councils at District or City level. The Council is required to incorporate the performance measures into their long-term plans and report against them in their annual reports. The element that is measured cannot be changed (as this is mandatory) but the targets can be changed. Measures are reported at both district wide level, and at scheme level. This is provided to Council on a quarterly basis, and the annual results are included in Council's Annual Report.

Error! Reference source not found. sets out the full set of mandatory performance measures and targets for the 2024 AMP.

This set of measures were approved by the Council's Utilities and Roading Committee for inclusion in the 2021 Draft Long Term Plan (report [200406043184\[v1\]](#)), before being approved by Council.

Table 8: Mandatory Performance Measures for 2024 (unchanged from 2021 AMP)

Level of Service	Performance Measure	2024 Target
System Adequacy The sewerage system is adequately sized and maintained	The number of dry weather sewerage overflows from the sewerage system expressed per 1000 sewerage connections to that sewerage system	Less than 1 per 1000 connections
Discharge Compliance The treatment and disposal of sewage is managed in accordance with consent conditions	Compliance with resource consents for discharge from the sewerage system measured by the number of : a) Abatement notices b) Infringement notices c) Enforcement orders, and d) Convictions Received in relation to those resource consents	a) Nil b) Nil c) Nil d) Nil
Response to Sewerage System Faults The sewerage system is actively maintained and faults promptly attended to	The median response times for attendance to sewerage overflows resulting from a blockage or other fault in the sewerage system: c) Attendance time: from receipt of notification to the time that service personnel reach the site, and b) Resolution time: from receipt of notification to the time that service personnel confirm resolution of the blockage or other fault	c) Less than 120 minutes b) Less than 480 minutes
Customer Satisfaction The wastewater system is managed to an appropriate quality of service	Number of complaints received about any of the following: a) Sewerage odour b) Sewerage system faults c) Sewerage system blockages, and d) Response to issues with the sewerage system Expressed per 1000 connections to the sewerage system	Aggregate of a) to d) to be < 5 per 1000 connections
Level of Service	Performance Measure (Non Mandatory but reported quarterly with the Mandatory measures at District level)	2024 Target
Consent Breach – Action Required	Percentage of the total number of wastewater consent conditions that have breaches that result in an Environment Canterbury report identifying compliance issues that require action.	0%
Level of Service	Performance Measure (Non Mandatory but reported at District level)	2024 Target

Level of Service	Performance Measure	2024 Target
Response time -Overflows	Response time to blockage causing overflow from Council system (not private lateral or gully trap) of > 8 hours	Nil/Year

Elective Levels of Service

The mandatory measures do not replace the scheme specific elective LoS reported in the AMPs and used by the Council to monitor and manage the performance of individual wastewater schemes.

Elective LoS are motivated by either legislative requirements (for example, compliance with resource consent conditions) or by established best practice (for example, the number of events that lead to complaints from the wastewater treatment plants). These are categorised as technical levels of service, and they are to be reported to Council on an annual basis. They have been developed over time, and are guided by a number of factors, including:

- Customer Expectations
- Affordability
- Council Community Outcomes (Strategic goals and objectives)
- Legislative Requirements

Primary customers are households or businesses that are connected to Council wastewater schemes, with key stakeholders being Community Boards, Councillors, and the Regional Council.

Community Engagement

The level of service component of the Activity Management Plans were consulted upon comprehensively as part of the 2005 review. While a comprehensive public review has not been carried out since then, levels of service are tested with the public in a number of ways.

- For general feedback the principle method of communicating proposed LoS to customers is via the LTP process. As noted, mandatory performance measures form part of the LTP documentation that goes out for public consultation, during preparation for the LTP.
- The Council's wastewater AMP's, which are updated concurrently with preparation for the LTP are made available on Council's website, which allows a channel for feedback from customers who may be interested.
- More specific consultation is carried out when any significant changes to the scheme are proposed, and particularly when rates may be affected. In such circumstances, options, costs and risks associated with each option are presented to the affected community and their feedback taken into account in making a decision about which option to select.
- The general satisfaction of customers with the level of service received is gauged through tracking of complaints through the service request system, as well as through the Council's customer satisfaction survey. Changes to this survey have been made so that information is now available on a per scheme basis. Trends in complaints are available through the Council's Business Intelligence reporting system, allowing easy analysis for trends both at a district level and a scheme level. Where upgrades to schemes have been completed, the

positive impacts can be seen to flow through to complaint levels, which provides a useful measure of success of projects.

- LoS were reviewed, in house, in 2020 and the proposed changes put to the U&R Committee for approval before going to Council for final approval. Refer to Council report [TRIM 200406043184\[v1\]](#) for the changes made and the motivation for those changes.

Error! Reference source not found. shows the 2024 AMP set of performance measures, unchanged since the 2021 AMP.

The district level performance results are shown in Table 10. The performance results as assessed for the 2022/23 year for each scheme, plus historical results back to 2008, are included in the relevant scheme appendix to this document. Each table includes proposed actions to address situations where the performance measure targets have not been met.

Table 9: Elective Performance Measure for 2024

Level of Service	Performance Measure (2024)	Target	Community Outcome that this LoS Contributes to
Complaints – Odour – Treatment	Number of events that lead to complaints about odour at treatment plants	< 5 per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Complaints – Odour – Reticulation	Number of events that lead to complaints about odour from the reticulation	< 5 per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Complaints – Midges & Insects – Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Outages – Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Overflows – Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Overflows – New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Overflows – Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main caused by insufficient maintenance or asset failure (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. © Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	<i>The natural and built environment in which people live is clean, healthy and safe.</i>

Level of Service	Performance Measure (2024)	Target	Community Outcome that this LoS Contributes to
Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service "satisfactory" or "very satisfactory"	> 90%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

District Overview: 2022/2023 Levels of Service Performance

Error! Reference source not found. shows both the mandatory and elective recent levels of service achievement for those measures that are assessed at the district level. Appendices to this document can be referred to for the performance results for the individual schemes, which also show performance history.

Table 10: District Overview 2022/23 : Levels of Service Performance

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
The number of dry weather sewerage overflows from the sewerage system expressed per 1000 sewerage connections to that sewerage system	Less than 1 per 1000 connections	Yes	There were a total of 8 dry weather overflows in 2022/23. This equates to a total of 0.45 per 1,000 connections. Overflows were predominantly caused by pipe blockages from wet wipes	N/A
Compliance with resource consents for discharge from the sewerage system measured by the number of : a) Abatement notices b) Infringement notices c) Enforcement orders, and d) Convictions Received in relation to those resource consents	a) Nil b) Nil c) Nil d) Nil	Yes	No abatement or infringement notices, or any enforcement orders or convictions were received from Environment Canterbury in the 2022/23 year	N/A

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
<p>The median response times for attendance to sewerage overflows resulting from a blockage or other fault in the sewerage system:</p> <p>a) a) Attendance time: from receipt of notification to the time that service personnel reach the site, and</p> <p>b) b) Resolution time: from receipt of notification to the time that service personnel confirm resolution of the blockage or other fault</p>	<p>a) Less than 120 minutes</p> <p>b) Less than 480 minutes</p>	Yes	<p>a) Average time achieved 60 minutes</p> <p>b) Average time achieved 198 minutes</p>	N/A
<p>Number of complaints received about any of the following:</p> <p>a) Sewerage odour</p> <p>b) Sewerage system faults</p> <p>c) Sewerage system blockages, and</p> <p>d) Response to issues with the sewerage system</p> <p>Expressed per 1000 connections to the sewerage system</p>	< 5 per 1000 connections for each category	Yes	<p>Results per 1000 connections:</p> <p>a) No complaints</p> <p>b) 1.32</p> <p>c) 2.75</p> <p>d) No complaints</p> <p>Total : 4.07%</p>	N/A
<p>The percentage of the total number of wastewater consent conditions that have breaches that result in an Environment Canterbury report identifying compliance issues that require action</p>	0%	Yes	<p>There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.</p>	N/A

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service "s "Satisfact"ry" "r "Very Satisfact"ry"	>90%	Yes	91 % customer satisfaction level from 2022 survey across all schemes	N/A
Response time to blockage causing overflow from Council system (not private lateral or gully trap) of > 8 hours	Nil/Year	No	4 loss of service, with 2 in Rangiora, 1 in Kaiapoi and 1 in Waikuku. These are related to the flooding events in July 2022.	Reticulation upgrade planned for Rangiora to be completed in 25/26, Increased planned pipeline maintenance in Kaiapoi.

Benchmarking

A number of the performance measures above are collated and reported nationally, and therefore can be benchmarked against other service providers to compare performance. Waimakariri District Council participates in Water NZ's annual national Performance Review (NPR). The customised 2020-21 report prepared for WDC can be found here: TRIM [230324041126](#)

The more general report for 2021-22, which still enables comparisons with other Councils can be found here: [2021-22 National Performance Review](#)

This survey function has recently been taken over by Taumata Arowai, and WDC will continue to participate.

Scheme Differences

As well as assessing the performance measures included within the AMP at a district level, there are a number of related measures assessed at scheme level. This allows for a comparison between schemes to highlight areas where improvements are required. By addressing the relevant schemes where the scheme specific performance measures are not met, improvements will flow up into the district measure.

Table 11 below shows the 2022/23 elective performance measures for each scheme.

The scheme appendices contain tables that show both the 2022/23 results, and scheme performance history going back to 2008, and any corrective action proposed.

Table 11 : 2022/23 Scheme Performance - Elective Levels of service

Level of Service	Target	Rangiora (incl Fernside)	Kaiapoi	Woodend	Pegasus	Waikuku Beach	Tuahiwi	Wooden d Beach	The Pines/ Kairaki Beach	Mandeville	Loburn Lea	Oxford
Number of events that lead to complaints about odour at treatment plants	< 5 per year	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Number of events that lead to complaints about odour from the reticulation	< 5 per year	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Number of events that lead to complaints about midges and insects at treatment plants	Nil per year	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Not Achieved - 2 events	Not Achieved - 1 event	Achieved	Achieved	Not Achieved - 1 event	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved

<p>Number of recorded overflows on private property found to be the result of</p> <p>(a) blockage in the main caused by insufficient maintenance or asset failure</p> <p>(b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999.</p> <p>(c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.</p>	Nil per year	1	1	0	0	0	0	0	0	0	0	0
<p>Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service "satisfactory" or "very satisfactory"</p>	> 90%	Achieved	Achieved	Achieved	Achieved	Achieved	Result incorrectly mixed with Fernside which is a different scheme	Achieved	Not Achieved 50%	Achieved	Achieved	Achieved

5. ASSET CONDITION

The current assessment of asset condition is based on theoretical remaining useful life derived from component age and adopted useful life. Adjustments to the remaining life are made to individual components where information is available to suggest the theoretical remaining life is inappropriate.

A wastewater CCTV programme was started in 2008 to survey the reticulation network and assign evidence based condition ratings. These surveys have identified a number of mains faults that have led to remedial actions including immediate or scheduled repair, decreased remaining useful life or, increased renewal priority.

Nominally wastewater pipes are inspected on average every 30 years, but criticality and age are modifying factors as set out below

AA – Every 10 years from 50% life remaining

A – Every 10 years from 40% life remaining

B – Every 10 years from 30% life remaining

C – Every 20 years from 20% life remaining

As noted in the 2021 AMP Council had not previously had appropriate software to effectively carry out analysis of the CCTV results, which is critical to assess the condition of the gravity network. The analysis has previously been outsourced, the outcome from which had been unsatisfactory. InfoAsset Manager has now been implemented which allows more efficient importing of CCTV data, and proper analysis of that data. When installed it had been the intention to integrate the data that will be imported into InfoAsset Manager with the main asset management system (Technology One) data. This project has been put on hold due to the Council commencing a process to replace the Technology One system, which is also the Council's enterprise wide business platform

Remaining Useful Lives

The useful lives of asset groups as indicated by the valuation are consistent with the asset life assumptions used to develop the renewal forecasts. The assumptions about remaining useful lives of the sewer assets are progressively informed by the ongoing collection and analysis of the asset maintenance and repair data, in conjunction with further CCTV surveys. Full details of the assumptions pertaining to the remaining useful lives of each asset category are included in the Valuation report (TRIM [220803132120](#)).

Assets are normally revalued on a three yearly valuation cycle, to coincide with the three yearly LTP cycle. However with increased inflation over the last few years, the most recent valuation was carried out a year earlier in 2022. The 2022 figures have been adjusted for 2023 using CPI factors.

- **Reticulation**

The approach of compiling better condition and maintenance information over time, has been considered relatively low risk for reticulation as the average age relative to asset life is reasonably young. The majority of reticulation assets have more than 50% remaining useful life and are considered to be in good condition.

As noted a CCTV programme is in place to assess the condition and expected life of gravity sewer assets. The programme is funded to enable a 20 year cycle of inspection to take place, which is considered reasonable given the average age of these assets.

In addition the vulnerability assessment (see section 6) assesses the risk of failure of brittle pipes in areas of the reticulation where the ground is prone to liquefaction, and when incorporated into the renewals model (section 15), has the effect of accelerating the replacement of these pipes. It is expected that within 15 years these vulnerable pipes will have been replaced.

- **Headworks**

Headworks asset condition is determined using asset age and asset class. No comprehensive asset condition assessment at facilities has yet been carried out so confidence in asset condition is not high. However field staff are required to take note of assets that are deteriorating, when carrying out their normal regular maintenance checks/inspections. In the recent complete facilities asset inventory work that has been undertaken the scope included identifying assets in particularly bad condition. Only 12 assets were found that fitted this criteria, and steps are being taken to attend to them.

In the absence of a formal assessment it is believed that the majority of headworks assets have more than 50% remaining useful life (based on age).

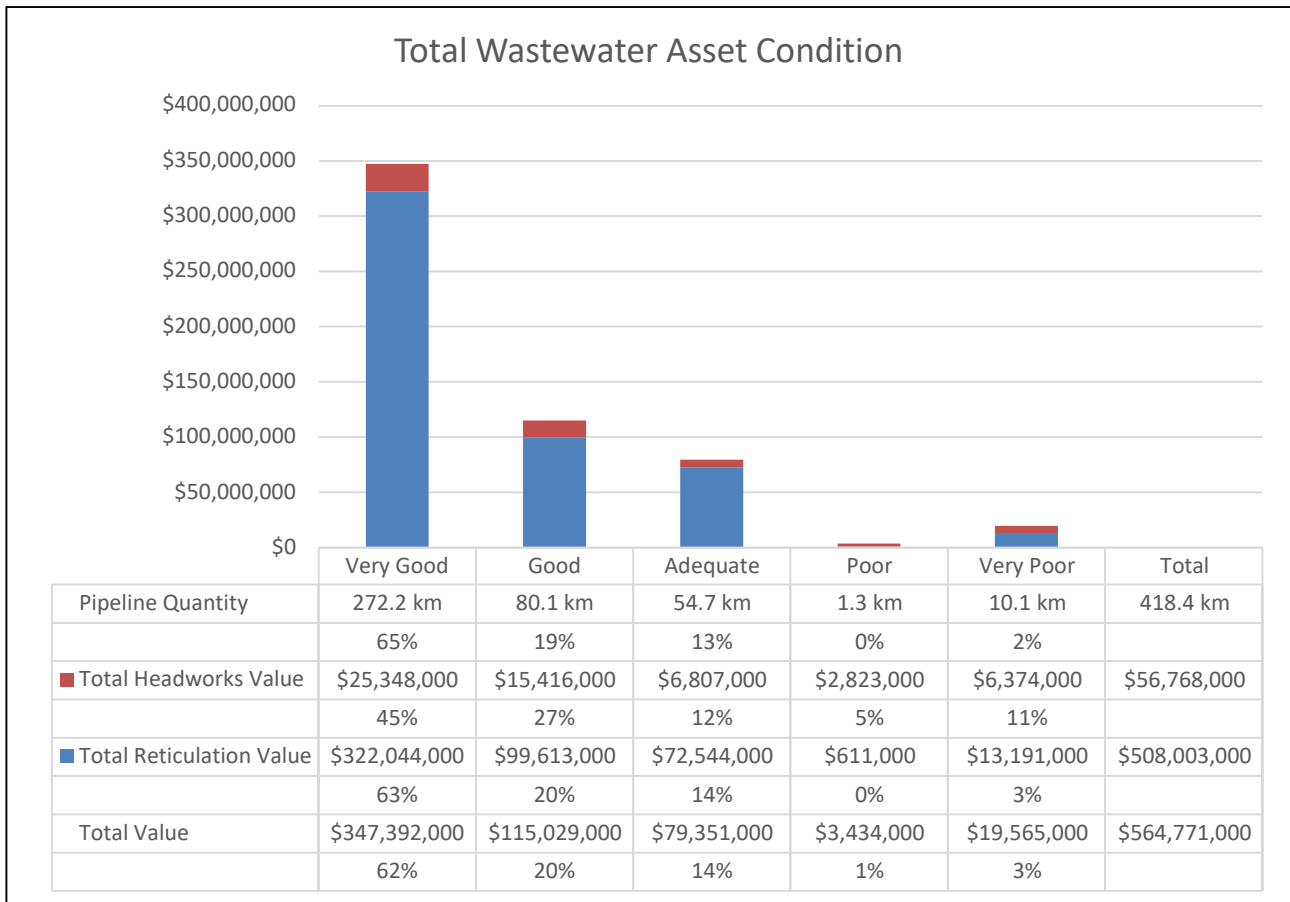
Electrical componentry at headworks has received more attention, and a regular inspection programme is in place to identify renewal needs, managed through Council's electrical maintenance contractor. Works identified from these assessments are programmed and budgets incorporated in the ten year plan

- **Useful Lives on GIS**

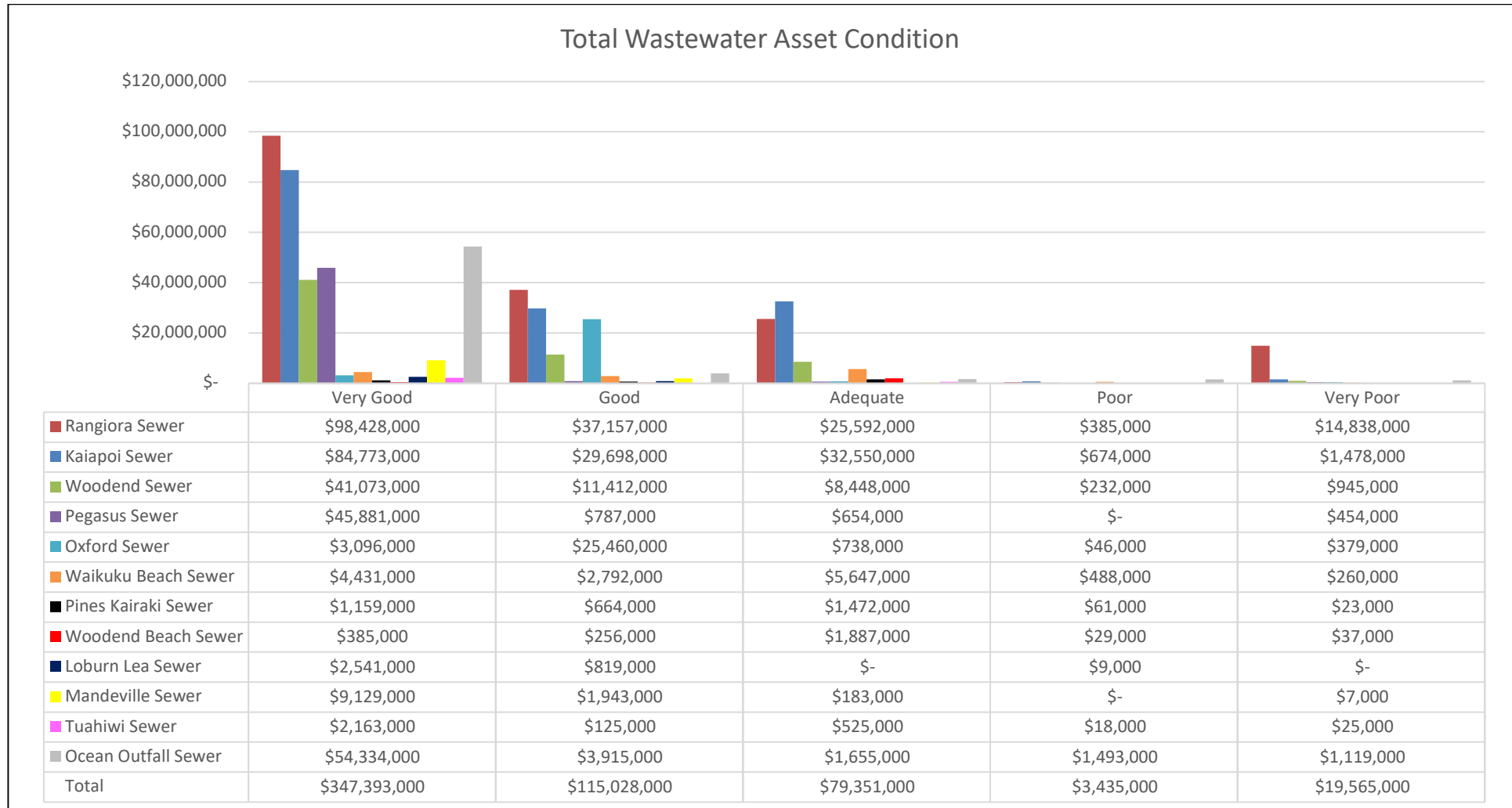
The [AMP Plans and Figures Viewer](#) contains GIS plans for each scheme that spatially illustrate the remaining useful life of the reticulation assets within the network. Included on each plan is the location of any blockages repair activity recorded since 2007. This provides a useful picture of the relative asset age and performance.

- **District Overview**

Error! Reference source not found. and **Error! Reference source not found.** below summarise assessed asset condition for the 2023 AMP reviews. Note that "Headworks" is inclusive of all above ground assets, while "Reticulation" covers the remainder of the assets, which are typically below ground pipework related assets.

Figure 2: District - Asset Condition Summary

Parameter	Very Good (Grade 1)	Good (Grade 2)	Adequate (Grade 3)	Poor (Grade 4)	Very Poor (Grade 5)
Definition	More than 80% of life remaining	Between 50% and 80% of life remaining	Between 20% and 50% of life remaining	Between 10% and 20% of life remaining	Less than 10% of life remaining

Figure 3: Asset Condition Summary - Schemes

6. CRITICALITY

Criticality is a measure of the importance of a given asset to the overall scheme and is determined by the consequence of failure. Assets for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation are considered more highly critical. Critical assets have a lower threshold for action than non-critical assets. Criticality is used as a means to:

- Identify the most important assets in the overall network
- Prioritise assets that warrant specific condition assessment
- Prioritise assets for repair following multiple failures, e.g. following an earthquake
- Quantify the relative consequence of failure, which can then be used to assess the risk of failure and prioritise renewals. Specifically this means that assets with higher criticality rating are renewed before their end of life, while renewal of low criticality assets will be delayed beyond theoretical end of life.

The criticality assessment carried out on the reticulation uses an automated GIS model using both GIS and modelling data to determine the criticality of pipes. The previous criticality assessment model for treatment plants and pump stations has been updated and used again in this document, but now that a comprehensive asset stocktake at facilities has been completed, it will enable a new model for assessing the criticality of pump stations and treatment plants to be developed.

WDC have chosen to use a component failure and public-impact based approach to identify and rank critical assets.

For wastewater assets “Failure” is defined as any single component malfunctioning causing a loss of service or significant impact to others under normal operating circumstances. “Impact” is defined as:

- Public health impact – the failure of the asset creates an unacceptable impact on public health.
- Socio-economic impact – the failure of the asset creates an unacceptable social and/or economic loss to the community. This includes disruption to essential services, significant economic activities, and important roads.
- Financial Loss – The failure of the asset, or the repair of a failed asset, creates an unacceptable financial loss to the community, including the Council.
- Environmental impact – the failure of the asset creates an unacceptable environmental effect.

The criticality of wastewater mains is assessed using up to eight key criteria (eight criteria for gravity mains, five criteria for pressure sewer mains).

Table 12: Criticality Assessment Criteria

Criteria	Assessment Notes
Crossings	The disruption caused by a pipe failure on a major crossing point. Railways, Motorways, State Highways and Major Waterways were all considered under this item and identified using GIS queries. The disruption under this item relates to both the other service and the difficulty and time to make repairs to the wastewater main.
Private Land	Pipes on private land were given a higher criticality rating based on the difficulties associating with making repairs to the pipe and the impact on the private landowner of a pipe failure. These pipes were identified using GIS queries.
Diameter	Large diameter pipes were given a higher criticality rating to reflect the difficulty and time required to repair these mains and to reflect the intrinsic importance of these mains in the network. For pressure mains this category was also used to consider the likely impact of raw sewerage discharging to land due to a mains failure.
CBD	Pipes within CBD or retail shopping areas were given a higher criticality rating to reflect the financial impact of undertaking wastewater main repairs in these areas and the likely effect of a pipe repair on pedestrian traffic. These pipes were identified using GIS queries.
Roads	The location of the pipe in the road corridor and the nature of the road was considered here. A pipe within the road carriageway and pipes on high volume strategic roads were given a higher rating to reflect the greater impact on road users. These pipes will also likely be more expensive and time consuming to repair.
Overflow Locations	For gravity mains a blocked pipe will cause an overflow in an upstream manhole. The location of this manhole determined the criticality for the section of main. Consideration was given to overflows on private land, CBD areas, parks and sensitive sites such as schools. These pipes were identified using model data to determine the overflowing manhole and GIS queries to determine the location of the manhole. For pressure mains the location of the main determined the overflow location. GIS queries were used to determine the location of the pressure mains.
Overflow Volume	For gravity mains the volume of overflow due to a mains failure was determined using sewer modelling data based on the average dry weather flow in each pipe length. The impact of an overflow on the receiving environment plus the difficulty in managing the overflow (such as providing bypass pumping) were both considered here. For the majority of pressure mains the flow can be managed at the upstream end by limiting the operation of pumps. The overflow volume was therefore not specifically considered for pressure systems but it was given consideration under the diameter criteria.
Groundwater, Depth and Soil Type	For gravity mains, the combination of depth, groundwater and soil type were considered. Pipes that are especially deep, in high groundwater or in poor soil are more expensive and time consuming to repair. Pipes with these attributes are given a higher criticality rating to reflect the difficulty in making repairs to these mains. GIS queries are used to determine the location of sewer mains in relation to the groundwater table and soil type. Pressure mains were not considered under this category as all pressure mains are generally constructed at a similar depth and the soil conditions are normally not a significant factor in making repairs to these mains.

Each individual main is then graded between AA and C categories.

Note that while the number of customers affected would seem to be an obvious criticality criteria, a decision has been made not to use this as a criteria. In the event of a pipe failure, it is considered that there would be no discernible impact on upstream individual customers as they would still be able to discharge into the network regardless of the pipe failure downstream. The effect of the pipe failure would instead be felt in the vicinity of the downstream overflowing manhole or where the repair was being undertaken, and this effect is already included in other criteria.

Table 13: Criticality Score Categories

Criticality Rank		Criticality Rank Code
High Criticality	Extreme Criticality	AA
	High Criticality	A
Moderate Criticality		B
Low Criticality		C

Table 14 shows the mains criticality by percentage across the district. **Error! Reference source not found.** contains links to criticality maps.

Because the pipe criticality assessment is undertaken using GIS data the assessment can be repeated and updated on a more regular basis. Annual updates are planned that will inform each years detailed renewals programme.

Operations

Criticality is used as an input to the CCTV programme, and also to determine if a “stand over” is necessary by our in-house operations contractor, when external contractors are working on or near WDC assets

District Overview – Criticality

Table 14 summarises the percentage of mains in each of the criticality classes:

Table 14: District Overview – Mains Criticality % by Category

Scheme	AA	A	B	C
Kaiapoi Sewer	20%	14%	31%	34%
Loburn Lea Sewer	0%	10%	19%	71%
Mandeville Sewer	2%	24%	73%	1%
Ocean Outfall Sewer	84%	16%	0%	0%
Oxford Sewer	7%	14%	28%	51%
Pegasus Sewer	11%	12%	36%	41%
Pines Kairaki Sewer	12%	10%	30%	48%
Rangiora Sewer	25%	13%	25%	38%
Tuahiwi Sewer	0%	4%	96%	0%
Waikuku Beach Sewer	2%	8%	44%	46%
Woodend Beach Sewer	0%	44%	28%	28%
Woodend Sewer	28%	12%	21%	39%
All Schemes	21%	14%	33%	31%

Note: % shown are by length

Criticality on GIS

The [AMP Plans and Figures Viewer](#) contains spatial views of the criticality of pipe and facility assets for each scheme.

7. RISK ASSESSMENT - OVERVIEW

The purpose of carrying out risk assessments on wastewater schemes is to identify any risks to the scheme which need to be mitigated, and to prioritise implementation of any mitigation plans.

A number of different risk assessment have been carried out, each one with a specific focus, although there is some overlap. A description, and the purpose of each assessment is provided below

- i. **Operational Risk Assessment:** This is the broadest scope assessment. Possible causes of failure of the wastewater system are examined, together with the consequences of that failure. Failure includes overflows, or treatment failures as well as failure caused by natural disasters. This assessment was last carried out for the 2015 AMP review, but has not been updated for this review. It was originally the intention that a review of these operational risks be carried out in time for this AMP, but as it was subsequently expected that the next AMP would be written by the new entity being set up under the 3 Waters reforms, this was not carried out.
- ii. **Disaster Resilience Assessment (DRA):** Assesses the risk to above ground assets from a broad range of potential natural disasters. See Section 9.
- iii. **Vulnerability Assessment:** Focuses solely on underground assets, assessing the vulnerability of pipes to damage from natural hazards, and uses an automated approach. One of the principal inputs to the risk based methodology for determining the renewals programme. See Renewals in Section 16.
- iv. **Corporate Risk:** High level risk assessment carried out corporately in association with the development of the LTP and Infrastructure Strategy. Covers Environmental, Economic, and Social risks. Council updated its Risk Management Policy and Framework in 2022. TRIM [220428064824](#) and [220428064825](#). The most recent corporate risk assessment is available here: TRIM [230321039241](#)

Updating the 3 Waters risk assessments is now a priority. A new approach has been recently developed, which brings the Operational, Disaster Resilience and Vulnerability assessments into a single risk assessment process. This is expected to make regular updating of the assessments less of a hurdle. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

The new methodology enables consistent, measurable quantifying of risks for customers and the environment from operation of water supply (and also stormwater and wastewater) schemes. Key risks are presented as outcomes such as loss of, or contamination of water supplied to customers, or stormwater or wastewater discharges resulting in flooding or downstream environmental contamination.

The method achieves consistency by assigning numerical values to conditions that lead to events (for example – “pump station failure”) which causes the adverse outcome “loss of supply”.

Likelihood is determined by using preset data to assign values to conditions which are common across schemes. A typical condition is, for example, “average asset condition - % of life remaining”. For this example each percentage range specified in the condition receives a rating of between 1 and 5, with “1” being “almost certain” and “5” being “rare”. Likelihood scores for each condition are averaged to determine an overall likelihood rating for each event. Conditions are measurable,

using asset and scheme operating data, drawing from procedural, mechanical or structural factors or natural hazards which contribute to the events.

The resulting likelihood scores are averaged with consequence scores (comprising agreed severity values modified by scheme exposure) to determine final risk ratings for each event and scheme. “Scheme exposure” is determined by the number of connections to each scheme. This gives an indication of the scale of impact of an event and size of the likely Council response that would be required to resolve it.

Findings from these updated risk assessments will be compared with previous risk assessments, particularly the DRA work as a check.

8. OPERATIONAL RISK ASSESSMENT

The table below details the risks considered under the previous assessment methodology, which was last carried out for the 2015 AMPs. Natural disaster risks were also considered across all asset types: earthquake, tsunami, extreme weather events, and vandalism/terrorism.

Table 15: Risk Events Considered

	Event	Cause
Collection	Overflow or discharge of raw sewage from gravity reticulation	Insufficient reticulation capacity
		Poor reticulation condition (blockages)
		Insufficient grades or flow to achieve self cleansing velocities
		Chemical damage of pipes
		Third party damage of pipes
	Overflow or discharge of raw sewage from pump station (Worst score only, from all pump stations on the network being assessed.)	Pump failure
		Electrical / Power failure
		Rising main failure & 3rd party damage
		Wet Well failure
Treatment	Overflow or discharge of partially or untreated sewage	Electrical /Mechanical/Structural Failure
		Blockage
	Sewage not sufficiently treated	Overloaded STP
		Electrical /Mechanical Failure
		Shock loading
		Extreme climatic conditions
		Treatment Process inadequate
	Event	Cause
Disposal	Overflow or discharge of raw sewage from Discharge Pump Station	Pump failure
		Electrical / Power failure
		Rising main failure & 3rd party damage
		Wet Well failure
	Effluent unable to be discharged or discharged uncontrollably	Failure of discharge system

General	Operations / management failures	Operator or management error
		Incorrect or no data - Flows - Pump data - Effluent quality - Consent compliance - etc.
		Inappropriate work planning & management

Risk Matrix

Each of the causes are rated for consequence (1 to 5) and likelihood (A to E) and then combined to give a risk score using the matrix shown in Figure 4. The three cells highlighted by a black frame show where the WDC matrix differs from the standard AS/NZ 4360 risk matrix. These changes were made as they better reflect the level of risk accepted by WDC on their 3 waters assets.

Figure 4: WDC Risk Matrix

Risk Matrix		Consequences				
		Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	A Almost certain	M	H	H	E	E
	B Likely	M	H	H	E	E
	C Possible	L	M	H	H	E
	D Unlikely	L	L	M	H	E
	E Rare	L	L	M	H	H

District Overview – Operational Risk

The 2015 assessment identified 15 high risks remaining across all the wastewater schemes in the district, with all the extreme risks having been previously attended to. These high risks have largely been dealt with now.

Error! Reference source not found. summarises the current status of the high operational risks identified in 2015 across all the wastewater schemes.

Since a completely new comprehensive risk assessment is about to be embarked upon, with completion in 2024 anticipated, the medium and low risks identified in the 2015 assessment have been removed from this 2024 version of the AMP.

Table 16: District Overview – High Risks remaining (Operational)

Scheme	2015 Risk Assessment	Operational Risk Assessment Update	Comment
Fernside	2	0	Both risks related to insufficient treatment at the plant which has now been de-commissioned, and the network connected to the EDSS
Kaiapoi	4	2	<p>Two related to wastewater overflow from insufficient reticulation capacity or poor condition pipes. The Kaiapoi Network Capacity upgrade programmed for 2025-2031, will resolve under capacity. The newly implemented InfoAsset Manager programme will enable targeting and renewal of poor condition pipes.</p> <p>The third risk is generic pipe joint susceptibility to earthquake, which will be re-assessed with the new risk methodology.</p> <p>The fourth risk was associated with a now de-commissioned pump station</p>
Loburn Lea	0	0	
Mandeville	0	0	
Ocean Outfall	4	4	<p>Three risks relate to pipeline failure of pipeline in liquefaction prone ground. Pipe material is PE, which is the most appropriate material to mitigate this risk. New risk assessment likely to accept this as a residual risk.</p> <p>Fourth risk is the drop structure failure in earthquake, which needs further assessment</p>
Oxford	3	0	All three risks related to overloaded treatment plant in wet weather. Risk mitigated with construction of a holding pond, but risk needs to remain included in the new risk assessment, and re-evaluated.
Pegasus	0	0	
Pines Kairaki	0	0	
Rangiora	2	0	<p>Overflow from network under capacity, is being resolved with the capacity upgrade programme completion due 2025/26.</p> <p>Overflow from poor condition pipes mitigated from implementation of InfoAsset Manager</p>
Tuahiwi	0	0	
Waikuku Beach	0	0	
Woodend	0	0	
Woodend Beach	0	0	
District	15	6	

For each scheme AMP, where the assessment shows unresolved extreme or high risks, a table is provided that shows more details of the nature and response to those risks. Improvement projects have been assigned to each risk event. In some cases multiple projects are required to address a wide ranging risk. Improvement projects take the form of either capital works (ref URS) or process improvement (ref IP) projects.

9. DISASTER RESILIENCE ASSESSMENT

The 2009 Disaster Resilience Assessment (DRA) was a desktop assessment of the risk from natural hazard events for all Council operated water supply, wastewater and drainage schemes including above ground and reticulation assets.

In calculating risk the following factors were considered:

- The likelihood of the hazard event occurring, determined from return period
- The resilience or vulnerability of the asset to each hazard (desktop based)
- The consequence of asset failure to the community

The DRA was updated in 2011 to take into account new hazard assessments, in particular the increased seismic risk to the assets throughout the District including further work on areas susceptible to liquefaction. The outputs of new tsunami modelling, a rapid flood hazard assessment and, an updated wildfire threat assessment were also included.

This update focused on above ground assets, as the assessment of risk to below ground assets became incorporated from this time on, into the renewals model. Risk from earthquake events that could induce liquefaction, on brittle pipes (AC and earthenware) is managed using a reticulation vulnerability score. This is used as an input to the risk based renewals assessment. See the **Error! Reference source not found.** section.

A comprehensive review of the DRA Action Plan was carried out in 2014 to update progress made on tasks and prioritise future initiatives. As a result of the review, related tasks were consolidated into one of three improvement projects to be actioned over the following three years. Limited progress has been made on these improvements since the 2015 AMP revision, due to resource constraints.

The new risk assessment methodology described in section 7 above has been developed with the purpose of incorporating the DRA risk analysis within it. It is therefore expected that it will result in similar actions/improvement projects to the DRA, but integrated with the outcomes of the operational risk assessment.

The DRA, together with the risk based renewals assessment, were the Council's 3 Waters department's primary tools in meeting the obligations of the CDEM Act which requires that all lifeline utilities operate to the fullest possible extent before, during and after an emergency. The new risk assessment process and the risk based renewals assessment will be the tools used going forward to meet those obligations.

10. CORPORATE RISK & ASSUMPTIONS

An assessment of key risks and assumptions was prepared by the Council in preparation for the 2024-34 LTP, and is included in the Infrastructure Strategy. The assessment outlines all of the Key Assumptions and Risks that could potentially impact Council service delivery for the 3 Waters activities. Mitigation measures are explained in response to each identified risk.

The Key Risks and Assumptions table is available at TRIM 240611093590.

The definitions of likelihood and consequence and the overall risk priority used in the Corporate Risk Assessment are included in the Council's Risk Framework Document [TRIM 220428064825](#).

A number of the financial risks and assumptions identified in this document imply future uncertainty, with future changes potentially affecting the individual scheme financial projections. Changes to corporate assumptions have been taken note of as part of this AMP review and projections and budgets revised accordingly.

11. CLIMATE CHANGE

For some time Waimakariri District Council has been including the expected effects of climate change in both the hydraulic modelling that it carries out, and design work, and has assumed the worst case projection of RCP8.5.

Notwithstanding, in 2022 the Council commissioned NIWA to carry out a district specific climate report, and in June 2022 the Council resolved to

- *Adopt the NIWA climate projections for the RCP 8.5 Scenario as its baseline evidence for corporate planning, including District planning and the 2024 LTP suite of corporate documents (LTP, activity management plans and infrastructure strategy).*

The key findings of the NIWA report are as follows:

- The projected Canterbury temperature changes increase with time and increasing greenhouse gas concentrations. For RCP8.5 the mid-century mean air temperature is projected to increase by 0.9°, with an end of century increase of 2.4°. Diurnal temperature range (i.e., difference between minimum and maximum temperature of a given day) is expected to increase with time and increasing greenhouse gas concentrations.
- For RCP8.5 the mid-century mean maximum air temperature is projected to increase by 1.2°, with an end of century increase of 3.3°. Changes in mean minimum air temperature are largely uniform across the district.
- For RCP8.5 the mid-century mean minimum air temperature is projected to increase by 0.5°, with an end of century increase of 1.6°. Changes in mean minimum air temperature are largely uniform across the district.
- The average number of hot days (days $\geq 25^{\circ}\text{C}$) is expected to increase with time. 15 by mid-century and 44 by end century. Hot days in the Lees Valley and western plains could see the largest increase by the end of century with upwards of 50 additional hot days projected per year.
- The number of frost days (days $< 0^{\circ}\text{C}$) is expected to decrease throughout the region. Largest decreases are expected in inland areas, with frost days reducing by up to 26 per annum by end century.
- Increased rainfall is projected across the lower altitude plains and coastal areas, and no change (or slight decreases) in annual rainfall are projected in the western high-altitude zones. However, rainfall intensity is expected to increase. Extreme rainfall will likely increase by approximately 7% per 1 °C of climate warming, and shorter duration rainfall events (e.g., hourly) could increase by as much as 15% per 1 °C of climate warming.
- The future amount of accumulated PED (Potential Evapotranspiration Deficit) is projected to increase, therefore drought potential is projected to increase.
- Mean annual low flow in rivers generally decreases by late century, with decreases of 20%-50%.
- Floods (characterised by the Mean Annual Flood; MAF) are expected to become larger, with increases exceeding 50%. However, as noted in The Canterbury Regional climate change report (Macara et al., 2020), the mean annual flood “should not be considered a comprehensive metric for the possible impact of climate change on New Zealand flooding”.
- Sea-level rise will continually lift the base mean sea level on which the tide rides, which means there will be an increasing percentage of normal high tides which exceed a given present-day elevation e.g., street level, berm or stopbank crest.

This report validates the approach 3 waters has been taking with it's modelling and design work.

Previous Climate Change Initiatives

WDC's initial studies carried out on the effects of climate change focused on the coastal fringe. An investigation into groundwater levels, (TRIM [191202168785](#)) concluded that rising groundwater levels will subject underground assets to more frequent inundation, and exacerbate surface flooding. Existing drainage systems are likely to become less effective. However a study of coastal erosion (TRIM [191202168789](#)) found that dune erosion is not likely to follow from sea level rise, as the Waikamariri River delivers enough additional material along the coast to the north of the river, to compensate for any increased rate of erosion. This study also considered coastal inundation, but a further more comprehensive study (TRIM [200312034365](#)) concluded that various combinations of storm tide, fluvial events and a rising mean sea level will cause overtopping of existing stop banks and natural river banks.

More recently a study (TRIM [231115183268](#)) has been carried out of the potential effects of climate change on the Council's infrastructural assets. This study used Council's previous risk assessment and criticality work to consider the likely increase in risk to assets arising from global warming. The conclusion is that the greatest risk come from the increased likelihood of flooding. The key outputs from the report are a comprehensive list of all the assets under threat from the higher flooding risk, and a high level assessment of costs to mitigate the danger. Solutions may include strengthening the asset to enable it to withstand the flooding, moving the facility/asset to a safer site, or accepting the damage, and repairing it when flooding does occur. For some solutions the work will be able to be integrated with the normal renewals programme. However, this study is only a first screening, and the assets at risk will need case by case studies to further refine the actual threat, and commence development of a prioritised programme to mitigate risks.

It is proposed that this additional work will be carried out over the next three years. Notwithstanding this additional refining work, the report's future costs to adapt have been included in the 30 year capital programme as place holders in years 11 to 20.

Design and modelling work carried out by WDC for it's 3 Waters infrastructure allow for both increased rainfall intensity and sea level rise using the RCP8.5 scenario, but wastewater modelling has not yet incorporated the effect on ground water infiltration (GWI) that will be a potential consequence of the increased groundwater levels indicated by the above studies. Initial studies indicates that the effect will be minor, but monitoring of shallow groundwater levels is being undertaken which will assist with correlating increasing groundwater levels with GWI.

Overall, the effects of climate change are expected to increase the potential for wastewater overflows in wet weather events.

There were specific actions in the 3 Waters activity area that were identified in the 2021 AMPs that the WDC planned to carry out with respect to reduction of carbon emissions. Table 17 below provides an update on progress made against those actions.

Table 17: Climate Change Actions from 2021 AMP

Item	2023 Update for Wastewater Supply.
Investigate technology and improvements which help reduce greenhouse gas emissions from treatment plants and other 3 Waters infrastructure via energy efficiency improvements.	Beca report commissioned (TRIM 210603089252[v1]) and provides recommendations. Budget has been allowed to further investigate options to reduce carbon emissions associated with the use of geobags to manage sludge onsite.
Record nitrogen, BOD and other parameters influent and effluent to enable accurate calculation of greenhouse gas emissions from large wastewater treatment plants. Provide an updated greenhouse gas emission profile to Management Team as result of the assessment.	A Beca report identified the key GHG emitting processes from WDC wastewater treatment plants, and made recommendations for action on the “low hanging fruit”. Reported to U and R Committee (TRIM 210603089252[v2]) via Management Team
Report progress quarterly on preparation and process for installation and initial operation of solar power array project (Rangiora WWTP)	No Progress made
Identify appropriate targets for reduction of greenhouse gas emissions from Council’s corporate and infrastructure facilities.	No progress made

Future Climate Change Initiatives

Looking forward Council’s 3 Waters team plans to carry out more with respect to mitigation and embed climate change consideration into its investment decisions. Within the three year term of the 2024 LTP it intends to use the guidance in the Water NZ publication Navigating to Net Zero to:

- Confirm the operational emissions boundary that 3 Waters intends to use.
- Update and refresh the 3 Waters operational emissions inventory, including biogenic emissions – using the guidance in “Water NZ Carbon Accounting Guidelines for Wastewater treatment CH₄ and N₂O. This work to be aligned with the corporate climate change work programme.
- Develop an operational emissions forecast
- Develop a capital emissions baseline. Note the previous focus has been on operational emissions alone, but establishing a “business as usual” capital emissions baseline, will enable emission reduction opportunities from adopting alternative low-carbon approaches to be appropriately assessed. Establishing this baseline will be a significant body of work, and for it to be used effectively, the implication is that all future infrastructural projects will need to be assessed from both a climate and financial perspective once the baseline has been established.
- Set carbon reduction targets

12. DEMAND

Growth projections were updated in 2023 to determine the expected growth on each wastewater scheme in order to understand what upgrade works are required to meet the agreed levels of service. There are a number of factors that influence future demand on water in the District:

- Population trends or increases in population
- Changes in water use practices
- Changes in legislation
- Advancements in technology
- Implementation of water conservation measures (such as water metering)

To date only growth has been considered in establishing the district's future demand for wastewater services. A more complex approach is planned for the future with consideration of the effects of the factors noted above.

The overall district population growth scenario used for the 2024 AMP update was calculated by the consultant Formative under direction from Council's Development Planning Unit (DPU). The Formative data, which shows the population broken down into towns and rural areas is available here: [Population Forecasts report](#). The "50 Year Water and Sewer Growth Forecast" report, was updated using this data (TRIM [230413051831](#)) which was the basis for the infrastructure planning.

To calculate the growth for the wastewater schemes, population increases were applied to planned growth areas at a densities agreed with the DPU. Account was also taken of the capacity for infill to absorb the necessary increases. In cases where the required increase in population could not be fitted inside growth areas, further discussions were held with the Development Planning Unit to agree on locations where the additional growth should be applied. Wastewater scheme growth in connections was then calculated based on the growth areas.

The following growth projection horizons were used;

1	1 – 3 years	(2024/25 to 2026/27)
2	4 – 10 years	(2027/28 to 2033/34)
3	11 – 20 years	(2034/35 to 2043/44)
4	21 – 30 years	(2044/45 to 2053/54)
5	31 – 50 years	(2054/55 to 2073/74)

Growth Uncertainty

The corporate growth model developed by the Council for assessing growth related works is by its nature uncertain as it relies on population projections that are highly dependent on changing economic and social factors. Generally however, there is a greater degree of certainty in initial years, and greater levels of uncertainty when looking forward to the future. This means that over time, there is the ability for growth projections to be updated and refined over time as contributing factors evolve. There are also a number of other strategies employed to manage this uncertainty, which are outlined below.

A key means of managing this uncertainty has been to use the best available data and consult widely with Council staff in the policy and planning fields for the best information.

As part of the 2024 AMPs, a sensibility analysis was also undertaken by comparing the past 5 years of actual scheme connection growth with the future growth projections. The projections are seen to generally align well with recent growth that has occurred.

Long term, the 2024 projections are very similar to the 2021 AMP projections, and as a whole therefore, there are no significant changes to the overall capital work programme. However some changes have been recommended for particular projects.

To further reduce the uncertainties from the model in terms of the timing of when a growth project may actually be required, when a project is recommended by the Network Planning Team, a catalyst for the project is always included (for example, when a certain parcel of land begins to develop, or when connection numbers exceed a certain value). This means that as a project comes up in an Annual Plan to be constructed, the documented catalyst is reviewed and discussions held with the Network Planning Team to verify that the project is genuinely required to be constructed at that time, or whether it be pushed out further in the budget.

District Overview – Growth Forecasts

The district wastewater connections are predicted to grow by approximately 86% over the 50 year projection period. The connection increase lines up with the water connections, although it is noted that there may be a slight lag in connections for wastewater. This is due to the fact that water connections are counted upon the service becoming available (and rated accordingly) while sewer connections are not counted until the homeowner makes a connection (at which point rates are charged).

It is predicted that in the first 10 year projection (up to 2033/34) the Waimakariri District will grow on average by 437 new wastewater connections annually. However in the long term (2034/35 to 2073/74), the rate of growth is expected to reduce to approximately 290 new connections annually.

Table 18 and Figure 5 present the growth forecast for the Waimakariri Districts wastewater schemes.

Table 18: Summary of the Growth Forecast for the Waimakariri Districts Wastewater Schemes

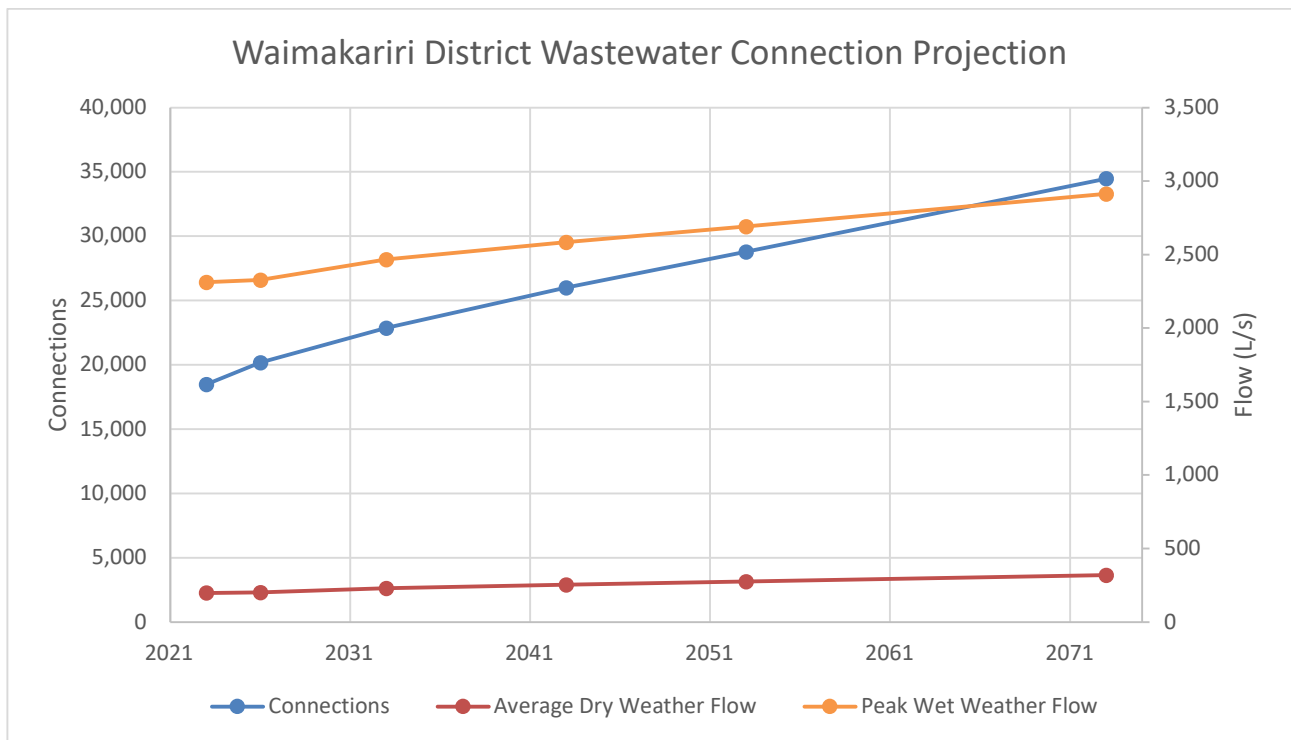
Scheme		District	Rangiora (incl Fernside)	Kaiapoi	Woodend	Pegasus	Waikuku Beach	Tuahiwi	Woodend Beach	The Pines/ Kairaki Beach	Mandeville	Loburn Lea	Oxford
Projected Connections	Current	18,490	7,643	5,171	1,883	1,480	460	76	77	168	593	38	901
	3 yrs (2026)	20,161	8,283	5,488	2,259	1,650	478	123	83	171	643	40	943
	10 yrs (2033)	22,864	9,530	6,014	2,776	1,855	506	193	93	176	730	45	946
	20 yrs (2043)	25,994	10,972	6,541	3,448	2,026	543	268	105	172	843	49	1,027
	30 yrs (2053)	28,778	12,199	7,073	4,115	2,026	582	341	117	188	959	54	1,124
	50 yrs (2073)	34,482	14,812	8,167	5,438	2,026	655	476	138	200	1,181	62	1,327
Projected Average Dry Weather Flow	Current	199 L/s	104 L/s	61 L/s	10 L/s	6.4 L/s	3.9 L/s	0.4 L/s	0.7 L/s	2.6 L/s	2.9 L/s	0.3 L/s	6.4 L/s
	10 yrs (2033)	230 L/s	117 L/s	68 L/s	16 L/s	8.8 L/s	4.3 L/s	1.3 L/s	0.8 L/s	2.7 L/s	3.9 L/s	0.3 L/s	6.8 L/s
	20 yrs (2043)	253 L/s	127 L/s	72 L/s	21 L/s	10.1 L/s	4.6 L/s	1.9 L/s	0.9 L/s	2.7 L/s	4.8 L/s	0.4 L/s	7.4 L/s
	30 yrs (2053)	275 L/s	137 L/s	76 L/s	26 L/s	10.1 L/s	4.9 L/s	2.5 L/s	1.0 L/s	2.8 L/s	5.7 L/s	0.4 L/s	8.1 L/s
	50 yrs (2073)	320 L/s	157 L/s	85 L/s	37 L/s	10.1 L/s	5.5 L/s	3.5 L/s	1.1 L/s	2.8 L/s	7.5 L/s	0.5 L/s	9.7 L/s
Projected Peak Wet Weather Flow	Current	2,312 L/s	1,575 L/s	554 L/s	58 L/s	17.9 L/s	23.5 L/s	2.1 L/s	8.0 L/s	22.4 L/s	14.0 L/s	1.9 L/s	35.4 L/s
	10 yrs (2033)	2,467 L/s	1,640 L/s	585 L/s	90 L/s	29.7 L/s	25.3 L/s	6.7 L/s	8.6 L/s	22.7 L/s	19.3 L/s	2.1 L/s	37.1 L/s
	20 yrs (2043)	2,583 L/s	1,691 L/s	606 L/s	115 L/s	36.4 L/s	26.7 L/s	9.6 L/s	9.1 L/s	22.9 L/s	23.8 L/s	2.3 L/s	40.3 L/s
	30 yrs (2053)	2,691 L/s	1,739 L/s	626 L/s	141 L/s	36.4 L/s	28.2 L/s	12.5 L/s	9.6 L/s	23.2 L/s	28.3 L/s	2.5 L/s	44.1 L/s
	50 yrs (2073)	2,913 L/s	1,841 L/s	669 L/s	192 L/s	36.4 L/s	31.1 L/s	17.8 L/s	10.4 L/s	23.6 L/s	37.0 L/s	2.8 L/s	52.0 L/s

Note that the above growth forecasts will not necessarily directly match the number of growth connections shown in the LTP or financial sections of the Infrastructure Strategy. The above figures are based on growth forecasts provided by the Development Planning Unit, in January 2023, which allows sufficient time to carry out the work necessary to plan the infrastructure required to accommodate the growth. Capital budgets are then developed from this planning work.

Late in 2023 the Finance department carry out a separate process, using the same base growth data, to estimate the number of connections for rate income forecasts. Not only do Finance have more recent data to base their forecasts on (for example whether a particular subdivision is/is not going ahead), but they also have a different perspective. To be conservative they will tend to minimise the connection numbers (to be conservative in terms of expected rating income), whereas for infrastructure planning, being conservative will tend to maximise the potential numbers to ensure that growth can be accommodated without compromising levels of service.

Figure 5 presents the projected growth for the Waimakariri District's Wastewater connections

Figure 5: Wastewater Connection Projection



13. CAPACITY & PERFORMANCE

This section of the AMP considers the capacity and performance of the Council's Wastewater Schemes, for current demand, and forecast growth. Specific aspects of each scheme that are considered are the reticulation network and treatment plants.

The existing capacity and performance of the wastewater schemes throughout the district are assessed using hydraulic models constructed and maintained by the Council for each scheme. Demand in the models is based on flow records collected from the Council's SCADA system and analysed by the PDU unit to obtain daily diurnal flow profiles. Calibration is also undertaken on the models to ensure the models are accurately predicting inflow and infiltration to simulate wet weather events.

The Council models and flow data that supports the models, are updated approximately quarterly and the capacity assessments undertaken for this AMP represent the latest available information.

For the first time a wastewater specific growth report has been produced for this AMP review, summarising reticulation and treatment capacity, and works required to meet future demand. The report can be viewed on TRIM [231206196569](#)

Future demands are considered across 5 development horizons

- 0 Years (existing)
- 0-10 Years
- 10-20 Years
- 20-30 Years
- 30-50 years

Where a scheme has been identified as performing below the required Levels of Service set out in the Engineering Code of Practice upgrades have been subsequently modelled and recommended. These upgrades have been costed and added to the list of AMP capital projects for inclusion in the Council's Long Term Plan.

Upgrades required for growth areas have been incorporated into the Council's assessment of system performance and, where required, upgrades have been identified and tagged to development areas to fund the works.

Uncertainties affecting the timing and demand for upgrades are assessed through the options and investigations reports for affected schemes, prior to the confirmation of capital projects. These reports are referenced in the Data Reference table of the AMP, or noted in the following sections.

Networks

A review of the of the **Ocean Outfall** wastewater network capacity was completed in January 2020 (Trim [200214019934](#)). The review concluded that the network has capacity until at least 2069 with opportunities to extend this with better management of storage and pumping control. A subsequent report TRIM [200214019933](#) recommended that the Kaiapoi WWTP PS rising main be cleaned, and a flushing cycle re-instated, to maintain LOS.

Neither **Kaiapoi** nor **Rangiora** meet current levels of service for reticulation capacity. A ten year programme of works commenced in 2015/16 to upgrade trunk sewer capacity in Rangiora ([TRIM 150323044514](#)) will resolve this situation, and also provide growth capacity out to about 2055.

Kaiapoi has very little suitable land for growth, the capacity issues being more related to stormwater and I and I. The Kaiapoi budget includes a \$17 million ten year budget with construction programmed to start in 2025/26. Concept for the full programme is to be developed during FY 23/24 when catchment I&I investigations have been completed.

The existing reticulation systems in older areas in both **Woodend** and **Oxford** meet the required level of service of accommodating peak wet weather flow resulting from a 2 year rainfall event, as well as newer areas (post May 1999) meeting the 5 year event level of service. Oxford is a stand alone system and the modelling shows that the existing reticulation can meet future demand. Recent field monitoring has confirmed that while I and I is high, the major constraint in the network is the terminal pump station delivering wastewater to the treatment plant. Upgrading of this is included in the planned overall WWTP upgrade.

The **Pegasus** network is new and has been designed to Council's current LoS, and no growth is planned.

The **Waikuku Beach** reticulation also meets current LoS for both existing and new development areas (2 and 5 year level of service).

Rising main replacements at Kings Ave, North Oval and Reserve Road pump stations have been deferred to post 2031. This is following the condition assessment of a section of AC pipe from the Kings Ave pressure main which resulted in recommended programming the renewal in 2037 (TRIM [210111001675](#)). The rising main capacity will be increased when it is replaced to accommodate the expected growth.

The **Tuahiwi** scheme has been recently upgraded utilising Covid-19 stimulus funds, and now has adequate capacity to meet expected growth demand.

Woodend Beach reticulation also meets current LoS for both existing and new investigate areas (2 and 5 year level of service). The only potential growth area on the Woodend Beach scheme is a parcel to the southwest of the existing residential area. Servicing this area has been investigated and the modelling shows the scheme has capacity for the potential extra 20 lots.

A desktop study of the small **Pines Kairaki** system concluded that the system has sufficient capacity to accommodate the existing peak wet weather flow during the 2 and 5 year rainfall. There is limited scope for growth for the Pines-Kairaki sewer scheme and it is likely to be impacted by coastal retreat in the future.

Fernside and **Loburn Lea** have recently been connected to the Eastern Districts scheme and expected growth has been allowed for in the designs.

The **Mandeville** system, despite being fairly new, has had capacity issues in the past associated with significant I and I caused by high groundwater levels, overland stormwater flow, and under capacity stormwater systems. The network, which is a STEP system, is vulnerable to overland flow entering the septic tanks, and overwhelming it locally. A programme of site by site work to try and prevent stormwater entering the tanks was completed some time ago, but there are two outstanding drainage capital projects due for completion in 2025/26 and 2031/32, which are expected to further improve the situation.

Treatment

The most recent assessment of the capacity of the Eastern Districts treatment plants to meet BOD removal, was carried out in 2020. See TRIM [200214019932](#) for the findings of the assessment, and references to other relevant documents. This report updated the findings of a number of previous Beca reports that considered the capacity of each of the four treatment plants connected to the eastern District Sewer Scheme, to meet anticipated future demand over a 50 year time horizon. The initial report was carried out in 2011 TRIM [111205058266](#).

The 2011 report recommended a suite of works to upgrade the **Rangiora** plant. Low dissolved oxygen in the Rangiora ponds in 2014 led to an investigation and recommendations for a further programme of pond and aeration upgrades. TRIM [141219141680](#). Earlier recommendations were reviewed and updated in a further 2016 Beca report TRIM [161129123158](#). Upgrades recommended in this report are nearing completion with only an upgrade to the aeration basin in 2024/25-2027/28 remaining to be completed.

The 2011 report found that the **Kaiapoi** WWTP had sufficient capacity until 2040, subject to a change in the resource consent from enterococci to E-coli as the indicator bacteria for testing post treatment. This consent change has been made.

To meet 50 year future demand, the **Woodend** WWTP plant which also takes wastewater from Pegasus and Woodend Beach, required additional aeration, two new aeration ponds, increased UV capacity, and duplicate wetlands. Still to be completed are: 2025/26, increased UV capacity and in 2030/31 a third oxidation pond.

No upgrades were required for the **Waikuku Beach** WWTP

The **Oxford** plant is a modified activated sludge plant (MLE), which has been subject to a number of upgrades in order to comply with consent conditions, growth, and high I and I in the network. A further significant upgrade is planned in 2024-2028, to meet expected increases in flow and load, and potential changes from a future consent renewal in 2031. See GHD report TRIM [210810131225](#), and the Apex peer review/update [230808120833](#)

Since the last AMP was written the **Loburn Lea** and **Fernside** plants have been decommissioned, and the networks connected into the EDSS.

Consents

The most significant wastewater consent that WDC has is the Ocean Outfall consent, which permits the disposal of all of the treated effluent from the Eastern Districts wastewater scheme. It expires in 2039. It only permits a maximum discharge of 57,000 m3 per day. The Ocean Outfall Wastewater Network Model Capacity Assessment, 2020 (Trim [200214019934](#)) confirmed the discharge limit would not be exceeded in the next 50 years.

The Oxford WWTP discharge consent expires In 2031. However in high rainfall events current consent conditions can be breached, and furthermore the current sludge management/removal process is not sustainable. In addition, a forthcoming Regional Plan review commencing in 2024, and due for being operative in 2028 may complicate the consent renewal. It is therefore proposed

to apply for an early renewal, and upgrade the plant in conjunction with the new conditions. Budget has been allowed in years 1-4 of the LTP

It is likely that more stringent discharge consent conditions will be the outcome of the renewal process.

The Rangiora, Woodend, and Waikuku Beach plants are currently meeting their primary consent conditions with respect to capacity and performance. The Ocean Outfall is also meeting its consent condition, but not all the Oxford plant conditions were met for the 2022/23 year.

A spreadsheet of all the Council's consents relating to wastewater is available at TRIM [230621091962](#).

14. OPERATION AND MAINTENANCE

Operation and maintenance expenditure incorporates the day to day running of the wastewater network and allows the system to carry on functioning to deliver the agreed levels of service.

Historically the maintenance programme has been partially proactive and partially reactive, although the Council has the intention to move further towards a proactive maintenance programme, acknowledging that some reactive maintenance will always be required. Currently there is little distinction in the budgets between planned and unplanned maintenance, and they are largely based on past expenditure carried forward, with an increase based on growth projections.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised below:

Table 19: Overview of Planned and Reactive Maintenance Tasks

Task	Planned	Reactive
Headworks Maintenance	Frequent inspections (typically weekly) and basic maintenance	If required for particular headworks items in response to alarms, or defects noted as part of inspections.
Sampling	Planned samples are taken for process monitoring, consent compliance and trade waste	As required.
Generator Checks	Planned monthly, quarterly and annual checks	As required in response to plant failure.
Pipe maintenance	Pipe flushing, root removal	Repairs undertaken in response to service requests / blockages.
Valve maintenance	Air valve maintenance	Repairs undertaken in response to service requests / leaks.

Council has recently implemented additional asset management functionality to its asset register. Wastewater maintenance costs are now automatically linked to pipe asset ID's and mapped to help better understand the performance of the network and in particular the performance of the different pipe materials being used throughout the district. The mobility devices field workers use

to record these costs, are also configured to enable the field recording of asset data. This automatically updates the asset register, and will allow faulty asset data to be readily corrected directly from the field. It had been expected that in time, this new functionality would enable Council to better understand its maintenance costs, and move towards a more planned maintenance regime. Unfortunately there is some doubt about the continuation of the system as Council's enterprise software, to which the asset management system is linked, is to be replaced.

Since the 2021 AMP review Council has purchased and implemented the widely used InfoAsset Manager software which allows more efficient importing of CCTV data, and proper analysis of that data. This will provide benefits in both maintenance planning, and renewals, though the ability to target CCTV work in a more systematic way.

3 Water has a Service Level Agreement with its in house operations arm, The Water Unit, which includes a fully priced schedule of works. Prices are reviewed annually. Scheduled prices have been incorporated into the works order system associated with the Asset Management Information System.

The SLA includes comprehensive KPI's to be monitored, which are expected to improve accountability and quality assurance, over time.

Operation & Maintenance Expenditure

The operation and maintenance (O&M) budgets are currently set up to automatically account for inflation and growth. Inflation is accounted for with a factor set by the Council's Finance Unit, but this is not used in the development of the graphs and tables in the AMP's to provide a clearer picture of asset O&M costs year to year.

The implication of growth on O&M budgets is accounted for with the inclusion of a formula that increases the O&M costs on a pro rata basis proportionally with the population (as new developments come online). However, depending on asset class the increase in O&M costs may be reduced from being directly proportional.

This is adjusted using a 'Demand Factor'. So for example costs for a particular scheme to maintain the network pipes and valves is expected to increase directly in proportion to increasing numbers of connections, but maintenance of pump maintenance costs are only expected to increase at 50% of the rate of the increasing number of connections.

In addition to the automated increases, part of the consideration when setting the O&M budgets across the district's schemes is the potential impact of any new capital projects. These increases are accounted for in two ways:

- **Direct O&M Increases:** Through Asset Managers calculating what areas of the budget may increase, and manually adjusting the appropriate parts of the budgets from the year following when the capital project will be completed. An example of this would be a new pump station being constructed. This would require power costs to be reviewed (as the new headworks would consume power), as well as items related to pump station inspections and maintenance.
- **Depreciation Increases:** Changes in depreciation as a result of new capital projects are accounted for by the Council's Finance Team. As a new capital budget is introduced to a scheme, there is a formula to increase the depreciation amount for that scheme based on the size of the capital budget being assumed to represent the value of the assets being added, and the asset life being assigned a representative figure for that scheme

(depreciation rates are typically in the order of 1.5% to 2.5% of the value of assets added for example). Normally a comprehensive valuation is carried out every three years, which then assigns accurate valuation rates and base lives to any new assets created in the last years, to refine the accuracy of the depreciation rates further. With increased inflation over the last few years, the most recent valuation was carried out a year earlier

Figure 6 presents the forecast Operations and Maintenance Expenditure across all the Council's wastewater schemes for the following 30 year period.

Figure 6: District Overview – Projected Operation & Maintenance Expenditure

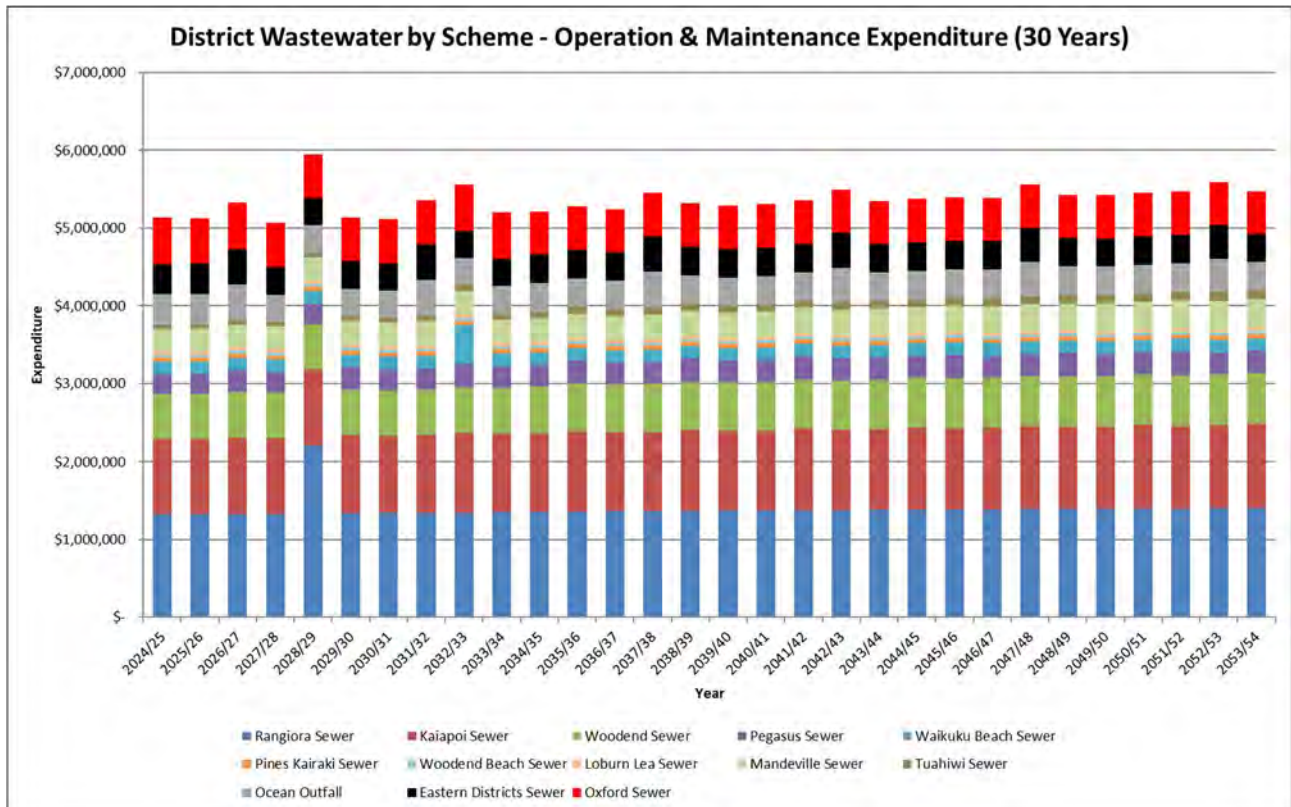
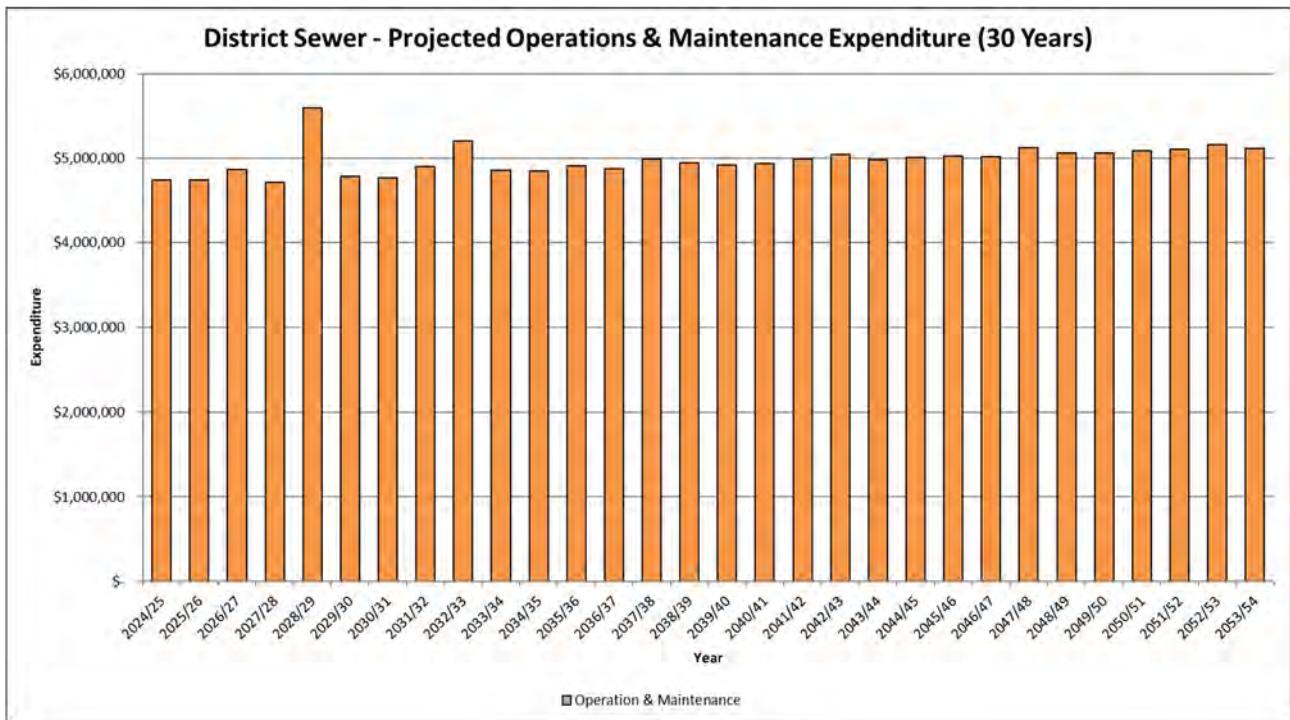


Figure 7: Projected Operations and Maintenance Expenditure (30 years)Project



The graph is based on the assumption that past operational and maintenance costs reflect future costs except for known future changes, such as periodic oxidation pond sludge removal, as seen in the peaks in 2028/29 and 2031/32.

15. CAPITAL WORKS

The Waimakariri District Council has previously developed a process for justifying any new capital works projects being submitted for inclusion in the draft Annual Plan or LTP. However, this has so far not become well embedded in the Council's processes, and so improvements are now being made, and rolled out in time for the 2024-34 LTP.

In particular, projects in years 1-3 of the LTP with value greater than \$500,000 require a "Business Case Light" application, and projects of a greater value than \$4M in years 1-3 require a full business case to be written. Projects in years 4-10 with a value greater than \$500,000 require a slightly less robust 'Justification Form' application.

In general the forms require:

- Project description and scope;
- Strategic case – LOS, growth or renewal. Contribution to Community Outcomes, national programmes and public value benefits;
- Risks and assumptions;
- Economic case – Preferred option and alternatives considered;
- Financial case – Requested budget, (components –LOS, growth, renewal), expensed component, funding sources (DC's if relevant), effect on rates and budget confidence;
- Management Case – ability to deliver and how.

Through each Annual Plan and Long Term Plan process, Project Justification forms are prepared for projects that meet the criteria for requiring them. These require the relevant Department Manager's approval before being presented to the Council's Management Team as part of submitting the overall budget proposal from each service area. Ultimately what is approved by the Management Team is presented to Council to review as the Draft Long Term Plan or Annual Plan budget.

16. RENEWALS

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it restores the system to its original capacity. Renewal work is funded from a budget generated by the depreciation component of the rates.

Council uses a risk-based renewals programme for pipework which incorporates the following criteria:

- Condition Rating – standard scoring from pipe inspection manual based on CCTV data.
- Remaining Useful Life – based on the design life, as used previously.
- Vulnerability – a function of location, material and joint type calculated as part of the DRA review, which assesses the risk of earthquake damage in areas subject to liquefaction.
- Criticality – the criticality score calculated for each main, which is determined from various factors e.g. pipe material type. Details are shown in Table 12.

The process uses a GIS model that incorporates the above factors and utilises existing Asset Management Information System data in the GIS.

The model enables an assessment to be made of the depreciation required to fund future replacement costs, for different levels of risk. This allows risk and affordability to be balanced. Key outputs from the model are a prioritised list of pipe renewals needed across the district, identified by scheme, and an annual expenditure profile for the next 150 years. A schematic of the modelling process is shown below in .

A potential emerging pipe renewals risk is the health issue associated with the replacement of asbestos cement pipes in private property that will be coming to the end of their lives in the medium term future. A policy has not yet been established as to the approach to be taken with abandoned pipes, but the potential exists to significantly increase renewal costs above those currently used.

The model developed for headworks uses the same methodology as the pipe renewals model. Since knowledge of the headworks condition is not high, standard industry lives for the relevant asset classes have been used as inputs to the headworks renewals model. As the headworks criticality model is still under development, a simplified renewals assessment methodology has been used in the interim, which does not factor in criticality.

The final decision about pipe renewals to be carried out in a particular year is made by the Asset Manager, taking into account opportunities for coordination of works (i.e. Roading projects and other utilities renewals that may be planned) and any other operational requirements.

District Wide – Renewals Expenditure

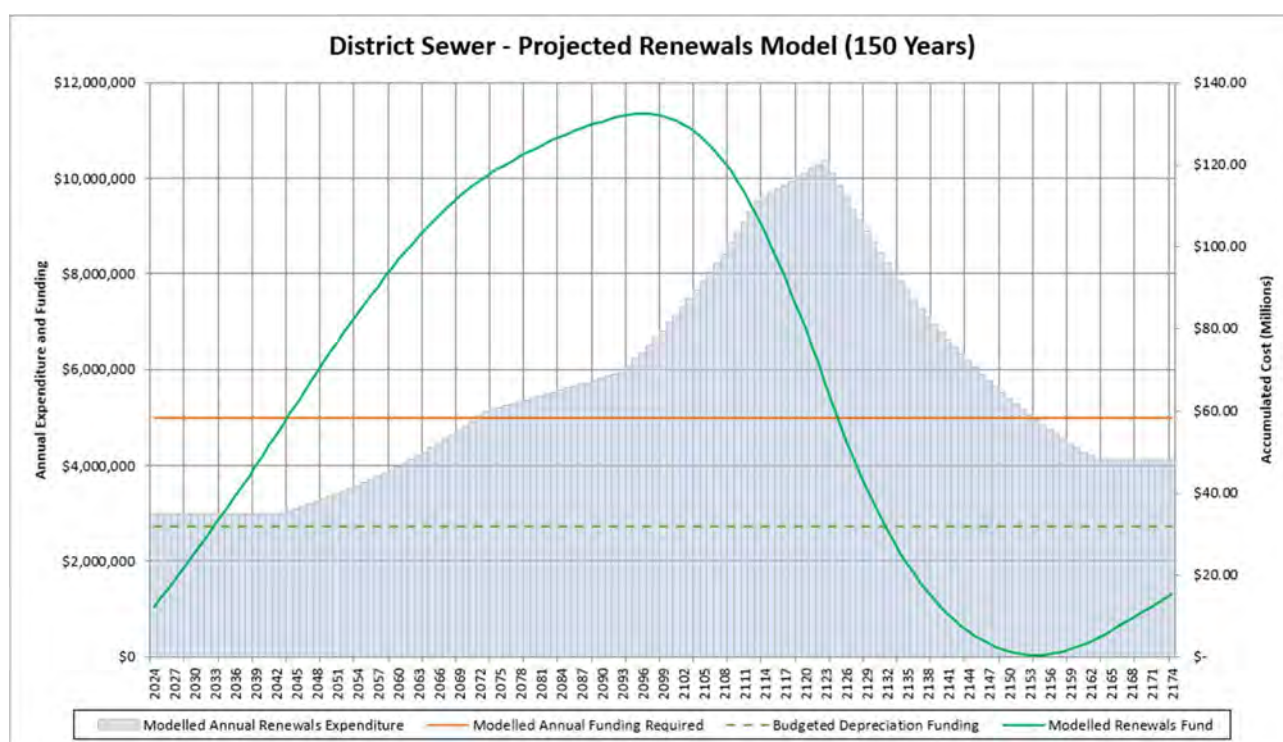
Error! Reference source not found. presents the forecast Renewals Expenditure across all the Council's wastewater schemes for the following 150-year period. The horizontal line is the required level of funding to ensure that renewals are not deferred, and current levels of service are maintained.

The figure only shows the output from the model, so expenditure shown in the graph for the first ten years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager to the direct renewals model outputs.

The model is operated at a district wide level. Renewals expenditure by scheme is then determined by breaking down the district wide expenditure in relation to the value and type of the assets within each scheme.

All properties that are connected to the Eastern District Wastewater Scheme (EDSS), which makes up most of the district's sewer network, are charged using the same set of (differential) rates.

Figure 8: District Wide Projected Renewals Expenditure



The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.

- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model. As can be seen in Figure 8, this account goes into surplus, peaking at approximately \$93 million in the year 2100, before reducing to zero in 2160

The key point to note is that for both graphs the Budgeted Depreciation Funding is less than the Modelled Annual Funding Required. The reason for this discrepancy is as follows:

Depreciation Discount Factor: Council's financing of future renewals incorporates the expectation that depreciation funding can be invested at a higher rate of return over the life of the assets than inflation. Further information regarding this approach is provided in the Finance Policy. This concept is embodied in the scheme budgets in the form of a discount rate (referred to in the budgets as the 'Depreciation Discount Factor'). This reduces the annual depreciation funding required from rates, while still ensuring that there will be sufficient funding available to renew assets at the end of their useful life. The renewals model assumes funds can be invested at a 1% marginal interest rate higher than inflation when considered over the long term.

There are a wide number of factors influencing specific planning for renewals projects, which means that the outputs from the renewals model may not be strictly followed, at least in the first ten years. Where specific projects have not been identified in the first three years of the LTP, the total recommended budget from the first ten years of the model are redistributed over years 4 to 10. Funding can be brought forward if and when specific projects are identified. For wastewater the difference between model outputs and the planned budget is shown in the table below

Table 20: Planned Budget Versus Renewals Model Recommendation 2024-34

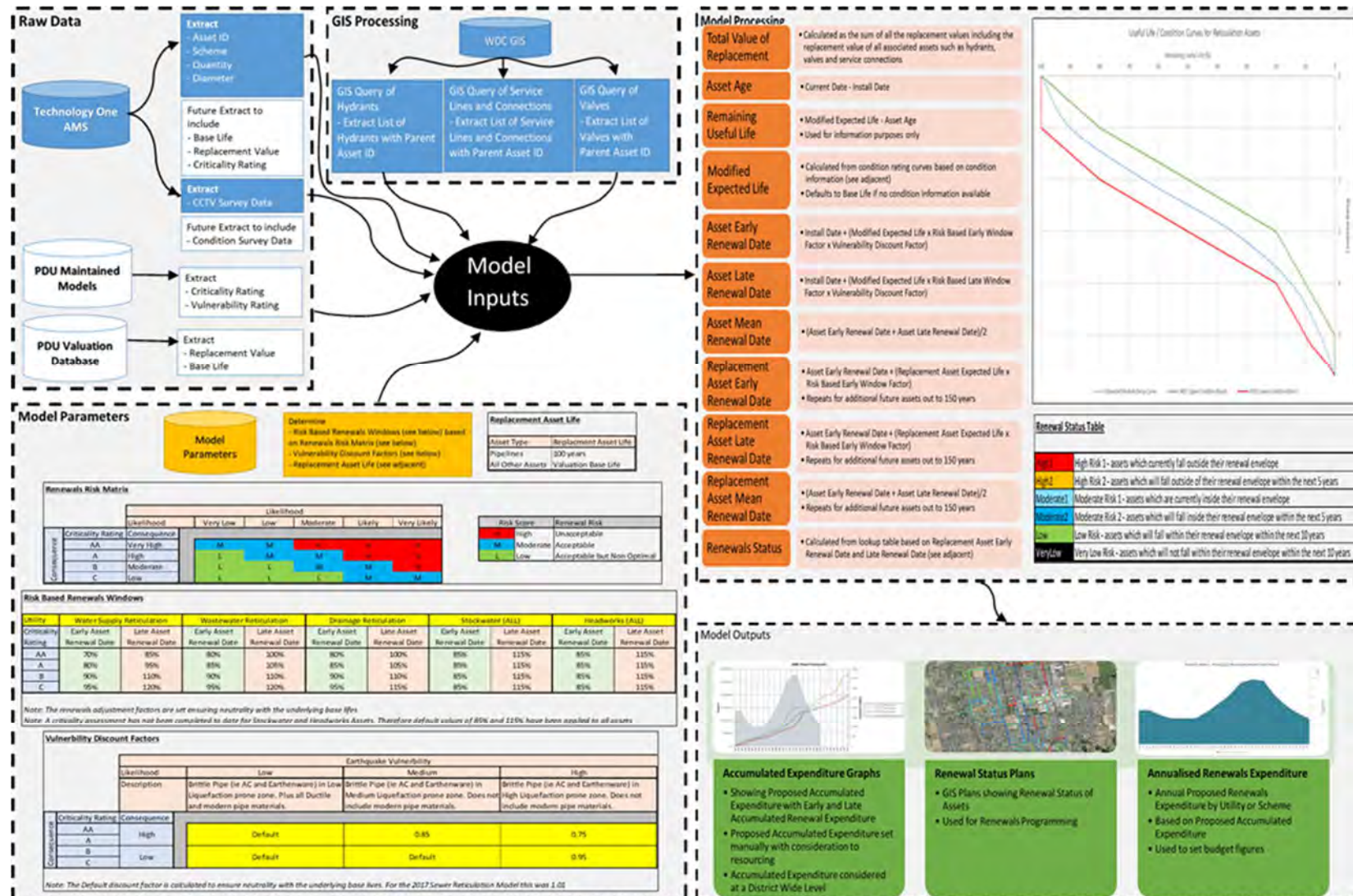
	Renewals model recommendation	Planned Budget	Budget as a percentage of model recommendation
Reticulation	\$15,000,000	\$21,513,000	143%
Headworks	\$15,000,000	\$8,489,000	57%
Total	\$30,000,000	\$30,002,000	100%

Beyond the first 10 year window, the outputs from the renewals model have been fully adopted to inform the renewals budgets for each scheme.

There are no known deferred renewals of assets across the district.

The mechanics of the renewals model are outlined further in

Figure 9: Renewals Expenditure Models



17. SCHEME – RETICULATION RENEWAL TIMELINES – SPATIAL VIEW

The [AMP Plans and Figures Viewer](#) contains plans by scheme of the pipe renewal timeframes generated by the model, in three bands; within 5 years, 15 years and 25 years

18. NEW WORKS

There are five main sources of new works in the District that come together to produce the new works programme. These are:

- The capacity assessments provide details on any shortfall on the schemes and new works are prioritised to address these, the primary influence being growth.
- The Levels of Service highlight any deficiencies in the quality of service provided to customers which can then trigger new projects to address any highlighted deficiencies.
- The Risk Assessments provide information on the highest risk areas on each wastewater supply scheme, with any extreme or high risks requiring works to mitigate against those risks.
- Works are also identified through the operation of the schemes rather than being identified through the assessment of level of service, capacity, or risk. These works are normally identified by an operator or Asset Manager and include such works as health and safety improvements, and works to ensure assets are maintained in an acceptable condition.

These sources all provide new works projects that populate the budget for the next 50 years. The table below shows the projected budgets for new works for the next 50 years for all the district's wastewater schemes, including renewals.

When any significant project is being planned, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. The detailed capital works table which is available in the [Asset Management Plans GIS Viewer](#) , shows the project ID for each project. Each project has an entry in the budget spreadsheets [Capital Works Budget Sheets -Sewer](#) , which in turn provide references to supporting documentation.

Table 21: New Works across Wastewater Schemes Over 50 Years

Scheme	2024 – 2033	2034 – 2043	2044 – 2053	2054 – 2073	Total
Rangiora Sewer	\$21,632,306	\$15,948,727	\$6,050,282	\$48,304,093	\$91,935,408
Kaiapoi Sewer	\$31,498,886	\$8,225,759	\$16,535,710	\$28,630,796	\$84,891,151
Woodend Sewer	\$8,336,363	\$7,638,756	\$9,504,538	\$11,537,030	\$37,016,687
Pegasus Sewer	\$639,077	\$1,692,906	\$898,751	\$2,085,685	\$5,316,419
Waikuku Beach Sewer	\$1,648,282	\$4,699,701	\$1,368,582	\$15,374,355	\$23,090,920
Tuahiwi Sewer	\$0	\$1,372,758	\$567,191	\$68,326	\$2,008,275
Woodend Beach Sewer	\$458,676	\$599,242	\$62,592	\$1,114,982	\$2,235,492
Pines Kairaki Sewer	\$93,131	\$729,018	\$128,668	\$1,300,757	\$2,251,574
Mandeville Sewer	\$322,055	\$133,804	\$190,457	\$566,136	\$1,212,452
Loburn Lea Sewer	\$8,095	\$1,078	\$9,482	\$0	\$18,656
Ocean Outfall	\$3,968,632	\$63,231,067	\$2,688,663	\$6,000,664	\$75,889,026
Eastern Districts Sewer (other)	\$0	\$12,687,260	\$0	\$0	\$12,687,260
Oxford Sewer	\$15,408,705	\$7,390,663	\$664,287	\$3,287,872	\$26,751,527
Total	\$84,014,209	\$124,350,739	\$38,669,204	\$118,270,694	\$365,304,847

Note: Dates refer to beginning of financial year (e.g. 2024 is 2024/25 financial year).

The figures in the table are based on the assumption that LOS do not change significantly into the future, and that growth forecasts are accurate. Growth projects may be delayed to fit actual growth patterns.

All projects are included in a central database of capital works projects, including renewals.

The front end of the data base has recently been updated to ensure that relevant data to the projects is captured in one place as a “single source of truth”. Where possible this data will also be used to populate the “WDC Capital Works Project Justification” template that is required to be filled in for any new project of a higher capital value than \$500,000.

When a scheme upgrade is undertaken, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. These investigative reports are referenced in Table 6 : Data References in Section 3, Scheme Description.

Works Coordination

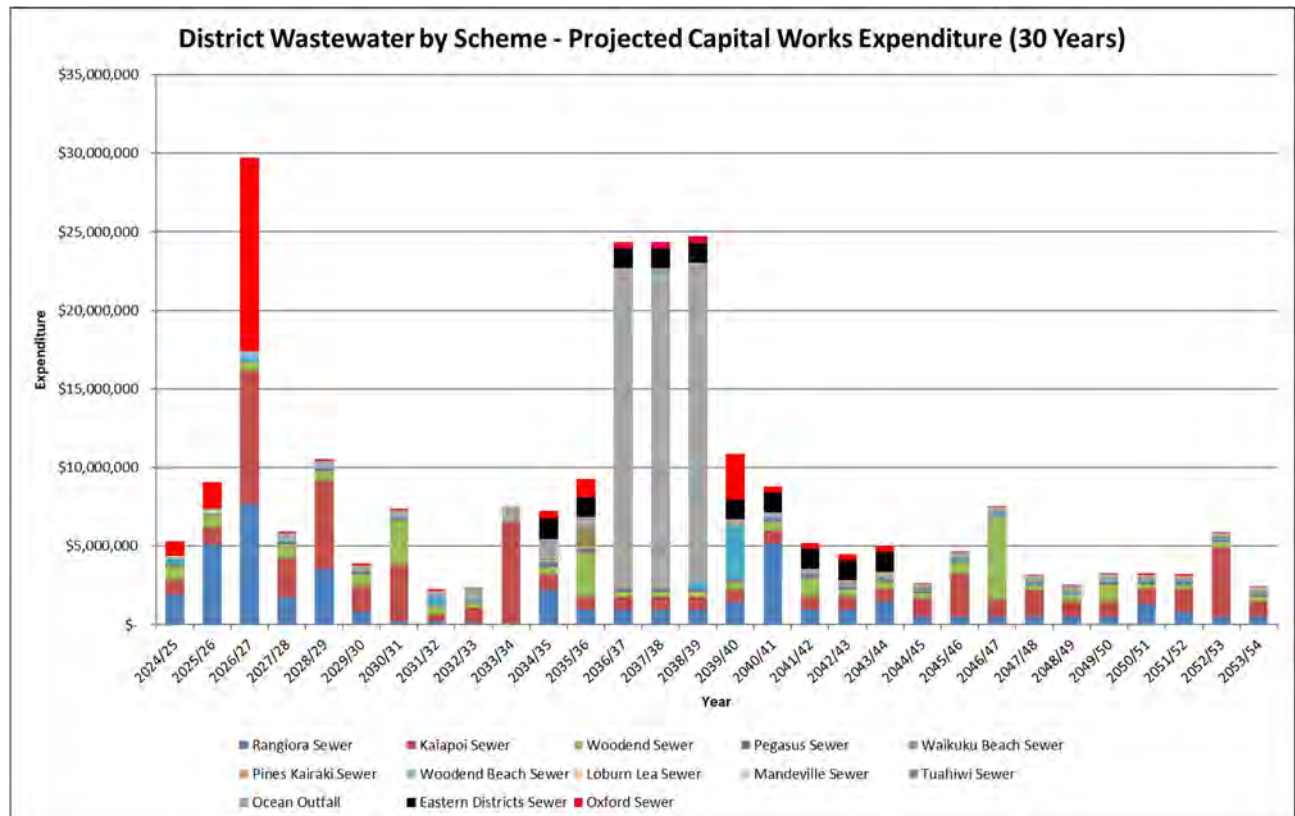
As well as the processes above identifying works on a scheme by scheme basis, or by service type, further consideration is required to coordinate work programmes between a combination

of service types. Utilities Providers Coordination meetings are held quarterly between 3 Waters, Roding, power and telecommunication providers. This enables opportunities for collaboration to be identified. In addition, Council has a GIS tool where future planned works can be overlaid to optimise the coordination process further.

District Overview – Capital Works

The following graph shows the 50 year budget for all capital works, including projects driven by growth and levels of service, and including carry forwards.

Figure 10: District Overview – Projected Capital Works Expenditure



The significant peak in 2027/28 relates to the major Oxford WWTP and Kaipoi capacity upgrade projects, and in 2036-39, relates to the major upgrade required for the EDSS plants corresponding to the consent expiry in 2039.

The table available within the [AMP Plans and Figures Viewer](#) shows all of the planned projects over a 50 year time horizon for all of the schemes, and how the cost is spread across the three components – LOS, renewals and growth. The level of confidence in the budget for the works is also presented in the table, as well as references to other documents relevant to the works, such as options studies. The figures presented in the table exclude inflation for ease of comparison across years.

For a more complete discussion on the level of optimisation, refer to the introductory chapter of the AMP.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

Scheme – Capital Upgrade Works – Spatial view

The [AMP Plans and Figures Viewer](#) contains plans by scheme of the planned capital upgrades in 5 temporal bands over a 50 year time horizon.

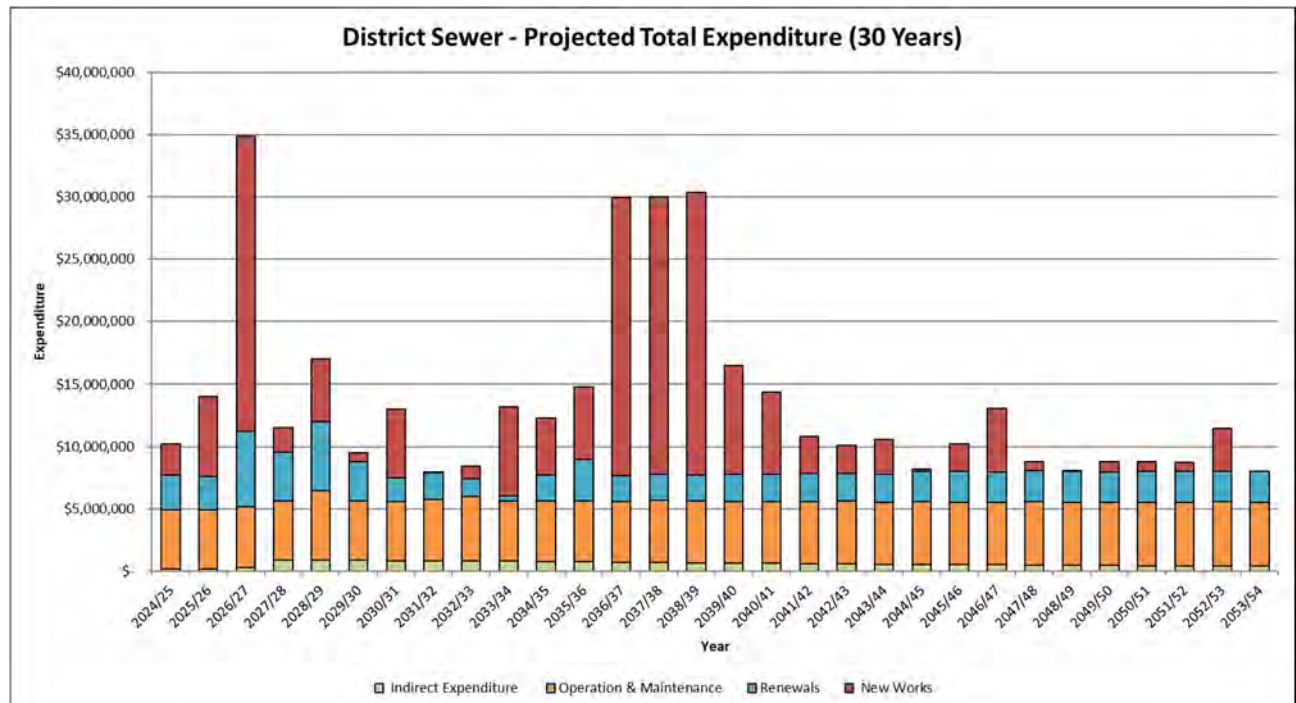
19. OVERALL FINANCIAL FORECASTS

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure.

Operational costs include operations and maintenance, and indirect expenditure. Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, interest and internal overhead costs.

Capital includes expenditure for growth, levels of service and renewals, (including carry forwards).

Figure 11: Projected Expenditure



Financial Forecast Key Assumptions

The following key assumptions have been made in preparing the financial forecasts.

1. Asset data in the asset register is fit for purpose.
2. Asset lives based on nominal material life, are reasonably accurate.
3. LOS will not change, for example required by legislation.
4. WDC does not suffer any major natural disaster during the period of the financial forecasts.
5. Effects of climate change are not felt during the term of this LTP
6. Growth matches the projected profiles.
7. Maintaining Operational and Maintenance costs at current levels is cost effective

Funding/Revenue Sources

An explanation of the sources of funding for the activity is fully detailed in the Council's Revenue and Financing Policy, published within the 2024-2034 LTP (TRIM 231114183205). This includes the rationale for each source of funding for each scheme, and an explanation of how the different funding methods are applied to each scheme in relation to the service delivered.

Primary sources of funding for all wastewater supply schemes are targeted rates and development contributions for works required to accommodate growth.

All capital works budgets are split into three components, Level of Service, Renewal and Growth. The division may be seen for scheme projects in the Capital Works table contained within the [AMP Plans and Figures Viewer](#)

The growth component is recovered through development contributions (DC's), calculated in accordance with Council's Development Contributions Policy, which can be accessed via the link below. For those projects with a growth component an assessment has been made for the 2024-2034 LTP of the value of the DC required per future connection to the scheme, to fully recover the growth component of the capital work. These assessments are updated as part of the Annual Plan process, and are published on the Council's website at the following link [Development Contributions](#)

Summary calculation sheets for individual schemes can be viewed by clicking on links within the main document.

Valuation

A full peer reviewed valuation of assets is normally carried out on a three yearly cycle, using the asset data in our asset management information system. Due to the current much more rapid inflation than has been usual, the most recent valuation has been carried out in 2022 ([TRIM 220803132120](#)). The rates from that valuation have been adjusted by the CPI to arrive at "valuation" figures for 2023. **Error! Reference source not found.** below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for the district, broken down by scheme.

Table 22: Asset Valuation

Scheme		District	Rangiora (incl Fernside)	Kaipoi	Woodend	Pegasus	Waikuku Beach	Tuahiwi	Woodend Beach	The Pines/ Kairaki Beach	Mandeville	Loburn Lea	Oxford	Ocean Outfall
Manholes	Quantity	4,295	1,815	1,129	494	369	96	8	18	31	33	50	251	1
	Replacement Cost	\$61.9M	\$25.8M	\$16.3M	\$7.1M	\$5.7M	\$1.2M	\$104.4k	\$293.7k	\$368.7k	\$575.6k	\$717.3k	\$3.7M	\$1.3k
	Depreciated Replacement Cost	\$48.6M	\$19.1M	\$12.7M	\$6.1M	\$5.1M	\$0.8M	\$103.0k	\$212.7k	\$263.6k	\$539.7k	\$652.1k	\$3.0M	\$1.1k
	Annual Depreciation	\$499.8k	\$207.6k	\$132.2k	\$57.0k	\$45.2k	\$10.3k	\$0.8k	\$2.4k	\$3.0k	\$4.9k	\$6.3k	\$30.0k	\$0.0k
Valves	Quantity	698	65	159	39	55	15	26	2	-	256	-	2	79
	Replacement Cost	\$12.2M	\$337.9k	\$995.0k	\$246.1k	\$237.5k	\$52.7k	\$81.1k	\$24.7k	-	\$998.3k	-	\$8.8k	\$9.2M
	Depreciated Replacement Cost	\$8.8M	\$305.9k	\$899.9k	\$226.8k	\$210.1k	\$46.7k	\$78.2k	\$19.3k	-	\$895.8k	-	\$7.0k	\$6.1M
	Annual Depreciation	\$160.0k	\$3.4k	\$10.9k	\$2.6k	\$2.4k	\$0.5k	\$0.8k	\$0.2k	-	\$10.6k	-	\$0.1k	\$128.5k
Main	Quantity	397.6 km	121.0 km	82.3 km	37.6 km	33.9 km	10.5 km	8.7 km	3.0 km	2.0 km	47.9 km	4.1 km	20.8 km	26.0 km
	Replacement Cost	\$282.3M	\$82.0M	\$78.8M	\$23.8M	\$25.4M	\$7.0M	\$1.2M	\$1.5M	\$1.4M	\$7.0M	\$2.0M	\$15.3M	\$36.9M

	Depreciated Replacement Cost	\$213.7M	\$58.3M	\$57.6M	\$19.0M	\$22.2M	\$3.9M	\$0.9M	\$0.7M	\$0.9M	\$6.3M	\$1.8M	\$11.5M	\$30.7M
	Annual Depreciation	\$3.0M	\$866.6k	\$873.9k	\$260.3k	\$254.2k	\$95.6k	\$14.8k	\$21.1k	\$17.4k	\$70.6k	\$19.7k	\$152.6k	\$369.1k
Service Lines	Quantity	15,419	5,952	4,350	1,732	1,320	431	83	71	162	622	37	659	-
	Replacement Cost	\$72.3M	\$29.0M	\$21.2M	\$8.4M	\$6.4M	\$2.1M	\$100.2k	\$345.4k	\$788.2k	\$751.0k	\$44.7k	\$3.2M	-
	Depreciated Replacement Cost	\$56.0M	\$21.0M	\$16.8M	\$7.0M	\$5.7M	\$1.4M	\$95.1k	\$189.5k	\$530.7k	\$654.1k	\$35.9k	\$2.5M	-
	Annual Depreciation	\$759.8k	\$304.6k	\$221.2k	\$88.5k	\$64.2k	\$26.9k	\$1.0k	\$4.1k	\$9.1k	\$7.5k	\$447	\$32.1k	-
Facilities	Replacement Cost	\$64.7M	\$18.9M	\$14.3M	\$9.0M	\$4.5M	\$1.8M	\$1.1M	\$121.9k	\$374.8k	\$768.7k	\$704.9k	\$4.1M	\$9.1M
	Depreciated Replacement Cost	\$46.0M	\$14.5M	\$10.4M	\$7.0M	\$3.1M	\$1.0M	\$1.0M	\$49.9k	\$222.1k	\$597.7k	\$407.9k	\$2.7M	\$5.1M
	Annual Depreciation	\$1.5M	\$389.3k	\$320.0k	\$162.0k	\$102.3k	\$46.6k	\$16.3k	\$3.9k	\$16.2k	\$20.1k	\$17.4k	\$140.1k	\$255.6k
Totals	Replacement Cost	\$493.4M	\$156.0M	\$131.6M	\$48.5M	\$42.2M	\$12.2M	\$2.5M	\$2.3M	\$2.9M	\$10.1M	\$3.4M	\$26.3M	\$55.2M
	Depreciated Replacement Cost	\$373.0M	\$113.1M	\$98.4M	\$39.3M	\$36.3M	\$7.2M	\$2.1M	\$1.2M	\$1.9M	\$8.9M	\$2.9M	\$19.8M	\$41.9M
	Annual Depreciation	\$5.9M	\$1.8M	\$1.6M	\$570.4k	\$468.3k	\$179.9k	\$33.8k	\$31.8k	\$45.7k	\$113.7k	\$43.9k	\$354.9k	\$753.2k

20. DATA CONFIDENCE

Data confidence is assessed as part of the AMP review, across a range of asset data and processes. The confidence grading used has been taken from the IIMM as follows:

Confidence Grade	Description
A Highly Reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset accuracy $\pm 2\%$
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Data set accuracy $\pm 10\%$
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample. Up to 50% data is extrapolated and accuracy estimated at $\pm 25\%$
D Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis, Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated at $\pm 40\%$
E Unknown	None or very little data held

Confidence grades have been assessed as:

Table 23: Data Confidence Levels

Element	Grade
Asset Inventory	Reticulation B
	Headworks A
Performance and service gap interpretation	B
Asset condition	Reticulation B
	Headworks C
Asset remaining lives	Reticulation B
	Headworks C
Demand forecasts	B
Valuation and depreciation	B
Financial forecasts	B

Confidence in headworks assets can be seen to be generally lower than reticulation assets. This is a reflection of more focus being placed historically on network assets rather than facilities, as that is where the majority of the maintenance effort is expended. However confidence in the

headworks asset inventory has increased considerably since the last LTP, as a full asset inventory has been carried out, although this did not include asset condition assessment.

It is worth noting that because headworks assets are above ground, any assets in poor condition can be readily identified and the risk associated with asset failure mitigated through regular visual inspections that can be carried out when operations staff are carrying out routine maintenance operations.

Note that Demand forecasts and Financial forecasts sections have been assessed on the basis of the confidence in our infrastructure planning given a particular growth scenario. Growth predictions themselves are always inherently uncertain, and elastic. If actual growth is faster or slower than the growth scenario selected, projects to cope with the demand, provided they have been well scoped, can be readily brought forward or delayed as necessary.

21. ASSET MANAGEMENT SYSTEMS

A register of Wastewater supply assets is held within the Council's Financial Management System and referred to as the Asset Management Information System (AMIS). The register is maintained by the Asset Information Management (AIM) Team on behalf of the 3 Waters Team. The platform is the Council's Finance Management System, Technology One.

The AMIS provides the base data used for the asset criticality model, the water network models and RAMM Roding data, so it is essential that every effort is made to ensure the dataset in the AMIS is accurate. Current process to deliver the required outcome is as follows.

For new assets, built as part of development or as stand-alone capital projects, the AIM team collates as-built data from as-built engineering plans and incorporates this data into the GIS system and asset database. This data then feeds through into the Council's asset valuation process.

The in-house works order system integrates with the asset management system. Maintenance activity, for example in the form of a pipe fault repair by the Council Water Unit under instruction from a work order is now entered digitally via mobile devices in the field. The field devices record job costs, asset location and any changes to assets, and the information is direct uploaded into asset register. Costs are recorded against the repaired assets.

Service requests are generated out of Council's Property and Rates System and for certain job types automatically raise a work order to be sent to the Water Unit via email. Other service request types are forwarded to 3 Waters team members for triage.

Unfortunately the Council's enterprise system, Technology One is in the process of being replaced, as the company advised that it was moving entirely to a cloud based new platform..

Asset Management Maturity

Asset management maturity assessments (AMMA) have been carried out on two previous occasions, most recently in 2021. The assessment was carried out in house, and a subsequent peer review of the self assessment was carried out. The assessment showed that the Waste water supply activity was generally operating asset management at an intermediate level of maturity, and scored overall a 63 against a target of 79.

The key areas for improvement for wastewater were as for water supply: *"improving the asset data for facilities and headworks, updating the risk register content and process and completing and embedding the ability to capture maintenance costs against assets"*. These have all been completed. In addition the report considered there was *potential to improve the use of condition data*. This has been actioned through the implementation of InfoAsset Manager.

The table below shows further high priority improvement recommendations, together with the actions taken since the assessment.

AM Function	Recommendation	Action
<i>Policy and Strategy</i>	Develop an Asset Management Strategy.	No Progress

	Incorporate a workshop with AMP authors early in the AMP development to explain overall themes (in the IS) and ensure they are included in the AMP.	Being integrated with the AMP planning meetings
<i>Forecasting Demand</i>	Undertake sensitivity testing for growth or demand change scenarios such as population demographic shifts and climate change. Incorporate the results into the AMP.	The 3 Waters reform process has left insufficient time for sensitivity analysis, on top of the normal growth work required
<i>Asset Register data</i>	Complete the facilities and headworks asset data and condition information improvements.	Will be complete July 2023
<i>Asset Performance and Condition</i>	Improve use of asset condition data	InfoAsset Manager is now in operation to make better use of CCTV data. Facilities asset condition assessment yet to be carried out
<i>Decision Making</i>	Introduce a cross activity project prioritisation process to enable better decision making, focusing on the relative priority of level of service improvements.	No formal process developed. Prioritisation carried out by Management Team and elected members
<i>Managing Risk</i>	Review the format, and content of the risk registers and introduce processes to regularly review them and escalate key risks to the corporate register.	Review under way. Expected to be complete late 2023

The self assessment AMMA is available in TRIM [210506072304](#) and the peer review documents in TRIM [220506071089](#)

22. NEGATIVE EFFECTS

At the District level the activity of providing a wastewater supply to the various communities has the following negative effects:

- Potential for noise and foul odours when sewage treatment plants malfunction
- Potential for environmental harm in the event of overflows from the sewer network.
- Potential for environmental harm in the event of treatment plant failure

23. SERVICE DELIVERY

Delivery of most capital works is via competitive tendering practice in accordance with the Council's procurement policy ([TRIM 220303030172](#)). Design is usually carried out in house, or where resources are insufficient, via external consultants, again engaged in accordance with the procurement policy.

Routine maintenance is carried out by Council's in house Water Unit. A Service Level Agreement exists that defines the relationship between 3 Waters and the Water Unit, and the rates therein are reviewed annually.

24. IMPROVEMENT PLAN

The table below summarises the planned AMP improvements applicable district wide, identified as each section has been reviewed. Many of these have been carried forward from the 2021 AMPs. The 3 Waters reform programme meant that little focus was provided on the Improvement Programme from the 2021 AMP.

Projects will be managed under the 2024-27 AMP Improvement Programme full details of which are provided in [2024 Improvement Programme](#). The summary table below shows which section the AMP that the improvement project was derived from and includes projects that have been completed since the 2021 AMP.

Table 24: 2024 AMP Improvement Plan

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP002	Asset Management System	Carry out asset inventory check at all facility sites. Record key attributes and condition, and functional descriptions	High	Largely complete	Asset inventory complete. Plan to use TRAKK software to start collecting condition data
IP004	Asset Management System	Integrate Rooding & 3 Waters Renewals Programmes	High	Planned for 2024/25	Physical works layer in GIS now used for planning, but further Rooding/3 Waters work needed to complete
IP006	Asset Management System	Verify location of critical assets	Medium	Planned 2024-2026	Higher priority now - arising from the Utilities Code of Practice
IP008	Asset Management System	Unify various existing documents into a 3 Waters Emergency Response Plan or Business Continuity Plan	Medium	Planned 2024-2026	A cascading hierarchy of documents for emergency response is required for Council. At 3 Waters a "Business Continuity Plan" is required
IP011	Disaster Resilience	Confirm natural hazard information at facilities sites as part of the site by site asset risk assessment for climate change effects.	High	Incorporated into IP054	Original site risk assessment project now incorporates climate change risk and priority has been increased
IP020	Asset Management System	Ensure AMIS functionality transferred over to new Asset Management System/Council Enterprise system	High	2024/25 onwards	Necessitated by Council's enterprise system changing from Tech One to Datacom
IP022	Asset Management System	Develop system to store and manage consent information	High	2024/25 onwards	Dedicated staff member has been engaged to implement and maintain
IP027	Asset Management System	Establish documentation that specifies asset data that must be included in As Built information supplied to AIM team	High	Planned for 2024/25 onwards	Multi faceted project including updating the Engineering Code of Practise, and them promulgating Council's requirements

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IPO34	Asset Management System	3 Waters Strategy	High	2025/26	What do WDC water services look like in 2053 and 2073?
IP045	Risk Assessment	Update DRA in parallel with Risk Assessment Update using common risk approach. Develop high level framework, seek update of hazard information.	High	Planned for 2024/25	PDU have progressed . To be followed up
IP048	Operations and Maintenance	Standardise operational and maintenance items used in the budget to enable better expenditure monitoring	Medium	On hold	Still nice to have but only medium priority
IP053	Climate groundwater modelling	Work with the Regional Council regarding GW modelling and consideration of effects of SL rise on their infrastructure	High	Planned for 2024/25 onwards	Ongoing
IP054	Risk Assessment	Carry out an assessment of the likely operational and asset management risks associated with rising GW levels in affected areas.	High	Phase 1 complete	Initial screening carried out. Further more detailed work on site by site basis to follow

As an adjunct to this section the 10 key questions that Audit NZ have advised should be responded to, as a high level check on the adequacy of Asset Management Plans has been reproduced below with responses. Additional improvement projects are included in the Improvement Plan table that fill gaps identified through this process.

Audit NZ Question	Response
1. Have you got a strategy for the long-term sustainability of your assets?	Council has Activity Management Plans that are reviewed in house, at three yearly intervals, that include a well-developed renewals assessment and funding model that ensures the long term sustainability of its 3 waters assets. The Council does not have an Asset Management Strategy document however
2. Have you set an asset management policy?	Yes. TRIM link to policy
3. Do you have good quality up-to-date asset management plans for achieving your strategy?	Yes. These are comprehensively reviewed every three years and submitted for peer review.
4. Does your organisation have appropriate asset management skills and experience?	Yes. For 3 waters each of the activity areas – water supply, wastewater and drainage, has a dedicated asset manager responsible for the management of the relevant assets
5. Do you know the reliability of your asset information?	Reasonably well. Asset data for our reticulation network is reliable and being improved through analysis of maintenance data. Facility asset data is also reliable, with a comprehensive facilities asset inventory just having been completed
6. Do you have a structured approach to assessing the condition and performance of your assets?	<p>Yes. Noting that the average age of its network assets is relatively young, the condition of water supply reticulation assets has been the subject of recent analysis through examination of pipe performance. This has enabled condition to be inferred in more detail than has previously been the case. For gravity pipes, Council has recently invested in InfoAssets software, which will enable improved management of gravity pipe condition data.</p> <p>A facility assets condition assessment has not yet been carried out.</p> <p>The system that records repair costs against assets, would have improved understanding of performance, especially as it was further developed, but unfortunately it's future is in jeopardy. This is because the Council's enterprise system is to be replaced.</p>
7. Have you defined a clear and comprehensive set of service levels to be delivered or supported by the assets?	Yes. These are generally reviewed and approved by Council in conjunction with the three yearly AMP review. As noted in the LoS section this has not been possible for the 2024 AMP
8. How well do you forecast future demand for the services that are delivered or supported by your assets?	Demand forecast is largely based on growth projections. Improvements could be made by considering other factors such as for example demographic changes, and changing technologies

9. Do you report, and get reports, on achievement of your asset management plan(s)?	Key Levels of Service are reported quarterly to Council, and other LOS are reported annually to Council. Asset Management Plans themselves are generally peer reviewed, although this has not been carried out for the 2024 AMP due to the effect of the 3 Waters Review on AMP timing.
10. Do you have a backlog of repairs, maintenance, and asset renewals? And what are you doing about it?	No. The Asset Management Plan process delivers approved budgets that to date have been sufficient to ensure that there is no appreciable maintenance backlog, and that fully funds future renewals

25. CHANGES TO AMP AS A RESULT OF LONG TERM PLAN CONSULTATION

This section outlines any significant changes to the AMP as a result of the 2024-34 Long Term Plan consultation period.

Some changes to budgets have arisen as a consequence of a staff submission report to Council during LTP hearings 21-22 May (TRIM 240405053554).

A new budget was created for an urgent wastewater gravity main replacement in Kaiapoi due to recent CCTV inspections identifying the pipe to be in very poor condition and at risk of failure.

The other changes relate to budget changes to existing projects.

The table below provides a summary of the changes to capital budgets across the two schemes.

Budget Name	Draft 2024-34 LTP (2024/25)	Proposed Revised Budget (2024/25)	Difference	Notes
Raven Quay Gravity Main Renewal	\$0	\$540,000	\$540,000	New budget for urgent gravity main replacement in 24/25, due to pipe recently identified to be in very poor condition through CCTV inspection.
Oxford Wastewater Treatment Plant Upgrade	\$157,050	\$57,050	-\$100,000	Original scope that was planned for 24/25 is reduced. More investigation is required for strategic long term options for Oxford wastewater scheme.
Woodend WWTP Overflow Improvement	\$52,350	\$0	-\$52,350	Budget no longer required as issue resolved through maintenance works carried out in 23/24.
Total	\$209,400	\$597,050	\$387,650	

Appendix 1: Rangiora (including Fernside) Scheme Performance

Table 25: A1 - Rangiora Elective Levels of Service Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	0	This level of service is met	Achieved	N/A	Y	Y	N	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	Nil	There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	2	These are related to the flooding events in July 2022.	Not Achieved	Reticulation upgrade planned for Rangiora to be	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
							completed in 25/26					
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	The Central Rangiora Sewer Upgrade is currently under construction. This will provide additional capacity in the reticulation system and is expected to address all the remaining level of service issues in Rangiora. This project is programmed to be complete in 2028 when Stage 9 is undertaken.	Achieved	N/A	Y	N	N	N	N
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met.	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	(a) 1	(a) SR2200289 - Blockage in the main potentially caused by storm debris (b) Not Achieved (c) Not Achieved	Not Achieved	Ongoing Rangiora sewer capacity upgrade programme will result in (b) and (c) being met when complete	N	N	Data	Y	N
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	93		Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 2: Kaiapoi Scheme Performance

Table 26: A2 - Kaiapoi Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	1	This level of service is met	Achieved	N/A	Y	N	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	1	This level of service is met	Achieved	N/A	Y	Y	N	Y	N
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	Nil	There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	1	This is related to the flooding events in July 2022.	Not Achieved	Increased planned pipeline maintenance in	Y	Y	Y	N	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	N	Recent modelling has confirmed a significant proportion of the existing Kaiapoi network is not meeting the desired level of service. Additional flow monitoring and further studies are underway to identify mitigation measures.	Not Achieved	Major system upgrade planned and budgeted	N	N	N	N	N
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Y	Recent modelling undertaken in Kaiapoi has not identified any overflow issues associated with new reticulation designed to the 5 year level of service.	Achieved	N/A	Y	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	1	An historical issue of loss of service in heavy rain.	Not Achieved	A programme of works that is expected to resolve the problem will be completed in the 2023/24 FY	Y	Y	N	N	N
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	91%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 3: Woodend Scheme Performance

Table 27: A3 Woodend Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	Nil	There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	N	Y	Insf. Data	Y	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	90%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 4: Pegasus Scheme Performance

Table 28:A4 Pegasus Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	0	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	0	This level of service is met	Achieved	N/A	Y	N	Y	Y	Y
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	92%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 5: Waikuku Beach Scheme Performance

Table 29: A5 Waikuku Beach Elective LoS Performance - Assessed June 2025

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	Nil	There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	1	This is related to the flooding events in July 2022.	Not Achieved	No action planned	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y				
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y				

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Service	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	100%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 6: Tuahiwi Scheme Performance

Table 30: A6 Tuahiwi Elective LoS Performance - Assessed June 202

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	N	N
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2-year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5-year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	33% (?)	Survey linked Tuahiwi and Fernside together, which are separate schemes	Not known	Correct survey questions					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 7: Woodend Beach Scheme Performance

Table 31: A7 Woodend Beach Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 years	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 years	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	100%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 8: The Pines/Kairaki Beach Scheme Performance

Table 32: A8 The Pines/Kairaki Beach Elective Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	50%		Not achieved						

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 9: Mandeville Scheme Performance

Table 33: A9 Mandeville Elective LoS Performance - Assessed 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	Nil	There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.	Achieved	N/A	Y	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results#				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	90%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 10: Loburn Lea Scheme Performance

Table 34: A10 Loburn Lea Elective LoS Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	N/A	Plant has been decommissioned	N/A	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	N/A	Plant has been decommissioned	N/A	N/A	Y	Y	Y	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	N/A	There were no breaches of consent this year leading to significant adverse effects, as noted in Environment Canterbury compliance reports.	N/A	N/A	N	Y	Y	Y	Y
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	100%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 11: Oxford Scheme Performance

Table 35: A11 Oxford Elective LoS performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Customer Complaints	Complaints - Midges & Insects - Treatment	Number of events that lead to complaints about midges and insects at treatment plants	Nil per Year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Reticulation	Number of events that lead to complaints about odour from the reticulation	Less than 5 per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
	Complaints - Odour - Treatment	Number of events that lead to complaints about odour at treatment plants	Less than 5 per year	1	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Resource Consents	Consent Breach - Action required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil per Year	1	Consent breach due to lack of data to demonstrate depth of effluent application and exceedance of faecal coliform concentration for 2 samples due to operational issue with UV units noted in Environment Canterbury compliance reports.	Not achieved	Connect irrigator to SCADA and improve sampling data collection.	Y	Y	N	Y	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results#				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Outages	Outages - Events >8 hours	Number of events that cause a loss of service to any property for >8 hrs (does not include private laterals)	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - Existing Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed prior to May 1999 without overflows occurring	1 in 2 year	Nil	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y
Overflows	Overflows - New Reticulation	Minimum return period of rainfall event that can be accommodated in network components designed after May 1999 without overflows occurring	1 in 5 year	Less than 1 in 5 year	This level of service is met	Achieved	N/A	Y	Y	Y	Y	Y

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2020				Previous Results [#]				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
	Overflows - Private Property	Number of recorded overflows on private property found to be the result of (a) blockage in the main (b) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 2 year event, for areas designed prior to 1999. (c) Insufficient capacity in the reticulation system for any rainfall up to a 1 in 5 year event for areas designed after 1999.	Nil per year	Nil	This level of service is met	Achieved	N/A	Y	Y	Insf. Data	Y	Y
Customer satisfaction	Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory"	>90%	92%	This level of service is met	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 12: Glossary of Terms

The following terms and acronyms (in brackets) are used in this Activity Management Plan, either in the overview document or the scheme specific AMP.

Activity	As defined in the Local Government Act 2002: 'Goods or services provided by, or on behalf of a local authority or council-controlled organisation and includes: a) The provision of facilities and amenities; b) The making of grants; and The performance of regulatory and other governmental functions.
Activity Management Plan (AM Plan)	Activity Management Plans are key strategic documents that describe all aspects of the management of assets and services for an activity (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. The documents are an information source for the Council's LTP and IS, and place an emphasis on long term financial planning, community consultation, and a clear definition of service levels and performance standards.
Asset Condition	This describes an asset's structural integrity or ability to deliver the service required from it. The condition can deteriorate slowly over the life of an asset or rapidly if it is damaged.
Annual Plan	The Annual Plan has the meaning given to it in the Local Government Act 2002.
Asset	A physical item that enables provision of services and has an economic life of greater than 12 months, has value of at least \$250 and is recorded in the asset register.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied systematically to physical assets with the objective of providing the required level of service in the most cost-effective and sustainable manner.
Asset Management System (AMS) (also known as asset register)	A system (usually computerised) for collecting analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Management Plan (AMP)	In the Waimakariri District Council's context, this is referred to as an activity management plan.
Asset Management Planning	A set of interrelated or interacting elements of an organisation, including the AM policy, AM objectives, AM Strategy, AM Plans, and the processes to achieve these objectives.
ADF	Average Daily Flow - The recorded flow over a year divided by the number of days in a year and generally expressed as volume/day or litres/second. Also refer ADWF
ADWF	Average Dry Weather Flow is the total sewage flow for a 24 hour period that occurs on a dry day. The ADWF is usually expressed as m ³ /day. It is comprised of domestic, commercial, and industrial sewage flows and permanent baseflow from groundwater infiltration.
Ancillary	A structure or an arrangement within the wastewater collection system such as a pumping station, weir, syphon, or emergency pumping station overflow.

ARI	Average Recurrence Interval. The statistical period between events (e.g. rainfall or overflows) occurring.
BOD	Biological Oxygen Demand, also known as Biochemical Oxygen Demand. This is the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period.
Brownfields	Previously developed land with potential for new development.
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
CCTV	Closed Circuit Television. It is used to visually assess the condition inside pipe networks.
Condition Monitoring	The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Connection	From the point of view of the utility provider this relates to the physical connection of a particular customer to the service.
Consumer	The owner or resident of a property who has a connection to a sewer scheme.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify prioritisation for inspection, rehabilitation or replacement ahead of other assets.
Current Replacement Cost	The cost of replacing an existing asset with an appropriate modern equivalent asset to deliver the same level of service.
Customer	A customer is an individual or business that creates the demand for and is the recipient of goods or services. Customers can be internal or external.
Deferred Maintenance	The shortfall in maintenance or rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management may be 'SUPPLY-SIDE' demand management (for example minimising wastage through pipe leak detection) or customer DEMAND-SIDE management, to reduce demand for over-utilised assets or vice versa (for example, through pricing, regulation, education and incentives).
Depreciation	The annual sum budgeted to enable the assets to be replaced at the end of their economic life. It is generally based on the value of the asset divided by its remaining life at that point in time.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Disaster Resilience Assessment (DRA)	An assessment first carried out in 2007 and updated in 2011/12 to determine the risk to assets from natural hazards.
Disposal	Activities necessary to decommission and dispose of assets that are no longer required.

Risk Management	Risk management is the identification, assessment, and prioritisation of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events.
Routine Maintenance	Day to day operational activities to keep the asset operating such as replacement of minor equipment, oil and greasing pumps and motors, cleaning of equipment, repairing leaks, etc. It forms part of the annual operating budget, including preventative maintenance.
SS	Suspended Solids.
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
Sewer Catchment	An area containing properties that are connected to the wastewater collection system upstream of a particular point whether it is a particular manhole or a network pumping station.
Step Screen	The screen that removes larger solids and debris from sewage just before it enters the WWTP. The step is its action of incremental movement to clear itself and deposit the solids in waste container.
Total Coliforms	Genera in the family enterobacteriaceae, the total coliforms are bacteria which will grow on a specific selective medium when incubated at 35 degrees centigrade + or – 0.2 degrees centigrade. They are used to indicate the probable contamination of water by organic material, and that the possibility of faecal contamination needs to be checked. Total coliforms include the genera; Erwinia, Klebsiella, Escherichia, Citrobacta and Enterobacta.
Turbidity (NTU)	A measure of the clarity of water. High turbidity means low clarity (poor aesthetics) and is generally caused by very fine suspended particles in the water (as opposed anything dissolved in the water). It is not harmful. Suitable treatment processes can reduce turbidity. NTU is the measure of turbidity, higher values mean the water is more cloudy or has lower clarity.
Unplanned Maintenance (or repair)	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrade	The addition or replacement of an asset, or component of that asset, that materially improves its original service potential.
UV	Ultraviolet (light) used to kill bacteria in sewage treatment processes. This can be supplied by the sun or in more modern plants it is generated with fluorescent lights.
Valuation	The process of determining the worth of an asset or liability. Assessed asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for life cycle costing or replacement plus a percentage for insurance purposes.
WWF	Wet Weather Flow. Wastewater flow comprised of dry weather flow (DWF) and rainfall dependent infiltration and inflow (RDII).



WAIMAKARIRI
DISTRICT COUNCIL

Activity Management

Plan 2024

Urban Drainage

3 Waters | July 2024








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Action	Name		Signed	Date
Prepared by	Jason Recker	Drainage Asset Manager		11/12/2023
	Simon Collin	3 Waters Asset Management Advisor		11/12/2023
	Chris Bacon	Network Planning Team Leader		11/12/2023
Reviewed by	Kalley Simpson	3 Waters Manager		10/7/2024
Approved by	Gerard Cleary	General Manager Utilities and Rooding		10/7/2024
Adopted by		Utilities & Rooding Committee		

Contents

1	Executive Summary.....	5
	What assets do we have?	5
	Levels of Service	5
	Asset Condition.....	5
	Risk.....	5
	Growth and Demand	6
	Capacity and Performance	6
	Consents	7
	Operation and Maintenance	7
	Renewals.....	7
	Financial Forecasts	7
	Future Challenges and key Decisions	8
2	Introduction.....	9
	Document structure	10
	Improvement Plan	10
	Document Review Process	10
	Financial Forecasts	10
	District Overview- Key Projects	12
3	Scheme Description (What Do We Have?)	12
4	Levels of Service.....	17
	Changes to LOS for 2024	17
	Mandatory Performance Measures	17
	Elective Levels of Service	18
	Community Engagement for Levels of Service.....	18
	2024 LTP Levels of Service.....	19
	District Overview: 2022/23 Levels of Service Performance	22
	Benchmarking.....	26
	Scheme differences	26
5	Asset Condition	29
	Remaining Useful Lives.....	29
6	Criticality	33
	District Overview – Reticulation Criticality.....	34
	Criticality on GIS	34
7	Risk Assessment - Overview	35

8	Operational Risk Assessment.....	37
	Risk Matrix	37
	District Overview – Operational Risk.....	38
9	Disaster Resilience Assessment	42
10	Corporate Risks & Assumptions.....	43
11	Climate Change	43
	Previous Climate Change Initiatives.....	44
	Future Climate Change Initiatives	45
	a) Mitigation.....	45
12	Demand	46
	Growth Uncertainty	47
	Changes in Land Use	47
	Changes in Public Awareness	47
	Significant Wet Weather Events	48
	This has been a significant driver of demand over the last 10 years. Typically such events may feature high intensity periods of rainfall in localised parts of a catchment that exposes deficiencies in particular parts of the drainage system. As noted in the level of service section, Council reacts to these events by additional programmes of works to alleviate the drainage system shortcomings.....	48
13	Capacity & Performance	49
	District	49
	Consents	51
14	Operation and Maintenance.....	53
	Operation & Maintenance Expenditure	53
15	Capital Works.....	56
16	Renewals	57
	District Wide – Renewals Expenditure	57
	Scheme – Reticulation Renewal Timelines – Spatial View	59
17	New Works	61
	Works Coordination	62
	Urban Capital Works.....	62
	Scheme – Capital Upgrade Works – Spatial view	65
18	Overall Financial Forecasts	65
	Financial Forecast Key Assumptions	65
	Funding/Revenue Sources.....	66
	Valuation	66

19	Data Confidence	69
20	Asset Management Systems	71
	Asset Management Maturity	71
21	Negative Effects	72
22	Service Delivery	73
23	Improvement Plan	73
24	Changes to AMP as a Result of Long Term Plan Consultation	77
	Appendix 1: Rangiora Urban Scheme Performance.....	79
	Appendix 2: Kaiapoi Urban Scheme Performance	81
	Appendix 3: Coastal Urban Scheme Performance (Woodend, Pines, Kairaki and Waikuku Beach systems).....	83
	Appendix 4: Pegasus Urban Scheme Performance	85
	Appendix 5: Oxford Urban Scheme Performance	87

Tables

Table 1: All drainage rated schemes	9
Table 2: District Overview – Scheme Summary Information	13
Table 3: Pipe & Open Channel Data Summary.....	14
Table 4: Other Stormwater Assets data Summary.....	15
Table 5: Data References	16
Table 6: Summary of Performance Measure Types, and Reporting.....	17
Table 7: Performance Measures for the 2024 AMP	19
Table 8: District Overview - Levels of Service Performance	22
Table 9: 2022/23 Scheme performance - elective measures	27
Table 10: Pipe Condition Summary	31
Table 11: Criticality Score Categories.....	34
Table 12: District Criticality Assessment	34
Table 13: Risk Events Considered.....	37
Table 14: District Overview – High Risks remaining (Operational)	38
Table 15: District Overview - Extreme and High Risks (Natural Hazards).....	53
Table 16: Planned Budget versus Renewals Model Recommendation 2024-34	59
Table 17: New Works across Urban Drainage Schemes Over 50 Years	61
Table 18: Asset Valuation	67
Table 19: Data Confidence Levels	69
Table 20: 2021 AMP Improvement Plan	74
Table 21: A1 - Rangiora Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023	79
Table 22: Kaiapoi Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023.....	81
Table 23: Coastal Urban Scheme Elective Levels of Service Performance - Assessed June 2023.....	83
Table 24: Pegasus Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023	85
Table 25: Oxford Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023.....	87

Figures

Figure 1: Asset Condition Summary	31
Figure 2: Asset Condition Summary - Schemes.....	32
Figure 3: WDC Risk Matrix.....	37
Figure 4: District Overview - Projected Operation & Maintenance Expenditure	55
Figure 5: District Wide - Projected Renewals Expenditure	58
Figure 6: Renewals Expenditure Model	60
Figure 7: Projected Capital Works Expenditure	63

Figure 8: Projected District Wide Capital Works Expenditure. 64

Figure 9: Projected Total Urban Drainage Expenditure 65

1 EXECUTIVE SUMMARY

What assets do we have?

There are 7 rural and 5 urban rated drainage areas within the Waimakariri District. Together the 5 urban drainage schemes cover approximately 1.2% of the District's land area but service approximately 75% of the District's population. Two separate Activity Management Plans have been prepared, one each for the rural and urban drainage areas.

The urban scheme assets include piped stormwater networks, treatment devices, basins, stormwater pump stations and open drains while in the rural schemes assets are primarily open drains and waterways which the Council maintains.

Levels of Service

In the lead up to the updating of the 2024 AMP's, it was expected that the Council would not be preparing AMPs to support the 2024-2034 LTP, due to the 3 Waters Reform. When the situation changed in May 2023, it was too late to carry out a review of LoS. As a consequence the LoS in this AMP have remained largely unchanged when compared to the 2021 AMP version. The 2021 AMP levels of service were presented to the Council's Utilities and Roading Committee in July 2020, which recommended that the Council include them within the Draft 2021-31 Long Term Plan (refer to report 200406043184).

Table 7 in this document shows performance against the levels of service measured at district level, assessed for 2022/23. All of the mandatory levels of service were met, and most of the elective levels. Response times to service requests, overall satisfaction with the drainage services as measured by the community survey, and maintaining dialogue with Te Ngai Tuahuriri Runanga are the three areas where levels of service were not met

Asset Condition

Council has a programme of CCTV inspections for the stormwater pipe network in place. Since the last AMP review the software InfoAsset Manager has been employed, which will enable improved CCTV analysis, and better maintenance and renewals planning.

A condition assessment of all assets at headworks has not yet been carried out, so confidence in asset condition is only moderate. However most of the drainage infrastructure is relatively new, and based on age 99.3% of pipe assets are considered to be in very, good, good or adequate condition. For headworks the percentage is 97.6%.

A full asset inventory has recently been compiled for all of the 3 Waters facilities, the scope of which included identifying assets in particularly poor condition. There were only 21 assets that fitted this category, less than 6 being drainage assets.

Risk

Historically a range of different types of risk assessments has been carried out for the District's drainage supply schemes. The operational risk assessment has previously generated a programme of work to resolve the identified high risks (There were no extreme risks recorded). This work is now largely complete but there are a number of remaining issues.

At the district level risks to pipes and headwalls from earthquake remain. At scheme level Waikuku, Pines and Kairaki Beaches, are still at flooding risk from malfunction of flap valves or from insufficient capacity. Parts of Kaiapoi and Rangiora also remain at risk of flooding from insufficient capacity

Projects to resolve all these flood risks have been identified and programmed.

The vulnerability assessment and criticality assessments provide input data to the renewals programme. The effect of the vulnerability assessment, which only applies to underground pipes, is to accelerate the renewal of old brittle pipework, in areas of high risk of liquefaction.

It is expected that this category of pipes will have been completely replaced by 2033 thereby increasing the resilience of the network.

The Disaster Resilience Assessment considers the risk to above ground assets from a broad range of potential natural disasters.

While much of the work from past assessments will remain relevant, they have become out of date. A new approach has been developed, which brings the three different methodologies noted above into a single risk assessment process. This is expected to make regular updating of the assessments more efficient. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

Growth and Demand

Growth projections have been updated with base population projections being calculated via a model that provides town by town projections. Subsequent modelling has been carried out to identify new works or upgrades that will be required in the future to service this growth while continuing to meet the agreed levels of service. Where appropriate the necessary works have been incorporated into the capital project budgets.

It is proposed to manage the inherent uncertainty in rate of growth, by carrying out an annual growth review in conjunction with the Development Planning Unit to enable short term capital planning adjustments to be made that respond to changing market requirements. This will avoid unnecessary expenditure on growth works before they are actually needed, or potentially ensure growth related projects are accelerated if growth occurs faster than anticipated.

Note that new developments are required to construct infrastructure that will ensure that discharge from development is treated to the quality standards required by the Regional Council's Land and Water Regional Plan, and also to not discharge at a rate greater than that which existed before the development. Therefore nearly all the cost for capital works for growth falls directly to the developer, and works within the AMP's for growth are minimal.

Capacity and Performance

The capacity and performance of the main reticulated drainage schemes throughout the district are assessed using hydraulic models constructed and maintained by the Council's in house team for each scheme.

Extraordinary rain events, of which there have been a number of late may also identify areas where LOS is not being met.

Programmes of work arising from these sources are ongoing with capital works upgrades planned for Woodend, Waikuku Beach, Kaiapoi, Oxford and Rangiora.

Consents

Under the Land and Water Regional Plan Council is required to obtain consents for discharge of its urban stormwater. Under these consents Council will be required to improve the quality of the water it discharges into streams and rivers. Consents for all the district's urban centres have been lodged, but as of July 2023 the Rangiora consent has been the only one issued. Noting that ECAN does not require any further information from the Council, the outcome is pending on the others. Provisional budgets to meet the expected consent conditions have been included in the relevant scheme budgets, but the exact methodology to be used to meet the consent conditions has yet to be determined.

Operation and Maintenance

Operational and maintenance expenditure for drainage remains largely based on the previous year's expenditure carried forward. The biggest single expenditure item typically being spent on carrying out day to day maintenance – drain cleaning and the like. Drainage maintenance for urban areas is included in the Greenspaces maintenance contract.

In association with a district wide waterways maintenance consent from the Regional Council, Council has developed a [Drainage Maintenance Management Plan 2020](#). While being principally directed at rural waterways, it still has relevance for open urban waterways. It provides a new direction for the way that waterways are maintained, with an emphasis on maintaining and enhancing ecological values, as well as providing for the traditional drainage function. It is hoped that over time, with increased planting, installation of sediment traps and other improvements, streams may be able to be left "unmaintained" in the traditional sense of being cleaned out by digger on a regular basis. Much of the impetus for these changes is being directed by the Canterbury Water Zone Committees, managed by Environment Canterbury.

Renewals

Improvements have been made to the Council's risk based renewals model, so that different levels of acceptable risk can be applied to the various categories of criticality. The model includes that highly critical assets are renewed before 85% of their expected life, while the lowest criticality assets may not be replaced until 120% of their expected life. Based on these risk profiles the model provides a prioritised list of pipe renewals needed across the district, identified by scheme, which Asset Managers assess and adjust as necessary. The model provides an annual expenditure profile for the next 150 years, and also identifies the annual revenue required to ensure that required future renewals are fully funded. The employment of InfoAsset Manager to manage and analysis CCTV pipe inspection data will improve the modelling of pipe renewals through a better understanding of the remaining asset life.

There are no deferred renewals for urban drainage assets

Financial Forecasts

Financial forecasts included within the AMP show projected capital expenditure for growth, level of service, and renewals, together with operational and maintenance expenditure. (Funds carried forward from previous years because capital projects have been delayed are not included.)

Periods shown for the different categories of budget vary, from 30 years for operations and maintenance, through to the full life cycle of long lived assets such as pipelines – 150 years. Forecasts are aggregated up from the different schemes, district wide flood response projects included and then shown graphically. See Figure 7.

Programmes of district wide improvement works developed in response to a number of flooding events since 2014 are typically funded by a district wide rate, which is part of the General Rate. Additional capital budgets are funded from ratepayers entirely within each scheme.

Future Challenges and key Decisions

Putting aside managing expectations around stormwater levels of service which will remain as an ongoing challenge, the four most significant challenges facing Waimakariri District Council in the drainage area, are global discharge consents, climate change effects, Water Reform, and the effects of the Freshwater National Environmental Standards. The latter applying principally to rural drainage.

- **Discharge Consents**

As noted above Council has applied for discharge consents into receiving waters for all of its urban drainage networks. Although there is now more certainty about the conditions that these consents will impose, challenges remain about how best to comply with the conditions. Further detail on this issue is provided in the Consents section of this overview document.

- **Climate change**

Climate change adaptation is the most significant long term challenge. Research to date has indicated that while low lying coastal areas will remain protected by the dune system, increasing ground water levels will become an issue, and various combinations of storm tide, fluvial events and a rising mean sea level will potentially cause overtopping of stop banks and natural river banks. Farming in these areas may become problematic. Further assessment work is needed, and consideration given to the types of solutions that may be practical.

Potentially increased frequency of high intensity rain events, plus increased community expectations could also lead to pressure for higher levels of service away from the coast, with corresponding greater costs. Current levels of service in many older subdivisions are already not met.

Engagement is required with stakeholders, most notably the Regional Council, and affected communities. Major decisions will need to be made, to agree an adaptive strategy that is acceptable to both the affected communities and the wider district.

- **Water Reform**

The operative water reforms include Taumata Arowai having a role to monitor and report on the environmental performance of drainage networks. What this looks like is not yet known. The wider water reforms to be abandoned or significantly modified under the National led government also create significant uncertainty.

2 INTRODUCTION

The purpose of this Drainage Activity Management Plan (AMP) is to provide an overview of the Council's urban drainage assets, outline the issues associated with these assets and show how the Council proposes to manage them in the future, so as to continue to supply agreed levels of service, growth demand is accommodated, and renewals carried out at the appropriate time.

The Activity Management Plan Utilities and Rooding (U&R) Introductory Chapter provides the context for the suite of U&R activity management plans and gives an overview of the department's activities, and asset management practices and processes, and should be read in conjunction with this document.

This document outlines the management approach for the five urban drainage schemes, all of which are rated separately, in addition to a District Wide drainage rate.

All drainage rated schemes are shown in the table below to provide context, although this AMP only covers the urban schemes.

Table 1: All drainage rated schemes

Urban Schemes	Rural Schemes
Kaiapoi	Coastal Rural
Rangiora	Clarkville
Oxford	Central
Pegasus	Ohoka
Coastal	Loburn Lea
	Cust
	Oxford Rural

The 5 urban drainage schemes cover approximately 1.2% of the District's land area and service approximately 75% of the District's population.

The urban scheme assets include piped stormwater networks, treatment devices, basins, stormwater pump stations and open drains which the Council maintains.

In recent years the issue of properties upstream of drainage rated areas contributing to stormwater problems within the rated area became an issue. In addition, the problem of how to manage requests for minor drainage works in areas that are not inside a rated drainage area became more prominent. This latter issue has to some extent been alleviated by the introduction of a modest fixed cost per property district wide rate. Moving more comprehensively to district wide rating has been toyed with for some time, but at the time of this AMP elected members have put consideration of that on hold.

With increasing public awareness and concern about stream water quality, stormwater and drainage management has a much higher profile across the district than was the case a few years ago.

Document structure

The main body of this document contains tables of infrastructure data at both a district wide level, and scheme level. Further detail of the individual schemes is provided by tables of links to other sources. These include:

- Network schematics,
- Pipe condition plans,
- Asset criticality plans
- Pipe renewal timeframes plan
- Capital upgrade works plan
- Scheme Serviced area

There is an appendix for each scheme which contains the Scheme Level of Service Performance table.

Improvement Plan

The assessments carried out as part of the asset management review process are intended to identify issues that need to be addressed. Resolution may include new capital works, or adjusted management or process practices. All these improvements are collated in Table 19

Document Review Process

Review of the AMPs has been carried out by a project team comprising the 3 Waters Manager, the 3 Waters Asset Management Advisor, Asset Managers (Water, Wastewater and Drainage), and the Network Planning Team Leader, with additional technical input from the Network Planning Team. Project Management has been led by the 3 Waters Asset Management Advisor.

The project team met fortnightly, and progress was tracked against a detailed programme that set out the review actions necessary for each section of the document

Internal advice was sought from the Council's Development Planning Team for growth projections, and liaison with the Asset Management Information team occurred during the update of the valuations. Asset Managers worked closely with the Finance Unit during development of the budgets.

Information regarding progress and requirements for both the Infrastructure Strategy and the LTP development was provided via the LTP Project Manager.

Draft versions of the documents were presented to the Utilities and Roding Committee at the end of 2023, with an updated version presented to Council in late January for adoption. Any changes in the AMPs resulting from modifications to the LTP, have been incorporated in the final version by way of an additional section. The final document is published on the Council's webpages after adoption of the 2024-2034 LTP.

Financial Forecasts

The financial forecasts shown in this AMP exclude inflation and any carry-forwards between the 2023/24 and 2024/25 financial years.

District Overview- Key Projects

There are several scheme drainage improvement programmes that are included within the 2024/34 LTP programme of works, some identified as a consequence of recent extraordinary rain events.

In the Coastal Urban scheme, capacity improvements are planned for Woodend, and Waikuku Beach. Minor work is planned for Pines Kairaki.

Notwithstanding significant recent works carried out with funds from government stimulus funding, further work is planned to continue to upgrade the Kaiapoi systems.

Ordinary rain events are known to cause concern for some residents in Oxford and a suite of works is planned to alleviate these concerns in the first three years of the LTP.

There are three projects in Rangiora still to be completed from the programme developed following the 2014 flood event, plus four additional upgrades to improve performance.

In addition, significant sums are included in each of the urban scheme budgets to carry out works to meet the requirements of the new network discharge consents.

3 SCHEME DESCRIPTION (WHAT DO WE HAVE?)

The table below outlines the total area of each urban scheme (ha.) and the total number of properties within each scheme at the time of the 2023/24 Rates Strike. The 5 urban drainage schemes cover approximately 1.2% of the Districts land area and service approximately 75% of the District's population. Table 1 provides an overall summary. Tables 2 and 3 summarise the districts urban network assets. In addition to the individual assets shown in these tables there are 14 stormwater pump stations.

Table 4 shows data references of technical reports and file numbers used to compile the AMP, with links should further details be sought.

An overall map of the District's Council drainage schemes is shown in the [AMP Plans and Figures Viewer](#). Scheme specific plans are also available in the viewer:

- Network Schematics
- Serviced area

Table 2: District Overview – Scheme Summary Information

Drainage Scheme	Rangiora Urban	Kaiapoi Urban	Coastal Urban: Woodend, Pines Kairaki Waikuku Beach	Pegasus Urban	Oxford Urban
Drainage Area	1,029 Ha	884 Ha	386 Ha	282 Ha	174 Ha
Number of properties 2023/24 Rates strike	7,958	5,584	2,655	1,663	760
Pumpstations	1 Groundwater Pumpstation	13 Pumpstations	-	-	-
Stormwater Management Areas	11 Infiltration Ponds 3 Dry Ponds 8 Wet Ponds / Wetlands	10 Dry Ponds 3 Wet Ponds / Wetlands	2 Dry Ponds 4 Wet Ponds	1 Dry Pond 1 Wetland	1 Dry Pond
Stormwater Treatment Devices	1 Stormfilter (Townsend Fields)	3 Stormfilters (Silverstream)	1 Gross Pollutant Trap 1 Jellyfish Filter	2 Stormfilters	-
Receiving Waterways	Ashley River North Brook Middle Brook South Brook South South Brook No 7 Drain	Cam River Kaiapoi River McIntosh Drain Kaikanui Stream Courtenay Stream Silver Stream	Taranaki Stream McIntosh Drain Cam River (via Box Drain and SH1 Drain) Kairaki Creek	Taranaki Stream (via Eastern Conservation Area)	Cust Main Drain (via Findleys Drain and Pearson Drain) Eyre River (Direct and via Flanagans Drain)
Total Replacement Value (2022 Valuation)	\$69.6M	\$66.8M	\$33.5M	\$12.1M	\$1.6M

Depreciated Replacement Value (2022 Valuation)	\$58.7M	\$55.8M	\$29.7M	\$11.0M	\$1.5M
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Table 3: Pipe & Open Channel Data Summary

Stormwater pipe length (m) by pipe material					
Pipe Material	Rangiora	Kaiapoi	Coastal Urban	Pegasus	Oxford
Concrete	37,127	35,580	16,138	5,026	844
PE	138	1,496	-	-	-
PVC	6,540	6,642	5,561	1,458	705
Other	477	1,052	466	-	-
Total	44,282	44,770	22,165	6,484	1,726
Open Drain length (m) lined and unlined					
Unlined Drain	14,197	14,574	6,502	151	17,509
Lined Drain	228	72	1,312	-	-
Total	14,425	14,645	7,814	151	17,509

**Table 4: Other Stormwater Assets data
Summary**

Other Stormwater Asset types					
Asset Type	Rangiora	Kaiapoi	Coastal Urban	Pegasus	Oxford
Inlet (sump)	70	58	16	-	5
Manholes	877	842	493	179	27
Nodes	409	395	189	155	97
Valves	10	105	10	-	1
SMA's / Basins	27	13	6	-	1
Treatment Devices	1	5	1	2	-

Table 5: Data References

Data References – District wide	Trim Reference
2021-2022 Waters Asset Valuation	<u>220803132120</u>
2023: 30 year connection and rating unit projection	<u>230413051831</u>
2022 Customer Satisfaction Survey	<u>230504063243</u>
2014 Flood Mitigation works	<u>141009110892</u>
Data References – By Scheme	Trim Reference
Rangiora - Northbrook Enhancement Options	<u>191030151124</u>

4 LEVELS OF SERVICE

Levels of Service (LoS) are a measure of the standard of service being provided. The target levels of service are a significant factor in determining the size, capacity and cost of operating each scheme.

There is a hierarchy to the LoS. Some are measured at district wide level, some at scheme level, and some differ depending whether the scheme is urban or rural. The way that LoS measures are assigned, measured, and reported is summarised below, and explained in more detail in the following paragraphs.

Table 6: Summary of Performance Measure Types, and Reporting

	Mandatory Performance Measures	Elective Performance Measures
Set By:	These measures are set by the Department of Internal Affairs (DIA), but the targets set by individual local authorities.	These measures are set by individual local authorities.
Reporting:	Long Term Plan and Annual Report	Individual scheme Activity Management Plans Annual report to Council (future improvement). Some measures are also included within the Long Term Plan and Annual Report.

Changes to LOS for 2024

In early 2023, when the LOS and targets would normally have been reviewed again, the 3 Waters reform based on four new entities to manage 3 Waters infrastructure nationally, was going ahead. A National Transition Unit was operating under the Department of Internal Affairs, and the expectation was that the 2024 AMP's would be prepared by that Unit. By the time that the government changed the planned new structures, and delayed the entire programme it was too late to be able to review LoS, and have them approved by the U&R Committee/Council. Therefore the LoS and targets in the 2024 AMPs, both Mandatory and Elective, are generally unchanged from the 2021 AMPs.

The 2021 set of measures were approved by the Council's Utilities and Roding Committee for inclusion in the 2021 Draft Long Term Plan (report [200406043184\[v1\]](#)), before being approved by Council.

Mandatory Performance Measures

In 2010, the Local Government Act 2002 was amended (Section 261B) to require new rules specifying non-financial performance measures for local authorities. The measures are intended to help members of the public compare the level of service provided by different councils at District or City level. The Council is required to incorporate the performance measures into their long-term plans and report against them in their annual reports. The element that is measured cannot be

changed (as this is mandatory) but the targets can be changed. Measures are reported at district wide level. This is provided to Council on a quarterly basis, and the annual results are included in Council's Annual Report. Note that Council has chosen to also include some elective LoS in its quarterly and annual reporting.

Elective Levels of Service

The mandatory measures do not replace the scheme specific elective LoS reported in the AMPs and used by the Council to monitor and manage the performance of individual drainage schemes.

Elective LOS are motivated by either legislative requirements (for example, compliance with resource consent conditions) or by established best practice. These are categorised as technical levels of service, and they are to be reported to Council on an annual basis. They have been developed over time, and are guided by a number of factors, including:

- Customer Expectations
- Affordability
- Council Community Outcomes (Strategic goals and objectives)
- Legislative Requirements

Primary customers are households or businesses that are connected to Council drainage schemes, with key stakeholders being Community Boards, Councillors and the Regional Council.

Community Engagement for Levels of Service

The level of service component of the Activity Management Plans was consulted upon comprehensively as part of the 2005 review. While a comprehensive public review has not been carried out since then, levels of service are tested with the public in a number of ways.

- For general feedback the principle method of communicating proposed LoS to customers is via the LTP process. As noted, mandatory performance measures form part of the LTP documentation that goes out for public consultation, during preparation for the LTP.
- The Council's drainage AMP's, which are updated concurrently with preparation for the LTP are made available on Council's website, which allows a channel for feedback from customers who may be interested.
- The general satisfaction of customers with the level of service received is gauged through tracking of complaints through the service request system, as well as through the Council's customer satisfaction survey. Changes to this survey have been made so that information is now available on a per scheme basis. Trends in complaints are available through the Council's Business Intelligence reporting system, allowing easy analysis for trends both at a district level and a scheme level. Where upgrades to schemes have been completed, the positive impacts can be seen to flow through to complaint levels, which provides a useful measure of success of projects.

Council received considerable community criticism after the 2014 flood event, particularly from the Mandeville area. It responded with a new district wide flood rate introduced in the 2015-2025 LTP, and a programme of works to address the concerns of the affected communities.

There have been other significant rain events since that time, and Council now has an established follow up pattern for these events. Council initially carries out an analysis of all the drainage service

requests received during the event. Issues relating to capacity (as against those relating to system blockage, which are mostly dealt with during the event) are investigated and, where warranted, improvements identified and submitted to Council for approval of additional funding. Some improvements are multi-year programmes of work, in which case the additional funding is incorporated in the financial information provided within the following AMP.

Summary reports to Council that have sought funding approvals in this way are TRIM [180809090003](#), [200709085254](#), [210817135255\[v2\]](#), [220825147219\[v2\]](#), [220923165375](#)

2024 LTP Levels of Service

Table 7 is in three sections. The first part sets out the mandatory performance measures and targets for the 2024 AMP. The second part shows the elective performance measures that are included in the quarterly reporting, and the third part shows the remaining elective performance measures.

Table 7: Performance Measures for the 2024 AMP

Level of Service	Performance Measure (2024)	Target	Community Outcomes that this LoS Contributes to
Mandatory Measures – reported quarterly and annually to Council			
Flooding - Dwellings	Urban stormwater a) The number of flooding events that occur * b) For each flooding event, the number of habitable floors affected, expressed per 1000 properties connected to a territorial authority's stormwater system.	a) Nil in less than 50 year storm events b) Nil per 1000 connected properties in less than 50 year storm events	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Consent Breach	Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of: (a) abatement notices (b) infringement notices (c) enforcement orders, and (d) convictions, Received in relation those resource consents.	a) Nil b) Nil c) Nil d) Nil	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Response time	The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site.	Less than 180 minutes	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

Level of Service	Performance Measure (2024)	Target	Community Outcomes that this LoS Contributes to
Complaints	The number of complaints received by a territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority's stormwater system.	Fewer than 10	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Elective Measures reported with Mandatory measures – quarterly and annually to Council			
Response Time	Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days	95%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Consultation	Maintain dialogue and consultation with Te Ngai Tuahuriri Runanga	Drainage team represented at all scheduled Runanga meetings	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Consent Breach	Percentage of the total number of Drainage consent conditions that have breaches that result in an Ecan report identifying compliance issues that require action.	0%	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Elective Measures – reported annually and in AMP			
Flooding - Dwellings	Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 year	<i>The natural and built environment in which people live is clean, healthy and safe.</i>
Flooding - Nuisance or Carriageway	<u>For urban areas:</u> For properties or carriageways within urban drainage schemes, the percentage of complaints, about nuisance flooding** caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	<i>The natural and built environment in which people live is clean, healthy and safe.</i> <i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Flooding - CBD Nuisance or Carriageway	For properties or road carriageways in the CBD area, the percentage of complaints, about nuisance flooding** caused by lack of capacity, that are investigated and measures	100%	<i>The natural and built environment in which people live is clean, healthy and safe.</i>

Level of Service	Performance Measure (2024)	Target	Community Outcomes that this LoS Contributes to
	implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 10 years or less.		<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Complaints - Aesthetics - Drain Clearance	Number of complaints, post cleaning, resulting from unsatisfactory drain cleaning operations or service (Reported at district level)	Nil per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Complaints - Odour or Insects - Open Network	Number of complaints about odour, midges or insects in the open network including drains and ponds. (Reported at district level)	Nil per year	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>
Customers - % Satisfied	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory". (Reported at district and scheme level)	> 90%	<i>Infrastructure and services are sustainable, resilient, and affordable.</i>

*Flooding event defined as an overflow of stormwater from a territorial authority's stormwater system that enters a habitable floor

** Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

District Overview: 2022/23 Levels of Service Performance

Table 8 shows both the mandatory and elective levels of service achievement for those measures that are assessed at the district level. Appendices to this document can be referred to for the performance results for the individual schemes, which also show performance history.

Table 8: District Overview - Levels of Service Performance

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
Mandatory Measures – reported quarterly and annually to Council				
* Urban stormwater a) The number of flooding events that occur as a result of overflow from the stormwater system that enters a habitable floor b) For each flooding event, the number of habitable floors affected, expressed per 1000 properties connected to a territorial authority's stormwater system.	a) Nil in less than 50-year storm events b) Nil per 1000 connected properties in less than 50-year storm events	a) Y b) Y	a) There were no flooding events of habitable floor levels in urban area during this year, as a result of overflow from the stormwater system. On 26 July 2022 an event caused flooding to two habitable floors, but the flooding related to private issues. b) There were no flooding events of habitable floor levels during this year.	a) N/A b) N/A
*Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of:	a) Nil b) Nil	a) Y b) Y c) Y d) Y	a) No abatement notices were received from Environment Canterbury this year. b) No infringement notices were received from Environment Canterbury during this year.	a) N/A b) N/A c) N/A d) N/A

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
(a) abatement notices (b) infringement notices (c) enforcement orders, and (d) convictions, Received in relation those resource consents.	c) Nil d) Nil		c) No enforcement orders were received from Environment Canterbury during this year. d) No convictions were received from Environment Canterbury during this year.	
* The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site.	Less than 180 minutes	Y	There were no flooding events of habitable floor levels during this year.	N/A
*Complaints The number of complaints received by a territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority's stormwater system.	Fewer than 10 complaints per 1000 connections.	Y	There were 57 complaints for the year which equates to 3.2 per 1,000 connections. This is well under the target of 10.	N/A
<i>Elective Measures reported with Mandatory measures – quarterly and annually to Council</i>				
Service Requests: Percentage of service requests relating to any drainage enquiries that are responded to within 5 days	95%	N	62.67% of the service requests during the whole year met the target time. This number is for both urban and rural areas combined. There is still a backlog of service requests that the Drainage Team and Flood Team have been working through following the July 2022 flood events.	Council Staff have requested as part of the 24/34 LTP for the establishment of an Infrastructure Recovery Team of full time Council employees. This team will provide additional capacity to respond to service requests from events, the ability to commence the recovery works immediately without the delay of securing external assistance, and resources to implement ongoing

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
				upgrades to build resilience and prepare for future events.
Maintain dialogue and consultation with Te Ngai Tuahuriri Runanga	Drainage team represented at all scheduled Runanga meetings	N	No scheduled Runanga meetings have been held to date this year for the Drainage team to attend. (result common to Rural and Urban schemes)	None. The meetings are arranged by the Governance section of Council. 3 Waters attends if there are meetings to attend
Percentage of the total number of Drainage consent conditions that have breaches that result in an Ecan report identifying compliance issues that require action.	0%	Y	There were no compliance reports received from Environment Canterbury regarding a breach of consent condition during the year	N/A
<i>Elective Measures – reported annually and in AMP</i>				
Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 years	-	Insufficient data. Cannot be determined unless house floor levels known, and further modelling for 50 year events completed	Complete 50 year event modelling and consider next steps
<u>For urban areas:</u> For properties or carriageways within urban drainage schemes, the percentage of complaints, about nuisance flooding* caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	N	Insufficient data available	A mechanism for obtaining this data needs to be investigated and out into place

Performance Measure	Target	Target met 2022/23	Commentary	Action to Address
For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated, and measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 10 years or less.	100%	N	Insufficient data available	A mechanism for obtaining this data needs to be investigated and out into place
Number of complaints, post cleaning, resulting from unsatisfactory drain cleaning operations or service	Nil	Y	No complaints reported	N/A
Number of complaints about odour, midges or insects in the open network including drains and ponds.	Nil	Y	No complaints reported	N/A
Percentage of respondents to a three-yearly community survey that have an opinion that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	N	Of those who identified themselves as being within a drainage area, on average across the urban schemes (weighted by sample size) the percentage of satisfied respondents was 79%.	Flood mitigation and protection projects to improve LOS are underway. Budget has been allocated for projects to be implemented as part of the 24/34 LTP.

* Nuisance defined as "any flooding that covers footpaths, makes vehicular access difficult (i.e water ponds to a depth of 15 cm or more), or fails to drain away within 6 hours of the rain event that caused the flooding finishing"

Benchmarking

A number of the performance measures above are collated and reported nationally, and therefore can be benchmarked against other service providers to compare performance. Waimakariri District Council participates in Water NZ's National Performance Review (NPR). The most recent customised report prepared for WDC can be found here: TRIM [230324041126](#).

The more general report for 2021-22, which still enables comparisons with other Councils can be found here: [2021-22 National Performance Review](#). Comparisons noted below may look slightly different to the comparisons in previous AMPs as different numbers of Council's participate in the review. (There are 67 territorial authorities in NZ)

Using the Water NZ National Performance Review most recent results (2021/22):

- 22% of WDC stormwater discharges are consented, with the remainder having been applied for. 8 TLA's have all of their discharges consented, 7 have more than 22% but not 100%, and the remaining 13 have fewer consents
- WDC is among the 21 TLAs which are monitoring stormwater quality, and the 27 that have stormwater catchment management plans in place.
- WDC average annual residential charges are higher at \$260 per annum than the average across all TLA's at \$193 per annum
- Operational cost per property at \$149 p.a. is higher than the national average of \$95
- Capital expenditure per property at \$347 p.a. is higher than the national average of \$129
- Capital expenditure on existing assets as a proportion of depreciation is 552%, indicating the increasing level of service

Scheme differences

New subdivisions such as Pegasus perform better than other urban areas within the District, as they have been designed for higher levels of service. Older areas of Kaipoi and Rangiora were typically built with lower design standards, and retrospectively increasing them to current standards is not considered to be affordable. However the minimum return period for a flood event below which flooding of floor levels must not occur, is a universal LOS across all urban areas. The nuisance flooding LOS is generally aimed at identifying issues in these older areas, with the intention being to avoid those issues not being addressed.

Parts of old Kaiapoi are low lying and have suffered from sporadic flooding for years. Projects to deal with these problems have recently been completed. They were brought forward from the original programme as a consequence of Covid 19 response funding from central government.

Assessment of scheme level performance allows for a comparison between schemes to highlight areas where improvements are required. By addressing the relevant schemes where the scheme specific performance measures are not met, improvements will flow up into the district measure.

Table 8 below shows the 2022/23 elective performance measures for each scheme.

The scheme appendices contain tables that show both the 2022/23 results, and scheme performance history going back to 2008.

Table 9: 2022/23 Scheme performance - elective measures

Performance Measure	Target	Rangiora Urban	Kaiapoi Urban	Coastal Urban: Woodend, Pines Kairaki Waikuku Beach	Pegasus Urban	Oxford Urban
Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 years	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
For properties or carriageways within urban drainage schemes, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 10 years or less.	100%	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
Number of complaints, post cleaning, resulting from unsatisfactory drain cleaning operations or service	Nil per year	Achieved	Achieved	Achieved	Achieved	Achieved

Number of complaints about odour, midges or insects in the open network including drains and ponds.	Nil per year	Achieved	Achieved	Achieved	Achieved	Achieved
Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	83%	75%	44% (Average of results from Woodend, Waikuku Beach and Pines/ Kairaki)	Achieved	73%

5 ASSET CONDITION

The current assessment of asset condition is based on theoretical remaining useful life derived from component age and adopted useful life. Adjustments to the remaining life are made to individual components where information is available to suggest the theoretical remaining life is inappropriate.

A CCTV programme was started in 2008 to survey the reticulation network and assign evidence based condition ratings.

Nominally drainage pipes are inspected on average every 25 years, but criticality and age are modifying factors as set out below

AA – Every 10 years from 50% life remaining

A – Every 10 years from 40% life remaining

B – Every 10 years from 30% life remaining

C – Every 20 years from 20% life remaining

InfoAsset Manager is the software used to import and analyse CCTV data. When installed it had been the intention to integrate the data that will be imported into InfoAsset Manager with the main asset management system (Technology One) data. This project has been put on hold due to the Council commencing a process to replace the Technology One system, which is also the Council's enterprise wide business platform

Remaining Useful Lives

The useful lives of asset groups as indicated by the valuation are consistent with the asset life assumptions used to develop the renewal forecasts. The assumptions about remaining useful lives of the drainage assets are progressively informed by the ongoing collection and analysis of the asset maintenance and repair data, in conjunction with further CCTV surveys. Full details of the assumptions pertaining to the remaining useful lives of each asset category are included in the Valuation report (TRIM [220803132120](#)).

Assets are normally revalued on a three yearly valuation cycle, to coincide with the three yearly LTP cycle. However with increased inflation over the last few years, the most recent valuation was carried out a year earlier in 2022. The 2022 figures have been adjusted for 2023 using CPI factors.

- **Reticulation** The approach of compiling better condition and maintenance information over time, has been considered relatively low risk for reticulation as the average age relative to asset life is reasonably young. The majority of reticulation assets have more than 50% remaining useful life and are considered to be in good condition.

As noted a CCTV programme is in place to assess the condition and expected life of gravity drainage assets, which will in time improve confidence in asset lives.

- **Headworks (pump stations)**

Headworks asset condition is determined using asset age and asset class. No comprehensive asset condition assessment at facilities has yet been carried out so confidence in asset condition is not high. However field staff are required to take note of assets that are deteriorating, when carrying out their normal regular maintenance

checks/inspections. In the recent complete facilities asset inventory work that has been undertaken, the scope included identifying assets in particularly bad condition. No stormwater assets were found that fitted this category.

In the absence of a formal assessment it is believed that the majority of headworks assets have more than 50% remaining useful life (based on age).

Electrical componentry at headworks has received more attention, and a regular inspection programme is in place to identify renewal needs, managed through Council's electrical servicing contractor. Works identified from these assessments are programmed and budgets incorporated in the ten year plan

- ***Useful Lives on GIS***

The [AMP Plans and Figures Viewer](#) contains links to GIS plans for each scheme that spatially illustrates the remaining useful life of the reticulation assets within the network. This provides a useful picture of the relative asset age and performance.

- ***District Overview***

Figure 2 and Table 10 below summarises assessed asset condition for the 2023 AMP reviews. Note that "Headworks" is inclusive of all above ground assets, while "Reticulation" covers the remainder of the assets, which are typically below ground pipework related assets.

Figure 1: Asset Condition Summary

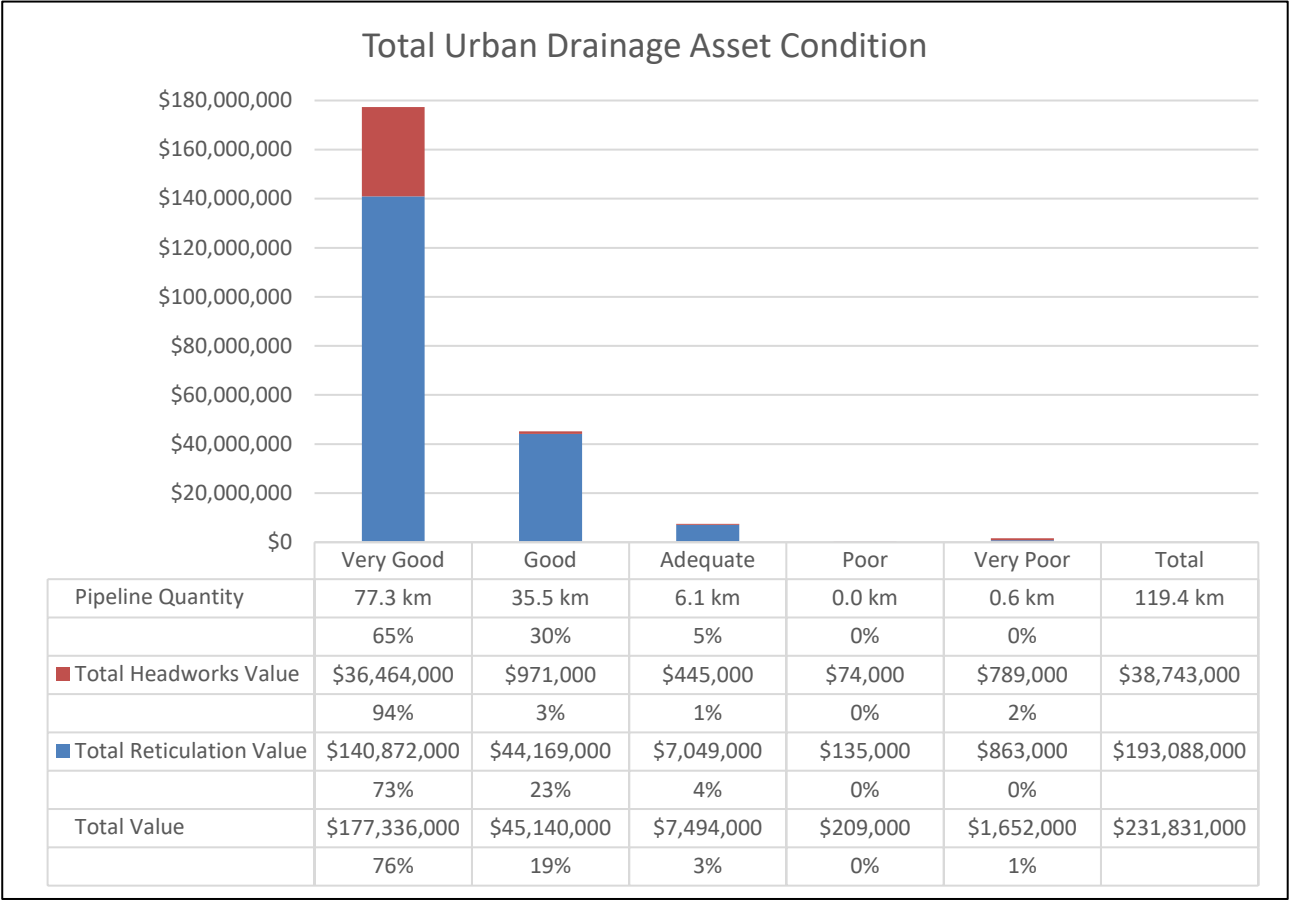
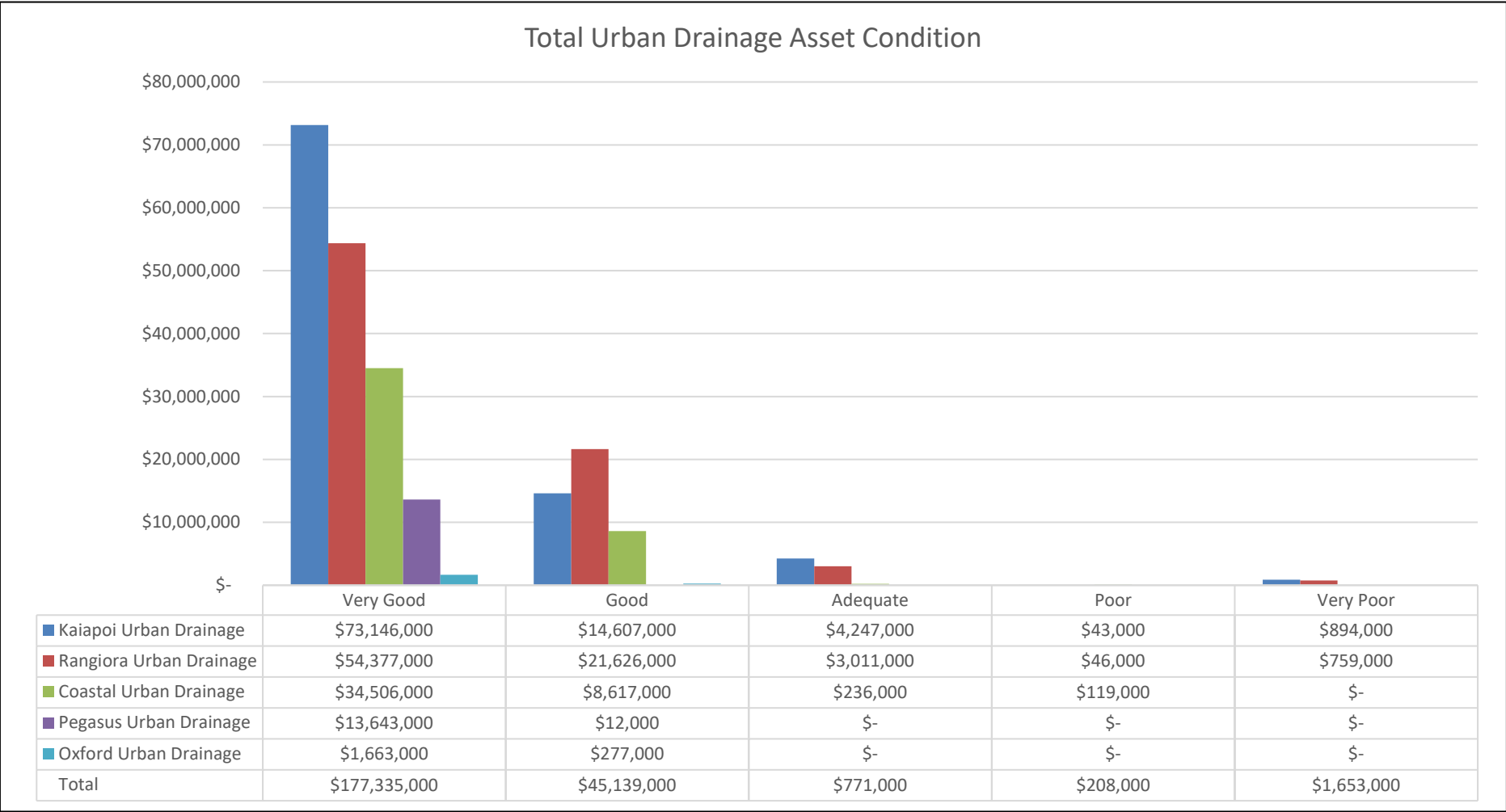


Table 10: Pipe Condition Summary

Parameter	Very Good (Grade 1)	Good (Grade 2)	Adequate (Grade 3)	Poor (Grade 4)	Very Poor (Grade 5)
Definition	More than 80% of life remaining	Between 50% and 80% of life remaining	Between 20% and 50% of life remaining	Between 10% and 20% of life remaining	Less than 10% of life remaining

Figure 2: Asset Condition Summary - Schemes



6 CRITICALITY

Criticality is a measure of the importance of a given asset to the overall scheme and is determined by the consequence of failure. Assets for which the financial, business, or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation are considered more highly critical. Critical assets have a lower threshold for action than non-critical assets. Criticality is used as a means to:

- Identify the most important assets in the overall network
- Prioritise assets that warrant specific condition assessment
- Prioritise assets for repair following multiple failures, e.g. following an earthquake
- Quantify the relative consequence of failure, which can then be used to assess the risk of failure and prioritise renewals. Specifically this means that assets with higher criticality rating are renewed before their end of life, while renewal of low criticality assets will be delayed beyond theoretical end of life.
- As an input to the CCTV programme.
- To determine if a “stand over” is necessary by our in-house operations contractor, when external contractors are working on or near WDC assets.

The criticality assessment carried out on the reticulation uses an automated GIS model using both GIS and modelling data to determine the criticality of pipes. The previous criticality assessment model for treatment plants and pump stations has been updated and used again in this document, but now that a comprehensive asset stocktake at facilities has been completed, it will enable a new model for assessing the criticality of pump stations and treatment plants to be developed.

WDC have chosen to use a component failure and public-impact based approach to identify and rank critical assets.

For drainage assets “Failure” is defined as any single component malfunctioning causing a loss of service or significant impact to others under normal operating circumstances. “Impact” is defined as:

- Public health impact – the failure of the asset creates an unacceptable impact on public health.
- Socio-economic impact – the failure of the asset creates an unacceptable social and/or economic loss to the community. This includes disruption to essential services, significant economic activities and important roads.
- Financial Loss – The failure of the asset, or the repair of a failed asset, creates an unacceptable financial loss to the community, including the Council.
- Environmental impact – the failure of the asset creates an unacceptable environmental effect.

The stormwater reticulation and pump stations are assessed by five main criteria:

- The number of customers potentially affected by failure of the main or facility
- The diameter of the gravity or pumped stormwater main
- The location of any potential flooding from main, manhole or pump station
- The depth of the stormwater main
- The location of the main, i.e. if it is located in a strategic road, near a train line or a stop bank

Each individual main is then graded between AA and C categories.

Table 11: Criticality Score Categories

Criticality Rank		Criticality Rank Code
High Criticality	Extreme Criticality	AA
	High Criticality	A
Moderate Criticality		B
Low Criticality		C

The table below shows the percentage of mains by length for each criticality rating. Because the pipe criticality assessment is undertaken using GIS data the assessment can be repeated and updated on a more regular basis. Annual updates are planned that will inform each years detailed renewals programme.

An equivalent table for facility assets is not currently possible, but will be when the facility asset inventory project has been finalised, and the facility criticality model linked back to the assets.

District Overview – Reticulation Criticality

Table 12: District Criticality Assessment

Scheme	AA	A	B	C
Coastal Urban Drainage	5%	41%	34%	20%
Kaiapoi Urban Drainage	12%	44%	28%	16%
Oxford Urban Drainage	7%	18%	67%	8%
Pegasus Urban Drainage	0%	32%	29%	39%
Rangiora Urban Drainage	6%	45%	31%	18%
All Urban Schemes	8%	43%	31%	19%

Criticality on GIS

The [AMP Plans and Figures Viewer](#) contains spatial views of the criticality of pipe and facility assets for each scheme.

7 RISK ASSESSMENT - OVERVIEW

The purpose of carrying out risk assessments on drainage schemes is to identify any risks to the scheme which need to be mitigated, and to prioritise implementation of any mitigation plans.

A number of different risk assessment have been carried out, each one with a specific focus, although there is some overlap. A description, and the purpose of each assessment is provided below

- i. **Operational Risk Assessment:** This is the broadest scope assessment. Possible causes of failure of the drainage system are examined, together with the consequences of that failure. Failure includes failure caused by natural disasters. This assessment, was last carried out for the 2015 AMP review, but has not been updated for this review. It was originally the intention that a review of these operational risks be carried out in time for this AMP, but as it was subsequently expected that the next AMP would be written by the new entity being set up under the 3 Waters reforms, this was not carried out.
- ii. **Disaster Resilience Assessment (DRA):** Assesses the risk to above ground assets from a broad range of potential natural disasters. See Section 9
- iii. **Vulnerability Assessment:** Focuses solely on underground assets, assessing the vulnerability of pipes to damage from natural hazards, and uses an automated approach. For drainage there are no AC or earthenware pipes in areas assessed as vulnerable to liquefaction, so no vulnerability assessment has been needed
- iv. **Corporate Risk:** High level risk assessment carried out corporately in association with the development of the LTP and Infrastructure Strategy. Covers Environmental, Economic, and Social risks. Council updated its Risk Management Policy and Framework in 2022. TRIM [220428064824](#) and [220428064825](#). The most recent corporate risk assessment is available here: TRIM [230321039241](#)

Updating the 3 Waters risk assessments is now a priority. A new approach has been recently developed, which brings the Operational, Disaster Resilience and Vulnerability assessments into a single risk assessment process. This is expected to make regular updating of the assessments less of a hurdle. The new methodology will be used in 2024 to carry out a complete risk assessment of water services.

The new methodology enables consistent, measurable quantifying of risks for customers and the environment from operation of water supply (and also stormwater and wastewater) schemes. Key risks are presented as outcomes such as loss of, or contamination of water supplied to customers, or stormwater or wastewater discharges resulting in flooding or downstream environmental contamination.

The method achieves consistency by assigning numerical values to conditions that lead to events (for example – “pump station failure”) which causes the adverse outcome “loss of supply”.

Likelihood is determined by using preset data to assign values to conditions which are common across schemes. A typical condition is, for example, “average asset condition - % of life remaining”. For this example each percentage range specified in the condition receives a rating of between 1 and 5, with “1” being “almost certain” and “5” being “rare”. Likelihood scores for each condition are averaged to determine an overall likelihood rating for each event. Conditions are measurable,

using asset and scheme operating data, drawing from procedural, mechanical or structural factors or natural hazards which contribute to the events.

The resulting likelihood scores are averaged with consequence scores (comprising agreed severity values modified by scheme exposure) to determine final risk ratings for each event and scheme. "Scheme exposure" is determined by the number of connections to each scheme. This gives an indication of the scale of impact of an event and size of the likely Council response that would be required to resolve it.

Findings from these updated risk assessments will be compared with previous risk assessments, particularly the DRA work as a check.

8 OPERATIONAL RISK ASSESSMENT

The table below details the risks considered under the previous assessment methodology, which was last carried out for the 2015 AMPs. Natural disaster risks were also considered across all asset types: earthquake, tsunami, extreme weather events, and vandalism/terrorism.

Table 13: Risk Events Considered

Process	Event
Collection	Overflow or flooding stormwater from pipes or open drains
	Collapse or failure of pipe or open drains
	Overflow or flooding of stormwater from pump station
Treatment	Overflow or discharge of untreated stormwater
	Stormwater not sufficiently treated
Disposal	Stormwater unable to be discharged or discharged uncontrollably
General	Operations/management failures

Risk Matrix

Possible causes leading to the above events are rated for consequence (1 to 5) and likelihood (A to E) and then combined to give a risk score using the matrix in Figure 3. The three cells highlighted by a black frame show where the WDC matrix differs from the standard AS/NZ 4360 risk matrix. These changes were made as they better reflect the level of risk accepted by WDC on their 3 Waters assets.

Figure 3: WDC Risk Matrix

Risk Matrix		Consequences				
		Insignificant	Minor	Moderate	Major	Catastrophic
		1	2	3	4	5
Likelihood	A Almost certain	M	H	H	E	E
	B Likely	M	H	H	E	E
	C Possible	L	M	H	H	E
	D Unlikely	L	L	M	H	E
	E Rare	L	L	M	H	H

District Overview – Operational Risk

Table 17 summarises the number of high risks identified in 2015 now remaining across the urban drainage schemes. All extreme risks have been mitigated.

Note that the planned new comprehensive risk assessment, with completion in 2024 anticipated, will incorporate these previously identified risks

Table 14: District Overview – High Risks remaining (Operational)

Risk Event & Cause – DISTRICT level	Specific Risk	2023 AMP update	Project Details - updated
Natural disaster & other due to earthquake	In coastal urban areas, pipe joints and manhole connections could be susceptible to liquefaction	Risk assessment methodology is being reviewed as part of 2021 AMP improvement plan. Risk will be carried forward into new programme, if warranted	Risk assessment update, being carried out by PDU
Natural disaster & other due to earthquake	Failure of stopbanks and floodgates is a possibility. These are the responsibility of ECan	Residual risk now considered acceptable. These assets are in any case not WDC assets. For the risk to eventuate, an earthquake that causes damage to these assets needs to then be followed by a significant rainfall event	N/A
Natural disaster & other due to earthquake	Pipework and headwalls could be damaged by earthquake	Risk assessment methodology is being reviewed as part of 2021 AMP improvement plan. Risk will be carried forward into new programme, if warranted	Risk assessment update, being carried out by PDU
Risk Event & Cause – SCHEME level	Specific Risk	2023 AMP update	Project Details - updated
Natural disaster & other due to earthquake	Pond bunds could be susceptible to liquefaction.	Kaiapoi: One pond that is potentially at risk, and the consequences of bund failure are minor. Residual risk acceptable Pegasus: No bunded ponds	N/A N/A

Waikuku Beach: Flooding	Overflow or flooding of stormwater from pipes or open drains due to insufficient reticulation capacity	Waikuku Beach has minimal pipework, the drainage system comprising mainly of open drains.	<ul style="list-style-type: none"> • Temporary pump discharge line to be installed for alleviate Beach Crescent flooding in 2023/24. • Planned improvements for Rotten Row in 2028/29.
Waikuku Beach: Insufficient outfall capacity	Collins Drive flap valve has caused flooding in the past	A recent high intensity rainfall event has shown that when the flap valve operates, unacceptable flooding can occur behind the stop banks	<ul style="list-style-type: none"> • Maintenance of WDC flap valves to be continued and strengthened. • Liaison with Ecan for maintenance of their flap valves to be strengthened. • Planned Taranaki stream pumpstation in 2034/35.
Kairaki Beach: Flooding	Stormwater unable to be discharged due to failure of outfall	This is a regeneration zone previously damaged by the earthquakes, and the drainage system is poor. New housing is anticipated, and therefore the risk remains	Funding is available for modest system upgrades including an upgrade to the temporary pump
Pines Beach: Insufficient outfall capacity	Outfalls to Waimakariri River via Saltwater Creek. Flap valve has caused flooding in the past	Minor improvements have been made, but ECAN plans a completely new structure downstream of the existing one, within the next three years.	ECAN project within 2024/25 to 26/27 LTP period expected to mitigate risk
	Overflow or flooding of stormwater from pipes or open drains due to insufficient reticulation capacity	“Shovel ready” funding has enabled a suite of drainage improvement works to be completed earlier than planned, but there are still further upgrade works budgeted for	9 upgrade projects planned 2024/25 to 2033/34, amounting to approx. \$12M. Details included in AMP Plans and Figures Viewer
	Overflow or flooding of stormwater from pipes or open drains due to poor reticulation condition (blockages), particularly in	Some initial screening work has been carried out to identify at risk pipes. Follow up is required	The list of at risk pipes to be incorporated in the CCTV programme, as a high priority

Kaiapoi: Flooding	drowned pipes that are not regularly maintained		
	Overflow or discharge of stormwater from Beswick Pump Station due to pump failure.	No longer assessed as high risk , as pump station is now in a regeneration zone. Notwithstanding, operational improvements to the P.S. are planned	Operational improvements only. Risk now low
	Overflow or discharge of stormwater from Feldwick Drain Pump Station due to pump failure	Risk now mitigated: Feldwick Flood PS and Rising Main, SMA and Drain Upgrade and SW PS upgrade all completed.	N/A
	Natural disaster & other due to tsunami	Risk assessment methodology is being reviewed as part of 2021 AMP improvement plan. Risk will be carried forward into new programme, if warranted	Risk assessment update, being carried out by PDU
	Debris from storms could interfere with flap valves	Flap valve maintenance project has slipped	<ul style="list-style-type: none"> • Maintenance of WDC flap valves to be continued and strengthened • Liaison with Ecan for maintenance of their flap valves to be strengthened
Rangiora: Flooding	Overflow or flooding of stormwater from pipes or open drains due to insufficient reticulation capacity. The 2014 storm identified overland flow from surrounding farmland as the major issue	Risk reduced through work completed to date but programme of projects identified after the 2014 event still to be finished	Lehmans Rd Stage 2: 2027/28 Wiltshire Green stage 2: 2026/27 West belt trunk: 2028/29

9 DISASTER RESILIENCE ASSESSMENT

The 2009 Disaster Resilience Assessment (DRA) was a desktop assessment of the risk from natural hazard events for all Council operated water supply, wastewater and drainage schemes including above ground and reticulation assets.

In calculating risk the following factors were considered:

- The likelihood of the hazard event occurring, determined from return period
- The resilience or vulnerability of the asset to each hazard (desktop based)
- The consequence of asset failure to the community

The DRA was updated in 2011 to take into account new hazard assessments, in particular the increased seismic risk to the assets throughout the District including further work on areas susceptible to liquefaction. The outputs of new tsunami modelling, a rapid flood hazard assessment and, an updated wildfire threat assessment were also included. This update focused on above ground assets, as the assessment of risk to below ground assets became incorporated from this time on, into the renewals model. The report is available as [TRIM 160912093915](#)

A comprehensive review of the DRA Action Plan was carried out in 2014 to update progress made on tasks and prioritise future initiatives. As a result of the review, related tasks were consolidated into one of three improvement projects to be actioned over the following three years. Limited progress has been made on these improvements since the 2015 AMP revision, due to resource constraints.

The new risk assessment methodology described in section 7 above has been developed with the purpose of incorporating the DRA risk analysis within it. It is therefore expected that it will result in similar actions/improvement projects to the DRA, but integrated with the outcomes of the operational risk assessment.

The DRA, together with the risk based renewals assessment, were the Council's 3 Waters department's primary tools in meeting the obligations of the CDEM Act which requires that all lifeline utilities operate to the fullest possible extent before, during and after an emergency. The new risk assessment process and the risk based renewals assessment will be the tools used going forward to meet those obligations.

10 CORPORATE RISKS & ASSUMPTIONS

An assessment of key risks and assumptions was prepared by the Council in preparation for the 2024-34 LTP, and is included in the Infrastructure Strategy. The assessment outlines all of the Key Assumptions and Risks that could potentially impact Council service delivery for the 3 Waters activities. Mitigation measures are explained in response to each identified risk.

The Key Risks and Assumptions table is available at TRIM 240611093590.

The definitions of likelihood and consequence and the overall risk priority used in the Corporate Risk Assessment are included in the Council's Risk Framework Document [TRIM 220428064825](#).

A number of the financial risks and assumptions identified in this document imply future uncertainty, with future changes potentially affecting the individual scheme financial projections. Changes to corporate assumptions have been taken note of as part of this AMP review and projections and budgets revised accordingly.

11 CLIMATE CHANGE

For some time Waimakariri District Council has been including the expected effects of climate change in both the hydraulic modelling that it carries out, and design work, and has assumed the worst case projection of RCP8.5.

Notwithstanding, in 2022 the Council commissioned NIWA to carry out a district specific climate report, and in June 2022 the Council resolved to

- *Adopt the NIWA climate projections for the RCP 8.5 Scenario as its baseline evidence for corporate planning, including District planning and the 2024 LTP suite of corporate documents (LTP, activity management plans and infrastructure strategy).*

The key findings of the NIWA report are as follows:

- The projected Canterbury temperature changes increase with time and increasing greenhouse gas concentrations. For RCP8.5 the mid-century mean air temperature is projected to increase by 0.9°, with an end of century increase of 2.4°. Diurnal temperature range (i.e., difference between minimum and maximum temperature of a given day) is expected to increase with time and increasing greenhouse gas concentrations.
- For RCP8.5 the mid-century mean maximum air temperature is projected to increase by 1.2°, with an end of century increase of 3.3°. Changes in mean minimum air temperature are largely uniform across the district
- For RCP8.5 the mid-century mean minimum air temperature is projected to increase by 0.5°, with an end of century increase of 1.6°. Changes in mean minimum air temperature are largely uniform across the district
- The average number of hot days (days $\geq 25^{\circ}\text{C}$) is expected to increase with time. 15 by mid century and 44 by end century. Hot days in the Lees Valley and western plains could see the largest increase by the end of century with upwards of 50 additional hot days projected per year.
- The number of frost days (days $< 0^{\circ}\text{C}$) is expected to decrease throughout the region. Largest decreases are expected in inland areas, with frost days reducing by up to 26 per annum by end century.

- Increased rainfall is projected across the lower altitude plains and coastal areas, and no change (or slight decreases) in annual rainfall are projected in the western high-altitude zones. However rainfall intensity is expected to increase. Extreme rainfall will likely increase by approximately 7% per 1 °C of climate warming, and shorter duration rainfall events (e.g., hourly) could increase by as much as 15% per 1 °C of climate warming.
- The future amount of accumulated PED (Potential Evapotranspiration Deficit) is projected to increase, therefore drought potential is projected to increase.
- Mean annual low flow in rivers generally decreases by late century, with decreases of 20%-50%.
- Floods (characterised by the Mean Annual Flood; MAF) are expected to become larger, with increases exceeding 50%. However, as noted in The Canterbury Regional climate change report (Macara et al., 2020), the mean annual flood “should not be considered a comprehensive metric for the possible impact of climate change on New Zealand flooding”.
- Sea-level rise will continually lift the base mean sea level on which the tide rides, which means there will be an increasing percentage of normal high tides which exceed a given present-day elevation e.g., street level, berm or stopbank crest.

This report validates the approach 3 waters has been taking with it’s modelling and design work.

Previous Climate Change Initiatives

WDC’s initial studies carried out on the effects of climate change focused on the coastal fringe. An investigation into groundwater levels, (TRIM [191202168785](#)) concluded that rising groundwater levels will subject underground assets to more frequent inundation, and exacerbate surface flooding. Existing drainage systems are likely to become less effective. However a study of coastal erosion (TRIM [191202168789](#)) found that dune erosion is not likely to follow from sea level rise, as the Waikamariri River delivers enough additional material along the coast to the north of the river, to compensate for any increased rate of erosion. This study also considered coastal inundation, but a further more comprehensive study (TRIM [200312034365](#)) concluded that various combinations of storm tide, fluvial events and a rising mean sea level will cause overtopping of existing stop banks and natural river banks.

More recently a study (TRIM [231115183268](#)) has been carried out of the potential effects of climate change on the Council’s infrastructural assets. This study used Council’s previous risk assessment and criticality work to consider the likely increase in risk to assets arising from global warming. The conclusion is that the greatest risk come from the increased likelihood of flooding. The key outputs from the report are a comprehensive list of all the assets under threat from the higher flooding risk, and a high level assessment of costs to mitigate the danger. Solutions may include strengthening the asset to enable it to withstand the flooding, moving the facility/asset to a safer site, or accepting the damage, and repairing it when flooding does occur. For some solutions the work will be able to be integrated with the normal renewals programme. However this study is only a first screening, and the assets at risk will need case by case studies to further refine the actual threat, and commence development of a prioritised programme to mitigate risks.

It is proposed that this additional work will be carried out over the next three years. Notwithstanding this additional refining work, the report’s future costs to adapt have been included in the 30 year capital programme as place holders in years 11 to 20.

Design and modelling work carried out by WDC for its 3 Waters infrastructure allow for both increased rainfall intensity and sea level rise using the RCP8.5 scenario, but modelling has not yet incorporated the effect on higher ground water infiltration (GWI) that will be a potential consequence of the increased groundwater levels indicated by the above studies.

Overall the effects of climate change are expected to increase the frequency at which the existing drainage systems become overwhelmed

There were specific actions in the 3 Waters activity area that were identified in the 2021 AMPs that the WDC planned to carry out with respect to reduction of carbon emissions. None of these had any effect on drainage activities, which is a low emissions activity.

Future Climate Change Initiatives

a) Mitigation

Looking forward Council's 3 Waters team plans to carry out more with respect to mitigation and embed climate change consideration into its investment decisions. Within the three year term of the 2024 LTP it intends to use the guidance in the Water NZ publication Navigating to Net Zero to:

- Confirm the operational emissions boundary that 3 Waters intends to use.
- Develop an operational emissions forecast
- Develop a capital emissions baseline. Note the previous focus has been on operational emissions alone, but establishing a "business as usual" capital emissions baseline, will enable emission reduction opportunities from adopting alternative low-carbon approaches to be appropriately assessed. Establishing this baseline will be a significant body of work, and for it to be used effectively, the implication is that all future infrastructural projects will need to be assessed from both a climate and financial perspective once the baseline has been established.

Set carbon reduction targets

b) Adaptation

During the period of the 2024/2034 LTP further assessment work will need to be carried out, and consideration given to the types of solutions that may be practical. Since the Regional Council is responsible for management of the major rivers, Councils role with respect to these will be an advocacy one. The issues will need to start being discussed with affected communities.

12 DEMAND

There are a number of factors that may influence future demand on drainage systems in the district:

- Population trends or growth in population
- Changes in land use
- Changes in legislation
- Climate change
- Changes in public awareness/opinion
- Significant wet weather events

Growth

The overall district population growth scenario used for the 2024 AMPs update was calculated by the consultant Formative under direction from Council's Development Planning Unit (DPU). The Formative data, which shows the population broken down into towns and rural areas is available here: <https://formative.shinyapps.io/InformProfile-WaimakaririDistrict/>.

To calculate the growth for urban drainage schemes, population increases were applied to planned growth areas at a densities agreed with the DPU. Account was also taken of the capacity for infill to absorb the necessary increases. In cases where the required increase in population could not be fitted inside growth areas, further discussions were held with the Development Planning Unit to agree on locations where the additional growth should be applied. Drainage scheme growth in connections was then calculated based on the growth areas.

The following growth projection horizons were used;

1	1 – 3 years	(2024/25 to 2026/27)
2	4 – 10 years	(2027/28 to 2033/34)
3	11 – 20 years	(2034/35 to 2043/44)
4	21 – 30 years	(2044/45 to 2053/54)
5	31 – 50 years	(2054/55 to 2073/74)

TRIM [230905137205](#) shows the projected 50 year increase in drainage serviced properties, by scheme.

As part of all new development work, each development area must ensure that there are appropriate stormwater retention and treatment facilities created that both treat stormwater run-off and ensure that run-off from newly developed areas does not increase pre-existing stormwater flows.

Stormwater treatment and retention ponds are typically built or funded by each developer in the various development areas. The Council takes over the maintenance of these assets once constructed.

The drainage rated boundary areas shown on the drainage servicing plans for each scheme include any new stormwater management areas and their serviced properties.

Growth Uncertainty

The corporate growth model developed by the Council for assessing growth related works is by its nature uncertain as it relies on population projections that are highly dependent on both changing economic and social factors, and changing legislation, for example the 2020 National Policy Statement on Urban development 2020. Generally however, there is a greater degree of certainty in initial years, and greater levels of uncertainty when looking forward to the future. This means that over time, there is the ability for growth projections to be updated and refined over time as contributing factors evolve. There are also a number of other strategies employed to manage this uncertainty, which are outlined below.

A key means of managing this uncertainty has been to use the best available data and consult widely with Council staff in the policy and planning fields for the best information. Note that the policy of requiring developments to undertake work on the development site to ensure stormwater site runoff is not increased by the development, does to a large degree reduce uncertainties for stormwater planning.

To further reduce the uncertainties from the model in terms of when a growth project may be required, when a project is recommended by the Network Planning Team, a catalyst for the project is always included (for example, when a certain parcel of land begins to develop, or when connection numbers exceed a certain value). This means that as a project comes up in an Annual Plan to be constructed, the documented catalyst is reviewed and discussions held with the Network Planning Team to verify that the project is genuinely required to be constructed at that time, or whether it be pushed out further in the budget.

Changes in Land Use

WDC is currently undertaking a District Plan review. The only expected effect on land use from a drainage perspective is in rural areas where it is proposed to move from the currently permitted 4 hectare minimum lot size for rural subdivisions, to 20 hectares. This will have the beneficial effect of reducing potential increased runoff from such developments. The review also includes for a number of smaller lot sized rural residential developments (approx. 5000m²). The effect of these changes may encourage those seeking a lifestyle block to accept smaller lots, from which it is easier to manage overall runoff.

Changes in Public Awareness

There is increasing demand for an improvement to water quality in lowland streams, which is translating into new legislation. Further comment on the effect of this on drainage activity management is provided in the section on consents.

Significant Wet Weather Events

This has been a significant driver of demand over the last 10 years. Typically such events may feature high intensity periods of rainfall in localised parts of a catchment that exposes deficiencies in particular parts of the drainage system. As noted in the level of service section, Council reacts to these events by additional programmes of works to alleviate the drainage system shortcomings.

13 CAPACITY & PERFORMANCE

District

The existing capacity and performance of the main reticulated drainage schemes throughout the district are assessed using hydraulic models constructed and maintained by the Council's in house team for each scheme. District flood hazard mapping has been carried out by the same modelling team on behalf of the Development Planning/District Plan team, which has been made publicly available. These are used to set floor levels for new dwellings.

One of the LOS for all urban areas is having system capacity, measured from modelling, to ensure a 1 in 50 year event does not cause flooding of dwellings. This cannot be determined unless floor levels are known, which is problematic. Further work is needed and it has been included at the end of this document as an improvement project.

Parts of a scheme that are performing below the required Levels of Service, are most often identified through the occurrence of a high intensity rainfall event. Investigations follow and the models are then used to identify options that will meet the Levels of Service set out in the Engineering Code of Practice. The recommended upgrades are costed and added to the list of AMP capital projects for inclusion in the Council's Long Term Plan.

Issues of underperforming drainage systems have become more common within the last decade. The 2014 floods within the District highlighted a number of capacity problems with the stormwater systems. A subsequent programme of works to resolve the issues, the Flood Response Programme detailed in report TRIM [141009110892](#), is funded by a district wide rate.

More recent wet weather events, with in some instances heavy localised rainfalls in areas different to the 2014 storms, have identified additional capacity problems within parts of the network. Scheme budgets have been adjusted within the 2024-34 LTP to attend to these issues. Summary reports to Council that have sought funding approvals in this way are TRIM [180809090003](#), [200709085254](#), [210817135255\[v2\]](#), [220825147219\[v2\]](#), [220923165375](#)

Schemes

1. Coastal Urban

The capacity of the Woodend stormwater system has been assessed using the Councils hydraulic models. Funding has been allocated for capacity improvements, with construction in 2025/26 and 2026/27. Additional improvements to the capacity of the McIntosh Drain have been programmed for 2028/29 in response to development in this area.

The Waikuku Beach system relies largely on roadside drains and swales. The system is subject to backwater effects from sustained high flows in the Ashley River and upgrades to the system featuring a Taranaki Stream pumpstation are planned in 2034/35 to help address these issues.

The performance of the drainage system at Pines / Kairaki largely meets the target service levels for drainage capacity. Upgrades are planned in 2024/25 to help address some minor outstanding issues.

With regard to the piped systems of the stormwater network in general, modelling indicates that there is reasonable capacity particularly for the commercial area where a number of improvement works have been carried out. However some areas of nuisance flooding are indicated by the modelling, and to fully meet the capacity requirement of the 10 ARI level of service, capital works are required.

2. Pegasus Urban

Since it is a new system, developed to the higher standard now required, capacity will be meet the required LOS. The customer satisfaction survey with 100% of the respondents being satisfied or very satisfied, also indicates that the drainage system is performing well

3. Kaiapoi Urban

Recent upgrades undertaken as part of the government 'shovel ready' programme has largely addressed most of the major flooding issues within the urban areas of Kaiapoi. These works featured three new pumpstations at

- Otaki Street
- Beach Road
- McIntosh Drain

A number of additional upgrades have been included in the 10 year LTP programme to address other outstanding issues and include the following works:

- Kaikanui Stream Diversion
- Cridland Street West Pumpstation
- Beswick Street Pumpstation Upgrade
- Feldwick Drain Pumpstation Upgrade
- Dudley Drain Pumpstation Upgrade

4. Oxford Urban

The capacity of the Oxford stormwater system has been assessed using the Councils hydraulic models. Large parts of the system are not meeting the Council 5 year design standard. Ordinary rain events are known to cause ongoing concern to some residents, with issues arising from the limited capacity of the system to drain storm water away in conjunction with the decreasing capacity of the roadside soak pits. Two projects have been included in the scheme budget to address specific concerns:

- Constructon of a secondary overland flow path from Matai Place to Park Avenue (through Ericksons Lane) 2024/25
- Provision of a secondary flow path from Kowhai Street to High Street and through the cemetery. 2026/27

Following the flood events of 2022 additional works have been programmed to alleviate flooding on the Pearson Drain and Flannigan Drain systems

- Bay Road Drainage Upgrade 2024/25
- Flannigans Drain Capacity Upgrade 2024/25

- Burnett Street Capacity Upgrade 2024/25
- Flannigans Drain Downstream Upgrade 2025/26

5. Rangiora Urban

Significant flooding occurred in west Rangiora during the June 2014 flood event, which was above the design standard ARI. This was caused by overland flow from the rural area to the north-west, in combination with undersized section of waterways and reticulated mains in the township. The management of secondary flow paths was a further issue.

A number of new upgrades have been completed, funded by the district wide Flooding Response rate, with three projects still to be completed:

- Overflow pipeline on West Belt from North Brook to Townsend Road extension FY26/27 – 28/29
- Construction of box culverts and wide swale on east side of Lehman's Road (refer TRIM 141010111299). FY 26/27-27/28
- Dockey Creek overflow diversion at Lilly Road to the Cust River FY 24/25-26/27

There are also 4 upgrades planned for Rangiora funded by the scheme to improve performance:

- Blackett Street Piping 2024/25
- Johns Road Stormwater Main 2024/25
- Wiltshire/Green pipe upgrade Stage 2 2024/25
- Belmont Ave Drainage Upgrade 2028/29

With regard to the piped systems of the stormwater network in general, modelling indicates that there is reasonable capacity particularly for the commercial area where a number of improvement works have been carried out. However some areas of nuisance flooding are indicated by the modelling, and to fully meet the capacity requirement of the 10 ARI level of service, further capital works would be required. The current strategy is to analyse and investigate complaints after rain events, to determine if capital works are warranted. A general budget has been allowed to accommodate such works.

Consents

Council has applied for stormwater discharge consents for all of its major town urban reticulated networks. The Rangiora consent has been granted but Council is still waiting for Ecan to release decisions on the other town consent applications (Kaiapoi, Oxford and Woodend). Consent conditions for the other urban areas are expected to be similar to the Rangiora conditions, and provisional budgets have been included in the scheme budgets.

Consent applications propose that by 2025 Council will have developed and costed a strategy for meeting water quality standards that will be implemented in the 2025 to 2040 period. The work on this strategy has recently commenced for Rangiora. The strategy preparation (stormwater management plans) for the other 3 towns are delayed due to their consent decisions not yet being issued by Environment Canterbury.

Potential innovations from overseas and new technologies currently being developed by the University of Canterbury and other NZ education providers for improving water quality in existing urban areas will be investigated and assessed, for possible inclusion in the proposed strategies

The Waimakariri District Council is likely to adopt some form of the “industrial site stormwater audit” now being implemented by the Christchurch City Council under terms of its global stormwater consent. The audit comprises staff site visits to industrial properties, undertaking site runoff sampling, introduction of new products to intercept site pollutants and advising on improved site management practices. The approach involves ongoing negotiation with the site owners/operators and has within its first year of implementation been shown to be effective at reducing contaminant inputs into the stormwater networks.

The cost of retro fitting stormwater treatment to the Council’s existing urban networks is likely to be high (roughly estimated at in excess of \$100m). The uncertainty arises in part from the fact that worldwide, much of the work in this area is still experimental. Some improvements can only be effected by change that is led at a national level (e.g. a national decision to phase out use of copper brake pads which are a key urban stormwater contamination source would assist all territorial authorities to meet the required water quality standards for dissolved copper discharges).

Council has a global consent for the ongoing maintenance work it carries out on its rural open drainage network, but this does not significantly affect the urban networks.

Council has a range of other drainage consents, many related to stormwater management areas that have been built as part of recent new housing developments. Council’s recent engagement of a dedicated consents officer is expected to improve the way it manages it’s consents .

14 OPERATION AND MAINTENANCE

Operation and maintenance expenditure incorporates the day to day running of the drainage schemes and allows the system to carry on functioning to deliver the agreed levels of service.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised below:

Table 15: District Overview - Extreme and High Risks (Natural Hazards)

Task	Planned	Reactive
Headworks Maintenance (pump stations)	Frequent inspections (typically weekly) and basic maintenance	If required for particular headworks items in response to alarms, or defects noted as part of inspections.
Generator Checks	Planned monthly, quarterly and annual checks	If required in response to alarms
Pipe repairs	No planned repairs	Repairs undertaken in response to service requests / leaks.
Valve repairs	No planned repairs	Repairs undertaken in response to service requests / leaks.

There are a relatively small number of urban stormwater pump stations in the district, which are maintained on a planned basis. Open drains in urban areas are maintained via the Greenspaces maintenance contract

The CCTV programme will, with time, provide a view of the rate at which some stormwater networks may silt up, which will enable better planning of cleaning, and maintenance of systems. An investigation of pipes which are at high risk of silting up, from being drowned or having very flat grades, has stalled and needs to be re-started.

Since the 2021 AMP review Council has purchased and implemented the widely used InfoAsset Manager software which allows more efficient importing of CCTV data, and proper analysis of that data. This will provide benefits in both maintenance planning, and renewals, through the ability to target CCTV work in a more systematic way.

Operation & Maintenance Expenditure

Budgets are largely based on past expenditure carried forward, which has also been the case for the 2024/34 LTP. However consideration of the effect on drainage maintenance costs of rising groundwater levels in coastal areas caused by sea level rise should be made during the three year period before the next LTP, so that likely increasing costs can start to be factored in

The operation and maintenance (O&M) budgets are currently set up to automatically account for inflation and growth. Inflation is accounted for with a factor set by the Council's Finance Unit, but this is not used in the development of the graphs and tables in the AMP's so as to provide a clearer picture of asset O&M costs year to year

The implication of growth on O&M budgets is accounted for with the inclusion of a formula that increases the O&M costs on a pro rata basis proportionally with the population (as new developments come online). However, depending on asset class the increase in O&M costs may be reduced from being directly proportional.

So for example costs for a particular scheme to maintain the network pipes and valves is expected to increase directly in proportion to increasing numbers of connections, but maintenance of pumps costs are only expected to increase at 50% of the increasing number of connections.

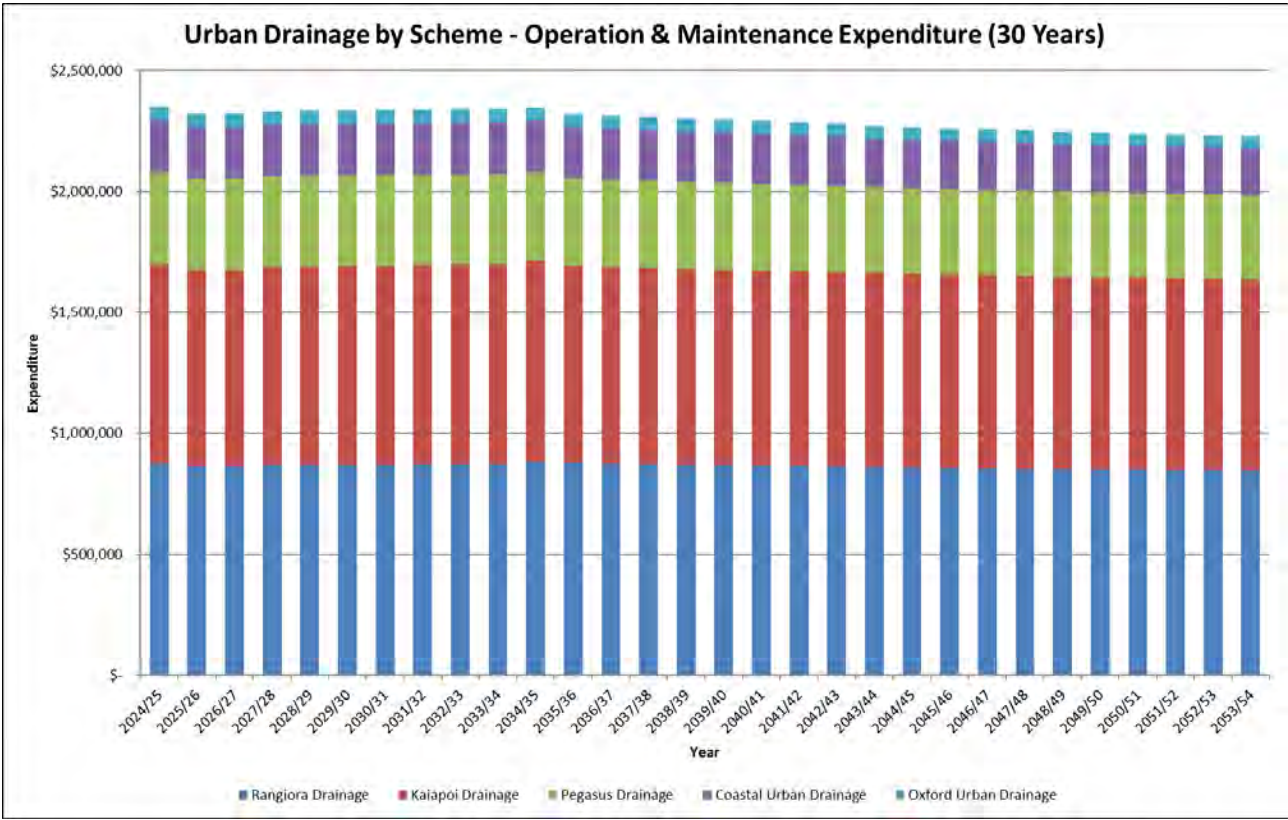
In addition to the automated increases, part of the consideration when setting the O&M budgets across the district's schemes is the potential impact of any new capital projects. These increases are accounted for in two ways:

- Direct O&M Increases: Through Asset Managers calculating what areas of the budget that may increase, and manually adjusting the appropriate parts of the budgets from the year following when the capital project will be completed. An example of this would be a new headworks being constructed. This would require power costs to be reviewed (as the new headworks would consume power), as well as items related to headworks inspections and maintenance.
- Depreciation Increases: Changes in depreciation as a result of new capital projects are accounted for by the Council's Finance Team. As a new capital budget is introduced to a scheme, there is a formula to increase the depreciation amount for that scheme based on the size of the capital budget being assumed to represent the value of the assets being added, and the asset life being assigned a representative figure for that scheme (depreciation rates are typically in the order of 1.5% to 2.5% of the value of assets added for example). Normally a comprehensive valuation is carried out every three years, which then assigns accurate valuation rates and base lives to any new assets created in the last 3 years. This refines the accuracy of the depreciation rates further. With increased inflation over the last few years, the most recent valuation has been carried out a year earlier.

At the end of each FY, a stocktake of new assets is undertaken, including vested assets, and the value included in the Council's financial system

Figure 5 presents the forecast Operations and Maintenance Expenditure across all the Council's drainage schemes for the following 30 year period.

Figure 4: District Overview - Projected Operation & Maintenance Expenditure



15 CAPITAL WORKS

The Waimakariri District Council has previously developed a process for justifying any new capital works projects being submitted for inclusion in the draft Annual Plan or LTP. However, this has so far not become well embedded in the Council's processes, and so improvements are now being made, and rolled out in time for the 2024-34 LTP.

In particular, projects in years 1-3 of the LTP with value greater than \$500,000 require a "Business Case Light" application, and projects of a greater value than \$4M in years 1-3 require a full business case to be written. Projects in years 4-10 with a value greater than \$500,000 require a slightly less robust 'Justification Form' application.

In general the forms require:

- Project description and scope;
- Strategic case – LOS, growth or renewal. Contribution to Community Outcomes, national programmes and public value benefits;
- Risks and assumptions;
- Economic case – Preferred option and alternatives considered;
- Financial case – Requested budget, (components –LOS, growth, renewal), expensed component, funding sources (DC's if relevant), effect on rates and budget confidence;
- Management Case – ability to deliver and how.

Through each Annual Plan and Long Term Plan process, Project Justification forms are prepared for projects that meet the criteria for requiring them. These require the relevant Department Manager's approval before being presented to the Council's Management Team as part of submitting the overall budget proposal from each service area. Ultimately what is approved by the Management Team is presented to Council to review as the Draft Long Term Plan or Annual Plan budget.

16 RENEWALS

Renewal expenditure is work that does not increase the capacity of the existing asset, rather it restores the system to its original capacity. Renewal work is funded from a budget generated by the depreciation component of the rates.

Council uses a risk-based renewals programme for pipework which incorporates the following criteria:

- Condition Rating – standard scoring from pipe inspection manual based on CCTV data.
- Remaining Useful Life – based on the design life, as used previously.
- Vulnerability – a function of location, material and joint type calculated as part of the DRA review, which assesses the risk of earthquake damage in areas subject to liquefaction.
- Criticality – the criticality score calculated for each main, which is determined from various factors e.g. pipe material type. Details are shown in Table 13.

The process uses a GIS model that incorporates the above factors and utilises existing Asset Management Information System data in the GIS.

The model enables an assessment to be made of the depreciation required to fund future replacement costs, for different levels of risk. This allows risk and affordability to be balanced. Key outputs from the model are a prioritised list of pipe renewals needed across the district, identified by scheme, and an annual expenditure profile for the next 150 years. A schematic of the modelling process is shown below in Figure 7.

The model developed for headworks uses the same methodology as the pipe renewals model. Since knowledge of the headworks condition is not high, standard industry lives for the relevant asset classes have been used as inputs to the headworks renewals model. As the headworks criticality model is still under development, a simplified renewals assessment methodology has been used in the interim, which does not factor in criticality.

The final decision about pipe renewals to be carried out in a particular year is made by the Asset Manager, taking into account factors such as Roading projects and other utilities renewals and any operational requirements.

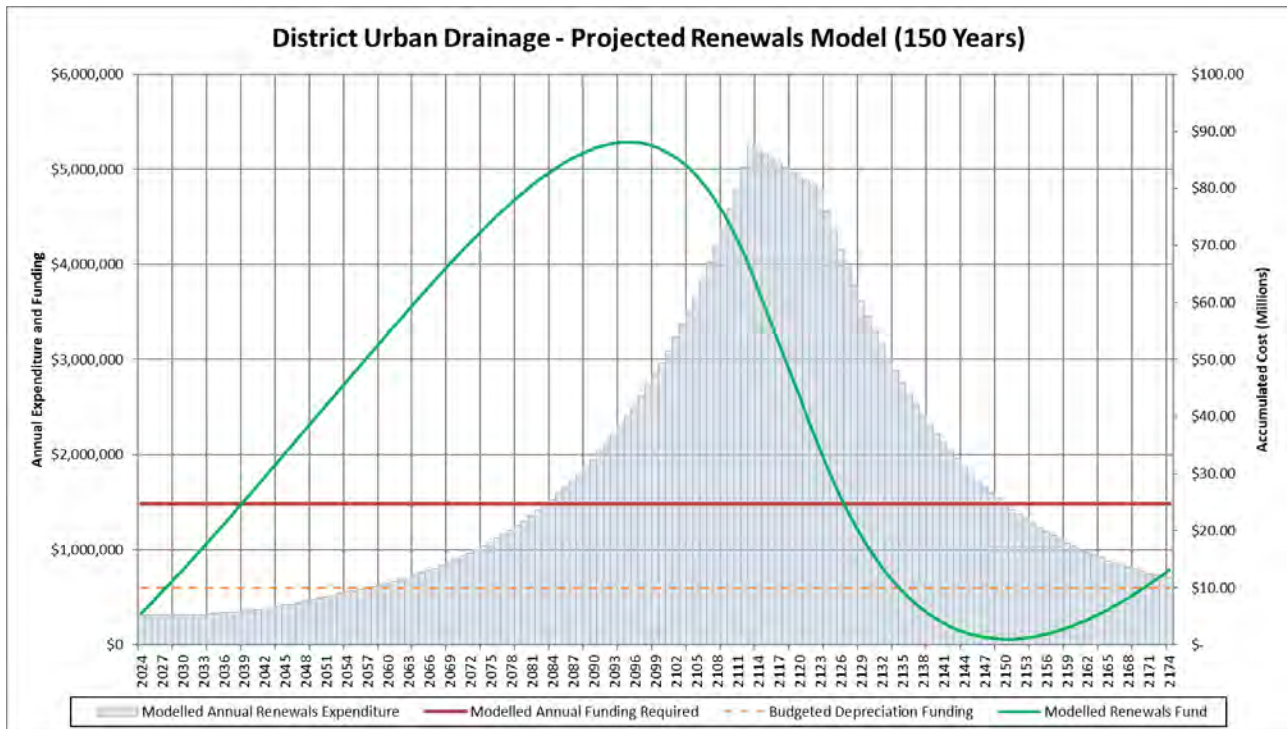
District Wide – Renewals Expenditure

Figure 6 presents the forecast Renewals Expenditure across all the Council's urban drainage schemes for the following 150 year period. The horizontal red line is the required level of funding to ensure that renewals are not deferred, and current levels of service are maintained.

The figure only shows the output from the model, so expenditure shown in the graph for the first ten years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager to the direct renewals model outputs.

The model is operated at a district wide level. Renewals expenditure by scheme is then determined by breaking down the district wide expenditure in relation to the value and type of the assets within each scheme. Scheme level graphs tend to be less smooth.

Figure 5: District Wide - Projected Renewals Expenditure



The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model. As can be seen, this account is maintained as a surplus, peaking at approximately \$88 million in the year 2096, before being drawn down over the following 80 years.

The key point to note is that the Budgeted Depreciation Funding is less than the Modelled Annual Funding Required. The reason for this discrepancy is as follows:

Depreciation Discount Factor: Council's financing of future renewals incorporates the expectation that depreciation funding can be invested at a higher rate of return over the life of the assets than inflation. Further information regarding this approach is provided in the Finance Policy. This concept is embodied in the scheme budgets in the form of a discount rate (referred to in the budgets as the 'Depreciation Discount Factor'). This reduces the annual depreciation funding required from rates, while still ensuring that there will be sufficient funding available to renew assets at the end

of their useful life. The renewals model assumes funds can be invested at a 1% marginal interest rate higher than inflation when considered over the long term.

It is noted also that there are a wide number of factors influencing specific planning for renewals projects, which mean that the outputs from the renewals model are not strictly followed. In general, district wide final renewals budgets have been set at a lower level than that recommended by the renewals model. The difference is shown in the table below.

Table 16: Planned Budget versus Renewals Model Recommendation 2024-34

	Renewals model recommendation	Planned Budget	Budget as a percentage of model recommendation
Reticulation	\$1,450,000	\$325,000	22%
Headworks	\$1,700,000	\$1,720,000	101%
Total	\$3,150,000	\$2,045,000	65%

It is noted that beyond the first 10 year window, the outputs from the renewals model have been fully adopted to inform the renewals budgets for each scheme.

The annual budget for some renewals line items has been accumulated and delayed until year 4. The annual budget had not been allocated to any specific renewal. However there remains no specific known deferred renewals of assets across the district.

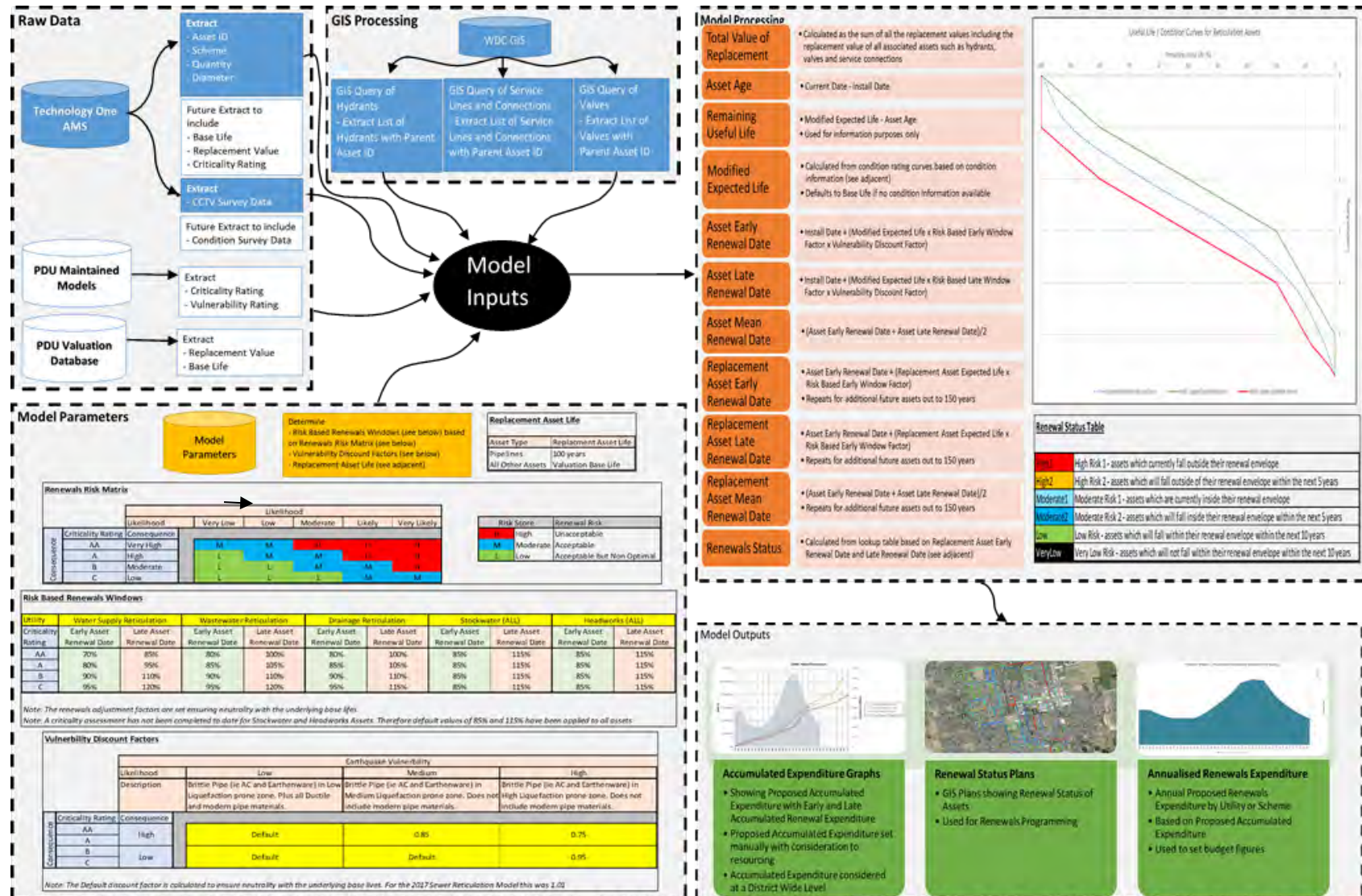
Council has a programme of CCTV inspections for the stormwater pipe network in place. Since the last AMP review the software InfoAsset Manager has been employed, which will enable improved CCTV analysis, and better maintenance and renewals planning. A condition assessment of all assets at headworks has not yet been carried out, so confidence in asset condition is only moderate. As the CCTV program advances, we anticipate achieving a more precise assessment that will enable Council to strategically determine the future expenditure of the renewals funds.

Scheme – Reticulation Renewal Timelines – Spatial View

The GIS viewer at the following link shows plans by scheme of the pipe renewal timeframes generated by the model, in three bands; within 5 years, 15 years and 25 years.

[Asset Management Plans GIS Viewer](#)

Figure 6: Renewals Expenditure Model



17 NEW WORKS

There are five main sources of new works in the District that come together to produce the new works programme. These are:

- Modelled capacity assessments provide details on any LOS shortfall on the schemes and new works are prioritised to address these.
- Flooding events. These are the primary source of improvement programmes, an example of which is the 2014 Flood Response Programme.
- The Risk Assessments provide information on the highest risk areas on each drainage scheme, with any extreme or high risks requiring works to mitigate against those risks.
- Works are also identified through the operation of the schemes rather than being identified through the assessment of level of service, capacity, or risk. These works are normally identified by an operator or Asset Manager and include such works as health and safety improvements, and works to ensure assets are maintained in an acceptable condition.

These sources all provide new works projects that populate the budget for the next 50 years. The table below shows the projected budgets for new works for the next 50 years for all the district's urban drainage schemes, including renewals.

When any significant project is being planned, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. The detailed capital works table which is available in the [Asset Management Plans GIS Viewer](#) , shows the project ID for each project. Each project has an entry in the budget spreadsheets [Capital Works Budget Sheets](#) , which in turn provide references to supporting documentation.

Table 17: New Works across Urban Drainage Schemes Over 50 Years

Scheme	2024 - 2033	2034 - 2043	2044 - 2053	2054 - 2073	Total
District Flood Area	\$25,470,001	\$610,507	-	-	\$26,080,508
Rangiora Drainage	\$18,712,000	\$3,854,468	\$1,487,425	\$4,221,724	\$28,275,618
Coastal Urban Drainage	\$7,090,000	\$6,279,271	\$181,501	\$1,062,736	\$14,613,508
Pegasus Drainage	\$165,000	\$215,718	\$105,122	\$213,899	\$699,739
Kaiapoi Drainage	\$19,576,131	\$6,943,123	\$3,131,130	\$10,322,775	\$39,973,159
Oxford Urban Drainage	\$4,120,000	\$203,213	\$101,234	\$220,349	\$4,644,795
Total	\$75,133,132	\$18,106,300	\$5,006,412	\$16,891,483	\$114,287,327

Note: Dates refer to beginning of financial year (e.g. 2024 is 2024/25 financial year).

The figures in the table above are based on the assumption that LOS do not change significantly into the future, and that growth forecasts are accurate. Growth projects may be delayed to fit actual growth patterns.

All projects are included in a central database of capital works projects, including renewals [Capital Works Budget Sheets](#).

The front end of the data base has recently been updated to ensure that relevant data to the projects is captured in one place as a “single source of truth”. Where possible this data will also be used to populate the “WDC Capital Works Project Justification” template that is required to be filled in for any new project of a higher capital value than \$500,000.

When a scheme upgrade is undertaken, the supporting investigations include assessment of the costs and benefits of all practicable options leading to a decision to undertake capital works. These investigative reports are referenced in Table 4 : Data References in Section 3, Scheme Description.

Works Coordination

As well as the processes above identifying works on a scheme by scheme basis, or by service type, further consideration is required to coordinate work programmes between a combination of service types. Utilities Providers Coordination meetings are held quarterly between 3 Waters, Roading, power and telecommunication providers. This enables opportunities for collaboration to be identified. In addition, Council has a GIS tool where future planned works can be overlaid to optimise the coordination process further.

Urban Capital Works

The following graph shows the 50 year budget for all capital works funded by scheme rates, including projects driven by growth and levels of service.

Figure 7: Projected Capital Works Expenditure

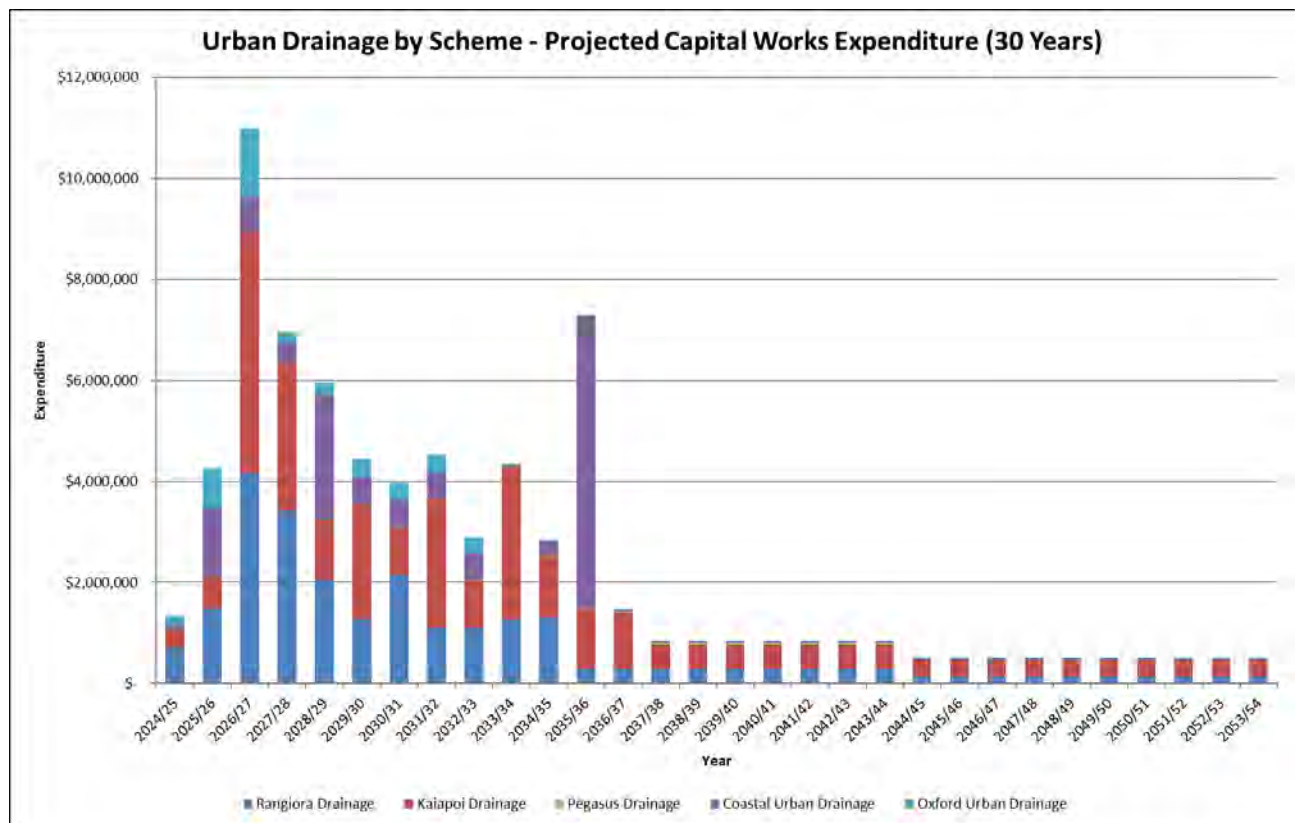


Figure 8 shows peaks from 2026 to 2028 which are due to the following projects:

Kaiapoi

- **Kaikanui Diversion (\$1.5M)** – Diversion of the lower reach of the Kaikanui Stream downstream of the railway line.
- **Kaikanui SMA (\$1.6M)** – Extension of the Kaikanui SMA into the regeneration area.
- **Cridland Street West Drainage Upgrades (\$1.94M)** – Drainage upgrades including new pump station.

Rangiora

- **Blackett Street (\$1.2M)** – Pipe upgrade on Blackett Street from King Street to Ashley Street.
- **North Brook Retaining Wall (\$880k)** – Installation of timber retaining walls on both sides of the North Brook between Janelle Place and White Street.

Additionally Figure 8 shows a peak in 2035/36 in the Coastal Urban Scheme for the Waikuku Taranaki Stream Pumpstation.

The graph below shows the additional capital budget for projects funded by the district wide rate. It includes both urban and rural area projects. Geographically the majority of these projects are in rural areas.

Figure 8: Projected District Wide Capital Works Expenditure.

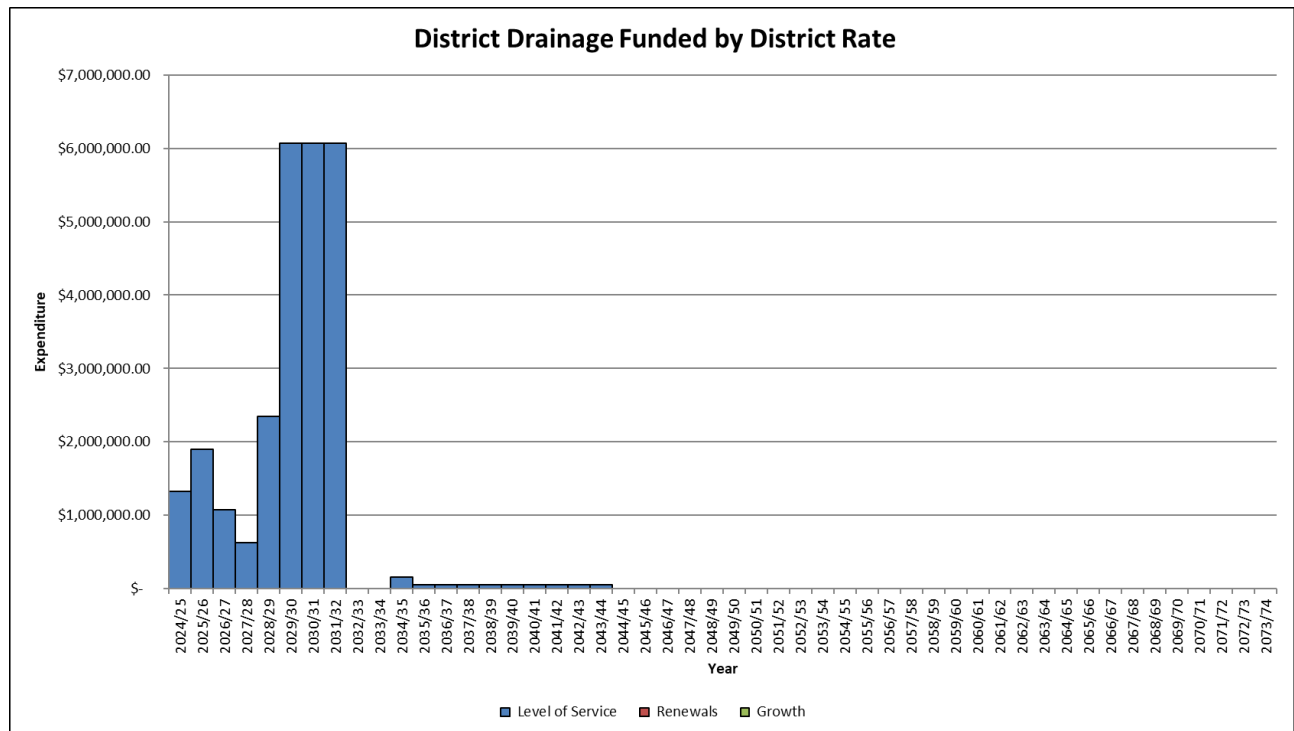


Figure 9 displays peaks corresponding to the Mandeville Resurgence Channel Upgrade Project's Stage 1 (2024-2026) and Stage 2 (2028-2032). Following flooding in June 2014, budget was allocated to improve the drainage in the Mandeville and Ohoka areas.

Additionally, a budget of \$20 million spread over the first 10 year (2024/34) of the Long Term Plan is included for Flood Resilience Projects to implement future works cater for the implications of increased weather patterns, climate change and associated impact on our services.

Over the past 10 years additional budget has had to be approved reactively by Council following significant rainfall and flooding events, including \$21.5 million following June 2014 event, \$3.5 million following May 2021 event, \$3.8 million following July 2022 event and \$4.0 million following July 2023 event. While some of this expenditure was funded from external sources, such as NZTA Waka Kotahi, a larger portion of the expenditure was funded from rates as unbudgeted expenditure.

The proposed Flood Resilience Projects capital works budget will ensure that there is existing budget available for immediate works and also risk and resilience improvement projects identified following future events.

Included in the [Asset Management Plans GIS Viewer](#) is a table that shows all of the planned projects over a 50 year time horizon for all of the urban drainage schemes, and how the cost is spread across the three components - LOS, renewals and growth. The level of confidence in the budget for the works is also presented in the table, as well as references to other documents relevant to the works, such as options studies. The figures presented in the table exclude inflation for ease of comparison across years.

For a discussion on the level of optimisation in project selection, refer to the introductory chapter of the AMP.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

Scheme – Capital Upgrade Works – Spatial view

The GIS viewer at the following link shows plans by scheme of the planned capital upgrades in 5 temporal bands over a 50 year time horizon.

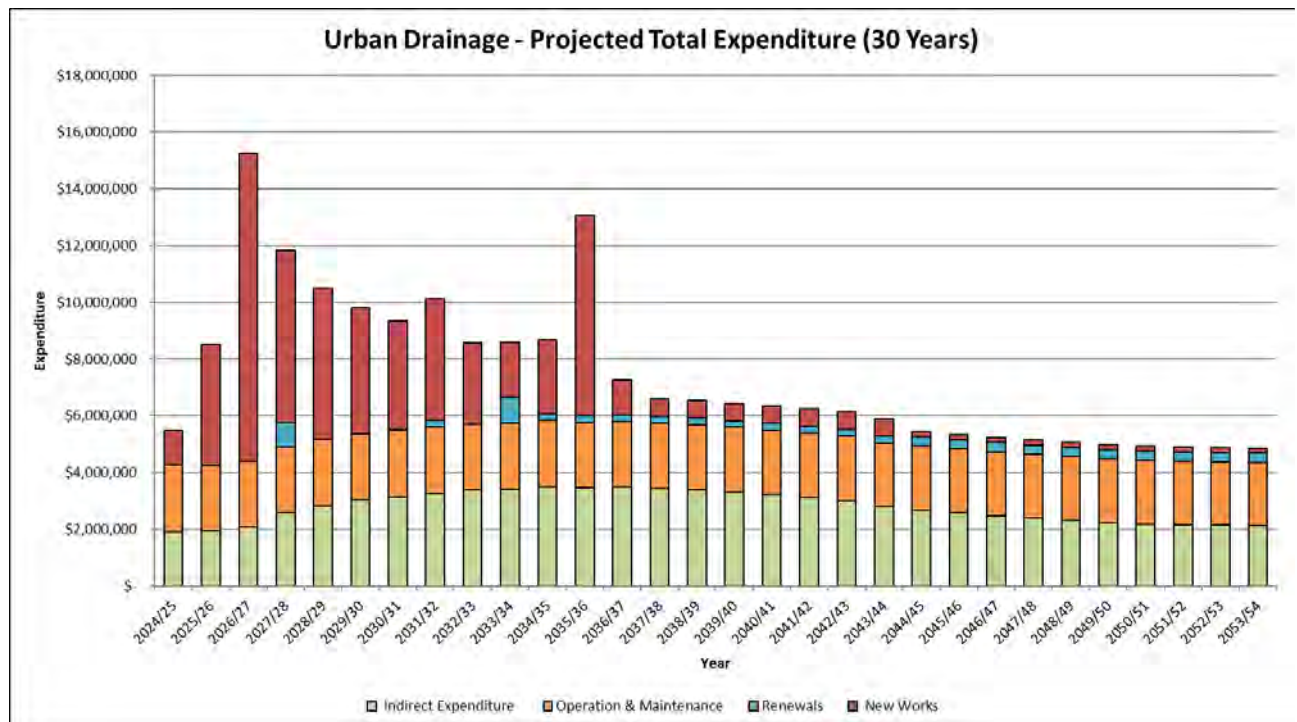
[Asset Management Plans GIS Viewer](#)

18 OVERALL FINANCIAL FORECASTS

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure. Operational costs include operations and maintenance, and indirect expenditure.

Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and internal overhead costs. Capital includes expenditure for growth, levels of service, and renewals, (excluding carry forwards) but excludes Flood Response Programme works funded by the district wide rate.

Figure 9: Projected Total Urban Drainage Expenditure



Financial Forecast Key Assumptions

1. Asset data in the asset register is fit for purpose.

2. Asset lives based on nominal material life, are reasonably accurate.
3. LOS will not change, for example required by legislation.
4. WDC does not suffer any major natural disaster during the period of the financial forecasts.
5. Effects of climate change are not felt during the term of this LTP
6. Growth matches the projected profiles.
7. Maintaining Operational and Maintenance costs at current levels is cost effective

Funding/Revenue Sources

An explanation of the sources of funding for the activity is fully detailed in the Council's Revenue and Financing Policy, published within the 2024-2034 LTP (TRIM 231114183205). This includes the rationale for each source of funding for each scheme, and an explanation of how the different funding methods are applied to each scheme in relation to the service delivered.

Primary sources of funding for all schemes are targeted rates and development contributions for works required to accommodate growth.

In addition a district wide drainage rate, included as part of the General Rate funds drainage upgrades district wide, both rural and urban areas, and without regard to drainage rated areas. Projects are primarily flood response works, but minor drainage works are also included.

All capital works budgets are split into three components, Level of Service, Renewal and Growth. The division may be seen for scheme projects in the Capital Works table contained within the [AMP Plans and Figures Viewer](#)

The growth component is recovered through development contributions (DC's), calculated in accordance with Council's Development Contributions Policy, which can be accessed via the link below. For those projects with a growth component an assessment has been made for the 2024-2034 LTP of the value of the DC required per future connection to the scheme, to fully recover the growth component of the capital work. These assessments are updated as part of the Annual Plan process, and are published on the Council's website at the following link <https://www.waimakariri.govt.nz/consents-and-licences/resource-consents-and-planning/development-contributions>

Summary calculation sheets for individual schemes can be viewed by clicking on links within the main document.

Valuation

A full peer reviewed valuation of assets is normally carried out on a three yearly cycle, using the asset data in our asset management information system. Due to the current much more rapid inflation than has been usual, the most recent valuation has been carried out in 2022 ([TRIM 220803132120](#)). The rates from that valuation have been adjusted by the CPI to arrive at "valuation" figures for 2023. Table 16 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for the district, and scheme by scheme (urban only).

Table 18: Asset Valuation

Scheme		District	Rangiora Urban	Kaiapoi Urban	Coastal Urban: Woodend, Pines Kairaki, Waikuku Beach	Pegasus Urban	Oxford Urban
Manholes	Quantity	2,270	862	782	424	179	23
	Replacement Cost	\$27.4M	\$10.4M	\$9.4M	\$5.3M	\$2.1M	\$272.1k
	Depreciated Replacement Cost	\$23.3M	\$8.3M	\$8.1M	\$4.7M	\$1.9M	\$250.2k
	Annual Depreciation	\$274.3k	\$103.9k	\$93.7k	\$52.7k	\$21.2k	\$2.7k
Sumps	Quantity	161	89	55	10	2	5
	Replacement Cost	\$398.3k	\$224.1k	\$135.6k	\$20.4k	\$4.9k	\$13.3k
	Depreciated Replacement Cost	\$308.0k	\$180.5k	\$92.5k	\$18.3k	\$4.5k	\$12.3k
	Annual Depreciation	\$4.0k	\$2.2k	\$1.4k	\$204	\$49	\$133
Valves	Quantity	67	5	54	7	-	1
	Replacement Cost	\$434.3k	\$27.5k	\$311.4k	\$88.2k	-	\$7.2k
	Depreciated Replacement Cost	\$314.0k	\$22.0k	\$202.7k	\$82.7k	-	\$6.6k
	Annual Depreciation	\$4.6k	\$312	\$3.2k	\$1.0k	-	\$72
Main	Quantity	109.5 km	43.7 km	38.5 km	19.3 km	6.4 km	1.5 km

	Replacement Cost	\$125.6M	\$44.8M	\$47.3M	\$22.8M	\$9.6M	\$1.0M
	Depreciated Replacement Cost	\$104.8M	\$36.4M	\$39.1M	\$19.7M	\$8.8M	\$0.9M
	Annual Depreciation	\$1.3M	\$460.8k	\$483.3k	\$236.4k	\$96.5k	\$10.6k
Open Channel	Quantity	28.8 km	11.3 km	8.5 km	2.4 km	482 m	6.1 km
	Replacement Cost	\$1.6M	\$869.5k	\$334.2k	\$94.3k	\$19.0k	\$239.4k
	Depreciated Replacement Cost	\$1.4M	\$758.1k	\$329.8k	\$93.6k	\$19.0k	\$239.4k
	Annual Depreciation	\$2.7k	\$2.5k	\$180	\$23	\$0	\$0
Facilities	Replacement Cost	\$28.2M	\$13.3M	\$9.3M	\$5.2M	\$328.2k	\$68.7k
	Depreciated Replacement Cost	\$26.5M	\$13.0M	\$8.0M	\$5.1M	\$244.7k	\$46.2k
	Annual Depreciation	\$128.7k	\$28.2k	\$80.5k	\$12.7k	\$6.3k	\$1.0k
Totals	Replacement Cost	\$183.6M	\$69.6M	\$66.8M	\$33.5M	\$12.1M	\$1.6M
	Depreciated Replacement Cost	\$156.6M	\$58.7M	\$55.8M	\$29.7M	\$11.0M	\$1.5M
	Annual Depreciation	\$1.7M	\$598.0k	\$662.2k	\$303.0k	\$124.0k	\$14.6k

19 DATA CONFIDENCE

Data confidence is assessed as part of the AMP review, across a range of asset data and processes. The confidence grading used has been taken from the IIMM as follows:

Confidence Grade	Description
A Highly Reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset accuracy $\pm 2\%$
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Data set accuracy $\pm 10\%$
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample. Up to 50% data is extrapolated and accuracy estimated at $\pm 25\%$
D Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis, Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated at $\pm 40\%$
E Unknown	None or very little data held

Confidence grades have been assessed as:

Table 19: Data Confidence Levels

Element		Grade
Asset Inventory	Reticulation	B
	Headworks	A
Performance and service gap interpretation		B
Asset condition	Reticulation	D
	Headworks	C
Asset remaining lives	Reticulation	C
	Headworks	C
Demand forecasts		B
Valuation and depreciation		B
Financial forecasts		B

Confidence in headworks assets can be seen to be generally lower than reticulation assets. This is a reflection of more focus being placed historically on network assets rather than facilities, as that is where the majority of the maintenance effort is expended. However confidence in the headworks asset inventory has increased considerably since the last LTP, as a full asset inventory has been carried out, although this did not include asset condition assessment.

It is worth noting that because headworks assets are above ground, any assets in poor condition can be readily identified and the risk associated with asset failure mitigated through regular visual inspections that can be carried out when operations staff are carrying out routine maintenance operations.

Note that Demand forecasts and Financial forecasts sections have been assessed on the basis of the confidence in our infrastructure planning given a particular growth scenario. Growth predictions themselves are always inherently uncertain, and elastic. If actual growth is faster or slower than the growth scenario selected, projects to cope with the demand, provided they have been well scoped, can be readily brought forward or delayed as necessary.

20 ASSET MANAGEMENT SYSTEMS

A register of drainage supply assets is held within the Councils Financial Management System and referred to as the Asset Management Information System (AMIS). The register is maintained by the Asset Information Management (AIM) Team on behalf of the 3 Waters Team. The platform is the Council's Finance Management System, Technology One.

The AMIS provides the base data used for the asset criticality model, the drainage network models and RAMM roading data, so it is essential that every effort is made to ensure the dataset in the AMIS is accurate. Current process to deliver the required outcome is as follows.

For new assets, built as part of development, or as stand alone capital projects, the AIM team collates as-built data from as-built engineering plans and incorporates this data into the GIS system and asset database. This data then feeds through into the Council's asset valuation process.

The in-house works order system integrates with the asset management system. Maintenance activity, for example in the form of a pipe fault repair by the Council Water Unit under instruction from a work order is now entered digitally via mobile devices in the field. The field devices record job costs, asset location and any changes to assets, and the information is direct uploaded into asset register. Costs are recorded against the repaired assets.

Service requests are generated out of Council's Property and Rates System and for certain job types automatically raise a work order to be sent to the Water Unit via email. Other service request types are forwarded to 3 Waters team members for triage.

Unfortunately the Council's enterprise system, Technology One is in the process of being replaced, as the company advised that it was moving entirely to a cloud based new platform.

Asset Management Maturity

Asset management maturity assessments (AMMA) have been carried out on two previous occasions, most recently in 2021. The assessment was carried out in house, and a subsequent peer review of the self assessment was carried out. The assessment showed that the Drainage activity was generally operating asset management at a core level of maturity, and scored overall a 57 against a target of 78.

The key areas for improvement for drainage were : *"the asset register data, condition information, risk management and capital works planning"*.

The table below shows further high priority improvement recommendations, together with the actions taken since the assessment.

AM Function	Recommendation	Action
<i>Policy and Strategy</i>	Develop an Asset Management Strategy.	No Progress
	Incorporate a workshop with AMP authors early in the AMP development to explain overall themes (in the IS) and ensure they are included in the AMP.	Being integrated with the AMP planning meetings
<i>Forecasting Demand</i>	Undertake sensitivity testing for growth or demand change scenarios such as population demographic shifts and climate change. Incorporate the results into the AMP.	The 3 Waters reform process has left insufficient time for sensitivity analysis, on top of the normal growth work required
<i>Asset Register data</i>	Complete the facilities and headworks asset data and condition information improvements.	Will be complete by end 2023
<i>Asset Performance and Condition</i>	Improve use of asset condition data	InfoAsset Manager is now in operation to make better use of CCTV data. Facilities asset condition assessment yet to be carried out
<i>Decision Making</i>	Introduce a cross activity project prioritisation process to enable better decision making, focusing on the relative priority of level of service improvements.	No formal process developed. Prioritisation carried out by Management Team and elected members
<i>Managing Risk</i>	Review the format, and content of the risk registers and introduce processes to regularly review them and escalate key risks to the corporate register.	Review under way. Expected to be complete late 2023

The self assessment AMMA is available in TRIM [210506072305](#) and the peer review documents in TRIM [220506071089](#)

21 NEGATIVE EFFECTS

At the District level the activity of providing a drainage service to the various communities has the following negative effects:

- Potential damage to private property through access of machinery used to clean open drains
- Increased silt load in streams, following drain cleaning , particularly if operator not properly aware of the issue
- Potential ecological damage, including fish spawning habitats from open drain maintenance activities

22 SERVICE DELIVERY

Delivery of most capital works is via competitive tendering practice in accordance with the Council's procurement policy ([TRIM 220303030172](#)). Design is usually carried out in house, or where resources are insufficient, via external consultants, again engaged in accordance with the procurement policy.

Routine maintenance of the urban drainage network is carried out as an extension to the Greenspaces maintenance contract which is competitively tendered at the end of its term.

23 IMPROVEMENT PLAN

The table below summarises the planned AMP improvements applicable district wide, identified as each section has been reviewed. Many of these have been carried forward from the 2021 AMPs. The 3 Waters reform programme meant that little focus was provided on the Improvement Programme from the 2021 AMP.

Projects will be managed under the 2024-27 AMP Improvement Programme full details of which are provided in [2024 Improvement Programme](#). The summary table below shows which section the AMP that the improvement project was derived from and includes projects that have been completed since the 2021 AMP.

Table 20: 2021 AMP Improvement Plan

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP002	Asset Management System	Carry out asset inventory check at all facility sites. Record key attributes and condition, and functional descriptions	High	Largely complete	Asset inventory complete. Plan to use TRAKK software to start collecting condition data
IP004	Asset Management System	Integrate Rooding & 3 Waters Renewals Programmes	High	Planned for 2024/25	Physical works layer in GIS now used for planning, but further Rooding/3 Waters work needed to complete
IP006	Asset Management System	Verify location of critical assets	Medium	Planned 2024-2026	Higher priority now - arising from the Utilities Code of Practice
IP008	Asset Management System	Unify various existing documents into a 3 Waters Emergency Response Plan or Business Continuity Plan	Medium	Planned 2024-2026	A cascading hierarchy of documents for emergency response is required for Council. At 3 Waters a "Business Continuity Plan" is required
IP011	Disaster Resilience	Confirm natural hazard information at facilities sites as part of the site by site asset risk assessment for climate change effects.	High	Incorporated into IP054	Original site risk assessment project now incorporates climate change risk and priority has been increased
IP020	Asset Management System	Ensure AMIS functionality transferred over to new Asset Management System/Council Enterprise system	High	2024/25 onwards	Necessitated by Council's enterprise system changing from Tech One to Datacom
IP022	Asset Management System	Develop system to store and manage consent information	High	2024/25 onwards	Dedicated staff member has been engaged to implement and maintain
IP027	Asset Management System	Establish documentation that specifies asset data that must be included in As Built information supplied to AIM team	High	Planned for 2024/25 onwards	Multi faceted project including updating the Engineering Code of Practise, and them promulgating Council's requirements
IPO34	Asset Management System	3 Waters Strategy	High	2025/26	What do WDC water services look like in 2053 and 2073?

Project Ref	AMP Section	Project Description	Priority	Status	Comment
IP045	Risk Assessment	Update DRA in parallel with Risk Assessment Update using common risk approach. Develop high level framework, seek update of hazard information.	High	Planned for 2024/25	PDU have progressed . To be followed up
IP048	Operations and Maintenance	Standardise operational and maintenance items used in the budget to enable better expenditure monitoring	Medium	On hold	Still nice to have but only medium priority
IP053	Climate groundwater modelling	Work with the Regional Council regarding GW modelling and consideration of effects of SL rise on their infrastructure	High	Planned for 2024/25 onwards	Ongoing
IP054	Risk Assessment	Carry out an assessment of the likely operational and asset management risks associated with climate change in affected areas.	High	Phase 1 complete	Initial screening carried out. Further more detailed work on site by site basis to follow

As an adjunct to this section the 10 key questions that Audit NZ have advised should be responded to, as a high level check on the adequacy of Asset Management Plans has been reproduced below with responses. Additional improvement projects are included in the Improvement Plan table that fill gaps identified through this process.

Audit NZ Question	Response
1. Have you got a strategy for the long-term sustainability of your assets?	Council has Activity Management Plans that are reviewed in house, at three yearly intervals, that include a well-developed renewals assessment and funding model that ensures the long term sustainability of its 3 waters assets. The Council does not have an Asset Management Strategy document however
2. Have you set an asset management policy?	Yes. TRIM link to policy
3. Do you have good quality up-to-date asset management plans for achieving your strategy?	Yes. These are comprehensively reviewed every three years and submitted for peer review.
4. Does your organisation have appropriate asset management skills and experience?	Yes. For 3 waters each of the activity areas – water supply, wastewater and drainage, has a dedicated asset manager responsible for the management of the relevant assets
5. Do you know the reliability of your asset information?	Reasonably well. Asset data for our reticulation network is reliable and being improved through analysis of maintenance data. Facility asset data is also reliable, with a comprehensive facilities asset inventory just having been completed
6. Do you have a structured approach to assessing the condition and performance of your assets?	<p>Yes. Noting that the average age of its network assets is relatively young, the condition of water supply reticulation assets has been the subject of recent analysis through examination of pipe performance. This has enabled condition to be inferred in more detail than has previously been the case. For gravity pipes, Council has recently invested in InfoAssets software, which will enable improved management of gravity pipe condition data.</p> <p>A facility assets condition assessment has not yet been carried out.</p> <p>The system that records repair costs against assets, would have improved understanding of performance, especially as it was further developed, but unfortunately it's future is in jeopardy. This is because the Council's enterprise system is to be replaced.</p>
7. Have you defined a clear and comprehensive set of service levels to be delivered or supported by the assets?	Yes. These are generally reviewed and approved by Council in conjunction with the three yearly AMP review. As noted in the LoS section this has not been possible for the 2024 AMP
8. How well do you forecast future demand for the services that are delivered or supported by your assets?	Demand forecast is largely based on growth projections. Improvements could be made by considering other factors such as for example demographic changes, and changing technologies

9. Do you report, and get reports, on achievement of your asset management plan(s)?	Key Levels of Service are reported quarterly to Council, and other LOS are reported annually to Council. Asset Management Plans themselves are generally peer reviewed, although this has not been carried out for the 2024 AMP due to the effect of the 3 Waters Review on AMP timing.
10. Do you have a backlog of repairs, maintenance, and asset renewals? And what are you doing about it?	No. The Asset Management Plan process delivers approved budgets that to date have been sufficient to ensure that there is no appreciable maintenance backlog, and that fully funds future renewals

24 CHANGES TO AMP AS A RESULT OF LONG TERM PLAN CONSULTATION

This section outlines any significant changes to the AMP as a result of the 2024-34 Long Term Plan consultation period.

Some changes to budgets have arisen as a consequence of a staff submission report to Council during LTP hearings 21-23 May (TRIM 240501068341):

In total \$460,840 of additional, new budget or advanced budget has been added to the 2024/25 financial year and \$628,200 of budget has been brought forward to 2025/26 from 2026/27.

Additional Budgets

- Additional budget of \$126,000 in 2024/25 for School Road Drainage Upgrade for pipework and secondary flow path modifications to comply with Council level of service standards and reduce flooding of a property in Woodend. For further information please see attached report (TRIM 240314040024).
- Additional budget of \$75,300 in 2024/25 for Matai Place Stage 2 Drainage Upgrade for new pipework that outlets to Flannigan's drain providing a secondary flow path from Matai Place in Oxford.
- Additional budget of \$20,000 in 2024/25 for Kaiapoi Underchannel Piping. This is an annual reoccurring budget that contributes to the underchannel piping for the Council Roading Department annual kerb and channel renewal project.

New Budgets

- Allocate Kaiapoi renewals budget of \$150,000 of budget in 2024/25 for design and construction of Raven Quay Stormwater Renewals to align with a water and wastewater renewal project.

Advanced Budgets

- Bring forward Woodend Capacity Improvements construction budget of \$628,200 to 2025/26 from 2026/27, and design budget of \$62,820 to the 2024/25 from 2025/26.

Deferred Budgets

- Defer budget of \$837,600 from 2024/25 to 2025/26 financial year giving a total budget of \$1,675,200 in 2025/26 for the construction of stage 1 of the Mandeville Resurgence Channel Upgrade Project. For further information please see attached report (TRIM 240507072873).

Scheme	Budget Name	Current Allowance	Recommended Change	Reasons
Kaiapoi	Raven Quay Stormwater Renewal	Nil	Allocate Kaiapoi renewals budget of \$150,000 of budget in 2024/25 for design and construction.	Upgrade of stormwater pipe to align with Raven Quay Water and Wastewater upgrades.
Coastal Urban	School Road Drainage Upgrade	\$415,000 in 2024/25 for construction.	Allocate additional budget of \$126,000 (debt funded) of budget in 2024/25 for construction.	Additional budget for pipework and secondary flow path modifications to comply with Council level of service standards.
Oxford Urban	Matai Place Stage 2 Drainage Upgrade	\$20,000 in 2023/24 for design and \$104,700 in 2024/25 for construction.	Allocate additional budget of \$75,300 (debt funded) of budget in 2024/25 for construction.	Upon completion of the design options memo the estimate has been updated as part of this work and an additional budget of \$75,300 is required to implement the preferred option.
Kaiapoi	Underchannel Piping	\$20,000 (annually)	Allocate additional budget of \$20,000 (debt funded) of budget for a total of \$40,000 (annually).	This budget contributes to the underchannel piping for the Roding Department annual kerb and channel renewal project. This increase aligns Kaiapoi's budget more closely with Rangiora's (\$60k), as its current allocation is not significant compared to the total project cost.
Coastal Urban	Woodend Capacity Improvements	\$62,820 in 2025/26 for design and \$628,200 in 2026/27 for construction.	Bring forward \$62,820 design budget to the 2024/25 financial year, and the construction budget of \$628,200 to the 2025/26 financial year (debt funded).	Following numerous service requests and consultations with residents, it is recommended to prioritise these works.
District Drainage	Mandeville Resurgence Channel Diversion Upgrade Stage 1	\$1,675,200, allocated evenly over two years: \$837,600 in 24/25 and \$837,600 in 25/26 for stage 1 improvement works.	Deferring \$837,600 budget from 24/25 to 25/26, giving a total budget of \$1,675,200 (debt funded) in 2025/26 for the construction of stage 1.	Deferred budget due to further resident consultation required regarding detailed design of channel improvement works.

Appendix 1: Rangiora Urban Scheme Performance

Table 21: A1 - Rangiora Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Flooding	Flooding - Dwellings	Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 years	Not known	Insufficient data. Cannot be determined without floor levels	Not Achieved	Update modelling and consider next steps	N	N	N	N	N
	Flooding - Nuisance or Carriageway	The percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	Not known	Insufficient data	Not Achieved	N/A	N	Y	N	N	N
	Flooding - CBD Nuisance or Carriageway	For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 10 years or less.	100%	Not known	Insufficient data	Not Achieved	N/A	N	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	N/A	N/A	This is reported quarterly and in the Annual Report, at District level and does not need reporting here. Included to show historical results only	N/A	N/A	y	Y	Y	Y	Y
Customer Satisfaction	Overall satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	83%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 83% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met . Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used.

Appendix 2: Kaiapoi Urban Scheme Performance

Table 22: Kaiapoi Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Flooding	Flooding - Dwellings	Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 years	-	Insufficient data. Cannot be determined without floor levels	Not Achieved	Update modelling and consider next steps	N	N	N	N	N
	Flooding - Nuisance or Carriageway	The percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	Not known	Insufficient data	Not Achieved	N/A	Y	N	N	N	N
	Flooding - CBD Nuisance or Carriageway	For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation.	100%	Not known	Insufficient data	Not Achieved	N/A	-	N	N	N	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		Applies to rain events with an Average Recurrence Interval of 10 years or less.										
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	N/A	N/A	This is reported quarterly and in the Annual Report, at District level and does not need reporting here. Included to show historical results only	N/A	N/A	Y	Y	Y	Y	Y
Customer Satisfaction	Overall satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	75%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 75% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 3: Coastal Urban Scheme Performance (Woodend, Pines, Kairaki and Waikuku Beach systems)

Table 23: Coastal Urban Scheme Elective Levels of Service Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Flooding	Flooding - Dwellings	Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 year	-	Insufficient data. Cannot be determined without floor levels	Not Achieved	Update modelling and consider next steps	Y	Y	Y	Y	Y
	Flooding - Nuisance or Carriageway	The percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	Not known	Insufficient data	Not Achieved	N/A	Y	Y	N	N	N
	Flooding - CBD Nuisance or Carriageway	For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation.	100%	Not known	Insufficient data	Not Achieved	N/A	Y	-	-	-	-

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		Applies to rain events with an Average Recurrence Interval of 10 years or less.										
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	N/A	N/A	This is reported quarterly and in the Annual Report, at District level and does not need reporting here. Included to show historical results only	N/A	N/A	Y	Y	Y	Y	Y
Customer Satisfaction	Overall satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	44% (Average of results from Woodend, Waikuku Beach and Pines/ Kairaki	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 44% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 4: Pegasus Urban Scheme Performance

Table 24: Pegasus Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Flooding	Flooding - Dwellings	Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 years	-	Insufficient data. Cannot be determined without floor levels	Not Achieved	Update modelling and consider next steps	Y	N	N	N	N
	Flooding - Nuisance or Carriageway	The percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	Not known	Insufficient data	Not Achieved	N/A	Y	Y	Y	Y	N
	Flooding - CBD Nuisance or Carriageway	For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation.	100%	Not known	Insufficient data	Not Achieved	N/A	Y	Y	Y	Y	N

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		Applies to rain events with an Average Recurrence Interval of 10 years or less.										
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	N/A	N/A	This is reported quarterly and in the Annual Report, at District level and does not need reporting here. Included to show historical results only	N/A	N/A	Y	Y	Y	Y	Y
Customer Satisfaction	Overall satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	91%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. 91% of those surveyed reported a high or very high level of satisfaction. This does meet the >90% target.	Achieved	N/A					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met. Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used

Appendix 5: Oxford Urban Scheme Performance

Table 25: Oxford Urban Drainage Scheme Elective Levels of Service Performance - Assessed June 2023

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
Flooding	Flooding - Dwellings	Minimum return period of flood event that can be accommodated in the system without having flooding of dwellings.	1 in 50 year	-	Insufficient data. Cannot be determined without floor levels	Not Achieved	Update modelling and consider next steps	N	N	Y	Y	Y
	Flooding - Nuisance or Carriageway	The percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and where justified measures implemented to improve the situation. Applies to rain events with an Average Recurrence Interval of 5 years or less.	100%	Not known	Insufficient data	Not Achieved	N/A	Y	N	N	N	Y
	Flooding - CBD Nuisance or Carriageway	For properties or road carriageways in the CDB area, the percentage of complaints, about nuisance flooding caused by lack of capacity, that are investigated and measures implemented to improve the situation.	100%	Not known	Insufficient data	Not Achieved	N/A	-	-	-	-	N/A

Section	Level of Service	2021 – 2024 Performance Measure	2021 – 2024 Target	2023				Previous Results*				
				Result	Commentary	Status	Action to Address	2020	2017	2014	2011	2008
		Applies to rain events with an Average Recurrence Interval of 10 years or less.										
Resource Consent	Consent Breach	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	N/A	N/A	This is reported quarterly and in the Annual Report, at District level and does not need reporting here. Included to show historical results only	N/A	N/A	Y	Y	Y	Y	Y
Customer Satisfaction	Overall satisfaction	Percentage of respondents to a three-yearly community survey that have an opinion, that rates the service as "Satisfactory" or "Very Satisfactory".	>90%	73%	While the level of customer satisfaction with the service, as measured by the three yearly survey, is not a level of service at scheme level, the latest survey has enabled that measurement. Only 73% of those surveyed reported a high or very high level of satisfaction. This does not meet the >90% target.	Not achieved	Further initiatives are warranted to improve this figure, will need to be assessed after the current planned capital works have been completed.					

* Note for previous results "Y" indicates that the LOS has been met, and "N" indicates it has not been met . Blank cells indicate measures were not recorded for that year. (the measure was likely not a LOS at that time)

** Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment. For the 2022/23 assessment, the measures from the 2021 AMP have been used*

Appendix 6 Glossary Of Terms

The following terms and acronyms (in brackets) are used in this Activity Management Plan.

Activity	As defined in the <i>Local Government Act 2002</i> : 'Goods or services provided by, or on behalf of a local authority or council-controlled organisation and includes: a) The provision of facilities and amenities. b) The making of grants; and The performance of regulatory and other governmental functions.
Activity Management Plan (AM Plan)	Activity Management Plans are key strategic documents that describe all aspects of the management of assets and services for an activity (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. The documents are an information source for the Council's LTP and IS, and place an emphasis on long term financial planning, community consultation, and a clear definition of service levels and performance standards.
Asset Condition	This describes an asset's structural integrity or ability to deliver the service required from it. The condition can deteriorate slowly over the life of an asset or rapidly if it is damaged.
Annual Plan	The Annual Plan has the meaning given to it in the <i>Local Government Act 2002</i> .
Asset	A physical item that enables provision of services and has an economic life of greater than 12 months, has value of at least \$250 and is recorded in the asset register.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied systematically to physical assets with the objective of providing the required level of service in the most cost-effective and sustainable manner.
Asset Management System (AMS) (also known as asset register)	A system (usually computerised) for collecting analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Management Plan (AMP)	In the Waimakariri District Council's context, this is referred to as an activity management plan.
Asset Management Planning	A set of interrelated or interacting elements of an organisation, including the AM policy, AM objectives, AM Strategy, AM Plans, and the processes to achieve these objectives.
Ancillary	A structure or an arrangement within the drainage collection system such as a pumping station, weir, syphon, or pond.
ARI	Average Recurrence Interval. The statistical period between events (e.g. rainfall or overflows) occurring.
Brownfields	Previously developed land with potential for new development.

Capital Expenditure (CAPEX)	Expenditure used to create new assets, renew assets, expand or upgrade assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
CCTV	Closed Circuit Television. It is used to visually assess the condition inside pipe networks.
Condition Monitoring	The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Connection	From the point of view of the utility provider this relates to the physical connection of a particular customer to the service.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify prioritisation for inspection, rehabilitation or replacement ahead of other assets.
Current Replacement Cost	The cost of replacing an existing asset with an appropriate modern equivalent asset to deliver the same level of service.
Customer	A customer is an individual or business that creates the demand for and is the recipient of goods or services. Customers can be internal or external.
Deferred Maintenance	The shortfall in maintenance or rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management may be 'SUPPLY-SIDE' demand management (for example minimising wastage through pipe leak detection) or customer DEMAND-SIDE management, to reduce demand for over-utilised assets or vice versa (for example, through pricing, regulation, education and incentives).
Depreciation	The annual sum budgeted to enable the assets to be replaced at the end of their economic life. It is generally based on the value of the asset divided by its remaining life at that point in time.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Disaster Resilience Assessment (DRA)	An assessment first carried out in 2007 and updated in 2011/12 to determine the risk to assets from natural hazards.
Disposal	Activities necessary to decommission and dispose of assets that are no longer required.
Economic life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to physical life, however obsolescence will often ensure that the economic life is less than the physical life.
Facility	A complex comprising many assets (eg. swimming pool complex, sewage treatment plant etc.) which represents a single management unit for financial, operational, maintenance or other purposes.

Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic data-base
Greenfield Development Area	Existing undeveloped land with potential for development or newly rezoned land that has yet to be developed with the appropriate infrastructure to support a residential or commercial land use.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components.
Key Performance Indicator (KPI)	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Key performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction. Some of these may be mandatory performance measures as prescribed by central government. Also referred to as performance indicators (PI) or performance measures (PM).
Level of Service (LOS)	A measure of the standard of service that the Council intends to provide. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Life Cycle	The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset ie. from planning and design to decommissioning or disposal.
Life Cycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
Life Cycle Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Long Term Plan (LTP)	The Long Term Plan (LTP) has the meaning given to it in the Local Government Act 2002.
LGA	Local Government Act 2002.
Maintenance Plan	Details the specific planned or reactive maintenance actions for the optimum maintenance of an asset, or group of assets.
Network Utility Operator	A person or in many cases a local authority that provides a reticulated sewer system.
NZ Treasury Asset Management Maturity Assessment Tool (AMMA)	A tool (in spreadsheet format) that allows organisations to assess the maturity of their current Asset Management Plans, and to define a target maturity to which future Asset management Plans can aspire to, that is appropriate to the activity under consideration.
Optimised Renewal Decision Making (ORDM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.

Performance Monitoring	Quantitative and qualitative assessments of the actual performance compared with specific objectives, measures, targets or standards.
Planned Maintenance	Day to day operational activities to keep the asset operating (fixing potholes, clearing drains, repairing leaks, mowing etc.) and which form part of the annual operating budget. These may be cyclic, e.g. on specific timeframe, or needs-based, i.e. where a fault is monitored until it reaches a point at which some action must be taken to ensure continued performance/life of asset.
Rating Charges	This is the unit charge applied to rate payers for a particular service. On some drainage schemes this is per property. On other schemes this is the area of land contributing to the discharge.
Renewal	Works to upgrade, refurbish, rehabilitate or replace existing assets with ones of equivalent capacity or performance capability.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
Renewal Programme	This is the programmed replacement of like asset with like asset (as opposed to an upgrade), when it reaches the end of its useful life due to deterioration of its condition.
Remaining Economic Life	The time remaining until an asset ceases to provide service level or economic usefulness.
Reticulation	The network of pipes that collects, stores and delivers stormwater to the point of discharge. It includes gravity pipes, open drains, manholes and pump stations.
Risk Assessment	The process of looking at all possible events that might cause the failure of a given asset or component. The risk assessment considers both the probability and consequences of an event occurring. Risks are assessed and prioritised, and appropriate reduction or mitigation measures are implemented.
Risk Cost	The assessed annual cost or benefit relating to the consequence of an event. Risk cost equals the costs relating to the event multiplied by the probability of the event occurring.
Risk Management	Risk management is the identification, assessment, and prioritisation of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events.
Routine Maintenance	Day to day operational activities to keep the asset operating such as replacement of minor equipment, oil and greasing pumps and motors, cleaning of equipment, repairing leaks, etc. It forms part of the annual operating budget, including preventative maintenance.
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
SMA	Stormwater Management Area.
SS	Suspended Solids.
Stormwater / Drainage Catchment	An area containing properties that are connected to the stormwater collection system upstream of a particular point whether it is a particular manhole or a network pumping station.

Unplanned Maintenance (or repair)	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrade	The addition or replacement of an asset, or component of that asset, that materially improves its original service potential.
Valuation	The process of determining the worth of an asset or liability. Assessed asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for life cycle costing or replacement plus a percentage for insurance purposes.

Transportation Activity Management Plan 2024

Executive Summary

June 2024



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Table of Contents

1	Executive Summary	4
1.1	Background	4
	Council Goal	5
	Key issues / Challenges.....	6
	Asset Growth	6
	Traffic Growth	7
	Asset Description.....	7
1.2	Levels of Service	8
1.3	Future Demand.....	10
1.4	Risk Management.....	13
1.5	Life Cycle Management	14
	Asset Condition, Performance and Capacity.....	14
	Routine Operation and Maintenance.....	17
	Renewal / Replacement Planning	17
	Creation/Acquisition/Augmentation Plan	17
1.6	Financial Summary	18
	Operating Expenditures	18
	Capital Expenditure	19
	Valuation.....	20
1.7	Asset Management Practices	21
1.8	Monitoring and improvement Programme	22

Figures

Figure 1-1: Total Expenditure and Revenue 2024-2034 (\$000).....	18
Figure 1-2: Operations and Maintenance Cost Requirements 2024-2034	19
Figure 1-3: Capital Cost Requirements 2024-2034	19
Figure 1-4: Funding Sources by %.....	20

Tables

Table 1-1: Change in Replacement Cost of Roading Assets Included in this Plan	7
Table 1-2: LTP Level of Service	9
Table 1-4: Major Projects and Costs	12
Table 1-5: Summary of Asset Condition, Performance and Capacity	15
Table 1-6: Total Expenditure and Revenue 2024-2034 (\$000).....	18
Table 1-7: Funding Source by \$ (10 years)	20
Table 1-8: Asset Valuation as June 2023.....	21
Table 1-9: Improvements	22

1 Executive Summary

This executive summary provides a brief overview of our district's transport infrastructure, outlines the key issues which require consideration and the approach to be taken to address these issues.

Our Transportation goal is:

“To plan, provide, maintain, develop and improve the transport network so that Waimakariri is a great place to be, and transport is accessible, convenient, reliable and sustainable”

1.1 Background

Over the last decade Waimakariri District has experienced significant growth and associated increases in traffic movements, from both private vehicles and commercial vehicles including heavy freight. This growth is expected to continue into the future. The district has also experienced increasing severe weather events which have tested the resilience of our network and the ability to be able to respond.

The transport system needs to respond to changes in population and land use, to ensure that it continues to provide a high quality of life in the Waimakariri District. The transport activity needs to provide people with ease of access to key activity centres, employment, education, healthcare, and recreation opportunities. It also needs to provide for the safe and efficient movement of freight to support a thriving economy.

To achieve this change, we need to transition away from what has historically been a private vehicle centric focus, into a transport system that provides options for how people can travel. This has benefits in that it can reduce the number of vehicle trips taken which results in reduced vehicle emissions, as well as providing health and wellbeing benefits for the community from active modes of travel.

Increasing adverse weather events and higher ground water levels, coupled with an increase in heavy freight movements are causing faster deterioration of roads within the district and an increased need to focus on maintenance activities, such as drainage maintenance and high shoulder removal, to minimise deterioration. Increasing costs have resulted less Road Maintenance, Operations and Renewals work being able to be undertaken, with increasing faults and decreasing customer satisfaction. A focus on these areas will help provide a more resilient transport network.

The five key focus areas for Council to address include:

- Increased Maintenance, Operations & Renewals Activities.
- Increased focus on resilience.
- Focused programme of safety improvement on key transport corridors
- Delivery of our walking & cycling network.

- Improvements to public transport infrastructure to support Greater Christchurch strategy.

This Activity Management Plan has been developed to align with the following national, Greater Christchurch and district documents and strategies:

- Draft Government Policy Statement on Land Transport 2024 (GPS)
- “Arataki” – NZ Transport Agency (Waka Kotahi’s) 30 Year visions and objectives for the land transport system
- Greater Christchurch Urban Development Strategy (UDS)
- Our Space 2018-2048
- Greater Christchurch Spatial Plan - under development
- Greater Christchurch Transport Plan (GCTP) – under development
- Greater Christchurch Transport Investment Programme (GCTIP) – under development
- Greater Christchurch VKT Reduction Plan – under development
- Canterbury Regional Land Transport Plan (RLTP)
- Canterbury Regional Public Transport Plan (RPTP)
- Waimakariri District Long Term Plan (LTP)
- Waimakariri Infrastructure Strategy
- Waimakariri Integrated Transport Plan

There are other strategic documents that inform the AMP as follows:

- Waimakariri Transportation Procurement Strategy 2022
- Waimakariri Organisational Sustainability Strategy & Action Plan 2020
- Waimakariri Walking and Cycling Strategy and Approved Walking & Cycling Network Plan
- Waimakariri District Parking Strategy

Council’s Goal

Purpose: To make Waimakariri a great place to be, in partnership with our communities guided by our outcomes, through the following roles:

- ❖ As a service provider.
- ❖ As a funder of activities by others.
- ❖ As an advocate on behalf of our community.
- ❖ As a regulator under legislation.

The following goal for the provision of transport infrastructure in the Waimakariri District Council has been developed from the Community Outcomes. Our Transportation goal is:

“To plan, provide, maintain, develop and improve the transport network so that Waimakariri is a great place to be, and transport is accessible, convenient, reliable and sustainable”

Key issues / Challenges

A key component of the preparation of the Transportation Activity Management Plan is the utilisation of the Strategic Business Case process. This requires the key strategic issues facing the district and the associated benefits of addressing these to be identified. Only once there is a key directional focus established should we investigate and decide on possible solutions to these issues.

The five key focus areas include increasing maintenance of the network, focusing on resilience, continuing a programme of safety improvements, developing our walking & cycling network and continued improvements to support public transport. This focus allows the transportation network to continue to cater for growth while utilising and maximising existing infrastructure. Provision for alternate modes of transport including walking, cycling and public transport, will allow choice in the way people can travel and relieve some pressure on existing infrastructure. Access to SH1 and SH72 continues to be a key focus area for the district, along with road safety, and road maintenance resulting from increasing growth, heavy vehicle movements and increased weather events.

The introduction of the Western Belfast Bypass and the Northern Corridor including the extra lanes on the Waimakariri River Bridge have been beneficial to the district and to the broader Canterbury region in terms of access and the economy. Travel times between Waimakariri District and Christchurch City have been reduced, however local constraints on the network particularly around the Skew Bridge, West Rangiora route, Tram Road and Southbrook Road continue to cause issues and safety concerns.

Infrastructure such as the replacement of the Skew Bridge, safety improvements on Tram Rd and the West Rangiora Route, and the construction of the new Rangiora Eastern Link Road will be required to support ongoing growth and address known safety issues. SH1 Woodend Bypass has now been committed to by the Government and is important infrastructure not only for the Waimakariri District but also for the Canterbury region.

The AMP explores options to resolve these issues, ranks these options to determine the best solution to the identified issues, and determines a means to fund and implement them.

Asset Growth

Between 2020 and 2023 there have been the following increases in roading assets.

- ❖ Roads – 28.09 km (1.8%)
- ❖ Kerb and Channel – 38.45 km (8.62%)
- ❖ Footpaths – 38 km (10.7%)
- ❖ Signs – 1,541 (8.5%)
- ❖ Streetlights – 149 (2.83%)
- ❖ Traffic Signals - 1 set

Note that the lower percentage increase of roads compared to other assets is due to most of the increase being in urban areas. As such, they include associated assets such as footpaths and kerb and channel. The increase in growth and traffic volumes in the district has also

resulted in an increase in the need for signalised intersections with the associated infrastructure.

The length of unsealed roads has remained reasonably static; however, they have suffered through repeat adverse weather events over the three years. Increasing events wash fines out of the running course which results in this being lost at an accelerated rate. The length of unsealed roads with traffic volume greater than 200 vehicles per day (formerly one of Council's Level of Service measures) has reduced to less than 1% of the network. This proportion is expected to stay roughly the same over the next three years, which will mean while the rural vehicle traffic will increase, the urban traffic will increase by more in real terms.

The district's population is expected to continue to grow for the foreseeable future, although the rate of growth is likely to be lower than in recent years, reducing from 2.4% in 2020 to an average of 1.9% per annum over the next 10 years.

Traffic Growth

Overall travel on the network increased from vehicle kilometres travelled (vkt) increased from 437 million in 2019/20 to 580 million in 2022/23. This is an increase of 33% over this time span, an average of 10.9% per annum, compared with 371 million vehicle kilometres travelled (vkt) in 2016/17 increasing to 437 million in 2019/20, a 17.6% increase or an average of 5.9% per annum.

Asset Description

A key goal of Waimakariri District Council is to provide a safe, responsive and sustainable network. To achieve this, Council manages the following asset with an optimised replacement cost of \$1,315 million.

Table 1-1: Change in Replacement Cost of Roading Assets Included in this Plan

Asset Group	Replacement Cost 2020 (\$000)	Replacement Cost 2023 (\$000)
Road Carriageway	700,042	884,878
Bridges and Structures	117,880	149,280
Footpath, Cycle paths and Shared Paths	42,129	53,575
Road Drainage	140,982	187,362
Streetlights	11,461	17,396
Traffic Services & Bus Seats / Shelters	14,702	20,564
Traffic Signals	915	1,620

1.2 Levels of Service

The Levels of Service developed in this Plan are based on the District's Community Outcomes. The Community Outcomes are the result of public consultation carried out up to and during preparation of the 2024 to 2034 Long Term Plan (LTP).

While transport contributes to almost all community outcomes in some measure, those specific to transport are as follows:

- Our community has reliable access to the essential infrastructure and services required to support community wellbeing.
- Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.
- Our district transitions towards a reduced carbon and waste district.
- The natural and built environment in which people live is clean, healthy and safe.
- Infrastructure and services are sustainable, resilient, and affordable.
- Our district readily adapts to innovation and emerging technologies that support its transition to a circular economy.

In establishing the Levels of Service, the Council has considered its legal obligations, comments made to it through formal consultation processes, the results of customer surveys, sound engineering practice, affordability and economic efficiency.

There are five Rooding Performance measures asset by the Department of Internal Affairs. These are shown in Table 1-2 below.

Table 1-2: LTP Level of Service

Roads and Footpaths							
Community Outcome	Council Response	Level of Service	Measure	Targets	Performance 2019/20	Performance 2020/21	Performance 2021/22
A place where everyone can have a sense of belonging.	<p>Council commits to promoting health and wellbeing and minimizing the risk of social harm to its communities.</p> <p>Our community has equitable access to the essential infrastructure and services required to support community wellbeing.</p>	The road network is increasingly free of fatal and serious injury crashes.	* The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number. (DIA measure)	Reduction in fatalities and serious injury crashes	One more fatality and 9 fewer serious crashes on Waimakariri local roads for the whole of 2019/20 financial year compared with 2018/19-8	There were 4 more fatalities and 5 more serious crashes on the local road network for the current financial year compared with the previous year	During the year there were 4 fatal crashes and 21 serious injury crashes. This is a reduction of five fatal crashes and 4 serious injury crashes from the previous financial year.
<p>A place...</p> <p>...where everyone can have a sense of belonging.</p> <p>...that values and restores our environment.</p> <p>...supported by a resilient and innovative economy.</p>	<p>Our community has equitable access to the essential infrastructure and services required to support community wellbeing.</p> <p>Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.</p> <p>The natural and built environment in which people live is clean, healthy and safe.</p> <p>Infrastructure and services are sustainable, resilient, and affordable.</p>	Sealed roads provide a level of comfort that is appropriate to the road type.	* The average quality of ride on a sealed road network, measured by smooth travel exposure. (DIA measure)	95% for rural and 75% for urban roads	98% / 80%	98%/80%	98%/84%
		Optimised programmes are delivered that are affordable and at a cost so that service productivity is improving.	* The percentage of the sealed local road network that is resurfaced annually (DIA measure)	5%	4.45%	4%. Higher quantity of asphalt means shorter length of road able to be resurfaced within budget	3.8% Covid affected Contractor resources. Remaining reseal programmed for start of new year's season
		Footpaths are safe, comfortable and convenient.	* The percentage of footpath that falls within the level of service or service standard for the condition of footpaths. (DIA measure)	95% of footpaths rated better than very Poor	99%	99%	99%
		Requests for service will be responded to in a prompt and timely manner.	* The percentage of customer service requests relating to roads and footpaths responded to within service delivery standards. (DIA measure)	95%	96.4%	94%	93.8%

1.3 Future Demand

The Waimakariri District has experienced significant growth over the last decade and is expected to continue to grow into the future, albeit at lower rates than those experienced in recent years. Statistics New Zealand (StatsNZ) projects low, medium and high growth rates. Waimakariri has chosen to use the high growth scenario. This equates to a projected district population of 101,791, a 46% increase over the next 3 decades.

StatsNZ also forecasts more people over the age of 65 and fewer young people in the District. Older people are more likely to have difficulty driving safely due to the effects of aging such as deteriorating eyesight and reaction time and greater likelihood of serious injury when they do crash.

The OECD International Transport Forum (2013) concluded that car use was declining internationally, however, this trend tends to be less pronounced in rural areas, and there is no evidence of declining car usage in the Waimakariri District. Vehicle kilometres travelled measures the quantity of travel in the district rather than just vehicle ownership or length of the network. Vehicle kilometres travelled in WDC increased from 437 million in 2019/20 to 580 million in 2022/23.

As population increases, any reduction in car usage that does occur is likely to be accompanied by a corresponding increase in walking, cycling and public transport usage. Council's walking and cycling strategy and Walking & Cycling Network Plans promote improved walking and cycling infrastructure, including new walking & cycling connections and footpaths.

The construction of the Christchurch Northern Corridor was completed late 2020 and this project has also included a cycle facility, which links Christchurch City to Waimakariri District (including a walking and cycling clip on the Motorway Bridge). This has been a key project for unlocking walking and cycling opportunities between Waimakariri and Christchurch City.

Alongside this, Waimakariri District Council has developed a Walking & Cycling Network Plan which identifies gaps and key projects in the network. Council has progressed the design of key walking & cycling infrastructure as part of the Transport Choices Funding package made available through central government, however construction funding has not been provided and as such there are significant gaps in the current network which need to be addressed. Increases in demand for walking & cycling infrastructure will continue into the future.

Waimakariri District Council has been working with the Greater Christchurch partners to develop and agree a package of Travel Demand Management initiatives to help promote changes in travel behaviour within the Greater Christchurch area.

Park & Ride facilities have been delivered in Rangiora and Kaiapoi, along with peak hour express bus services, to provide time and cost-effective alternatives for peak hour commuters. A further site is to be developed in Woodend to cater for the Woodend / Pegasus / Ravenswood area.

Much of the population growth in the district is expected to occur in Rangiora, Kaiapoi, and Woodend (including Pegasus and Ravenswood). In addition, there is expected to be continuing demand for rural-residential and larger “lifestyle” type blocks close to Christchurch city. Changes in the proposed District Plan now allow the traditional 10-acre (2.5 hectare) blocks east of Mandeville to be subdivided further, while the blocks west are no longer able to be subdivided below 20 hectare.

Other likely land use changes include the continuing demand for ongoing gravel extraction. The previous conversion to dairy has largely occurred and is likely to remain fairly static. Some logging will continue but is very dependent on the international market and harder to programme ahead for.

What changes might this lead to?

The anticipated population growth, demographic changes, vehicle use trends and land use changes would suggest the following future transport trends:

- ❖ A continuing increase in car usage;
- ❖ A possible reduction in the proportion of trips at peak time due to aging population;
- ❖ Increased pedestrian demand and footpath usage;
- ❖ Increased cycle numbers;
- ❖ Increasing numbers and size of heavy vehicles;
- ❖ Changing work patterns and the ability to work remotely, and;
- ❖ Increases in on-line shopping and goods delivery options.

Generally (with some exceptions), the district’s roads and intersections are far from their ultimate capacities, and many are unlikely to reach those points in the near future. However, there are some parts of the network that are having difficulty meeting the demand and where growth will put them under strain with longer delays at peak times being more likely in future, or where significant deterioration of the road will be likely to occur. This deterioration is particularly the case where the roads carry a higher than usual proportion of heavy traffic.

How will we deal with these issues?

The general approach to be taken in assets development to meet future trends is as follows:

- ❖ Maintaining and using the existing transport infrastructure efficiently and effectively;
- ❖ Targeted investment in infrastructure improvements for both access and safety outcomes;
- ❖ Increased emphasis on walking, cycling and public passenger transport to provide greater transport choice, integration, flexibility and to promote good public health outcomes;
- ❖ Ensuring growth areas and development support modal choice and provide opportunities for people to travel less, especially by private motor vehicle;

- ❖ Implement travel behaviour change programmes to encourage more efficient travel patterns, noting that these will be limited by lack of NZTA funding and the impact of Christchurch earthquakes; and
- ❖ Funding growth components of projects from development and/or financial contributions.
- ❖ While motorway infrastructure constructed to the north-west of Christchurch has improved access to and from our city neighbour, there is still issues with access in Waimakariri District itself, particularly around our largest town of Rangiora. A number of projects have been planned for the 2024-34 Long Term Plan (LTP) to help address these issues and are included in Table 1-4 of this chapter of the AMP.

Major programmes and costs to meet the demand described above are shown below. The full detail is shown in **Section 7 - [The Lifecycle Management Plan](#)**

Table 1-3: Major Projects and Costs

Project	\$M	When
Kaiapoi to Woodend Cycle Connection	2.2	31/32-32/33
Ravenswood Park N Ride	1.5	26/27-27/28
Kaiapoi Roding Improvements - Williams St South	2.0	28/29-29/30
North-West Arterial Rangiora – Lehman's to River Rd	2.2	29/30-30/31
West Rangiora Route	14.2	24/25-33/34
Woodend Improvements in conjunction with Woodend Bypass (Note: this will be dependent on the timing of the Bypass)	2.0	26/27-27/28 & 31/32-32/33
South Eyre/Giles/Tram Roundabout	1.9	26/27-27/28
Tram Rd Route Improvements (widening, intersection improvements, delineation)	7.7	23/24-33/34
Rangiora / Woodend / Tuahiwi / Boys Rd Intersection Improvements	1.9	26/27 & 28/29
Robert Coup Dr / Ohoka Rd Intersection Improvements	1.2	26/27-27/28
Skew Bridge Replacement	12.0	24/25-28/29
Southbrook Future Improvements	3.9	25/26-27/28 & 31/32-32/33
Northbrook / Ivory Intersection Improvements	1.5	27/28-28/29
New Eastern Arterial	35.1	24/25-29/30
North South Collector Rd	6.0	24/25 & 28/29

Many of the demand assumptions above are based on an underlying assumption that transport in the future will be delivered in similar ways to transport in the comparatively recent past. While Covid changed some working patterns and allowed more flexibility in the way people work, this has largely stabilised and people have largely returned to pre-Covid behaviours, however activities such as online shopping and home deliveries continue to be popular. Public Transport which suffered a significant drop in use during and after the pandemic, has in late 2023 finally reached and surpassed pre-Covid levels.

Other changes in technology are still coming to the fore, however, are likely to include semi-autonomous and fully autonomous vehicles. Many of these technologies are still being developed however have the potential to significantly alter private and commercial transport over time.

Until such time as this becomes more commonplace and is widely accepted, the development of technology, and changes in public attitudes towards transport will be monitored, along with population, demographic and land use trends. Expected transport demand will be reviewed and revised accordingly.

Electrification of the vehicle fleet is progressing however at current rates this will take some time before the entire fleet transitions away from fossil fuels. Moving to electric vehicles has benefits due to emissions reduction. This is particularly important in a dispersed district where there are often no alternate modes, for portions of the Community, in which people can travel.

1.4 Risk Management

This section outlines the risk management process used for the WDC road network. The objective of risk management is to identify the specific risks associated with the ownership and management of road network assets and identify how these risks will be mitigated. While it is not possible to eliminate all risk, it is important to be proactive in the management of risk to minimise adverse outcomes.

There are four strategic risk areas which have been identified and are outlined in this Transportation Activity Management Plan. These four strategic risk areas align with our Transportation Problem Statements and include:

1. Safety
2. Resilience
3. Sustainability
4. Integration of Land Use Planning and Transport

These are covered further in Section 5, however in summary these issues affect the network and the resulting community outcomes as follows.

Road safety is the risk to the public on a number of levels. Road safety has health, financial, and quality of life implications, that is best solved with a multi-faceted, integrated approach.

Sustainability is the ability for an asset or activity to be maintained at a certain rate or level. In the transportation sector, it includes financial, environmental and asset sustainability. Sustainability in its many forms requires a larger focus as part of day-to-day business and needs additional consideration, for example, the effects of roading runoff contamination on the environment, vehicle emissions on air quality and increased carbon.

Resilience in a transport network relates to the ability of the network to continue to function during a natural hazard event, and to quickly recover. This considers how we will manage our network, access to key infrastructure and communication to ensure our Community is safe from harm. In recent years, Waimakariri has experienced a number of heavy rainfall events and are becoming more common, hence a need to ensure our infrastructure is able to cope where possible, and that appropriate systems are in place to ensure our residents health, safety and wellbeing is not compromised.

Integration of Land Use Planning and Transport becomes an issue when growth occurs in an ad hoc manner and in places which do not readily support the growth.

1.5 Life Cycle Management

The in-house Roding team of the Council undertakes programme management, routine network management, investigations and reporting, and management of the Roding and transport assets. Physical works are carried out by external contractors, while specialist professional services (including bridge inspections and structural advice, road safety audits and advice, transport planning, traffic assessments, traffic counting, road condition rating and surveys) are provided by external consultants.

The Life Cycle Management Plan focuses on key asset groups (road carriageway, bridges and road structures, footpaths & cycleway, road drainage, streetlights, traffic services, and passenger transport). Management strategies focus on lifecycle activities (operation, maintenance, renewal, creation) for each asset group to improve the decision-making and evaluation of options associated with each asset, and to optimise lifecycle costs. Programme management can include travel demand management and behavioural change, e.g. rather than dealing with congestion by building more roads, encouraging moves to walking, cycling and public transport reduces the number of trips by private motor vehicles.

Asset Condition, Performance and Capacity

Transport assets need to be maintained to a good condition to provide a safe transport network for the public to use, and to meet customer level of service. Established asset management practices help to ensure this is achieved and that associated budgets are in place and met.

The following tables document the condition, performance and capacity of the assets based on best information currently available.

Table 1-4: Summary of Asset Condition, Performance and Capacity

Road Carriageway	
Condition	Performance/ Capacity
<p>The condition of the sealed road is assessed by roughness, condition rating and surface age. The 2023 roughness surveys indicate that overall average of 85% of all urban roads and 98% of all rural roads users experience smooth travel within the Waimakariri District Council. Both percentages are above the targeted LOS of 75% and 95% respectively.</p> <p>Formal condition rating is not undertaken on unsealed roads. Condition is monitored through contractor and Council staff inspections as well as service requests received from road users. The latest satisfaction survey indicated a decrease in customer satisfaction with our unsealed, which reflects the increase in storm events making maintaining a suitable road surface more difficult.</p>	<p>The 2022 customer satisfaction survey indicated a decrease in the percentage of households satisfied with the carriageway network, both sealed and even more so unsealed compared to previous years. This reflects the adverse weather events experienced over recent years, the increased population growth, and the insufficient funding to respond to increasing network needs.</p> <p>In addition to damage from the weather events, unsealed rural roads are likely to be particularly susceptible to increasing maintenance requirements due to increasing heavy vehicles associated with new dairy farm conversions, gravel extraction and other land use changes. These impacts require specific strategies to be developed to enable the network to cope.</p>
Bridges and Road Structures	
Condition	Performance/ Capacity
<p>The condition of all bridges has been assessed as being generally in good to average condition. There is no formal condition rating for the remaining road structures, however the condition of these assets is assessed through the routine inspections undertaken by the road network maintenance contractor.</p>	<p>The majority of bridges in the district have adequate capacity to cater for most of the projected future loading and traffic volumes, however some strengthening/widening may be required for HPMV capacity.</p>
Footpath & Cycleways	
Condition	Performance/ Capacity
<p>The 2022 condition rating indicated that 98% (391km) of the footpath network is in average to excellent condition, with just 2% in poor or very poor condition, programmed to be replaced over the next three years.</p>	<p>District wide satisfaction with the footpaths has decreased from 83.7% for town footpaths in 2019 to 78.2% in 2022 and from 59.6% to 58.9% for small settlement footpaths. The decrease in rating appears to be related to higher maintenance needs such as dealing with trip hazards, rather than overall footpath conditions.</p>

Road Drainage	
Condition	Performance/ Capacity
<p>The 2020 condition rating of the surface water channel indicated that 76% (449 km) of the SWC network is in average to excellent condition. The priority in the next 10 years programme will be replacement of kerb and channel which has deteriorated to the point of causing deterioration to the road pavement or surface due to water ingress.</p> <p>A recent review of culverts undertaken by the maintenance contractor indicated a number of these assets will require closer inspection and rating over the next three years, however generally culverts are inspected regularly through maintenance inspections and based on these inspections they are considered to be in a good condition.</p>	<p>The existing drainage systems are generally adequate except in flood conditions. Attention has been given over the last 3 years to ensuring at-risk areas are upgraded where possible, and sumps in high-risk areas are given highest priority at times of potential flooding.</p> <p>There has also been a move to ensure detritus which might contaminate waterways is being captured in sumps using reusable insets. These were initially used in conjunction with other environmental drainage assets such as swales to capture silt, but there is a move to also use these in central urban areas to catch detritus.</p>
Streetlights	
Condition	Performance/ Capacity
<p>The condition of the overall street lighting inventory has not been rated in any formal way however, overall condition of the street light assets is still considered satisfactory based on maintenance inspections, RAMM data and the number of service requests.</p>	<p>The majority of the older streetlights do not comply with the national standard for street lighting; however, the levels of complaints are low which indicates that the community is satisfied with the service levels provided and there are no identified safety issues. Generally, when poles have been replaced the lamps are upgraded at the same time, and funding has been allocated to increased LED replacement for the next LTP.</p>
Traffic Services	
Condition	Performance/ Capacity
<p>There is no formal condition rating system for the traffic services assets. However, the condition of these assets is assessed through the routine inspections undertaken by the road network maintenance contractor and the annual day and night safety inspections carried out by the professional Service Providers. In general, the condition of the traffic services assets is considered to be good.</p>	<p>The performance of the traffic services in the district is considered adequate based on road users' complaints, crash data, safety audits and road inspections. However, this is a critical group of assets and there are continued plans to improve these. Particularly, an assessment of the suitability of traffic facilities for an older population is a project which will need to be investigated in the future.</p>
Public Transport Infrastructure	
Condition	Performance/ Capacity
<p>The majority of the bus shelters and seats are in good or excellent condition, having been constructed following the review of the bus service in 2005. The main driver for maintenance/renewal is vandalism.</p>	<p>The current bus service is monitored by Ecan, however potential changes in service are consulted with the district. There is more focus on actively encouraging alternative modes of travel including public transport and to complement this Park and Ride facilities are being developed.</p>

Routine Operation and Maintenance

Operational activity is work or expenditure that is necessary to provide or keep the asset functioning. It has no effect on asset condition, where routine maintenance is the day-to-day work required to keep assets operating at required service levels, and falls into two broad categories:

- ❖ **Planned Maintenance:** Inspection and maintenance works planned to prevent asset failure.
- ❖ **Unplanned Maintenance:** Action to correct asset malfunctions and failures on an as-required basis (i.e., urgent repairs).

Council's operations and maintenance strategy is intended to retain the required levels of service, mitigate risk and minimise costs by monitoring the condition and performance of assets, implementing a balanced programme of planned, and unplanned works.

To achieve this, assets are monitored through routine proactive inspections, testing and the analysis of customer complaints and condition reports. Service levels are managed by assessing the condition of assets against levels of service, the levels of customer expectation, and implementing appropriate action. One way of minimising asset ownership costs is by ensuring effective and efficient technologies are used to improve operational and management efficiencies (e.g, JunoViewer, RAMM etc.). Opportunities for improvement in this area are considered where appropriate.

Renewal / Replacement Planning

Renewals are programmed with the objective of achieving:

- ❖ A net benefit to the national and/or local economy from the renewals.
- ❖ The lowest life cycle cost for the asset, i.e., it is uneconomic to continue repairing the asset.
- ❖ An affordable cash flow profile
- ❖ Other savings by co-ordinating renewal works with other planned works within the road reserve or adjacent to it.
- ❖ Reduced risk: The risk of failure and associated financial and social impact or potential failure can justify replacement or renewal of an asset. For example, the effect or impact and extent of discontinuation of a service, the potential extent of property damage, increased risk of crashes or other health risk.

Creation/Acquisition/Augmentation Plan

New capital projects are identified by the Council as a response to growth and demand or to better meet customer needs or achieve target LOS. The major projects and Roadway assets groups are considered and prioritised through the development of the Council's Long Term Plan (LTP). The projects may be partially funded by external funding sources such as the New Zealand Transport Agency, or other third-party contributions.

1.6 Financial Summary

The forecast expenditure requirements over the ten years planning period to continue to manage the Roothing and transport activities are presented in figure 1-1 below. The financial forecasts presented in the plan are based on 2024 dollars.

Figure 1-1: Total Expenditure and Revenue 2024-2034 (\$'000)

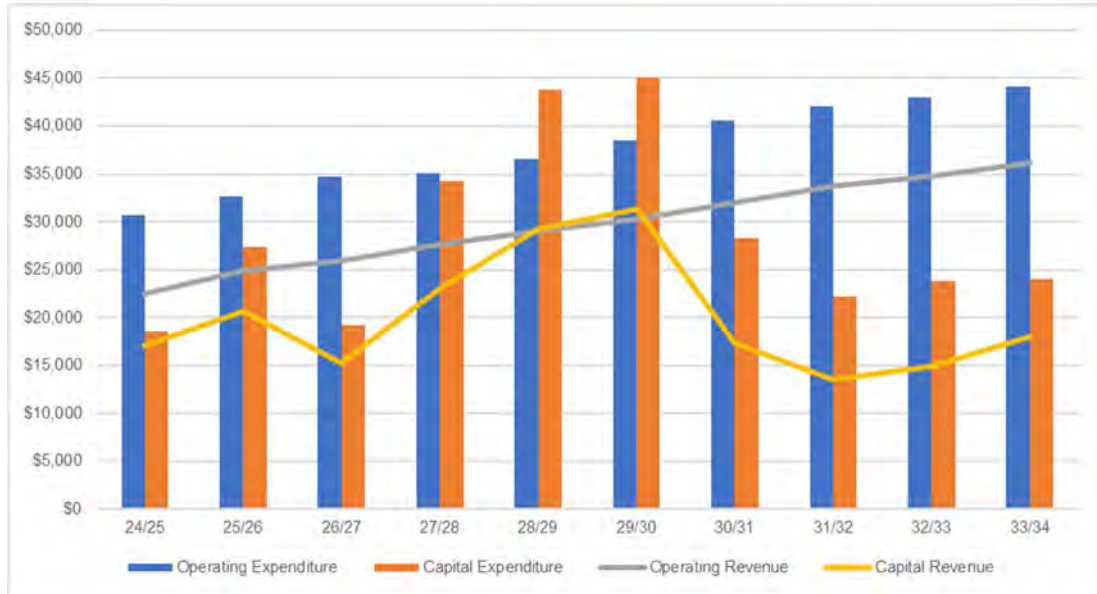


Table 1-5: Total Expenditure and Revenue 2024-2034 (\$'000)

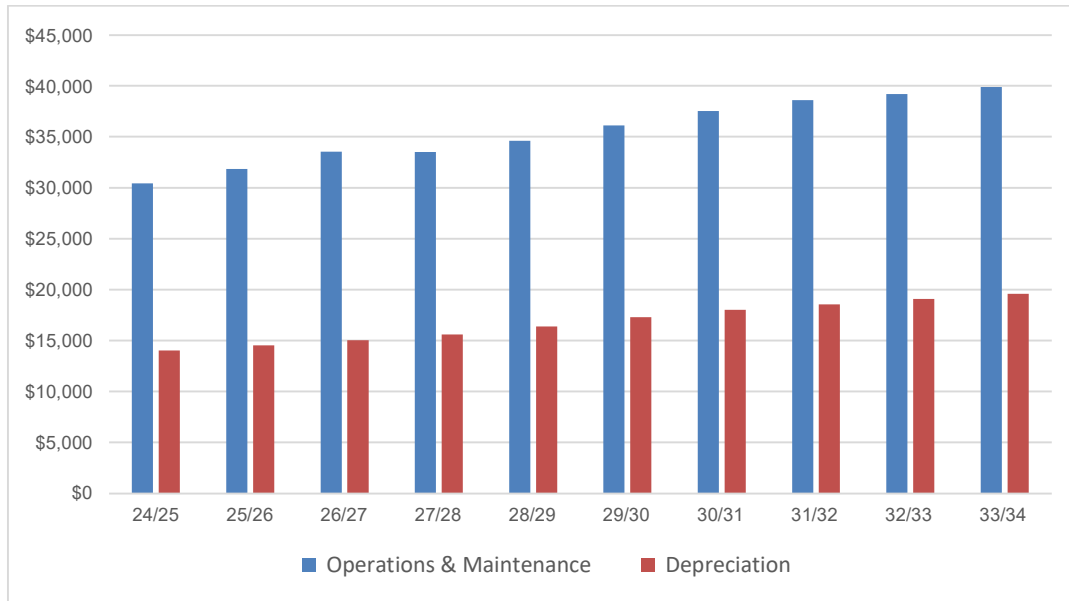
Financial Year	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Operating Expenditure	\$30,645	\$32,672	\$34,758	\$35,085	\$36,568	\$38,534	\$40,532	\$42,017	\$42,997	\$44,079
Capital Expenditure	\$18,500	\$27,334	\$19,167	\$34,306	\$43,822	\$45,048	\$28,340	\$22,206	\$23,799	\$23,999
Operating Revenue	\$22,549	\$24,955	\$25,965	\$27,707	\$29,024	\$30,258	\$32,053	\$33,764	\$34,829	\$36,121
Capital Revenue	\$17,066	\$20,707	\$15,232	\$23,024	\$29,256	\$31,334	\$17,341	\$13,526	\$14,931	\$18,026

Operating Expenditures

Operation and maintenance expenditure is projected at \$1.62B over the 30-year planning period for activities undertaken by the council to operate and maintain the network (including inflation).

The expenditure forecast is based on historical costs, contract rates and projected expenditure for future maintenance requirements. Allowances are made for predicted growth in the network, and inflation. 45% of the operating expenditure is considered depreciation. The breakdown of budget is shown below:

Figure 1-2: Operations and Maintenance Cost Requirements 2024-2034

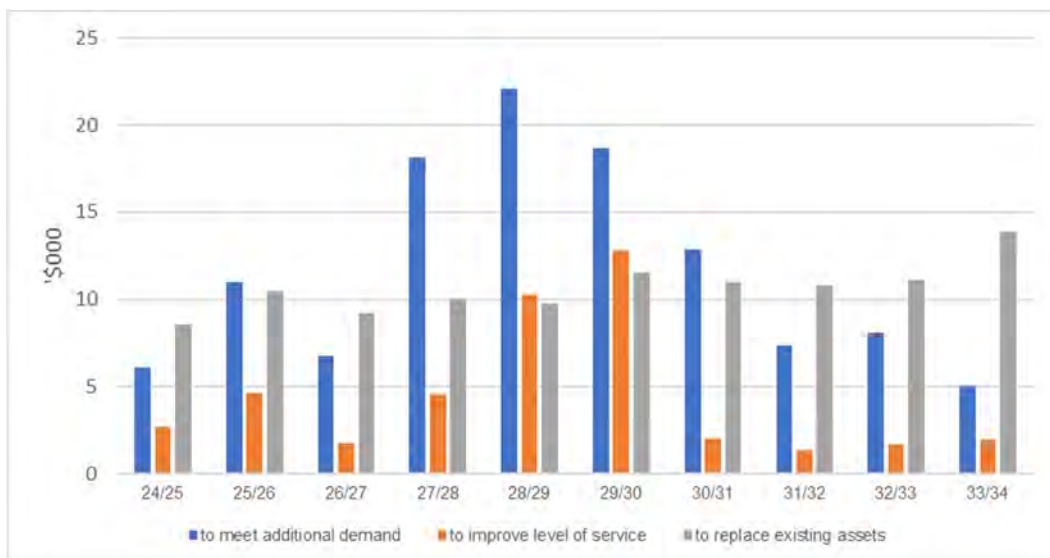


Capital Expenditure

Capital expenditure includes renewals and new projects.

- Renewal work does not increase the asset's design performance but restores, rehabilitates, replaces, or renews an existing asset to its original capacity. New work is the creation of a new asset or extension of an existing asset beyond its current capacity to meet or improve a level of service or to cater for growth.

Figure 1-3: Capital Cost Requirements 2024-2034



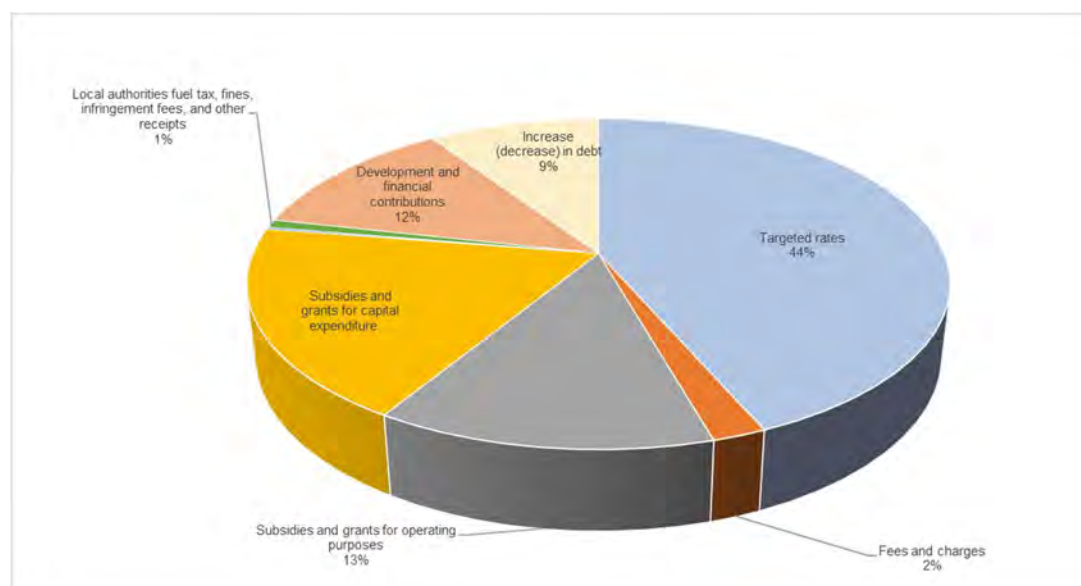
Revenue/ Funding

Funding for capital development and maintenance of the Roding network comes from a variety of sources as per table 1-7 below.

Table 1-6: Funding Source by \$ (10 years)

Funding Source	\$000
Targeted rates	216,410
Fees and charges	10,432
Subsidies and grants for operating purposes	65,452
Subsidies and grants for capital expenditure	93,391
Internal charges and overheads recovered	959
Local authorities fuel tax, fines, infringement fees, and other receipts	3,972
Development and financial contributions	60,362
Increase (decrease) in debt	46,690
Total	497,667

Figure 1-4: Funding Sources by %



Funding for operation and maintenance of the Roding and transport network is provided from Roding rates, fees and charges, and financial assistance received from NZTA. Funding for capital expenditure is provided from debt funding, renewals funds (depreciation), development/financial contributions, and NZTA financial assistance.

Valuation

The Council undertakes a full independent valuation of its Roding assets annually. These assets were revalued using the asset register as at 30 June 2023. Table 1-8 summarises the valuation of the transport network assets as at 30 June 2023.

Table 1-7: Asset Valuation as June 2023

Valuation as at 30 June 2023			
Asset Description	Replacement Cost \$	Annual Depreciation \$	Depreciated Replacement Cost \$
Formation	461,875,841	0.00	461,875,841
Sealed Pavement Surface	85,995,417	3,844,220	46,364,349
Sealed Pavement Layers	311,539,070	2,562,456	213,155,769
Unsealed Pavement Layers	25,467,824	394,502	23,808,370
Drainage	75,659,370	1,042,434	53,521,308
Surface Water Channels	111,702,739	1,433,141	82,871,173
Footpath	53,574,742	1,077,309	39,637,587
Traffic Facilities	2,022,465	103,336	1,321,023
Signs	8,703,631	663,043	3,376,467
Railings	2,650,480	69,744	1,904,385
Street Lights	17,395,913	385,985	11,256,759
Minor Structures	2,181,262	44,474	1,401,399
Islands	5,006,437	62,580	4,113,093
Bridges and Bridge Culverts	149,279,836	1,139,099	83,655,559
Traffic Signals	1,620,943	54,031	1,346,021
Total	1,314,675,971	12,876,345	1,092,639,102

1.7 Asset Management Practices

An asset management system is a combination of processes, data and software which are utilised to effectively manage assets.

The primary asset management tool and data register used by Council for road and transport infrastructure assets is the Road Asset Maintenance Management (RAMM) database. The use of RAMM or an equivalent asset management system is a prerequisite of the New Zealand Transport Agency for obtaining Government subsidy for Roadwork.

The following systems are also operated by the Council to help manage the assets:

- ❖ Pavement Deterioration Model (JunoViewer)
- ❖ Geographical Information System (GIS)
- ❖ TechOne Accounting/ Financial/Non-riding Asset Management Systems
- ❖ Total Record and Management System (TRIM)

The Council employs a team of eleven to manage the roading and transport network. Council has an internal professional services consultant in the Project Delivery Unit, who largely deliver the Roothing Capital Works Programme on an annual basis. As well as this, specialist professional services for areas such as structures and valuations, are provided by external consultants.

1.8 Monitoring and improvement Programme

The Council is committed to ongoing improvements in asset management. The current approach for asset management planning incorporates problem identification, evidence gathering, analysing, communication, resourcing and delivery improvements. This is incorporated into the Activity Management Plan which is then independently peer reviewed.

An improvement plan is developed as part of the AMP preparation and seeks to emphasise the most important improvements and to prioritise the importance of each action. Of particular importance are plans to improve performance monitoring and evidence gathering, to better inform decision making.

This plan was peer reviewed by Infrastructure Associates in January 2024, and recommendations from the peer review have been included in the improvement plan where it was considered appropriate.

The improvement plan focuses on improving systems, data, processes and organisational practices to raise the level of advancement in the AMP. The AMP needs to be a living document which is relevant and integral to daily asset management activities. To ensure the plan remains useful and relevant the following on-going process will be undertaken:

Table 1-8: Improvements

Action	Timing
Formal adoption of the plan by the Council	Three-yearly
Review and reporting against KPI's	Quarterly
Revise the plan annually to incorporate new knowledge resulting from the AM improvement programme	Annually
Formally review three-yearly to assess adequacy and effectiveness	2025/26
Track progress of implementing the improvement programme quarterly	Quarterly
Review condition assessment information (following condition rating)	Varies from 1-4 years

A number of items requiring improvement have been identified during preparation of this plan. It is intended to prioritise these improvements and develop an action plan to implement them.



Transportation Activity Management Plan 2024

Introduction

June 2024



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Prepared by	Yvonne Warnaar	Asset Planning Engineer (Roding)		29/01/2024
Reviewed by	Joanne McBride	Roding & Transport Manager		24/06/2024
Approved by	Gerard Cleary	General Manager, Utilities and Roding		
Adopted by	Utilities & Roding Committee			

2 Introduction.....	5
2.1 Background	5
Our District.....	5
Transportation Activity	5
Key Issues / Challenges	6
Our Strategy	7
Purpose of the Plan	7
Plan Structure	9
Approval Process.....	9
Waimakariri's Story.....	9
2.2 Relationship with other planning documents	13
Strategies, Policies and Plans that Impact on this activity	13
Other Council Strategies, Policies and Plans	18
Policy and Planning Developments.....	18
Strategic Context	20
2.3 Consultation.....	21
Key Stakeholders in the Plan	21
Waimakariri Community.....	21
Elected Members.....	21
Internal Partners	21
Other Stakeholders	22
Reasons and Justification for Asset Ownership	23
Council Vision	24
Community Outcomes	24
Four Wellbeing's	27
UN Sustainable Development Goals.....	27
Infrastructure Vision.....	28
Principal Goal	28
Strategic Approach, Council's Role.....	29
2.4 Legislative Requirements.....	29
The requirement to consider all options and to assess the benefits and costs of each option. 30	

The consultation requirements.....	30
Other legislation which parts of will influence work done in the transport sphere:.....	30
Recent additions to legislation which will influence planning and decision making:	30
2.5 Policy Context.....	31
Land Transport Management Act.....	31
Local Government Act	31
Resource Management Act.....	31
Climate Change Response Act 2002	31
Plan Framework.....	31
2.6 Sophistication / limitations of the Activity Management Plan	31

Tables

Table 2-1: Assets Included in Activity Management Plan by Type and Quantity [1][2] (from 2023 valuation).....	11
Table 2-2: National, Regional and Local Strategies and Plans.....	15
Table 2-3: Community Outcomes 2023.....	25

Figures

Figure 2-1: Map of Waimakariri District	10
Figure 2-2: Network Replacement Costs 2023 (Source 2023 Valuation).....	12
Figure 2-3: Hierarchy of WDC Policy, Strategy and Planning.....	14
Figure 2-4: Strategic Document relationships.....	20
Figure 2-5: Organisational Structure	23

2 Introduction

Waimakariri District Council is responsible for the management of a safe transportation network that is accessible, convenient, reliable and sustainable. The transport activity needs to provide people with ease of access to key activity centres, employment, education, healthcare, and recreation opportunities. It also needs to provide for the safe and efficient movement of freight to support a thriving economy.

To achieve this change, we need to transition away from what has historically been a private vehicle centric focus, into a transport system that provides options for how people can travel.

This document should be read in conjunction with the overarching Introduction to the Waimakariri District Council Utilities and Roding Activity Management Plans, which gives an overview of the district along with its activities, aims and aspirations.

2.1 Background

Our District

The Waimakariri District lies to the north of the Waimakariri River in North Canterbury. The district covers around 225,000 hectares of land. It extends from Pegasus Bay in the east to the Pukatea Range in the west and is bounded to the north by the Hurunui District.

Waimakariri District is largely made up of fertile flat land, or highly productive rolling downs. Much of the land to the east of Rangiora is reclaimed swamp, which is subject to poor drainage and occasional flooding. The north-western portion of the district is hill and high country. These hills, including Mt Oxford, Mt Richardson, Mt Thomas and Mt Grey dominate the district's western landscape.

We have a district which can be described as having two halves, with distinctly different characteristics. The east side of the district has our larger urban areas and higher population, and in the west the land is more rural in character with a strong agricultural base and lower population, with some areas being remote in nature.

The towns of Kaiapoi and Rangiora are the major urban areas in the Waimakariri District. The district's other main urban areas include Woodend / Ravenswood, Pegasus and Oxford, and along with this we have a number of small villages and settlements. Connecting communities is a key challenge.

Transportation Activity

Waimakariri District Council is a road controlling authority with the role of managing the districts transport network. Our goal is *to provide a transport network which is affordable, integrated, safe, responsive and sustainable, and which contributes to the attainment of high quality natural, living and productive environments within the District and assists development of a strong sense of community.*

To deliver upon this goal, Council manages (as at 1 July 2023):

- *1,562 km of roads (979km sealed and 568km unsealed)*
- *157 bridges and 132 large culverts*
- *385km of footpaths and 25km of shared paths*
- *5,648 Street lights*
- *32 bus shelters*

Key Issues / Challenges

The Waimakariri District has experienced significant growth over the last decade. Along with this we have seen increases in traffic movements from private motor vehicle trips and increases in heavy freight movements associated with servicing key activity centres and moving primary products. This growth is expected to continue well into the future. In conjunction with this, we have experienced increasing severe weather events which have tested the resilience of our network and the ability to be able to respond, and rapidly increasing costs across the market.

The transport system needs to respond to changes in population and land use, to ensure that it continues to provide a high quality of life in the Waimakariri District. The transport activity needs to enable ease of access to key activity centres, employment areas, education, healthcare, and recreation opportunities. It also needs to provide for the safe and efficient movement of freight to support a thriving economy.

To achieve this change, we are transitioning away from what was historically a private vehicle centric focus, into a transport system that provides for different users as well as providing options for how people can travel. This has benefits in that it can reduce the number of vehicle trips taken which results in reduced vehicle emissions, as well as providing health and wellbeing benefits for the community from active modes of travel.

Increasing adverse weather events and higher ground water levels, coupled with an increase in heavy freight movements are causing faster deterioration of roads within the district and an increased need to focus on maintenance activities, such as drainage maintenance and high shoulder removal, to minimise deterioration. Increasing costs have resulted less Road Maintenance, Operations and Renewals work being able to be undertaken, with increasing faults and decreasing customer satisfaction. This will be one of the areas of focus for Council to help provide a more resilient transport network.

The five key focus areas for Council to address include:

- *Increased Maintenance, Operations & Renewals Activities.*
- *Increased focus on resilience.*
- *Focused programme of safety improvement on key transport corridors*
- *Delivery of our walking & cycling network.*

- *Improvements to public transport infrastructure to support Greater Christchurch strategy.*

Our Strategy

Over the last decade Waimakariri District has experienced significant growth. Along with this we have seen increases in traffic movements from private motor vehicle trips and increases in heavy freight movements associated with servicing key activity centres and moving primary products. This growth is expected to continue well into the future. In conjunction with this we have also experienced increasing weather events which have tested the resilience of our network and the ability to be able to respond.

The transport system needs to respond to changes in population and land use, to ensure that it continues to provide a high quality of life in the Waimakariri District. The transport activity provides people with ease of access to key activity centres, employment areas, education, healthcare, and recreation opportunities. It also needs to provide for the safe and efficient movement of freight to support a thriving economy.

To achieve this change, we are transitioning away from a private vehicle centric focus, into a transport system that provides for different users as well as providing options for how people can travel. This has benefits in that it can reduce the number of vehicle trips taken which results in reduced vehicle emissions, as well as providing health and wellbeing benefits for the community from active modes of travel.

Increasing adverse weather events and higher ground water levels, coupled with an increase in heavy freight movements are causing faster deterioration of roads within the district and an increased need to focus on maintenance activities, such as drainage maintenance and high shoulder removal, to minimise deterioration. This also helps ensure a resilient network.

Purpose of the Plan

The objective of this Transportation Activity Management Plan is to outline a strategic, tactical and operational plan, which provides a framework and guidance that assists Waimakariri District Council in meeting the needs of the District's transport network users through the effective use of its assets and associated activities.

It also informs the vision and objectives of Council's commitments to the community, as defined in the Long Term Plan (LTP), whilst being consistent with the strategic direction both nationally through the Government Policy Statement (GPS) and regionally through Canterbury's Regional Land Transport Plan (RLTP). The Plan will help to ensure delivery of good-quality local infrastructure, local public services, and ensure performance of regulatory functions are achieved.

The purpose of this plan is to:

- *Identify how Transportation activities are to be managed.*

- *Explain how Waimakariri District Council will deliver the required level of service in the most efficient, effective and appropriate manner.*

This AMP is based on the International Infrastructure Asset Management Manual. This document recognises that assets exist to address the needs of the customer, in this case the users of the Waimakariri District transport system. An asset that is not meeting those needs because it is no longer utilised, however well preserved it may be, serves no useful function and may actually be diverting resources away from those assets more in need. In addition to assets, activities such as education, marketing, travel demand management and many other 'soft' measures are recognised as providing a synergy which allows better utilisation of assets. As such, they are an integral component of the plan.

The Activity Management Plan includes consideration of the Better Business Case Approach. This approach seeks to focus the AMP on the key issues facing the Road Controlling Authority and how the proposed programme of works would address these.

For this Activity Management Plan the identified key issues to be addressed, to best ensure the long-term maintenance of transport system and the well-beings for users are:

1. Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.
2. Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting in effects ranging from temporary disruption to potentially life-changing impacts.
3. Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, and social disconnect.
4. Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur.

These will be further addressed throughout the document, along with exploring ways to manage these key issues.

Activity Management Plans should be reviewed every three years to align with and inform the Long Term Plan (LTP).

The main benefits derived from the preparation and implementation of the AMP are:

- *Improved understanding of service level options and standards.*
- *Better understanding and forecasting of asset related management options and costs.*
- *Managed risk of asset failure.*
- *Improved decision making based on risk management practices.*
- *Clear justification of forward works programmes and funding requirements based on asset and activity needs.*

Plan Structure

The AMP is designed to take the reader through the various considerations and decisions taken in arriving at the best possible outcome for the Waimakariri District. In coming to those decisions, Council and staff carefully weigh up the positives and negatives within the decision-making process, to try and balance needs and wants against the ability of the community to pay for these. To arrive at that balance, a great deal of information gathering is undertaken. The various chapters of the AMP take the reader through this process so they can better understand how the final programme of work was arrived at.

Approval Process

The Activity Management Plan approval process involves:

- *Review by Management Team*
- *Approval by Council*

No direct community-wide consultation has been undertaken on the levels of service in this plan. It is Council practice to consult on Activity Management Plan levels of service through the Long Term Plan (LTP) process where the financial outcomes, levels of service, key performance measures and major capital projects are presented for community comment and submissions. In addition, service requests, Council's three yearly customer satisfaction surveys, and feedback to Councillors / Community Boards all provide valuable information to determine whether there is community desire to consider changes to existing levels of service.

Furthermore, for each capital project there is a consultation process undertaken with directly affected residents / businesses. This allows an opportunity for the community to provide feedback on designs and standards which are set through the levels of service in this plan.

Waimakariri's Story

In pre-European times there were several important Ngai Tahu settlements in the area now occupied by the Waimakariri District. The centre of Ngai Tahu was the pa of Tūrakautahi, known as Kaiapoi. Today, the hapu Ngāi Tūāhuriri is based at Tuahiwi, to the north of Kaiapoi. People who identify themselves as having Māori ancestry presently represent 8.6% of the District's population, and a number live in the eastern part of the district.

During the early years of European settlement, Kaiapoi developed as a river port. Rangiora was the area's main market town, and the development of Oxford was based on timber milling. The roles of the district's main urban areas have changed during recent years, mainly as the result of the rapid population growth. European settlement concentrated on the fertile soils of the plains. Until the middle of the 20th Century extensive agricultural and pastoral farming predominated. More recently, horticulture and forestry have gained in importance, however today only 11% of the district's labour force is involved with agriculture, forestry and fishing.

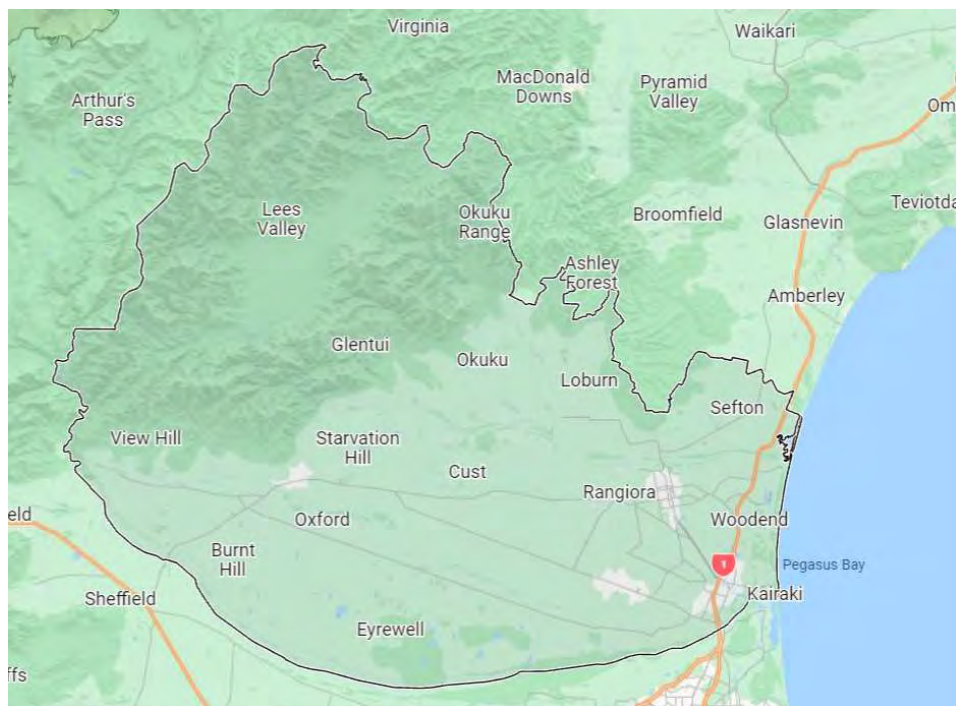
There has over several years, been a substantial increase in the number of people living in the district's rural areas with many small holdings being created. Some of these are used for full-

time or part-time horticultural enterprises (e.g., vegetable or flower growing), while other small holdings have no involvement in agriculture. These holdings, together with the District's rural residential (Residential 4) zones, provide opportunities for people to live in the district's rural areas.

The district has few major industries. A large fibre-board plant at Sefton draws on local wood resources. Other industries are mainly small to medium scale service and processing enterprises. Despite this, industrial business growth has been significant in recent years and areas such as Southbrook Industrial area is continuing to grow and expand, providing more opportunities for employment within the district. There has been increasing employment within the district in wholesale/retail, the hospitality industry, education and health and community services.

The Waimakariri District has a high level of connectivity across several areas. The South Island Main Trunk Railway and State Highway 1 cross the eastern portion of the district, providing a strong regional linkage. The district also has an airfield at Rangiora and is close to the Christchurch International Airport. South Island telecommunication trunk mains run through the district and fibre has been installed throughout our urban and several settlement areas.

Figure 0-1: Map of Waimakariri District



Over the last 6 years, there has been a focus on developing a walking & cycling network plan for the district, and work on delivery of key walking & cycling infrastructure has begun to build a cohesive network, offering different opportunities and choice for how people get around in our district.

The district offers a wide range of recreational opportunities. It has sandy beaches, estuaries, river gorges and braided rivers, which offer a range of opportunities for fishing, boating and rafting. The foothills and mountains offer a variety of tramping experiences which complement a growing range of walking trails and formal recreational areas.

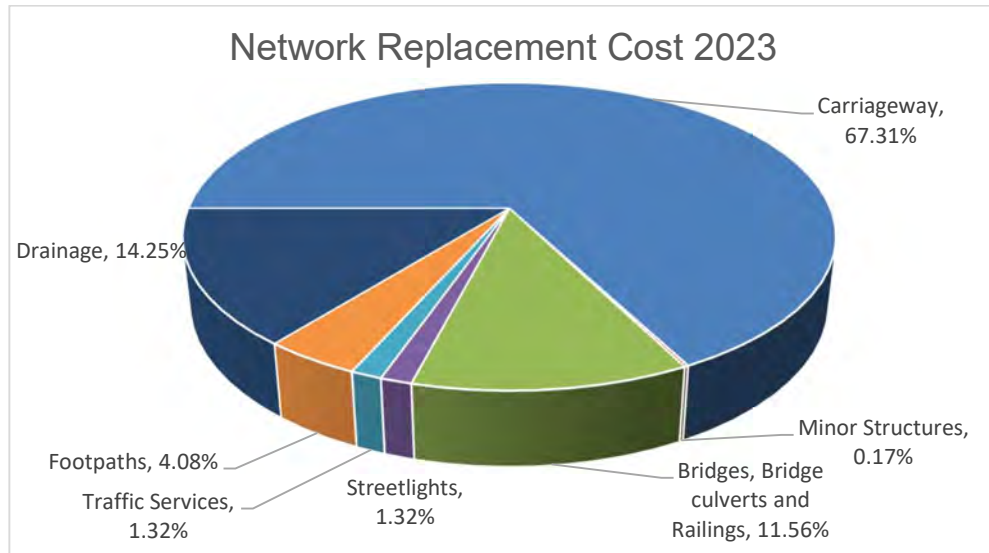
Despite ongoing growth, the Waimakariri District retains its rural /small town charm and character. Its two high schools (year 9-15), two composite schools (year 1-13), and many primary schools are well supported by the community. There are an increasing number of pre-schools in the district. There is also an extensive range of community and recreational organisations.

Table 0-1: Assets Included in Activity Management Plan by Type and Quantity [1][2] (from 2023 valuation)

Asset Group	Quantity/ Length 2020	Quantity/ Length 2023	Asset Group	Quantity/ Length 2020	Quantity/ Length 2023
	2021 AMP	2024 AMP		2021 AMP	2024 AMP
Road Carriageway Length (km)			Road Drainage (km)		
Total network	1,555	1,586	Kerb & Channel	416	454
Sealed Roads	971	999	Culverts	26.11	26.58
Unsealed Roads	586	587	Swale	29.9	30.1
Bridges & Structures (number)			Subsoil drain	4	22
Bridges	157	157	Road Drainage (each)		
Large Culverts	131	132	Sumps	4107	4843
Stock underpass	13	13	Soak pit	574	626
Cattle stops	19	27	Traffic Services (each)		
Streetlights (number)			Signs	18602	18,994
Poles	4970	5580	Traffic Islands	1026	1092
Lights	5264	5414	Tactile Indicators	633	1567
Passenger Transport (number)			Active Warning Signs	31	34
Bus Shelters	20	32	Bollards	326	358
Bus seats	26	26	Traffic Signals	3	4
Footpaths, Cycle Paths and Shared Paths (km)			Traffic Services (km)		
Total network	356.6	394.7	Railings	7.2	9.76
			Edge Marker post	399	399

Waimakariri remains one of the faster growing Districts in the country, albeit at a slightly slower rate than previous years. The AMP figures clearly show an increase in most asset quantities. Where figures are lower than previous, this can be due to either an error in data which has been corrected, or some assets moving into other categories, for example small bridges replaced with culverts which do not qualify as bridges as defined by the New Zealand Transport Agency are reclassified with drainage assets.

Figure 0-2: Network Replacement Costs 2023 (Source 2023 Valuation)

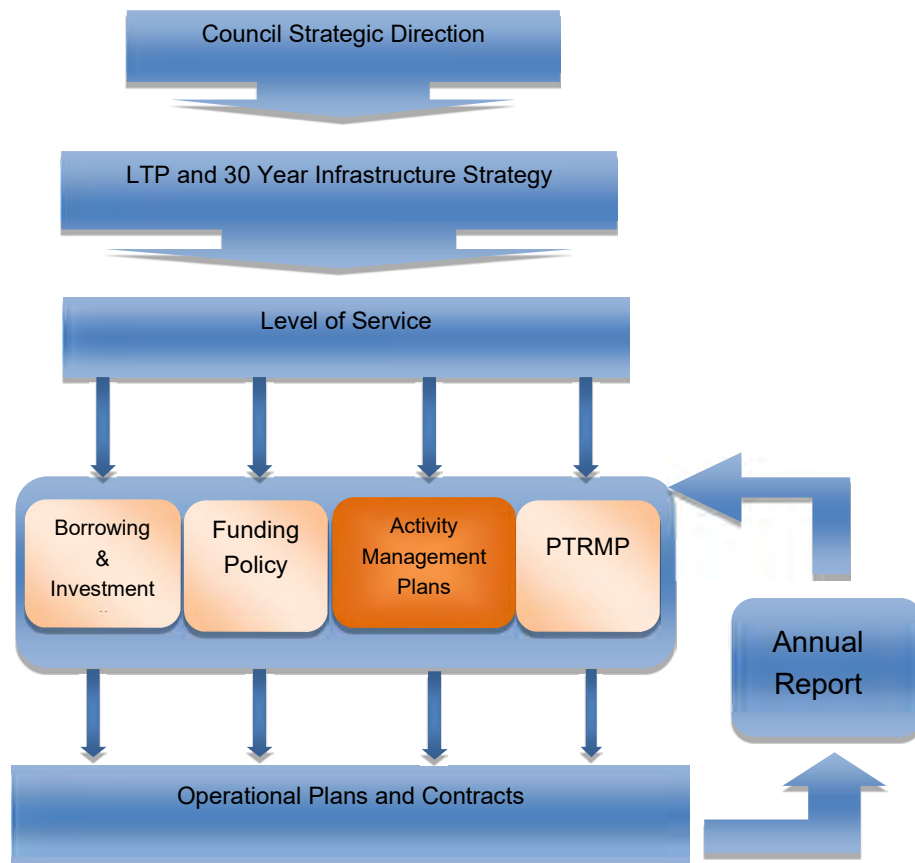


As is illustrated in this chart, two thirds of the network replacement cost lie in our carriageways, followed by drainage assets, and bridges. While the majority of work is carried out in maintaining and renewing our carriageways it is planned, moving forward, to have an increased focus on drainage works. An increased focus on bridge maintenance and component renewal has begun, however network replacement costs as a proportion of the whole network have largely been unchanged from the previous valuation which is to be expected.

2.2 Relationship with other planning documents

The Council's operation and delivery of all Rounding and Transportation activities is directed and shaped by legislation, statutory plans, processes, and other documents. **Error! Reference source not found.** and **Error! Reference source not found.** identify the AMP's relationship with other planning documents.

Figure 0-3: Document linkage chart – Local Planning documents



Strategies, Policies and Plans that Impact on this activity

Error! Reference source not found.-2 below outlines the strategic documents utilised by the Council as part of the planning process. It identifies the external and internal influences on Council's activity management plans and provides a brief insight as to how those influences are manifested.

Figure 0-3: Hierarchy of WDC Policy, Strategy and Planning

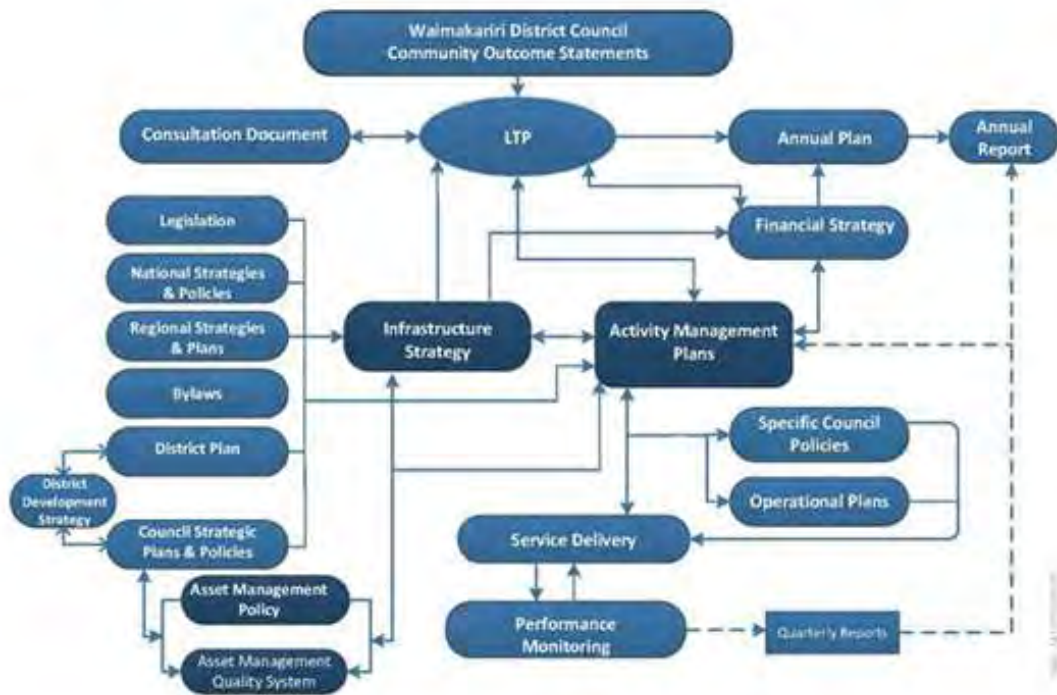


Table 0-2: National, Regional and Local Strategies and Plans

Documents	Descriptions
Key Internal Documents	
30 Year Infrastructure Strategy	Required by LGA 2002, it is intended to be a vehicle for identifying the significant infrastructure issues facing the council over that period, the principal options for managing those issues, and the implications of those options. The Strategy is based on a set of assumptions and the risks regarding the accuracy of these increase over time. The Strategy is therefore reviewed every three years as part of the LTP cycle. Projects identified in years eleven onwards are considered to be fluid due to the greater degree of uncertainty about the operating environment and underlying assumptions.
Long Term Plan (LTP)	The Long Term Plan is a comprehensive statement of the Council's plans for the next ten years. It is the primary instrument for the Council to report on its intentions on delivering its services to the community. The service level options, and associated costs developed in this Activity Management Plan will be fed into the Long Term Plan.
Integrated Transport Strategy	The overarching document which informs the direction of planning for transport in Waimakariri District, and a framework for the plans and more focused strategies which sit beneath and alongside it.
Activity Management Plans	These documents provide a detailed account of the rationale, management practices, processes, and responsibilities of the Council and others directly involved in management of the Activity. The Activity Management Plan links the long-term strategy of the Council to the operational resources and directs them in how they deliver a level of service required to meet community expectations as defined by the desired community outcomes. Detailed financial information relating to the management of the activity resides in these documents and is summarised at the Council level in the LTP.
Annual Plan	The Annual Plan outlines the Council's work programme and key projects for the next year.
Financial and Business Plans	The financial and business plans requirement by the Local Government Amendment Act (3). The expenditure projections will be taken directly from the financial forecasts in the Activity Management Plan.

Documents	Descriptions
Key Internal Documents	
Bylaws	<p>Bylaws are required by the Local Government Act 2002 for every local authority. They are a rule or regulation made by a Local Authority on a diverse range of subjects. The following Bylaws relate to this AMP:</p> <ul style="list-style-type: none"> • Waimakariri District Council Vehicle Crossings Bylaw 2019 • Waimakariri District Council Stock Movement Bylaw 2020 • Waimakariri District Council Parking Bylaw 2019 and schedule of restrictions • Signage Bylaw 2019
Waimakariri District Council Speed Management Plan	<p>Legislation put in place under the Labour government required all Councils to have a speed management plan in place by March 2024. Waimakariri has carried out considerable planning and consultation for this, however currently the only speed management changes that look likely to go ahead at this point are for speed zones around all schools.</p>
Contracts	<p>The service levels, strategies and information requirements contained in the Activity Management Plan are the basis for performance standards in the current Maintenance and Professional Service Contracts.</p>

Key External Documents	
Government Policy Statement (GPS)	<p>The GPS sets out the government's priorities for expenditure from the National Land Transport Fund over a 10-year period, and how funding should be allocated.</p>
National Land Transport Programme (NLTP)	<p>The NLTP is a three-year land transport programme that is funded by Waka Kotahi (NZTA). It provides the mechanism whereby investment is allocated to Road Controlling Authorities to assist in the delivery of activities which support desired government direction as conveyed through the GPS and Transport Framework Outcomes</p>
Our Space 2018-48	<p>A strategic framework put in place to update the work of and complement the UDS.</p>
Greater Christchurch Travel Demand Management (TDM) Strategy	<p>This strategy outlines how travel demand will be managed in the greater Christchurch area to meet the transport outcomes of the GCP.</p>

Key External Documents	
Regional Land Transport Plan (RLTP)	The RLTP is the vision of the Canterbury region, bringing together its key objectives for its member RCA's, its views on the future transport directions for the Region, and the programme of work its members seek to deliver, including prioritisation for NLTF allocations.
Canterbury Regional Public Transport Plan (RPTP)	The RPTP outlines the current state of our regional public transportation network and the challenges we face now and in the future. The priorities in the plan reflect the context of regional, national and international events and trends. The programmes and projects in it are the regional responses to these challenges and include actions for Canterbury's regional and district councils and (Waka Kotahi New Zealand Transport Agency).
Greater Christchurch Mode Shift Plan	The Greater Christchurch Mode Shift Plan is the first document to describe the sub-region's integrated and cohesive approach to delivering mode shift. It responds to a request from the Government for all high-growth urban areas to produce regional mode shift plans.
Arataki (Waka Kotahi)	<p>Arataki is Waka Kotahi's 10-year view of what is required to deliver on the Government's current priorities and long term objectives for the land transport system. Arataki outlines the context for change, the step changes in existing responses that it believes are needed, and the levers the Transport Agency will use, in partnership with others, to shape change.</p> <p>It includes national, pan-regional and regional summaries</p>
Transport Outcomes Framework	The Transport Outcomes Framework takes a strategic, long-term, and integrated approach to transport and makes clear what government is aiming to achieve through the transport system in the long term.
Road to Zero – New Zealand's Road Safety Strategy	The Road to Zero Strategy articulates government's vision of 'a New Zealand where no one is killed or seriously injured in road crashes', providing guiding principles for design of the road network and road safety decisions, as well as targets and outcomes for 2030.

Other Council Strategies, Policies and Plans

The following is a list of other Council strategies, policies and plans relevant in varying degrees to Roding and Transportation in the Waimakariri District Council.

- *Waimakariri District Walking and Cycling Strategy*
- *Rangiora Town Centre Strategy (RTC2020)*
- *Kaiapoi Town Centre Plan*
- *Waimakariri District Accessibility Strategy 2017-21*
- *Age-Friendly Waimakariri Plan and Process 2019-2021*
- *Waimakariri District Plan*
- *West Rangiora, East Rangiora, Kaiapoi and Woodend Structure Plans*
- *Kaiapoi Traffic Study*
- *District Transport Study*
- *Rangiora Transport Study*
- *Rangiora Parking study*
- *Kaiapoi Parking study*
- *Waimakariri District Development Strategy*
- *Waimakariri Rural Residential Development Strategy 2019*
- *Waimakariri Road Safety Action Plan*

Policy and Planning Developments

The District Transport Study, Rangiora Transport Study, and Kaiapoi Traffic Study were all based on data from the 1996 census and were developed prior to a more integrated and sustainable approach to transport planning as required by the Land Transport Management Act and as envisaged in the Greater Christchurch Urban Development Strategy (UDS). Hence, they are now somewhat out of date, although some key aspects have been incorporated in current plans as detailed below.

The key strategies in managing transportation in the district are 'Our Space', the Regional Land Transport Plan (RLTP) and the National Road Safety Strategy "Road to Zero".

The Whakawhanake Kāinga Komiti (Urban Growth Partnership for Greater Christchurch) has now developed a draft Spatial Plan for the sub-region, which sets out a plan for shaping and accommodating future growth in Greater Christchurch, by providing more affordable housing, emissions reduction, and climate resilience. Once adopted by partners, which is anticipated to occur in early 2024, the Spatial Plan builds on and replaces the previous plans and strategies developed for Greater Christchurch (including the UDS and Our Space) but does not seek a fundamental change from their strategic direction.

At a more detailed level specific transport studies and plans have been and will continue to be carried out as part of the development of Structure Plans and Outline Development Plans for the growth areas defined in the UDS.

Other strategies and plans such as the Road Safety Action Plan, the Walking and Cycling Network Plan, Age-friendly Waimakariri Plan and the Greater Christchurch Travel Demand Management Plan are specific documents that support the overall directions in the RLTP.

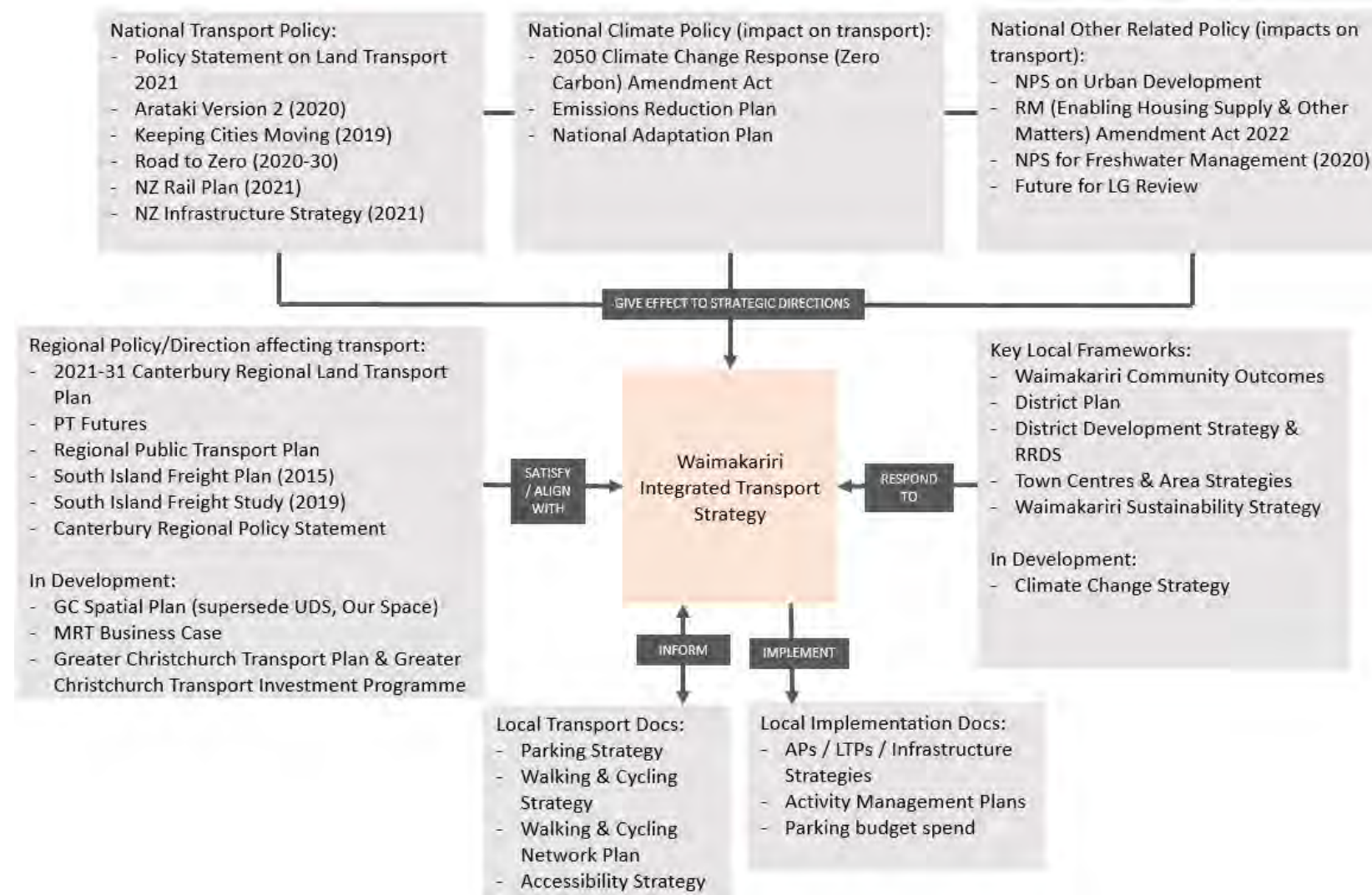
In addition, Council has recently developed a draft overarching Integrated Transport Strategy (ITS) for Waimakariri District, which outlines an integrated approach to delivering transport planning and investment, and encouraging behaviour change over future generations. It gives effect to strategic directions contained in transport and other related national policy documents (including considering a pathway to contributing to VKT reduction targets), while aligning with key sub-regional transport and land use policy and future strategies. The draft ITS proposes five Key Moves:

1. Create a well-connected multi-modal district;
2. Integrate land use and transport to underpin higher density living in urban areas;
3. Design transport network for the efficient movement of freight;
4. Deliver a safe transport system for everyone;
5. Achieve travel behaviour change.

These Key Moves are consistent with directions signalled in this Transportation AMP, and further key ITS proposals will be integrated into the next AMP. The Council will consider a final ITS for adoption in early 2024.

Strategic Context

Figure 0-4: Strategic Document relationships



2.3 Consultation

Key Stakeholders in the Plan

The levels of service for the transportation activity are determined by the Community. How the services are provided is determined by the Council in response to the requirements of both the key stakeholders and legislation.

Key stakeholders are broadly defined as:

- *Waimakariri Community*
- *Elected Members*
- *Internal Partners*
- *Other Stakeholders*

Waimakariri Community

The Waimakariri Community are the direct users of the district's transportation network. This includes commercial and private road users, users of footpaths and of cycleways. **Section 3: Level of Service** explains the needs and wants of the Waimakariri Community in more detail.

Elected Members

Elected members have a vital interest in Roding and Transportation assets, and they represent the views of the community. They include Councillors and Community Board members.

Internal Partners

Some of the key Council departments who contributed to or affected the decision-making process of the AMP Included

- **Asset Information Team** – *Responsible for ensuring that new asset data is maintained to a high standard, and that historic data is continually being improved. Ensuring data is correct is critical for a good AMP and AIM team played a large part in this. Also provided some of the supporting charts, and that data was up to date for annual revaluations.*
- **3 Waters** – *3 Waters liaise with the Roding department regarding forward works planning to ensure work is carried out at an optimal time that does not involve rework over recently completed work. High level planning carried out by managers of respective departments and the Roding Operations.*
- **Greenspace Unit** – *Liaison regarding Reserves / Roding overlap and project coordination. Ongoing consultation.*
- **Finance & Business Support** – *Provide a comprehensive list of documents which help to inform the plan, for example the Financial Strategy. They also assist asset managers during the budget period in financial forecasting to ensure the programme is affordable. For this AMP finance helped with regular updates as budget projections*

progresses, and ensuring information fed into the Financial Chapter was aligned with proposed expenditure, LTP and IS financials.

- **Strategy & Business Team** – Responsible for developing corporate strategies and policies. The strategies provide direction and highlight community priorities and the policies can impact on the way activities are carried out, for example, the Climate Change Policy requires climate change to be considered in all Council decision-making. Provided input into the risk management chapter, and reading resources for Climate Change background, also wrote the LTP and IS.
- **Development Planning Unit** – Provided key information on population growth, demographics other high level planning information. What, where, when, and historic information from external sources such as Department of Statistics.
- **Project Delivery Unit – Development Team** – Provided information on areas and quantities of growth over next 3 years based on proposed known new subdivisions.
- **Project Delivery Unit – Civil**. This department manages the Carriageway Lighting contract and provided key information regarding future needs of this asset.
- **Roading Operations Team** – Provided information on work carried out (including financials), Proposed programmes, prioritisation methods for renewals work, and assistance in predicting future work based on known rates.
- **Roading Strategic Team** - Provided information on safety issues, alternative modes, demand information and Strategic Business Case.
- **Special Projects Engineer** - Part of Project Control Group and assistance with specific issues, for example the Bridge Renewals Programme and the NZTA 24-27 Maintenance, Operations & Renewals bid.
- **Roading & Transport Manager** - Part of Project Control Group. Has overall decision control over AMP, in addition provided information and decisions around all Improvement projects, plus key conduit for information regarding the Greater Christchurch partnership work, amongst others.

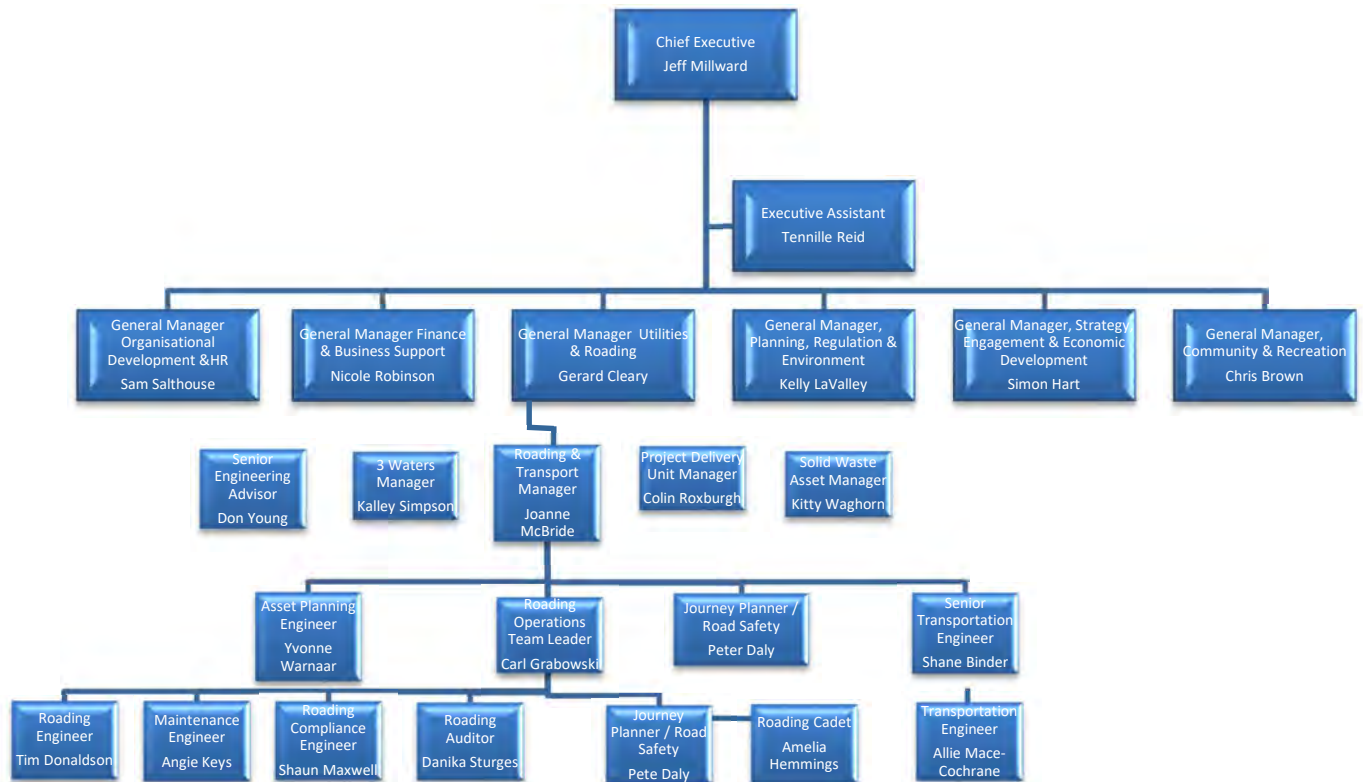
Other Stakeholders

There are external parties with an interest in the management of WDC road assets and include, but are not limited to:

- *Tangata Whenua*
- *Ministry of Transport and NZ Transport Agency*
- *Regulatory and monitoring bodies including Environment Canterbury, Ministry of Health, Department of Conservation, Audit NZ*
- *Contractors and consultants*
- *Police, Fire, emergency services and ACC*
- *Environmental and recreational interest groups (eg, Fish and Game)*
- *Automobile Association*
- *Road Transport Association*

- *NZ Police*
- *Local Government Organisations*
- *Utility providers*

Figure 0-5: Organisational Structure



Reasons and Justification for Asset Ownership

Transportation is fundamental to the quality of life in Waimakariri District. It provides people with access to employment, services, education, and recreation, as well as providing for the movement of goods to support a thriving economy. The road corridor also provides access for utilities such as power, telecommunications, water supply and waste disposal.

The Council considers that the provision of effective and efficient transportation systems is a key component of its goals to provide high quality living and productive environments.

Ownership of roads, other than State Highways, is vested in the Council by the Local Government Act 1974. This makes continued Council ownership the only available option.

State Highways are vested in the Crown and are maintained by Waka Kotahi (New Zealand Transport Agency). There are two State Highways in the District, State Highway 1 and State Highway 71.

The legal authority for the Council to be involved in the provision of Roding and ownership of assets is contained in the Local Government Act 1974.

The key legislative direction is contained in Section 319 of the Local Government Act 1974. This section establishes the ability of the Council to carry out various activities. It does not require any of these activities to be carried out neither does it establish standards for the work the Council does on the road.

In addition to S353 of the Local Government Act 1974 the statutes, regulations, rules, bylaws, policies, and other documents detailed in this plan all constrain or shape the Council's ability to carry out its desires for transportation. The most frequently encountered constraints are those imposed by the following documents:

- *Local Government Act 2002*
- *Government Roding Powers Act*
- *Land Transport Management Act*
- *Resource Management Act 1991 and associated district and regional plans*
- *The Local Government (Rating) Act 2002.*

Council Vision

The Council's vision is 'To make Waimakariri a great place to be, in partnership with our communities.'

Consultations carried out to develop strategies, policies and plans, regular community surveys, and ongoing feedback to staff, community boards and politicians help to define what residents think 'a great place to be' is. This is reflected in the Community Outcomes which guide Council's decision-making in the Long-Term Plan and 30 Year Infrastructure Strategy.

Community Outcomes

The Council has undertaken consultation with the Community on the Long-Term Plan in 2004, 2006, 2009, 2012, 2015, 2018 and 2021. Among the many topics that were consulted on were the community's preferences and desired outcomes for the next 20 years and beyond. It is the Council's responsibility to ensure that all activities that it undertakes are directed towards delivering outcomes.

The community outcomes that Waimakariri District Council will work towards are shown in Table 2-3.

Table 0-3: Community Outcomes 2023

<u>Social</u>	<u>Cultural</u>
<p>A place where everyone can have a sense of belonging...</p> <ul style="list-style-type: none"> Public spaces are diverse, respond to changing demographics and meet local needs for leisure and recreation. Council commits to minimizing the risk of social harm to its communities. Housing is available to match the changing needs and aspirations of our community. Our community groups are sustainable and able to get the support they need to succeed. Our community has access to the knowledge and skills needed to participate fully in society and to exercise choice about how to live their lives. People are able to enjoy meaningful relationships with others in their families, whanau, communities, iwi and workplaces. Our community has reliable access to the essential infrastructure and services required to support community wellbeing. 	<p>...where our people are enabled to thrive and give creative expression to their identity and heritage...</p> <ul style="list-style-type: none"> Public spaces express our cultural identities and help to foster an inclusive society. The distinctive character of our takiwā, arts and heritage are preserved and enhanced. Members of our community are able to engage in arts, culture and heritage events and activities as participants, consumers, creators or providers. Waimakariri's diversity is freely expressed, respected and valued. There is an environment that supports creativity and innovation for all. Local arts, culture and heritage are able to make a growing contribution to the community and economy. (new)

<p><u>Environmental</u></p> <p>...that values and restores our environment...</p> <ul style="list-style-type: none"> • People participate in improving the health and sustainability of our environment. • Land use is sustainable; biodiversity is protected and restored. • Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change. • Our district transitions towards a reduced carbon and waste district. • The natural and built environment in which people live is clean, healthy and safe. • Our communities are able to access and enjoy natural areas and public spaces. 	<p><u>Economic</u></p> <p>...and is supported by a resilient and innovative economy.</p> <ul style="list-style-type: none"> • Our district is prosperous and reflects the value of both paid and unpaid work. • Infrastructure and services are sustainable, resilient, and affordable. • Our district readily adapts to innovation and emerging technologies that support its transition to a circular economy. (modified and expanded) • There are sufficient and appropriate locations where businesses can set up in our District. • There are sufficient skills and education opportunities available to support the economy. (new) • There is access to meaningful, rewarding, and safe employment within the district.
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The community outcomes which most strongly associate with the Roding and Transport activity are as follows:

- *Public spaces are diverse, respond to changing demographics and meet local needs for leisure and recreation.*
- *Shared paths, separated cycle lanes and low speed streets with greenways have encouraged a wider group of users to participate in alternative modes in a safe and enjoyable manner.*
- *Our community has reliable access to the essential infrastructure and services required to support community wellbeing.*

As well as ensuring roads are maintained to a suitable standard for private and commercial motor vehicle use, Council is also working to ensure that there is choice in the way that people may choose to move around. This includes but is not limited to walking, cycling, micro mobility and public transport.

- *Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.*

Council ensures its network and critical infrastructure is well maintained, and that the risk of damage is minimised where possible. Also, future needs of the network for resilience are well understood and planned for to improve resilience (e.g., drainage / retaining works to minimise impacts from severe weather events).

- *Our district transitions towards a reduced carbon and waste district.*

Council's major contributions to reducing carbon include better utilisation of natural materials such as gravel for construction and remetalling unsealed roads, encouraging the use of alternate modes of travel including walking / cycling / public transport, and the continuing transition to electric vehicles.

- *The natural and built environment in which people live is clean, healthy and safe.*

Safety is, and will continue to be, a high focus area. Deaths and serious injuries on our roads are continuing to trend upwards. These losses have a devastating impact on families and communities. Planning for and implementing safe infrastructure as well as safe & appropriate speeds can help reduce the risk of a crash occurring and reduce the impact, which in turn can reduce harm.

- *Our district readily adapts to innovation and emerging technologies that support its transition to a circular economy.*

Council continues to seek more sustainable ways of doing its business in the transportation space, for example, pavement rehabilitation may include reuse (milling) of existing surfaces and incorporating into the road, rather than removal and waste to landfill.

Four Wellbeing's

Each community outcome is associated with one or more of four Wellbeing's; social, economic, environmental, and cultural, which the *Local Government Act 2002* requires councils to promote. As each infrastructure activity is aligned to specific community outcomes, the contribution it makes to community wellbeing can be easily seen.

UN Sustainable Development Goals

The community outcomes also broadly align to the United Nations Sustainable Development Goals (SDG). These are a blueprint for providing a better and more sustainable future for all by 2030 and have been incorporated into the Council's 2021-2031 LTP for the first time.

The SDG's most relevant to the Roding and footpath activity are as follows:

- SDG 3 Good Health and Well-being (ensure healthy lives and promote well-being for all at all ages)
- SDG 9 Industry, Innovation and Infrastructure (build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation)

- SDG 11 Sustainable Cities and Communities (make cities and human settlements inclusive, safe, resilient and sustainable)
- SDG 12 Responsible Consumption and Production (ensure sustainable consumption and production patterns)
- SDG 13 Climate Action (take urgent action to combat climate change and its impacts).

Infrastructure Vision

The Infrastructure Strategy vision for its infrastructure provision and management is 'To provide well maintained infrastructure that meets the needs of today's community and caters for the projected growth in the district's population in a manner that is sustainable and anticipates a changing environment.' This effectively underpins the planning for the Transport Activity Management Plan.

Principal Goal

Sitting underneath this is the principal goal for the Roading and footpath activity which is 'To plan, develop, operate, maintain and improve the district's transport infrastructure, delivering an affordable, integrated, safe, responsive and sustainable transport network.'

The following diagram shows how the above all fits together.

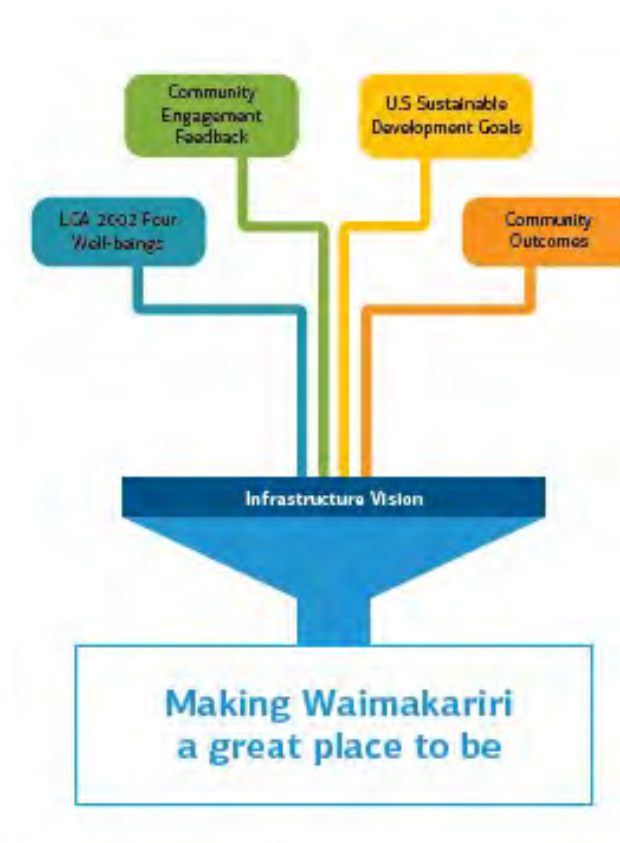


Figure 0-4: Linkages to Infrastructure Vision

Strategic Approach, Council's Role

The management of the Transportation activity is driven by the expectations and needs of the community, as reflected in the Council's Community Outcomes and the agreed levels of service.

Legislation, in particular the Local Government Act 2002, Land Transport Management Act 2003, Government Rooding Powers Act and Resource Management Act govern this activity.

The transport activity is also influenced by the Regional Land Transport Plan (RLTP), the Greater Christchurch Urban Development Strategy (UDS), the New Zealand Transport Strategy (NZTS) and the Government Policy Statement on Transport Funding (GPS), as well as the Council's District Plan, Integrated Transport Strategy, and a number of other plans and strategies.

The UDS is a strategy to manage growth through to 2041 in the Greater Christchurch area, which includes the eastern part and main urban areas of the Waimakariri district. The Waimakariri District Council is a partner to this strategy. Over time there has been a move to a more integrated and sustainable approach to transport planning as required by the Land Transport Management Act and as envisaged in the Greater Christchurch Urban Development Strategy (UDS). The key strategies in managing transportation in the district are 'Our Space', the Regional Land Transport Plan (RLTP) and the National Road Safety Strategy.

The Whakawhanake Kāinga Komiti (Urban Growth Partnership for Greater Christchurch) has now developed a draft Spatial Plan for the sub-region, which sets out a plan for shaping and accommodating future growth in Greater Christchurch, by providing more affordable housing, emissions reduction, and climate resilience. Once adopted by partners, which is anticipated to occur in early 2024, the Spatial Plan builds on and replaces the previous plans and strategies developed for Greater Christchurch (including the UDS and Our Space) but does not seek a fundamental change from their strategic direction.

At a more detailed level specific transport studies and plans have been and will continue to be carried out as part of the development of Structure Plans and Outline Development Plans for the growth areas defined in the UDS.

Transport planning at the regional level is implemented through the Regional Land Transport Plan (RLTP). The RLTP is guided by the Government Policy Statement (GPS), MOT Transport Framework Outcomes and Land Transport Management Act (LTMA).

2.4 Legislative Requirements

Waimakariri District Council is defined under legislation as the "Road Controlling Authority" for the district's roads. As such it is required by law to control activities on roads, although it may choose the level at which it will maintain the assets providing these services.

Legislation sets the minimum standards of service which the assets must meet. The key legislation, policy and planning documents affecting the levels of service provided by the land transport activity are:

- The Local Government Act 2002, particularly Schedule 10, which covers.

The requirement to consider all options and to assess the benefits and costs of each option.

The consultation requirements

- *The Local Government Act 1974, particularly Part 21 Roads (Other Than Regional Roads), Service Lanes, and Access Ways.*
- *The Government Roothing Powers Act 1989.*
- *The Land Transport Act 1998.*
- *The Land Transport Management Act 2003.*

Other legislation which parts of will influence work done in the transport sphere:

- *The Resource Management Act 1991.*
- *The Local Government (Rating) Act 2002.*
- *The Health and Safety in Employment Act 1999.*
- *The Building Act*
- *The Public Works Act 1987.*
- *The Telecommunications Act 1987.*
- *The Electricity Act 1992.*
- *The Railway and Corridor Management and Safety Act 1992.*
- *The Biosecurity Act 1993.*
- *The Summary Offences Act 1991.*
- *The Bylaws Act 1910.*
- *The New Zealand Coastal Policy Statement 1994.*
- *The Civil Defence Emergency Management Act 2002 (Lifelines).*

Recent additions to legislation which will influence planning and decision making:

- *The Climate Change Response Act.*
- *The Government's Sustainable Development Action Plan.*
- *Planned changes to the Resource Management Act*

2.5 Policy Context

The principal purpose of the core statutes governing transport are summarised below:

Land Transport Management Act

The Land Transport Management Act is the principal statute guiding land transport planning and funding in New Zealand. The purpose of the Act is to contribute to the aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system.

Local Government Act

The Local Government Act (LGA) 2002 guides local government planning and the way Councils carry out their functions. It includes provisions guiding the development of Council long-term plans and infrastructure strategies, where the local funding share for transport network investment is identified alongside other local investment priorities.

Included in the Local Government Act (2002) is a requirement for Council to prepare a Significance Policy. Under this, the Roding Network as a whole is considered to be a Strategic Asset.

Resource Management Act

This provides the statutory framework for land use planning, which can have significant influence on travel choice and transport network demand.

Climate Change Response Act 2002

As amended by the Climate Change Response (Zero Carbon) Amendment Bill in 2019. Key provisions include setting a target to reduce net carbon emissions to zero by 2050.

Plan Framework

This plan has been prepared in accordance with the International Infrastructure Management Manual (IIMM) framework, whilst incorporating changes required to simplify meeting NZTA requirements. The 2021 Activity Management Plan was peer reviewed by David Jeffrey of Infrastructure Services in January 2021 (Appendix B). The recommendations in the peer review have been taken into account in this plan where appropriate, either by immediate modifications or by additions to the Improvement Plan.

2.6 Sophistication / limitations of the Activity Management Plan

The Council has determined an appropriate level of sophistication for the plan is Core Plus. The Transportation Activity Management Plan peer review was conducted by Infrastructure Associates Ltd in January 2024 and concluded that Waimakariri had a score of 76 out of 100, which is at Intermediate Level, and 3 points higher than the previous review. This is deemed appropriate for a Council of Waimakariri's size and demographics. It should be noted that Advanced Level is 80 or above, and that Council is not far from achieving this level with this Activity Management Plan.



Transportation Activity Management Plan 2024

Strategic Business Case

June 2024



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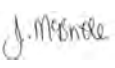
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Adopted by	Utilities & Roding Committee			

Table of Contents

3	Strategic Business Case	4
3.1	Strategic Case Summary	4
3.2	Background	4
3.3	District Overview	5
	Transport and Roding Assets	5
	Key Stakeholders	7
3.4	Strategic Business Case Background	7
3.5	Strategic Business Case 2024-2027	14
	Next Steps	14
3.6	Strategic Context.....	15
3.7	National and regional Land Transport Objectives	16
3.8	Community Outcomes.....	17
3.9	Alignment of Objectives Across Agencies	19
3.10	Problems, Benefits, Strategic Responses and Performance Measurement	20
3.11	Economic Case	21
	Evidence Supporting Business Case Statements.....	21
	Population & growth	21
	Road Safety	23
	Economic growth.....	23
3.12	Financial Case	27
	Council support	27
	Adequacy of Programme to meet asset and customer needs:.....	27
	Key Funding Requests for 2024-2027	27
	Programme Risks / Unknowns	27
	Resilience	27
	Sustainability	28
	Safety	28
3.13	Management Case	28

3.14 Commercial Case.....	29
Section 17 Processes.....	29
Collaboration	30

Figures

Figure 3-1: District Overview Map	5
Figure 3-2 - Waimakariri District One Network Road Classification	6
Figure 3-3: Strategic Context Map 21-33.....	9
Figure 3-4: National and Regional Land Transport Objectives.....	16
Figure 3-5: Waimakariri District population growth (2001 to 2022).....	21
Figure 3-6: Vehicle Kilometres Travelled (VKT) Trends	22
Figure 3-7: Urban and Rural Residents	22
Figure 3-8: Waimakariri fatal and serious casualties. (Source CAS data).....	23
Figure 3-9: Urban STE trend by ONRC for Waimakariri District.....	25
Figure 3-10: Rural STE trend by ONRC for Waimakariri District.....	25
Figure 3-11: Combined STE trend by ONRC for Waimakariri District	26

Tables

Table 3-1: 2018-2021-2024 - Key Programmes.....	11
Table 3-2: Capital Projects from 24/25-33/34	12
Table 3-3: Problem Statements and Benefits of Resolving	14
Table 3-4: Community Outcomes	17
Table 3-5: Strategic Linkages	19
Table 3-6: Definition of Problems, Strategic Responses and Performance measures	20
Table 3-7: Key funding requests.....	27

3 Strategic Business Case

3.1 Strategic Case Summary

Waimakariri District Council is located within a high growth urban area. Over time the district has transitioned from one which primarily served to support a rural community, to a fast-growing urban population requiring a different approach to doing business.

Managing and maintaining the network in the face of growth and expectations is becoming increasingly challenging on the available budget. Council is seeking a substantial increase in its programme.

This section of the AMP applies the 5 Case Model Framework to support the application for co-funding that helps address the issues raised in its Problem Statements, and the Regional and National Objectives, outlines the linkages from problem to benefit and solutions and provides a brief summary of the key evidence required to support funding of the district's transport programme.

The 5 Case model examines the following:

- Strategic Case – Is there a need for investment? Involves stating the problem, and the benefits in solving the problem, including supplying supporting evidence.
- Economic case – Is the proposed investment value for money?
- Financial Case – Is the investment affordable – is there sufficient Council budget available to support the programme?
- Management Case – Is the investment achievable, are there sufficient suitable resources to deliver?
- Commercial Case – Is the investment viable? Will Council endorse and provide support?

The planned works for Waimakariri District are designed to provide the optimum synergy if all works are completed. Many projects will be less effective if only part of the work is carried out, thus reducing overall benefits. While it is recognised that not all desired works can be carried out at once, it is important to understand the disbenefits of only carrying out the 'top value projects. Often the problem being solved will simply move problems further downstream until such time as a holistic package of works can be completed.

Figure 3-3 includes a map of the programme of works proposed around the district, which highlights those which have been achieved to date, and those which are still required to deliver on the district future transport needs.

3.2 Background

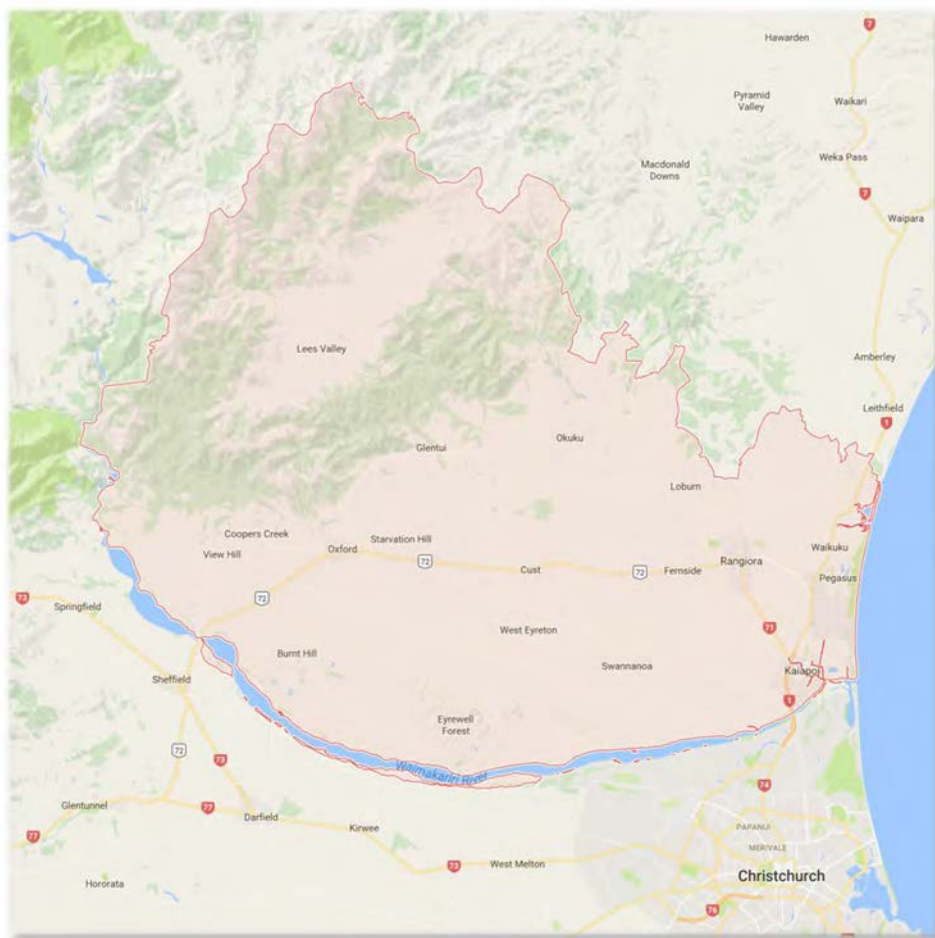
Waimakariri District Council's Activity Management Plan (AMP) outlines how it will deliver the services ratepayers and road users need to go about everyday business and life. The AMP details the district's planned transport and roading investment and how it fits with Waimakariri community outcomes, regional transport strategies, the Government Policy

Statement on Transport, and other strategic documents which influence it. This is done by clearly defining the key problems affecting the district's transport and roading activities and the benefits of investing to address those problems. This in turn establishes objectives and critical success factors against which the investment options for addressing those problems are evaluated.

The Activity Management Plan contains a strategy and programme of works setting out the district's planned transport and roading investment. This has been developed through building a strategic case from evidence, policy direction and a programme case that articulates what will be done to address the defined problems. This approach helps Council and its co-investor, NZ Transport Agency (Waka Kotahi) ensure that it is doing the right work, at the right time, for the right reasons.

3.3 District Overview

Figure 3-1: District Overview Map



Transport and Roding Assets

The council's roading assets have a replacement value of about \$1.3 billion, compared with around \$757 million in 2014, and 1586 kilometres of roads (increased from 1527 roads in

2014). Of these 1586 km of roads, around 323km are urban, compared with 240 in 2014 reflecting the growth in urban areas within the district.

Network Classifications

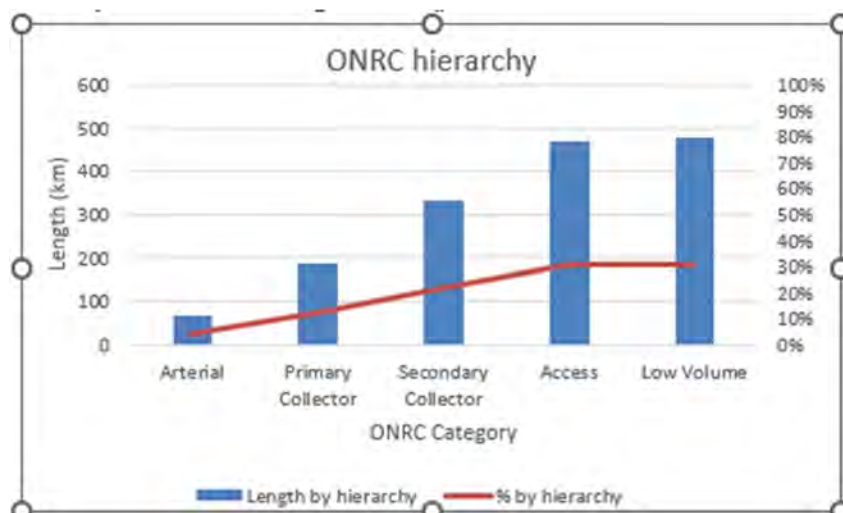
The network assets are classified through a number of different hierarchies. The Council standard is the District Plan hierarchy, fixed at time of District Plan being adopted, and unchanging unless a District Plan change is authorised. Its primary use is for enforcing planning rules.

The One Network Road Classification (ONRC) is a tool used by Road Controlling Authorities (RCAs) to better prioritise work on their network. The ONRC was developed by the Road Efficiency Group, a joint local government and NZ Transport Agency initiative, provide a nationally consistent framework to classify the country's roads and to allow measurement of performance against peers. The intent of the system was to focus transport outcomes on the road user through the classification, customer outcomes, and performance measures. Some of the measures suggested have been incorporated to measure Levels of Service gaps.

A new classification has since been developed which takes place and function into consideration. Known as the One Network Framework (ONF), it will be used to allow Councils to envision and move towards a multi-dimensional system catering to all user needs as appropriate to their classification. For example, a road may be low volume and hence less important through the ONRC but be critical for pedestrian movements. The new classification system will be incorporated as appropriate over the next NLTP period.

Figure 3-2 shows the allocation of the district's network to the ONRC.

Figure 3-2 - Waimakariri District One Network Road Classification



Key Stakeholders

Numerous people and groups have an interest in the Waimakariri road network. They include:

- Dairy farming
- Forestry
- Transport operators
- Businesses
- Police
- Heavy Transport representatives
- Council staff and elected representatives
- Automobile Association
- Waimakariri Access Group
- NZTA (HNO and Planning & Investment)

3.4 Strategic Business Case Background

For almost a decade now Waka Kotahi has emphasised the importance of utilising the Business Case Approach to setting a strategic approach to managing the transport network. Waimakariri District Council is also incorporating Business Case thinking in its approach to determining work priorities, albeit with slightly different thresholds and requirements. For NZ Transport Agency (Waka Kotahi), this involves Council determining what the key strategic transport issues are facing the District through consultation and evidence gathering, defining the benefits to be gained by addressing these issues then directing the responses such as work programmes or interventions required to realise the benefits and solve the problems. The Strategic Business Case identifies those problems and benefits and defines measures which will allow monitoring of success of the solutions.

Transport is fundamental to ensuring there is a high quality of life and a thriving economy in the Waimakariri District. There is increasing pressure on the transport network, and it is imperative that Waimakariri District Council is able to address current and future issues. To achieve this Council is focused on maintaining defined levels of service and addressing growth pressures through the sound management of the transport network.

Central Government set its strategic priorities for transport² indicating a focus on economic prosperity, inclusive access, healthy and safe people, environmental sustainability, and resilience and security, road safety, access/options, and the environment.

² Government Policy Statement on Transport 2024 was released July 2024 post development of this AMP.

The Canterbury region has identified the priority outcomes for the region to ensure an accessible, affordable, integrated, safe, resilient and sustainable transport system’.

Setting the Scene - Previous AMP's

When Waimakariri District Council first introduced Business Case Planning to its work, It was a relatively stable network, able to manage its Maintenance, Operations and Programme and the effects of the increased population, along with aspirations for a move from a car -dependant, primarily rural District to one which provided for the growing diversity of residents with the infrastructure which would allow greater mode choice and reduce car dependency within the available funding envelope.

The 2018-21 Activity Management Plan began the journey, and the 2024-27 continues the programme of work of building this interconnected network.

Reviewing the 2018-2021 Strategic Business Case is a useful introduction to this journey. Although funding is generally provided in three year segments to address issues as they can be prioritised and afforded, a much longer timeframe is often required to achieve a whole, integrated solution to larger problems. They often require a significant one-off capital investment, such as the replacement of a major bridge, or a series of smaller projects which once fully integrated provide a more significant change than if they had not been considered in synergy.

Steady population growth, land use change and business development over the past few years have resulted in ongoing pressure on the transport network. The problems this pressure is creating was identified in 2017 by a group of stakeholders as:

- The State Highway and connecting local roads not coping with the demand at peak periods, leading to increased and unreliable travel time; and
- Increased volumes of traffic leading to increased risks of crashes; and
- Increased rate of land use change putting pressure on maintaining the network.

Benefits in resolving the identified problems included:

- Providing users with consistent and reliable travel times,
- Decreased numbers and severity of crashes, and
- The network maintained at appropriate levels of service to meet changing land use.

A spatial plan of the proposed projects was provided to support the previous Business Case. This has been included in this current Strategic Business Case, with an update of progress and identification of the projects completed to date, and works planned for the future.

The key objectives underpinning the solutions to the problems identified in the first Strategic Business Case included:

- Maintaining and using the existing transport infrastructure efficiently and effectively through demand management and network optimisation measures.
- Targeted investment in infrastructure improvements for both capacity and safety outcomes.
- Implementing travel behaviour programmes to encourage more efficient travel patterns and to reduce the number of single occupancy vehicles at peak times.
- Increased emphasis on walking, cycling and public transport to provide greater transport choice, integration, and flexibility, and promotion of good public health outcomes. (and environmental sustainability)
- Ensuring growth areas and new developments support modal choice and provide opportunities for people to travel less, especially by private motor vehicle.

In practice this means managing the demand on the transport network by encouraging more efficient travel patterns, improved multi-modal transport options, increased vehicle occupancy and more passenger transport usage. This is undertaken at a greater Christchurch level working with our neighbouring Councils and the Transport Agency.

As well as changing transport behaviour, the overall road network (i.e. Waimakariri, State Highway and neighbouring Council networks) need to be optimised to ensure maximised people-carrying capacity across all networks (moving more people).

The three connections between Rangiora and State Highway 1 (Rangiora Woodend Road, State Highway 71, and the Flaxton Road / Skewbridge Road corridor), and the connections between Kaiapoi and State Highway 1, need to be improved to provide a safe and appropriate level of service that utilises the network efficiently.

While reliable travel time would appear to be primarily an economic measure, drivers who feel pressured are more inclined to make risky decisions, such as overtaking at inappropriate times, or attempting to enter traffic from side roads where there is not a sufficient gap on the road they are turning into or crossing. Thus, projects designed to support traffic flow will also contribute to road safety.

Finally, in addition to the need for improvement projects required to address capacity and demand issues, some projects were proposed to be investigated and (if appropriate) constructed, to address safety issues (mostly through low cost low risk projects). Investigations were carried out for the West Rangiora Route, Tram Road, and Southbrook Road, and initial recommendations made. A programme of improvements has been developed for the West Rangiora Route and Tram Road and it is proposed to implement these over a number of years.

Key programmes commenced in the 2018/2021 period and progress achieved to date includes:

Table 3-1: 2018-2021-2024 - Key Programmes

Townsend Road / Fernside Road / Flaxton Road / Skewbridge Road / Island Road route improvements.	West Rangiora route investigation completed, and this has identified a number of safety projects. New roundabout installed at the Flaxton Rd / Fernside Rd intersection. Right Turn Bay at Skewbridge / Mulcocks Rd intersection.
Rangiora Woodend Road and Woodend access improvements.	Walking & cycling facilities along with traffic calming on Rangiora Woodend Rd and School Road. Under construction. A right turn bay was constructed at the Rangiora Woodend Rd / Boys Rd intersection.
Travel Demand Management (TDM) programmes to align to Greater Christchurch TDM Business case.	Ongoing.
Targeted intersection improvements and clear zone improvements.	Ongoing changes in funding have meant much of this work in the 21-24 NLTP has been fully funded by Council.
Road Safety (education and promotion) programmes with our road safety partners.	Ongoing programme with planned initiatives delivered.
Walking and cycling improvement and education programmes to encourage more walking and cycling.	Walking & Cycling Network Plan endorsed off by Council. Ongoing programme with some planned initiatives delivered. Key connections between Woodend and Kaiapoi, and Ravenswood to Woodend are currently on hold due to changes in funding.
Passenger transport infrastructure programmes to align to Greater Christchurch PT Business Case.	Stage one of Park and Ride facility development complete. Stage Two underway. Future Park and Ride planned for Woodend / Ravenswood and informal areas to be considered in Mandeville.
Ivory St widening and safety improvements.	Complete

Table 3-2: Capital Projects from 24/25-33/34

	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost
Description	As at 30 June 2025	As at 30 June 2026	As at 30 June 2027	As at 30 June 2028	As at 30 June 2029	As at 30 June 2030	As at 30 June 2031	As at 30 June 2032	As at 30 June 2033	As at 30 June 2034
Major Towns - new kerb and channel	-	-	350,000	-	-	350,000	-	-	350,000	-
New Footpaths Major Towns	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
New Streetlighting Major Towns	50,000	-	50,000	-	-	-	-	-	-	-
Tuahiwi Gritted Footpath Surfacing	100,000	-	-	-	-	-	-	-	-	-
Bridge Renewal & Widening Projects	-	-	-	500,000	-	-	500,000	-	-	500,000
Minor safety - Lighting - LCLR LRI	25,000	25,000	25,000	30,000	30,000	30,000	35,000	35,000	35,000	40,000
Minor safety- Intersection Improvements	120,000	120,000	120,000	130,000	130,000	130,000	140,000	140,000	140,000	150,000
Minor Safety - School Safety Project	50,000	50,000	50,000	60,000	60,000	60,000	70,000	70,000	70,000	80,000
Minor Safety - Speed Treatments	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Minor Safety - Walking & Cycling improvements	100,000	100,000	100,000	110,000	110,000	110,000	120,000	120,000	120,000	130,000
Minor Works - other	50,000	50,000	50,000	60,000	60,000	60,000	70,000	70,000	70,000	80,000
Minor safety - Roadside Hazards Removal	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Minor safety- Delineation upgrades	-	100,000	-	-	100,000	-	-	100,000	-	-
Minor safety - High Risk rural Intersections Treatments - RTZ	200,000	200,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Flood Projects (Tram Rd, Depot Rd & Woodfields Rd) - RESILIENCE?	300,000	700,000	-	-	-	-	-	-	-	-
Minor Improvements - Drainage (culverts)to consider in year 4?	-	-	-	100,000	-	-	100,000	-	-	100,000
Broad road subsidised LCLR	50,000	-	-	-	-	-	-	-	-	-
School Safety Improvements	550,000	-	-	-	-	-	-	-	-	-
Mafeking Bridge Improvements	50,000	550,000	-	-	-	-	-	-	-	-
Town Centre Upgrades	295,000	-	-	300,000	-	-	300,000	-	-	300,000
Car Parking Provision - Town Centre Parking	-	-	-	-	-	2,250,000	-	-	-	-
North East Subdivision area	-	-	-	-	-	50,000	200,000	-	-	-
Streetlight upgrade High St from East Belt to King St	-	100,000	-	-	-	-	-	-	-	-
Streetlight upgrade Williams St Bridge to Cass St (Kaiapoi Town Centre	-	-	-	-	500,000	-	-	-	-	-
Improvements to Hilton/Williams St Pedestrian facilities (Linking Western Precinct to town) THIS SHOULD BE A GREENSPACES PROJECT	-	-	37,500	250,000	-	-	-	-	-	-
Land - Blake St Extension	-	675,000	-	-	-	-	-	-	-	-
Durham Land Purchase for Carparking	-	-	-	2,250,000	-	-	-	-	-	-
Support for MUBA (Area directly adjacent to KTC) (LoS portion)	12,500	125,000	125,000	-	-	-	-	-	-	-
Land Purchase - improved LOS	100,000	-	-	100,000	-	-	100,000	-	-	100,000
Direct payment to Developers	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608
Design Fees	41,861	41,861	41,861	41,861	41,861	41,861	41,861	41,861	41,861	41,861
Cost of Council Performed Works	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608
Rangiora Airfield/Prior Rd Upgrade	-	1,012,000	-	-	-	-	-	-	-	-
West Rangiora Route Improvement	-	-	-	-	-	350,000	-	-	-	-
Woodend East ODP	-	-	200,000	-	-	600,000	-	-	1,000,000	1,000,000
East Woodend ODP - north south road & widening existing	-	-	-	300,000	300,000	300,000	300,000	300,000	-	-
West Rangiora Growth ODP	0	0	0	684,888	228,296	456,592	228,296	228,296	228,296	228,296
Kaiapoi North Improvements - Smith St/Williams St, Smith St/Ranfurlly St and other intersection improvements	-	-	-	-	-	-	-	600,000	-	-
Support for MUBA (Area directly adjacent to KTC)	37,500	375,000	375,000	-	-	-	-	-	-	-
North/South Collector Road	-	1,500,000	-	-	-	-	3,000,000	-	-	-
Shared Path (East/West Collector Road)	-	-	-	-	-	-	220,000	-	-	-
New Passenger Transport Infrastructure	125,000	200,000	200,000	125,000	200,000	200,000	125,000	100,000	51,000	51,000
Skew Bridge Replacement	50,000	623,000	-	-	-	-	-	-	-	-
New Eastern Link Road	-	50,000	666,000	-	-	-	-	-	-	-
Minor safety - Roadside Hazards Removal	-	-	-	50,000	666,000	-	-	-	-	-
Lees Valley Willow Walls & culverts	-	-	-	-	50,000	712,000	-	-	-	-
Ashley Gorge Rd / German Rd	-	-	-	-	50,000	712,000	-	-	-	-
Realignment and Safety Improvements Oxford / Tram Road Intersection	350,000	-	-	-	-	-	-	-	-	-
Intersection Safety Improvements Two Chain Road / Tram Road Intersection	-	-	-	-	-	-	50,000	746,000	-	-
Town Centre Upgrades	-	-	-	-	-	-	-	-	-	1,210,000
Flood Projects (Tram Rd, Depot Rd & Woodfields Rd) - RESILIENCE?	-	-	-	-	100,000	1,400,000	-	-	-	-
Widen culvert on Townsend Rd	-	-	-	-	-	-	-	612,000	-	-
Fernside/Todds Intersection	-	-	-	-	-	-	-	600,000	-	-
Direct Payment to Developers	-	-	-	-	-	-	-	100,000	1,458,000	-
Council Performed Work	414,000	-	-	-	-	-	-	-	-	-
Walking and Cycling Projects	-	50,000	450,000	-	-	-	-	-	-	-
School Safety Improvements	-	-	-	-	-	-	-	-	-	514,000
28 Roundabout installation at Bradleys / McHughes / Tram Road Intersection	-	-	-	-	-	-	-	-	-	562,000
Sub Totals	-	-	-	-	-	-	-	-	-	318,000
Rangiora Airfield/Priors Rd Upgrade contribution	-	-	-	-	-	-	-	-	323,000	-
Marsh Rd / Railway Rd - Intersection	-	-	-	-	-	-	-	-	648,000	-
Fernside/Townsend Intersection	-	-	-	-	-	100,000	1,300,000	-	-	-

	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost
Description	As at 30 June 2025	As at 30 June 2026	As at 30 June 2027	As at 30 June 2028	As at 30 June 2029	As at 30 June 2030	As at 30 June 2031	As at 30 June 2032	As at 30 June 2033	As at 30 June 2034
Intersection Upgrades Island Road / Greigs Road / Tram Road	50,000	150,000	-	330,000	-	-	-	-	-	-
Durham Land Purchase for Carparking	-	-	500,000	500,000	-	-	-	-	-	-
Durham Land Purchase for Carparking	100,000	100,000	150,000	-	-	-	-	-	-	-
Widen Skewbridge Rd - Mulcocks to Threlkelds	-	50,000	450,000	-	-	-	-	-	-	-
Minor safety- Delineation upgrades	250,000	-	-	-	-	-	-	-	-	-
Streetlight upgrade High St from East Belt to King St	-	-	100,000	-	1,800,000	-	-	-	-	-
Mulcocks and Fernside Rd closure - Kiwirail & NZTA	250,000	-	-	-	-	-	-	-	-	-
Land - Blake St Extension	-	-	-	-	-	-	-	430,000	-	-
Land - Blake St Extension	-	-	-	-	-	-	-	486,000	-	-
East Mixed Business Use Development (Growth portion)	-	-	-	-	-	-	-	-	330,000	-
Kaiapoi Roading improvements - Williams St south intersections.	-	-	-	-	480,000	-	-	-	-	-
Johns Road/Plasketts Road Improvements	-	-	-	-	-	-	840,000	-	-	-
Fernside Rd/Townsend Rd Roundabout	1,800,000	-	-	-	-	-	-	-	-	-
Minor Improvements - Drainage (culverts)to consider in year 4?	-	-	-	-	-	-	420,000	-	-	-
East Mixed Business Use Development (LoS portion)	-	-	-	-	420,000	-	-	-	-	-
Intersection Safety Improvements South Eyre Road / Giles Road / Tram Road Intersection	-	-	-	-	-	370,000	-	-	-	-
Rangiora Woodend Rd / Boys Rd / Tuahiwi Rd Intersection	-	-	-	-	-	-	570,000	-	-	-
Woodend Improvements in conjunction with NZTA PBC and Woodend Bypass	-	-	-	-	-	-	-	-	150,000	-
Southbrook ODP – new footpaths and road improvements	-	-	-	-	-	-	-	-	400,000	-
Kaiapoi Park and Ride	-	-	-	223,000	290,000	-	-	-	-	-
Rangiora Park and Ride	-	-	-	476,000	360,000	-	-	-	-	-
Ravenswood Park and Ride	-	-	-	-	500,000	1,000,000	-	-	-	-
Coldstream Rd/Golf Links Rd Improvements	-	-	-	-	330,000	-	-	-	-	-
Johns Rd/Plasketts Rd/Fernside Rd Improvements	-	-	-	-	200,000	-	-	-	-	-
Kaiapoi Roading Improvements	-	-	-	-	-	-	-	-	-	1,500,000
West Rangiora Roading Improvements - Lehmans to River Rd	-	-	-	-	-	200,000	2,000,000	-	-	-
Walking and Cycling Projects	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Rangiora Woodend Road Intersection Improvements	-	-	100,000	-	1,800,000	-	-	-	-	-
Robert Coup Dr/Ohoka Rd Implentation	-	-	200,000	1,000,000	-	-	-	-	-	-
Skew Bridge Replacement	180,000	1,220,000	400,000	10,150,000	50,000	-	-	-	-	-
Southbrook Rd Future Improvements	50,000	50,000	50,000	-	-	-	-	-	-	-
Rangiora Woodend Rd Traffic Calming	-	-	-	-	-	150,000	-	-	-	-
Charles Upham Dr / Oxford Rd Roundabout	-	-	-	-	-	-	700,000	-	-	-
Oxford Rd / Lehmans Rd Roundabout	100,000	1,400,000	-	-	-	-	-	-	-	-
Fawcetts Rd / Cones Rd Intersection	-	100,000	400,000	-	-	-	-	-	-	-
North Eyre Rd / No. 10 Rd	-	-	-	-	-	200,000	-	-	-	-
Swannanoa Rd / Johns Rd	-	-	-	-	-	-	-	500,000	-	-
Ashley Gorge Rd / German Rd	250,000	-	-	-	-	-	-	-	-	-
Northbrook Rd / Ivory St Intersection	-	-	-	150,000	1,350,000	-	-	-	-	-
Lees Valley Willow Walls	200,000	200,000	280,000	-	100,000	-	-	100,000	-	-
Marsh Rd / Waikoruru Rd - Sealing of unsealed Rd	-	-	-	50,000	750,000	-	-	-	-	-
Marsh Rd / Railway Rd - Intersection	-	-	-	-	-	-	-	150,000	850,000	-
Mulcocks and Fernside Rd closure - Kiwirail & NZTA	-	200,000	-	-	-	-	-	-	-	-
Car Parking Provision - Town Centre Parking	-	-	-	-	-	750,000	-	-	-	-
Land - Blake St Extension	-	225,000	-	-	-	-	-	-	-	-
Durham Land Purchase for Carparking	-	-	-	750,000	-	-	-	-	-	-
New Eastern Link Road	187,500	1,350,000	162,500	275,000	7,750,000	7,800,000	-	-	-	-
New Eastern Link Road	93,750	675,000	81,250	137,500	3,875,000	3,900,000	-	-	-	-
New Eastern Link Road	93,750	675,000	81,250	137,500	3,875,000	3,900,000	-	-	-	-
North/South Collector Road	-	500,000	-	-	1,000,000	-	-	-	-	-
	8,363,077	15,229,077	7,662,577	21,137,965	29,423,373	28,049,669	13,297,373	7,396,373	8,132,373	8,772,373

3.5 Strategic Business Case 2024-2027

Next Steps

Since the last Activity Management Strategic Business Case was prepared, the issue of congestion has been partly alleviated by improvements to the State Highway Network south of the district. Southbrook Road remains an area where congestion and access are a challenge and will require ongoing commitment to improving the western and eastern accesses to Rangiora to encourage drivers to avoid using Southbrook Road as a through route and reduce the traffic volumes through here.

Some changes to the previous Problem Statements have been undertaken in recognition of progress made, and of changing national and local government priorities. Of particular importance for the latest AMP is a greater focus on maintenance and operation of the network, which recognised that BAU is as important as new capital projects. Waimakariri is seeking a significant increase over the previous three-year funding, in part to recognise the effect of cost fluctuations over the last three years, but also the impact of growth on the network, starting with providing sufficient funding to maintain and manage the network. The other major impact on the network has been the effect of a number of significant storm events, which have affected the resilience of the network.

The Problem Statements for the 24-27 AMP and the Benefits of resolving these issues are detailed below.

Table 3-3: Problem Statements and Benefits of Resolving

Problems	Benefits
1. Population growth and changing land use is resulting in increased vehicle use, making it harder to maintain safe and appropriate levels of service	<p>Better integration between land use and transport will allow for more efficient use of the existing transport network.</p> <p>Improved non-motorized facilities will increase throughput on existing network with limited additional investment and lower long-term lifecycle costs.</p> <p>Intentional routing of freight traffic will reduce maintenance impacts and out-of-context roading issues.</p>
2. Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, leading to effects ranging from temporary disruption to potentially life-changing impacts.	<p>Providing environmentally friendly options allows people to choose travel that assists with lowering emissions and helping to control climate change.</p> <p>Planning and preparing for extreme weather events will reduce the chances of loss of life and helps to minimise disruption.</p> <p>Strengthening resilience of roading network for future climate change-related events will reduce future rehabilitation costs.</p>
3. Lack of mode choice leads to social disconnect, increased need for more roads, environmental impacts due to vehicle emissions and lack of opportunity for safe and healthy activity.	<p>Improving mode choice will expand opportunities for both essential and non-essential journeys for all users regardless of ability or means.</p> <p>Shift from vehicular travel to alternative modes will contribute to improved air quality and reduce emissions.</p> <p>More focus on walking and cycling will provide residents an opportunity to participate in low-cost healthy activity and the potential for social contact.</p> <p>Increased public transport mode share will provide for more efficient and lower-emissions use of the existing network.</p>

4. Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur	<p>Crashes, while they are still likely to occur, will be of lesser severity and societal impact.</p> <p>Reduced costs to the community through loss of life and ongoing rehabilitation.</p>
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3.6 Strategic Context

Waimakariri District's transport investment fits into the wider regional and national framework through the links to the Government's Policy Statement on Transport, Ministry of Transport's Transport Framework Outcomes, Canterbury's Regional Land Transport Plan and the District's Long Term Plan. Waimakariri District Council's response to the defined problems and benefits is closely linked to these local, regional, and national objectives showing good alignment for the transport investment. This is shown in Table 3-3.

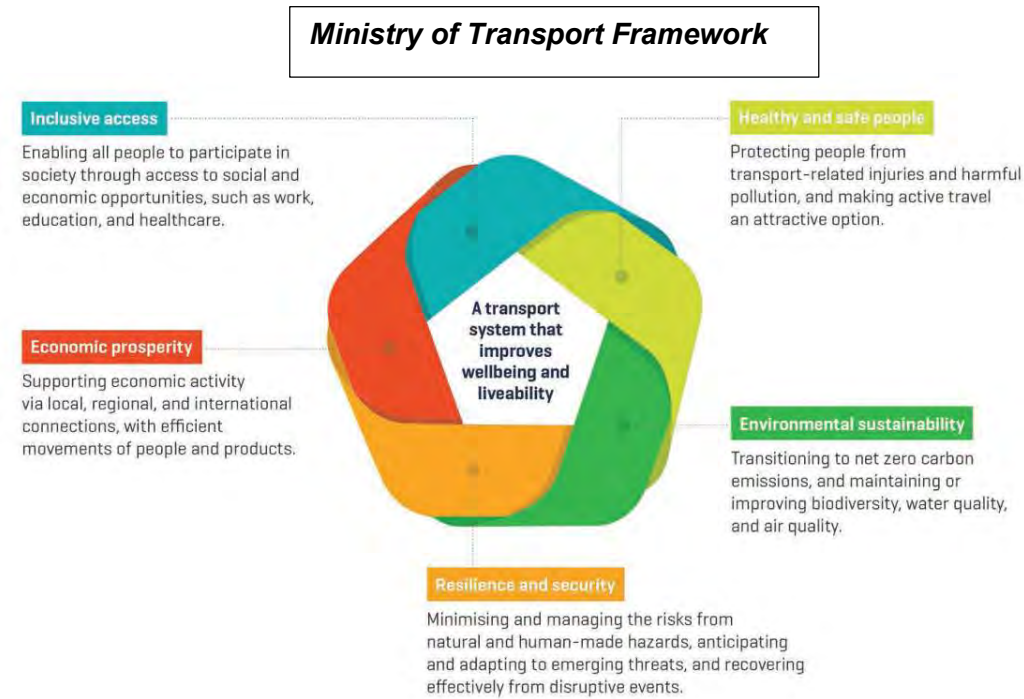
The key external agencies providing the strategic guidance have released documents which detail the outcomes they aim to achieve, and with which there is an expectation that Road Controlling Authorities will align themselves. The key objectives are illustrated in Figure 3-4, however full copies of the national documents are available online.

The Regional Land Transport Plan and Waimakariri District Council Long Term Plan will be available from July 2024.

Locally, Council has produced several Outline Development Plans and strategic documents which assist with decision making regarding where work should be targeted. These include Rangiora and Kaiapoi ODP, Rangiora Parking Strategy, the Walking and Cycling Strategy, and the Road Safety Action Plan. Many of Council's plans and strategies also integrate with those of the Regional Council and the Greater Christchurch area (Selwyn District, Christchurch City and Waimakariri District through the Greater Christchurch Partnership, e.g., Our Space and the Regional Passenger Transport Plan). 2023 saw the development of an Integrated Transport Strategy, which should provide direction for future strategic transport decisions.

3.7 National and regional Land Transport Objectives

Figure 3-4: National and Regional Land Transport Objectives



Government Policy Statement 2021

Note that the 2024 GPS was released on 1 July 2024, and as such was not available to be incorporated into these documents during development. The AMP was developed with consideration of the 2021 GPS.



Regional Land Transport Plan 2024-2034



3.8 Community Outcomes

These have been redeveloped in this LTP to align with the 4 well-beings.

Table 3-4: Community Outcomes

<p>Social</p> <p>A place where everyone can have a sense of belonging...</p> <p>Public spaces are diverse, respond to changing demographics and meet local needs for leisure and recreation.</p> <p>Council commits to minimizing the risk of social harm to its communities.</p> <p>Housing is available to match the changing needs and aspirations of our community.</p> <p>Our community groups are sustainable and able to get the support they need to succeed.</p> <p>Our community has access to the knowledge and skills needed to participate fully in society and to exercise choice about how to live their lives.</p> <p>People are able to enjoy meaningful relationships with others in their families, whanau, communities, iwi and workplaces.</p> <p><i>Our community has reliable access to the essential infrastructure and services required to support community wellbeing.</i></p>	<p>Cultural</p> <p>...where our people are enabled to thrive and give creative expression to their identity and heritage...</p> <p>Public spaces express our cultural identities and help to foster an inclusive society.</p> <p>The distinctive character of our takiwā, arts and heritage are preserved and enhanced.</p> <p>Members of our community are able to engage in arts, culture and heritage events and activities as participants, consumers, creators or providers.</p> <p>Waimakariri's diversity is freely expressed, respected and valued.</p> <p>There is an environment that supports creativity and innovation for all.</p> <p>Local arts, culture and heritage are able to make a growing contribution to the community and economy. (new)</p>
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<p>Environmental</p> <p>...that values and restores our environment...</p> <ul style="list-style-type: none"> • People participate in improving the health and sustainability of our environment. • Land use is sustainable; biodiversity is protected and restored. • <i>Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.</i> • <i>Our district transitions towards a reduced carbon and waste district.</i> • <i>The natural and built environment in which people live is clean, healthy and safe.</i> • Our communities are able to access and enjoy natural areas and public spaces. 	<p>Economic</p> <p>...and is supported by a resilient and innovative economy.</p> <ul style="list-style-type: none"> • Our district is prosperous and reflects the value of both paid and unpaid work. • <i>Infrastructure and services are sustainable, resilient, and affordable.</i> • <i>Our district readily adapts to innovation and emerging technologies that support its transition to a circular economy.</i> • There are sufficient and appropriate locations where businesses can set up in our District. • There are sufficient skills and education opportunities available to support the economy. • <i>There is access to meaningful, rewarding, and safe employment within the district.</i>
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3.9 Alignment of Objectives Across Agencies

Table 3-5: Strategic Linkages

No.	MOT Framework	GPS: <i>Note, this is draft only; with a new Government there is a strong likelihood that the next GPS, due mid-2024, will have a different set of objectives</i>	RLTP	Waimakariri District Council Community Outcomes	Related Problem Statements (from next page)
1	Healthy and safe people: protecting people from transport-related injuries and harmful pollution, and making active travel an attractive option	Developing a transport system where no-one is killed or seriously injured 2024 GPS: Transport is made substantially safer for all	Safety: Reduce harm on our roads	<ul style="list-style-type: none"> The natural and built environment in which people live is clean, healthy and safe. 	• 1, 4
2	Economic prosperity: encouraging economic activity via local, regional, and international connections, with efficient movements of people and products.	Improving freight connections for economic development	Growth: Develop the transport network to support well-planned, quality urban environments in areas of high growth. Freight: Transition to a low emission freight system that is more resilient, productive and innovative	<ul style="list-style-type: none"> Infrastructure and services are sustainable, resilient, and affordable. There is access to meaningful, rewarding, and safe employment within the district. Our community has reliable access to the essential infrastructure and services required to support community wellbeing. 	• 2, 3
3	Environmental sustainability: transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality, and air quality.	<ul style="list-style-type: none"> Developing a low carbon transport system that supports emissions reductions while improving safety and inclusive access GOS 2024: Transitioning to a lower carbon transport system 	Emissions: Develop a range of transport mission reduction solutions across Canterbury to reduce negative environmental and health impacts	<ul style="list-style-type: none"> The natural and built environment in which people live is clean, healthy and safe. Our district readily adapts to innovation and emerging technologies that support its transition to a circular economy. Our district transitions towards a reduced carbon and waste district. 	3
4	Inclusive Access: Enabling all people to participate in society through access to social and economic opportunities, such as work, education and healthcare	Providing people with better transport options to access social and economic opportunities		<ul style="list-style-type: none"> There is access to meaningful, rewarding, and safe employment within the district. Our communities are able to access and enjoy natural areas and public spaces. Our community has reliable access to the essential infrastructure and services required to support community wellbeing. 	• 1
5	Resilience and security: Minimising and managing the risks from natural and human-made hazards, anticipating, and adapting to emerging threats, and recovering effectively from disruptive events	Resilience and security was not one of the four strategic priorities in 2021, but it did feature in the draft 2024 GPS as “Increasing Resilience: The transport system is better able to cope with natural and anthropogenic hazards”. In view of the frequency of natural disasters of late this is likely to remain a focus of the new government	Resilience: Develop a resilient transport network that can better cope with unknown stresses, natural disasters and climate change impacts	<ul style="list-style-type: none"> Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change. 	• 2

3.10 Problems, Benefits, Strategic Responses and Performance Measurement

Table 3-6: Definition of Problems, Strategic Responses and Performance measures

No	Problems	Benefits	Strategic Responses	Benefits Framework Assessment Category	Objective	KPI	Target
1	Population growth and changing land use is resulting in increased vehicle use, making it harder to maintain safe and appropriate levels of service.	Better integration between land use and transport will allow for more efficient use of the existing transport network. Improved non-motorized facilities will increase throughput on existing network with limited additional investment and lower long term lifecycle costs. Intentional routing of freight traffic will reduce maintenance impacts and out-of-context roading issues.	Apply One Network Framework considerations to future development and system expansion. Liaise with heavy transport operators to develop freight network. Develop a cohesive walking and cycling network to provides users with options and encourage reduced motor vehicle use. Manage maintenance strategies to prioritise road hierarchy and crash risk and meet appropriate levels of service.	Economic Prosperity. Healthy and Safe People	Land use changes are designed to make alternative mode choice easier, resulting both in a reduction in the number of motorised journeys, and the subsequent negative effects on the network. Sealed roads provide a level of comfort that is appropriate to the road type.	Commitment to Waimakariri Freight Strategy from freight operators. Customer satisfaction with walking and cycling facility provision. The average quality of ride on a sealed road network, measured by smooth travel exposure. (DIA measure).	Commitment to development of a Freight Strategy. Increased approval rates for walking & cycling provision in customer satisfaction survey. 95% for rural and 75% for urban roads.
2	Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, leading to effects ranging from temporary disruption to potentially life-changing impacts.	Providing environmentally friendly options allows people to choose travel that assists with lowering emissions and helping to control climate change. Planning ahead and preparing for extreme weather events will reduce the chances of loss of life and helps to minimise disruption. Strengthening resilience of roading network for future climate change-related events will reduce future rehabilitation costs.	Continue to build facilities for and promote alternative mode travel. Ensure event planning is well-disseminated and effective. Evaluate potential for roading network impacts from future climate change related events.	Environmental Sustainability, Resilience and Security	Critical routes are accessible in emergency events. Evidence gathered and analysed sufficient to support planning for climate change.	Number of incidents where residents were affected by a road closure that could have been avoided with appropriate engineering measures.	All high-risk, high impact routes reviewed annually to ensure they remain fit for purpose. Climate change review completed by March 2025.
3	Lack of mode choice leads to social disconnect, increased need for more roads, environmental impacts due to vehicle emissions and lack of opportunity for safe and healthy activity.	Improving mode choice will expand opportunities for both essential and non-essential journeys for all users regardless of ability or means. Shift from vehicular travel to alternative modes will contribute to improved air quality and reduce emissions. More focus on walking and cycling will provide residents an opportunity to participate in low-cost healthy activity and the potential for social contact. Increased public transport mode share will provide for more efficient and lower-emissions use of the existing network.	Ensure overall transport investment meets the needs of all users regardless of ability or means. Encourage transition away from fossil fuel driven vehicles. Complete network identified in the district's walking & cycling strategy. Deliver cyclist education. Improve Park & Ride and bus stop amenity, includes connectivity with local community.	Inclusive Access	Residents of Waimakariri District have full opportunities to undertake both essential and non-essential journeys by a range of transport modes.	% of planned projects which assist with modal choice and access delivered. Park & Ride facility satisfaction. Bike stands / facilities. Number of people travelling by public transport.	100% delivery by June 2024 Increase in community satisfaction with Park and Ride facilities. New bike stands installed to support the Walking & Cycling Strategy. Annual increase in public transport boarding numbers.
4	Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur.	Crashes, while they are still likely to occur, will be of lesser severity and societal impact. Reduced costs to the community through loss of life and ongoing rehabilitation.	Deliver driver education. Set safe and appropriate speeds for all roads in the district. Develop safety management system integrating across design, capital projects, contractors, and asset management.	Healthy and Safe People	Network is safer for all users.	The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number. (DIA measure). Reduction in 85 th percentile speed on roads where able to be recorded through existing traffic counting system).	Reduction in fatalities and serious injury crashes. Reduction in 85 th percentile speed on roads where able to be recorded through existing traffic counting system.

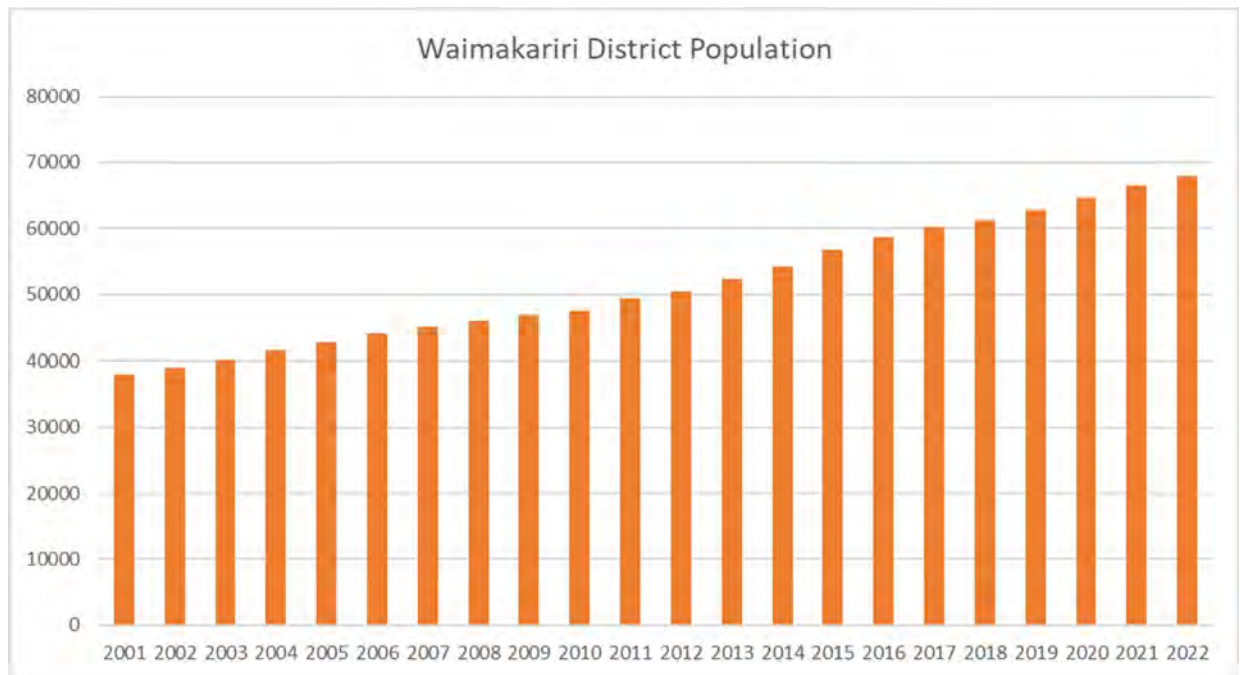
3.11 Economic Case

Evidence Supporting Business Case Statements

Population & growth

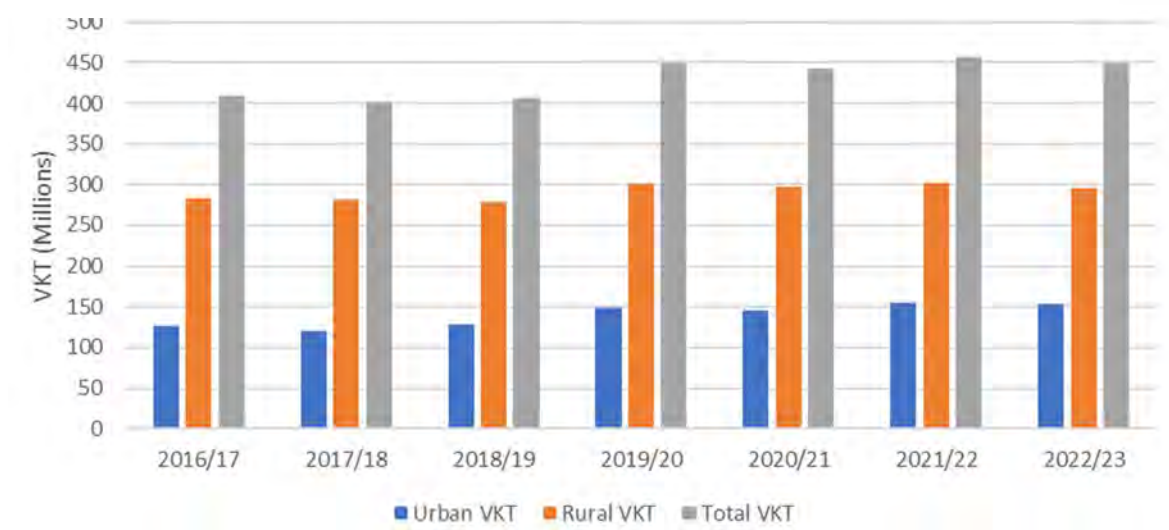
- The Waimakariri District has had an increasing population trend over the past twenty-year period, from 40,200 in 2003 to estimated 69,760 in 2023, i.e. just under 74% increase. As a comparison, the New Zealand population grew by just over 30%. With this level of growth, the Waimakariri District has been one of the fastest growing districts in New Zealand.
- Between 2020 and 2023 Waimakariri is estimated to have grown from 64,700 to 67,900, an average growth rate of just over 1%.
- The population is expected to grow to 77,100, by 2030, which by then will have averaged to an annual growth rate of around 1.5%.

Figure 3-5: Waimakariri District population growth (2001 to 2022)



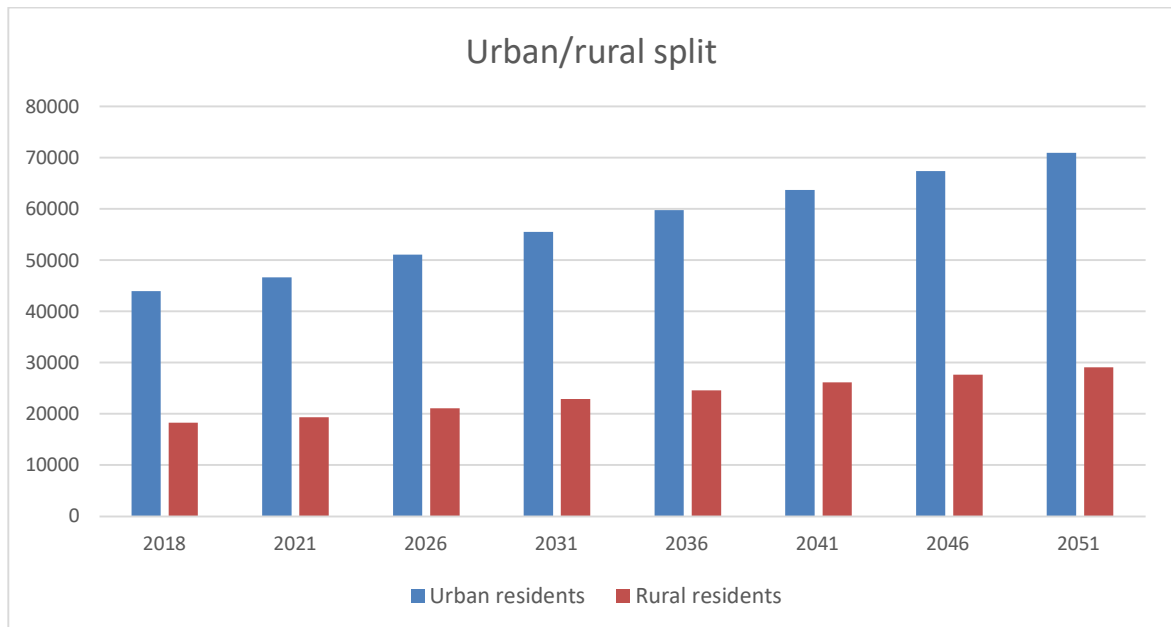
- With this population growth, roading and transport assets have grown:
- Vehicle kilometres travelled in the district has grown by 22% in urban areas, and around 5% in rural areas since 2016/17. The overall move from rural to urban travel is 3.3%.
- The district's urban road network has grown around 13% in the last three years, the same as for the previous three years, and up from 9% for the three years before that.

Figure 3-6: Vehicle Kilometres Travelled (VKT) Trends



- While the percentage of urban versus rural residents has stayed relatively stable, this has resulted in a larger increase by number of urban residents, which is expected to grow as the population increases. Urban development has a higher density of traffic, and more incidental assets such as footpaths, lighting etc. that are more expensive to maintain. Conversely, this also provides the opportunity for more modal choice and environmentally friendly transport.

Figure 3-7: Urban and Rural Residents



The National Policy Statement on Urban Development Capacity (NPS-UDC), which came into effect on 1 December 2016, identified the Waimakariri District as a high growth urban area (i.e. projected to grow by more than 10% between 2013 and 2023).

The NPS-UDC required the Council to provide sufficient development capacity to meet demand for residential and business land over a 30-year period, including 15-20% additional development capacity to ensure there is competition in the housing and business markets, which would require additional transport infrastructure to accommodate the increased numbers of residents. This was to have been partially offset by high density infill development which would require less new infrastructure, but potentially more provision for walking and cycling. With the change of government in 2022, it is expected that this policy is unlikely to remain in place, and development may potentially revert to a less dense nature.

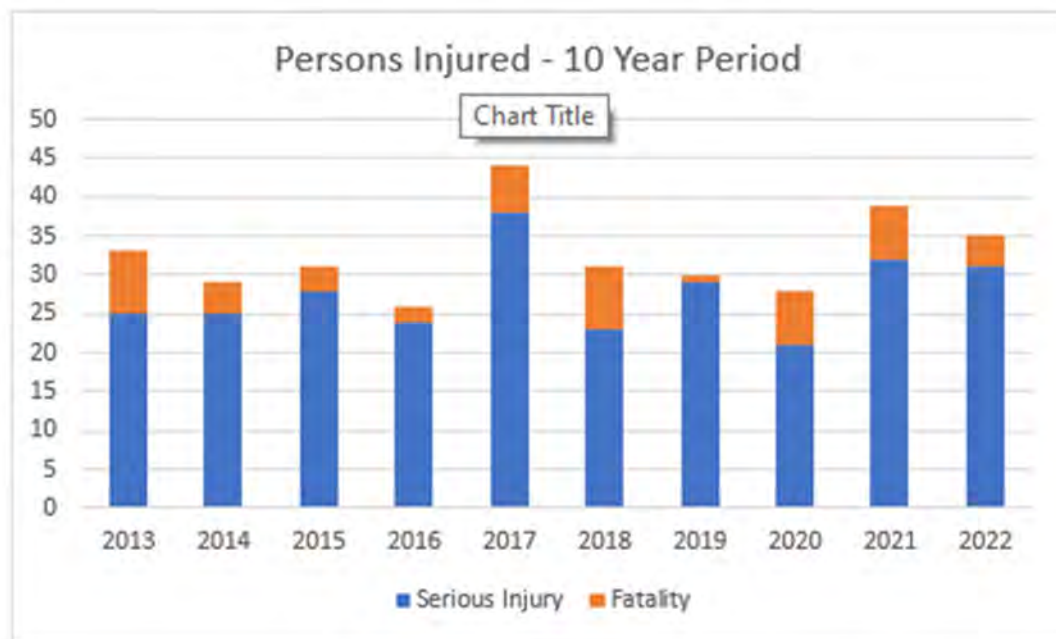
Road Safety

Excluding the decade high in 2017, fatal and serious crash numbers have been relatively stable over the last ten years and are not showing any sign of potential consistent downward trends (2023 has to date had 34 reported fatal and serious injury crashes).

The geographic nature of the district, (high risk rural roads and intersections) combined with the population growth and reliance on vehicles for transport means a changed approach safety is essential to bring about any noticeable change and not risk the increased exposure bringing about an increasing crash trend.

Proposed programmes include rural road intersections, hazard removal, safety outside schools, amongst others.

Figure 3-8: Waimakariri fatal and serious casualties. (Source CAS data)



Economic growth

Waimakariri has over recent years experienced substantial growth in employment. As reported by Statistics New Zealand. Unfortunately, the statistics from the most recent census are not yet available. Therefore, information from the previous AMP will remain current until new statistics are available.

Over the period between 2013 and 2019 the number of business locations in Waimakariri District increased by 6.9% c.f. 8.9% in the previous 6-year period, however, company car usage in Waimakariri increased 103% compared with the previous six years.

The number of paid employees in Waimakariri District increased by 24.4 percent at the year ended February 2019, very slightly down on the increase from 2006 to 2013 of 25.6%

The reliance on the private vehicle is one the most significant causes of local pinch points and poor journey time reliability. Around 42% of the district's usually resident workforce travel to Christchurch for work and about 2,000 of the daytime workforce commutes into the District from Christchurch. Commuting travel also occurs for many other reasons such as travel to schools, medical, shopping, and recreational opportunities.

The South Island's freight task is predicted to increase by 68% between 2012 and 2042. Canterbury accounts for 48% of the total freight moved around the South Island (Draft South Island Freight Plan, 2015). The freight route from Picton along the east coast of the South Island is the primary freight route in the South Island. Woodend is currently the pinch point, with the Northern Corridor over the Waimakariri River Bridge flowing freely with its recent improvements. The Woodend Bypass has been included as a key transport link with the Draft GPS, which will help alleviate safety and access concerns through Woodend. Care will need to be taken that growth further north can continue to be catered for, by such measures as mode choice, including alternative freight carriage modes.

The other key routes carrying freight include through Southbrook Road, through the centre of Rangiora, or alternately along the West Rangiora Route (Fernside Rd / Flaxton Rd / Skewbridge Rd & Ohoka Rd to SH1). This is becoming more popular for commuters however it is planned to improve the route for heavy vehicles along this route. To achieve this a number of improvements will be required to ensure the route is accessible and safe, and constructed to the standard required to cope with the anticipated volume of traffic, especially heavy traffic.

Another key piece of strategic infrastructure required is the Rangiora Eastern Link Road. This new road will connect at SH71 and run north to Northbrook Road, providing an alternative route to Southbrook Road, which is a very busy corridor carrying over 26,000 vpd in parts. Southbrook area is a key commercial / industrial area within the Waimakariri District. As such there is a strong heavy freight demand within the area. This has been proposed for a number of years, as part of a synergistic package of projects designed to not only manage growth in in the district, but also to improve access / congestion issues on Southbrook Rd and to facilitate connections with and opportunities in Christchurch, as part of Greater Christchurch Partnership.

Up until recent times Waimakariri has managed to maintain a comfortable network on minimal budget increases. A key indicator of network performance is represented by the Smooth Travel Exposure by ONRC classification. Generally the network is performing well, both year on year and against our peers and nationally but it is noted that Smooth Travel

Exposure, while still not at a concerning level, is trending downwards. (the higher the STE, the better the network). This may be reflective of the high growth in our urban areas.

Figure 3-9: Urban STE trend by ONRC for Waimakariri District

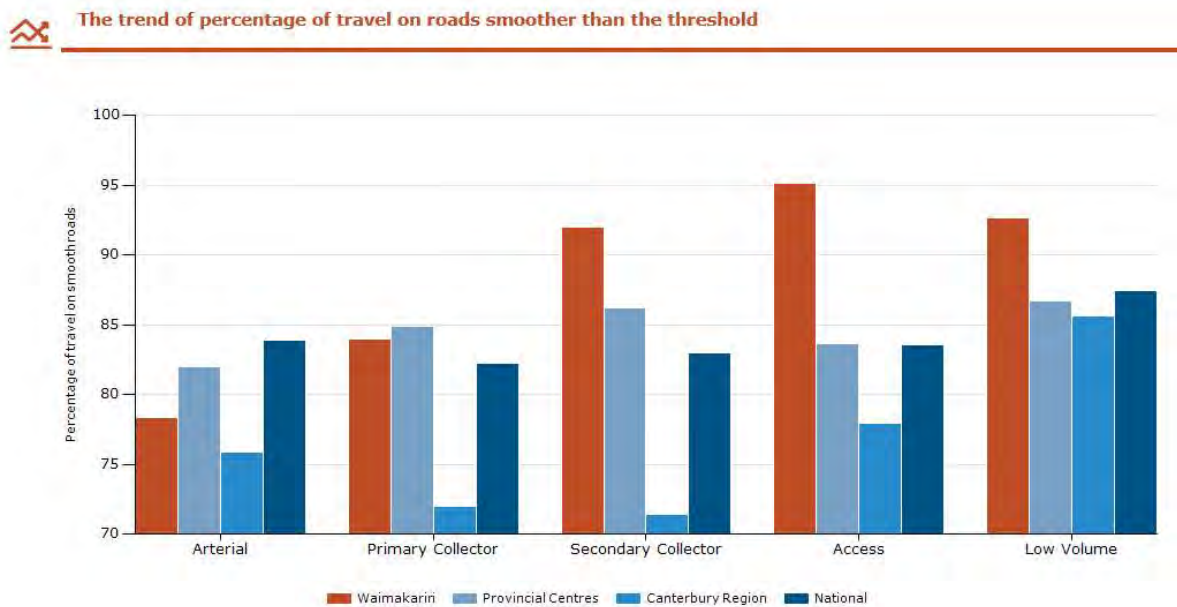
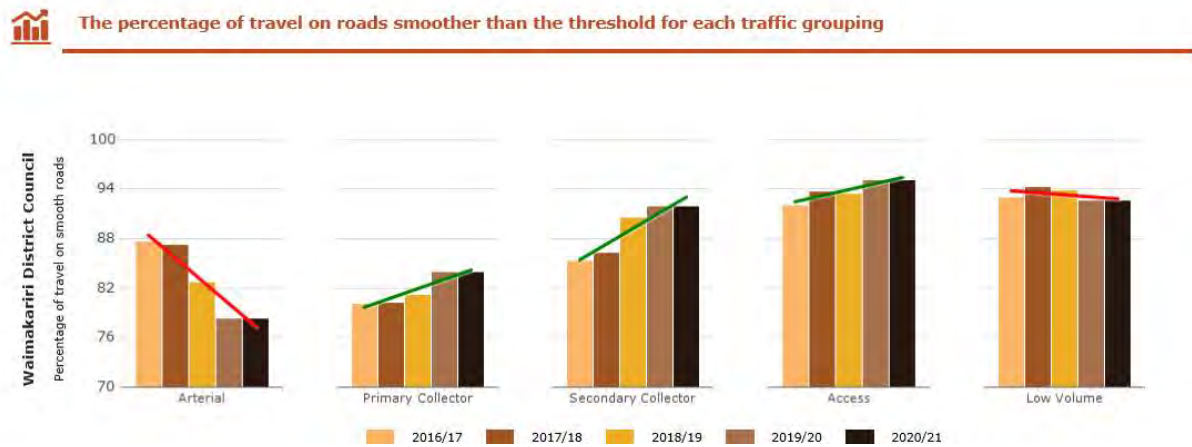
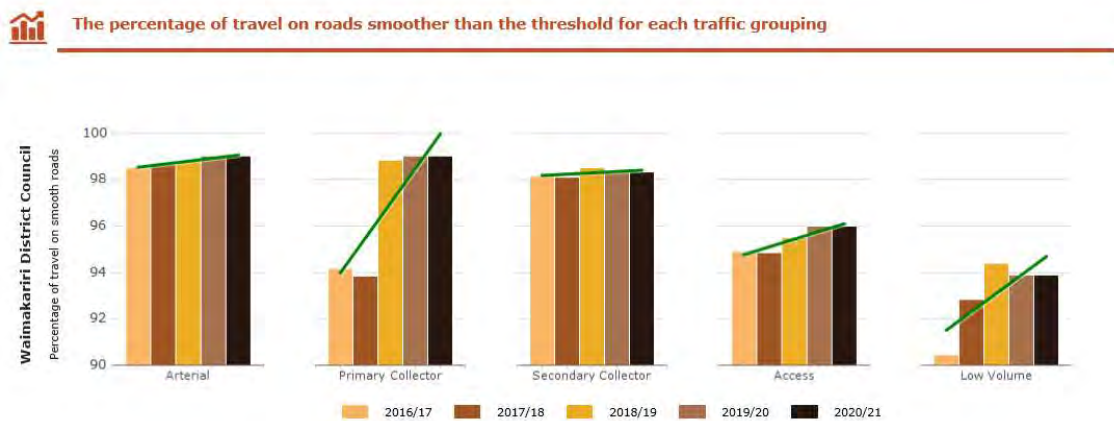


Figure 3-10: Rural STE trend by ONRC for Waimakariri District



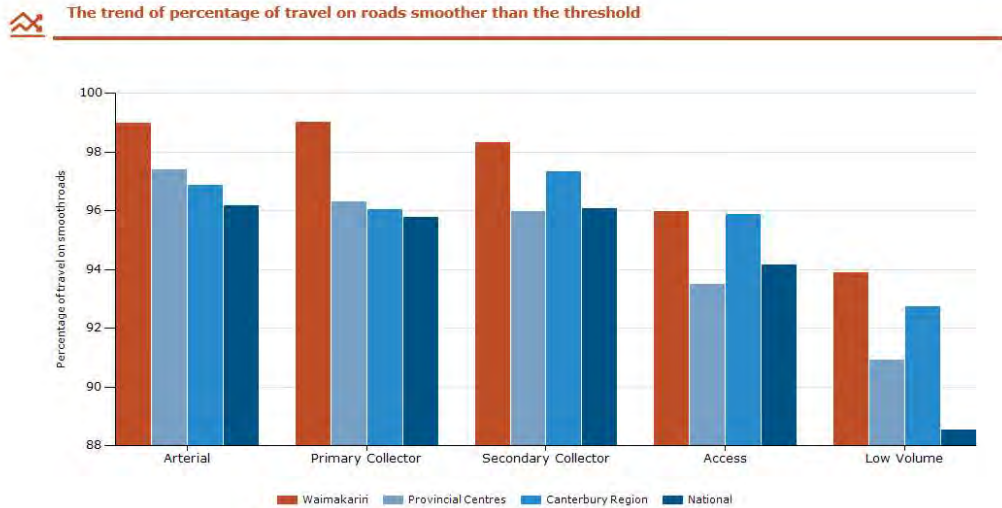
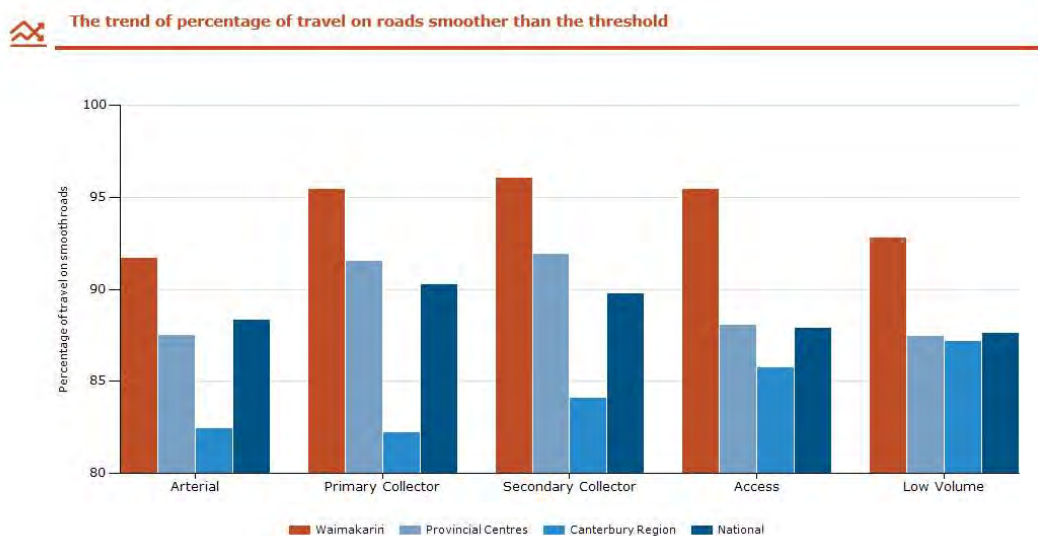
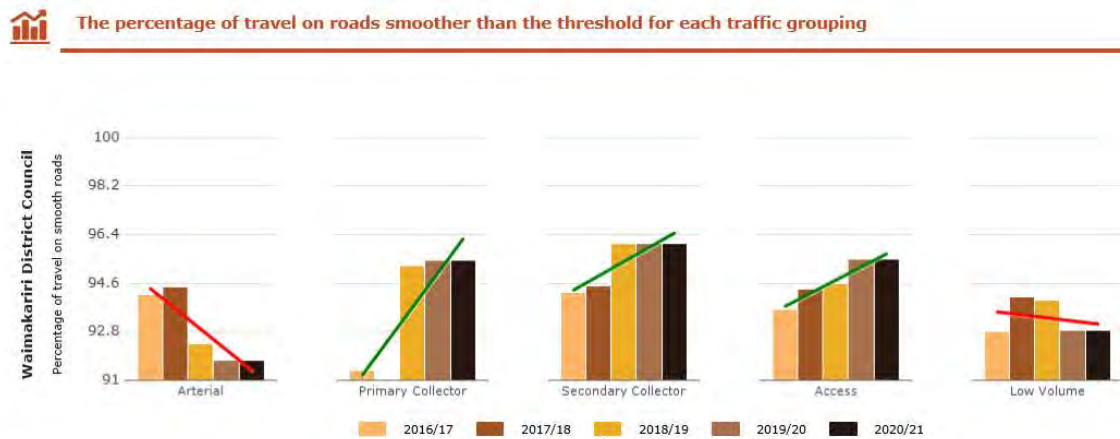


Figure 3-11: Combined STE trend by ONRC for Waimakariri District



3.12 Financial Case

The programme of works proposed for the next three years is fully outlined in Section 7 Financial Summary of the AMP, providing the expenditure proposed for the next ten years.

Council support

The Council Long Term for 2024-2034 fully supports the funding applications.

Adequacy of Programme to meet asset and customer needs:

At the last AMP trends showed that generally the network was holding together reasonably well. However, in the leadup to this AMP, the quantity and cost of maintenance work has been steadily increasing, not only due to inflation but also to an increase in the numbers of faults needing repaired. The proposed cost increases are described in greater detail in the Programme Business Case. They are however targeted at rectifying long term underfunding of drainage issues while ensuring current needs, such as maintain the road surfaces and not allowing these to reach a point where greater investment is needed to restore them.

Key Funding Requests for 2024-2027

Table 3-7: Key funding requests

Activity	24/25 (\$)	25/26(\$)	26/27 (\$)
Maintenance	5,375,870	5,946,452	6,121,458
Operations	4,541,580	4,887,421	5,098,838
Renewals	8,552,205	10,097,978	9,119,271
Road Safety Promotion	307,500	316,725	326,227
Minor / Low cost low risk improvements	3,180,000	3,690,000	1,770,000

While Council is wishing to manage rates increases, roading improvements are seen as a high priority and as such has been supported by Council, however this is still to be considered through the LTP process.

Programme Risks / Unknowns

There are several risks that have been identified during the development of the strategic case which require further management and/or investigation. These include:

Resilience

Increased extreme weather events are proving to be a challenge, both nationally and locally. Waimakariri has already had to carry out remedial works a consequence of several events. It has identified some potential areas for investment, but more work is planned for the next NLTP to further understand what work is needed to attempt to mitigate future damage.

Sustainability

Council also is proposing more work on understanding our contributions to emissions and how these might be reduced in the district.

Safety

As mentioned earlier, Waimakariri District is experiencing an increasing trend in fatal and serious crashes. While it is difficult to pinpoint consistent trends in causes of crashes, it is recognised that inconsistent or substandard networks are often contributing causes to crashes even when not recognised officially, particularly for inexperienced, elderly, or impaired drivers. As Waimakariri's population grows, so does the exposure factor. The Council wishes through its proposed programmes to ensure that its community meet their desired outcomes while at the same time supporting regionally and nationally identified goals.

3.13 Management Case

The Council team is staffed in-house under the leadership of the Roding & Transport Manager. They are responsible for the end-to-end process of managing the roading and transport network. This includes the role of Corridor Manager to ensure works of utility operators is efficiently managed within the network.

The team has a mix of operational, asset and transport planning and road safety staff who have close relationships with the Strategy and Policy, Planning, 3 Waters, Greenspace and other Council teams, including Finance. The collaborative nature of the team extends outward to the Greater Christchurch and Regional level through various groups.

The team utilises the Council's in-house Project Delivery Unit (PDU) to manage programme and project delivery, overweight permits, speed limit reviews and other specific tasks. Specialist consultants are utilised to provide specialist advice on bridges and structures, safety and transport modelling.

In addition to the Roding & Transport Manager, the Roding Team consists of the following operational staff:

- Roding Operations Team Leader, who is responsible for five operational staff:
- Roding Contract Engineer – manages contracts, unsealed network maintenance, pavement rehabilitation and reseal programme.
- Roding Maintenance Engineer – deals with day-to-day maintenance issues in the field, customer liaison/service requests, and small safety projects.
- Roding Compliance Officer – manages road corridor activities including CARs, temporary traffic management, and compliance issues such as overhanging vegetation and stock movement.
- Roding Auditor – Network auditing and ensuring vehicle crossings are constructed to Council standard.

- Roothing Cadet – newly introduced role which provides support to the rest of the department particularly in the area of network inspections and auditing.
- Senior Roothing Engineer Role – Additional role to be added to the team.

The remaining roles are directly managed by the Roothing & Transport Manager.

- Asset Planning Engineer (Roothing) - Responsible for the AMP, RAMM and NZTA funding.
- Senior Traffic Engineer - Resource Consents, design and project safety auditing (overseeing PDU design).
- Transportation Engineer – Assisting the Senior Traffic Engineer.
- Journey Planner / Road Safety Coordinator – Travel Demand Management, Public Transport and Road Safety.

3.14 Commercial Case

Section 17 Processes

Council has in place an NZ Transport Agency (Waka Kotahi) endorsed Procurement Strategy which was endorsed by the Agency in 2020.

Except for carriageway Road network maintenance and renewal management is carried out under a single road maintenance contract covering the whole district. The contract model is a collaborative model with Council staff and the contractor working as 'one team' focussing on best for network outcomes. The contractor is responsible for network inspections, programming and carrying out the work. Minor improvement works are included in the maintenance contract for greater efficiency. There is a comprehensive performance management process in place for the contract. The contract was re-let in November 2020 for a 3+1+1 period to the incumbent contractor and will be due for letting during this AMP period.

Specialist work and larger cost items such as some bridge renewal work is mostly carried out through the maintenance contractor's subcontractors, but at times where specialist experience or knowledge is required, or the main contractor does not have the in-house resourcing due to the workload at that time, other contractors may be brought in. Council is working on setting up a panel of preferred contractors and this may save some time in these cases.

Street light maintenance and renewals is carried out under a similar, but separate, contract. This contract was originally let in November 2019 but due to problems did not commence officially until April 2021, with the incumbent managing basic maintenance until then. It is also due in the next few years for re-letting.

Projects are procured through a range of options from lowest price conforming tender processes to short listing and selected tender processes depending on the type and

complexity of the project. Very small one-off projects such as safety improvements at an intersection, may be carried out directly through the maintenance contract where this is shown as the best price option.

Ability to Deliver Programme

Traditionally Waimakariri programmes have been delivered with minimal cost increases whilst maintaining levels of service. However, the high increased growth in the District has made this impossible to sustain. With regards the MOR programme, for both the current and previous NLTP, Council has easily spent its original allocation and more. In the case of the 2018-2021 programme, a further \$440,000 was sought, approved and spent within the last two months of the programme, enabling extra drainage work to be carried out. In the current programme, a cost scope adjustment of almost \$3.4 million was approved but even this has proved to be insufficient to maintain the current programme, due to the high cost fluctuations. The new programme requested is designed to maintain the current levels of service and also carry out general catchup activities. With a large labour market just across the river there is no shortage of available contractors to carry out the work, and the Section 17 Processes provide more detail on procurement.

Collaboration

The Waimakariri District Council is a party to the North Canterbury Rooding Collaboration MOU. This includes Selwyn, Hurunui and Kaikoura District Councils. Council also works in partnership with the other Greater Christchurch partners through the Greater Christchurch Partnership agreement and the Transport Managers Group and with various projects such as PT Futures and Business Case and the Travel Demand Management Business Case.

Council roading staff are represented on Regional Transport Officers Group, the Regional Road Safety Working Group and the Regional RAMM user group amongst others, including collaborative corridor management.



Transportation Activity Management Plan 2024

Levels of Service

June 2024



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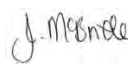
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Reviewed by	Joanne McBride	Roding & Transport Manager		24/06/2024
Approved by	Gerard Cleary	General Manager, Utilities and Roding		
Adopted by	Utilities & Roding Committee			

4	Levels of Service.....	4
4.1	Introduction	4
	Legislative Requirements	5
	Strategic and Corporate Goals	5
4.2	Nationally Strategic Documents	6
	Ministry of Transport's Transport Outcomes Framework	6
	Government Policy Statement for Transport.....	7
	Arataki 7	
4.3	Regional and Local Transport Documents.....	9
	Waimakariri District Levels of Service	9
	Community Outcomes.....	9
4.4	Customer Research and Expectations - Measuring Performance.....	11
	Levels of Service and Performance Measures	11
4.5	Progress against DIA measures.....	14
	The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number.....	14
	The average quality of ride on a sealed road network, measured by smooth travel exposure.	14
	The percentage of the sealed local road network that is resurfaced.	14
	The percentage of footpath that falls within the level of service or service standard for the condition of footpaths.	15
	The percentage of customer service requests relating to roads and footpaths responded to within service delivery standards.	15
4.6	Who We Engage With.....	15
	Customers and Stakeholders	15
4.7	How We Engage	16
	Direct Consultation.....	16
	Levels of Service Engagement.....	17
	Customer Satisfaction Surveys	17
	Customer Service Requests.....	20

Investment Logic Workshops	22
Targeted Engagement.....	23
4.8 Strategic Business Case Performance Measurement.....	24
4.9 Physical Measurement of Gaps – the One Network Road Classification (ONRC), and the Transition to the One Network Framework (ONF).....	25
Regional Levels of Service Results by ONF category.....	26
Gap Analysis.....	26
Negative Effects of this Activity	27
Positive Effects of this Activity	28
4.10 Key Improvement Initiatives	28

Tables

Table 4-1: Community Outcomes	10
Table 4-2: Community Outcomes Measures and Targets.....	13
Table 4-3: Percentage of respondents satisfied with aspects of the Roding network.....	18
Table 4-4: Summary of Positive Effects.....	28
Table 4-5: Key LoS Improvements	28

Figures

Figure 4-1: Levels of Service Key Inputs	5
Figure 4-2: Customer Service Request Trends.....	21

4 Levels of Service

4.1 Introduction

Levels of service are targets that provide a standard to measure to in order to deliver a desired outcome. The Council operates, maintains and improves roads, footpaths, bridges, traffic services and other Rooding ancillaries on behalf of ratepayers, residents, road users and the Crown. It strives to meet the levels of service sought by the community, and those required by law, statutory regulations, bylaws, and other quasi-statutory documents such as district and regional plans and resource consents, and to do so at the standard desired by the local community and other stakeholders.

Key objectives of this Activity Management Plan include:

- informing customers of the current level of service provided and any proposed changes to those levels of service and the associated cost.
- measuring performance against these defined levels of service
- identifying and quantifying the gaps
- developing Asset Management strategies to deliver the required level of service
- identifying the costs and benefits of the services offered.
- enabling assessment of suitability, affordability and equity of the services offered.

The Levels of Service in this document range from measures set by the Department of Internal Affairs to 'customer' levels of service defining expected outcomes from the activities, such as how long a customer may expect to wait for normal services after an emergency event, through to 'technical' levels of service which covering such things as acceptable periods between defect remediation. These levels of service must somehow accommodate a wide variety of wants and needs, sometimes conflicting, and help to deliver in a manner which best meets the needs and desires of the community at large.

Information regarding performance against Customer Levels of Service can be found in the appropriate section throughout this chapter. Technical Levels of Service are incorporated in this AMP against the relevant sections in this document, primarily in the Lifecycle Management Plan.

The Levels of Service are based on the following key input areas:

Figure 4-1: Levels of Service Key Inputs



Legislative Requirements

Key legislation covering minimum standards will include such things those covering what utilities may or may not do in the road corridor, changes to transport legislation such as the need to accommodate High Productivity Motor Vehicles, and potential future legislation around vehicle emissions and carbon measurement. Appendix x contains a list of current relevant legislation but with this environment constantly changing this should not be treated as exhaustive or even necessarily the latest legislation.

Strategic and Corporate Goals

The primary purpose of Council is *‘to make Waimakariri a great place to be, in partnership with our Communities guided by our outcomes, through the following roles:*

1. As a service provider;
2. As a funder of activities by others;
3. As an advocate on behalf of our community;
4. As a regulator under legislation.’

The following goal for the provision of transport infrastructure in the Waimakariri District Council has been developed from the Community Outcomes. Our Transportation goal is:

“To plan, provide, maintain, develop and improve the Roding and Transport network so that it is affordable, integrated, safe, responsive and sustainable and it contributes to the attainment of high quality natural, living and productive environments within the District and assists development of a strong sense of community.”

4.2 Nationally Strategic Documents

There are several strategic documents which outline national priorities. In preparing the AMP and our three-year programme it is important to be cognisant of these. NZ Transport Agency (Waka Kotahi) uses these documents for prioritising the funding assistance it provides to Road Controlling Authorities.

Ministry of Transport's Transport Outcomes Framework

The Ministry of Transport's Transport Outcomes Framework (June 2018) identifies what the government is trying to achieve through the transport system. It has established that the purpose of the transport system is to improve people's wellbeing, and the liveability of places. It does this by contributing to five key outcomes, summarised in the diagram below:



A guiding principle in the framework is mode neutrality. Mode neutrality involves two important aspects:

1. Ensuring that all modes and options are considered and evaluated to find the best system solution.
2. Making users and decision-makers more aware of the benefits and costs of transport choices, to incentivise robust decision-making and smart travel choices.

Specifically, the framework notes that more attention needs to be given to public transport and active modes as well as rail and coastal shipping.

The Transport Outcomes Framework is integral to the Investment Benefits Framework, which requires RCAs requesting national investment to

- identify how the work they intend to carry out relates to these five categories, and
- to select the measures which will be used to identify how the activities will be evaluated to determine the degree of success or otherwise at meeting predetermined targets.

The Transport Outcomes Framework is a guiding document for the Government Policy Statement (GPS) for Transport as described in the following section.

Government Policy Statement for Transport



The GPS sets out the key policies the Government seeks to have delivered over the next ten years, with a three yearly refresh and revision. It is important that consideration is given to aligning with these when funding is sought from Waka Kotahi NZ Transport Agency. A draft GPS was released in August 2023, but with a change of government a new GPS is not now due until mid 2024, and it is expected this will see changes in direction and objectives.

Arataki

Arataki is the Waka Kotahi view of what is needed to deliver on the government's current priorities and long-term objectives for the land transport system. It looks at each of the Regions and provides guidance in what are seen to be the key challenges facing the region.

The first Arataki was delivered three years ago. This has since been reviewed, and the following identified as the most important challenges to be resolved over the next 10 years for Waitaha/Canterbury to make progress towards transport outcomes. Consideration should be given as to how Arataki suggestions could be incorporated into Council work programmes.

Suggested Arataki Measures responding to these questions

- Support, enable, and encourage growth and development in areas that have good travel choices and shorter average trip lengths through the Greater Christchurch Partnership and spatial planning work.

Significant developments have been occurring in areas on the fringes of Rangiora, allowing better access by alternative modes.

- Accelerate the delivery of walking and cycling networks predominantly through reshaping existing streets, to make these options safe and attractive. •

Waimakariri has been actively expanding its on and off-road cycle network since 2018, from 24 to 48 km, particularly shared paths. There is an on-road programme of repair, upgrades, and new footpaths but this work will be more targeted going forward utilising the ONF to prioritise work.

- Implement the Public Transport Futures programme, starting with bus services and infrastructure improvements; confirm the design and timing of rapid transit along the corridors in the north and southwest of Greater Christchurch.

Waimakariri has been rolling out bus stop infrastructure improvements and will follow the lead of Environment Canterbury for any service enhancements. At this time, no rapid transit is anticipated to service the District.

- Explore new and emerging technologies, such as on-demand services, to improve access to social and economic opportunities. •

Waimakariri is working with our partners at Environment Canterbury to explore financially sustainable extensions to existing public transport services, potentially using new modes.

- Better understand the impact of future economic transformation on travel patterns and freight volumes

As the District increases its self-sufficiency and attracts more residential and commercial traffic from Greater Christchurch, the resulting impacts on travel patterns are being supported by investments in public and active transport and resilient roading connections.

- Explore opportunities to move to a more multi-modal freight system with greater use of rail and coastal shipping.

Waimakariri is working with our partners at Environment Canterbury to better understand freight shift opportunities across the region.

- Confirm how key resilience risks will be addressed over time, and work with communities to identify plans for when to defend, accommodate, or retreat.

Business plan for Lees Valley, addressing ongoing resilience and community separation issues. In the longer term there is a need to address coastal encroachment and for groundwater rise to being investigated.

- Continue to implement road safety plans and programmes including those focused for iwi/ Māori.

Active Road Safety Committee

- Improve or maintain, as appropriate, physical access to marae, papakāinga, wāhi tapu and wāhi taonga.

Ongoing work at Tuahiwi

- Reduce financial and other barriers to iwi Māori getting a driver's licence in areas not well served by public transport.

Further work needs to be undertaken to determine how best to facilitate this action.

Note that Waimakariri issues are only addressed in this document either through general Canterbury issues or as part of the Greater Christchurch Partnership. While many issues are common to a number of Canterbury Districts this AMP will identify those most critical for Waimakariri, while ensuring these are not inconsistent with national and regional directions.

4.3 Regional and Local Transport Documents

Waimakariri District Levels of Service

Waimakariri Transport LTP Levels of Service measures are based on Department of Internal Affairs (DIA) measures, with targets adopted to meet Council requirements as appropriate. Technical Levels of Service (those the Contractor is required to meet under their contract agreement) were developed a number of years ago and have not been revised in recent times. The Community Outcomes are the result of public consultation carried out up to and during preparation of the 2024/34 Long Term Plan (LTP).

The Council has considered many factors in defining the levels of service on its Roding network. These included:

- Its statutory/legal obligations
- The needs and expectations of the District community as a whole and other communities within the District, established through comments made to it through formal consultation processes, the results of customer surveys
- The Council's vision, goals, objectives and policies.
- Waka Kotahi NZ Transport Agency requirements
- Sound asset management, including sound engineering practice and accounting practice (affordability and economic efficiency).

Community Outcomes

Community Outcomes describe the aspirations and priorities that a local authority aims to achieve in order to promote the social, economic, environmental, and cultural well-being of its district or region, in the present and for the future. Waimakariri's Community Outcomes were revised in preparation for the coming Long Term Plan and as such feed into the AMP. When deciding on

our work programme we should be cognisant of these and how they connect to National and Regional outcomes sought.

Table 4-1: Community Outcomes

<p>Social</p> <p>A place where everyone can have a sense of belonging...</p> <ul style="list-style-type: none"> • Public spaces are diverse, respond to changing demographics and meet local needs for leisure and recreation. • Council commits to minimizing the risk of social harm to its communities. • Housing is available to match the changing needs and aspirations of our community. • Our community groups are sustainable and able to get the support they need to succeed. • Our community has access to the knowledge and skills needed to participate fully in society and to exercise choice about how to live their lives. • People are able to enjoy meaningful relationships with others in their families, whanau, communities, iwi and workplaces. • Our community has reliable access to the essential infrastructure and services required to support community wellbeing. 	<p>Cultural</p> <p>...where our people are enabled to thrive and give creative expression to their identity and heritage...</p> <ul style="list-style-type: none"> • Public spaces express our cultural identities and help to foster an inclusive society. • The distinctive character of our takiwā, arts and heritage are preserved and enhanced. • Members of our community are able to engage in arts, culture and heritage events and activities as participants, consumers, creators or providers. • Waimakariri's diversity is freely expressed, respected and valued. • There is an environment that supports creativity and innovation for all. • Local arts, culture and heritage are able to make a growing contribution to the community and economy. (new)
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<p>Environmental</p> <p>...that values and restores our environment...</p> <ul style="list-style-type: none"> • People participate in improving the health and sustainability of our environment. • Land use is sustainable; biodiversity is protected and restored. • Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change. • Our district transitions towards a reduced carbon and waste district. • The natural and built environment in which people live is clean, healthy and safe. • Our communities are able to access and enjoy natural areas and public spaces. 	<p>Economic</p> <p>...and is supported by a resilient and innovative economy.</p> <ul style="list-style-type: none"> • Our district is prosperous and reflects the value of both paid and unpaid work. • Infrastructure and services are sustainable, resilient, and affordable. • Our district readily adapts to innovation and emerging technologies that support its transition to a circular economy. (modified and expanded) • There are sufficient and appropriate locations where businesses can set up in our District. • There are sufficient skills and education opportunities available to support the economy. (new) • There is access to meaningful, rewarding, and safe employment within the district.
--	--

4.4 Customer Research and Expectations - Measuring Performance

Levels of Service and Performance Measures

Council has a range of measures by which by which it can determine how well the community's needs and desires are being met. These range from customer service outcomes to technical measures used to evaluate contractor delivery. While Council's Rounding Community Levels of Service performance measures have been based around the DIA required measures, it is anticipated that in future more measures may need to be developed, however some work is required to ensure these are useful, simple, repeatable and that Council agrees to them.

Other performance measures Council has to take into consideration are those utilised from the Waka Kotahi Investment Benefits Framework, which assist the Agency in measuring whether desired results have been achieved from their investment.

The five Annual Report measures were set by The Department of Internal Affairs, with the targets set by council, and became the new LOS measures as of 1 July 2015. These will also be measured against for the next LTP (2024-2034).

The measures, targets and results for Waimakariri District Roding are shown in the table below. In the last three years Council has failed to meet its target measures for quantity of resurfacing carried out annually, reduction in numbers of fatalities and serious injury crashes (only met once in the last 3 years) and responding to service requests within the required target period. It is actively working to deal with the issues related to service request response, but the other two targets are to a certain extent governed by available funding, in particular the resurfacing. Crash rates are not only governed by engineering works, but many external factors and RCAs are limited by the influence they have in this area.

The process of reporting overall progress towards achievement of Community Outcomes to which the Roding and Transport Activity primarily contributes is managed corporately through the Council Policy Team to ensure consistency between all activities. Performance against these targets is reported quarterly.

Table 4-2: Community Outcomes Measures and Targets

Roads and Footpaths										
Community Outcome	Council Response	Level of Service	Measure	Targets (2024-2034)	Achieved					
					17/18	18/19	19/20	20/21	21/22	22/23
A place where everyone can have a sense of belonging.	Council commits to promoting health and wellbeing and minimizing the risk of social harm to its communities. Our community has equitable access to the essential infrastructure and services required to support community wellbeing.	The road network is increasingly free of fatal and serious injury crashes.	The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number. (DIA measure)	Reduction in fatalities and serious injury crashes	There were the same number of fatalities and 5 more serious crashes in Waimakariri District for the 2017/18 financial year compared with the previous one. (Overall increase)	One less fatality and six fewer serious injury crashes on Waimakariri local roads for the whole of 2018/19 financial year compared with 2017/18. (Overall decrease)	One more fatality and 9 fewer serious crashes on Waimakariri local roads for the whole of 2019/20 financial year compared with 2018/19. (Overall decrease)	There were 4 more fatalities and 5 more serious crashes on the local road network for the current financial year compared with the previous year. (Overall increase)	During the year there were 4 fatal crashes and 21 serious injury crashes. This is a reduction of five fatal crashes and 4 serious injury crashes from the previous financial year. (Overall decrease)	There were 2 fatalities and 6 serious injury crashes in the last quarter of the 2022/23 financial year, resulting in a cumulative total of 32. This compares with 26 in the 2021/22 financial year.(overall increase)
A place... ...where everyone can have a sense of belonging. ...that values and restores our environment. ...supported by a resilient and innovative economy.	Our community has equitable access to the essential infrastructure and services required to support community wellbeing. Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.	Sealed roads provide a level of comfort that is appropriate to the road type.	The average quality of ride on a sealed road network, measured by smooth travel exposure. (DIA measure)	95% for rural and 75% for urban roads	96%/81%	98% / 81%	98% / 80%	98%/80%	98%/84%	98%/85%
		Optimised programmes are delivered that are affordable and at a cost so that service productivity is improving.	The percentage of the sealed local road network that is resurfaced.(DIA measure)	5%	3.2% A larger proportion of asphaltting was carried out this year compared with chipseal, which impacted on the overall programme	6%	4.45%	4%. Higher quantity of asphalt means shorter length of road able to be resurfaced within budget	3.8% Covid affected Contractor resources. Remaining reseal programmed for start of new year's season	3.4%. High cost fluctuations have resulted in a reduction of the available budget. This combined with increased asphalt surfacing being completed has resulting in the resurfacing target not being met.
	The natural and built environment in which people live is clean, healthy and safe. Infrastructure and services are sustainable, resilient, and affordable.	Footpaths are safe, comfortable and convenient.	The percentage of footpath that falls within the level of service or service standard for the condition of footpaths. (DIA measure)	95%	98.9%	98.7%	99%	99%	99%	98%
		Requests for service will be responded to in a prompt and timely manner.	The percentage of customer service requests relating to roads and footpaths responded to within service delivery standards. (DIA measure)	95%	96%	97.1%	96.4%	94%	93.8%	83.6%. A backlog of service requests due to emergency events and staff shortages has resulted in failing to meet the target in the 2022/23 financial year. Work is continuing to reduce the backlog and it is hoped that these changes will allow the target to be met going forward.

4.5 Progress against DIA measures

Measure One: Crashes

The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number.

In terms of actual results, 2022/23 was seen as an increase in combined fatal and serious crash numbers, however looking at results over the last six years it can be seen that numbers fluctuate and no consistent trend can be determined.

Despite this, Council continues to try to reduce crash numbers in the District. This is covered off in more detail in a number of chapters of this AMP, including the Risk chapter, and the Life Cycle Management Plan. This is a difficult measure to achieve a successful result on because so much of the result depends on factors outside Council control, such as Government Policy, work by other agencies, the weather, vehicle design, the economy, even significant events such as Covid. Council has greatest control over the engineering it carries out (maintenance activities, improved minor safety/capital works such as intersection improvements and hazard removal) and the education programmes it delivers, but it also endeavours to work with partners such as police to achieve a synergistic delivery.

Measure Two: Ride Quality - Sealed

The average quality of ride on a sealed road network, measured by smooth travel exposure.

Council consistently reaches its targets for this measure, and performs well against its peers. However, this is a feature of a network with extremely stable subbase due to the majority of the roads being built on flood plains with a good free-draining aggregate. This is also a feature of its southern neighbours, and Council is performing slightly worse than these for this measure. There has also been a deteriorating trend on some specific categories of road which do not show up when averaged across the network. Council is programming interventions to ensure the impacts on the network of extreme weather events do not lead to further significant damage which in turn will impact on performance and customer satisfaction.

Measure Three: Network Resurfacing

The percentage of the sealed local road network that is resurfaced.

Although the 5% target may not always be required, this AMP has determined that this is currently a reasonable target for Council, at least until further work is done on validating the current model. One factor in the past which has led to a failure to achieve this is where a higher quantity of asphaltic concrete is laid, as this is a higher cost than chip seal, and a previously fixed budget can mean less resurfacing able to be achieved within a given seal season. However, in recent years there have been other governing factors as well, including high inflation resulting in less work being able to be achieved for the same budget. Council propose increasing the budget to ensure the quantity of required resealing can be met, as this

is more cost-effective long term than allowing the roads to deteriorate to the point where they require significant repair.

Measure Four: Footpath Condition

The percentage of footpath that falls within the level of service or service standard for the condition of footpaths.

Council has for some time now carried out a substantial programme of renewals, leading to a generally high level of footpath condition. However, since the last condition rating two years ago, there has been an increasing issue with tree root trip hazards. Council is currently carrying out comprehensive data collection to determine the quantum of the problem, and how best to prioritise repairs. While the condition is a long way off falling below the target, customer satisfaction has been declining, and this combined with the increasing issues identified, and Council will need to continue to monitor closely, programme appropriately and ensure the pedestrian network is kept safe, particularly with Waimakariri's older demographic.

Measure Five: Service Request Response

The percentage of customer service requests relating to roads and footpaths responded to within service delivery standards.

There has been some difficulty in meeting this target due to the high level of service requests received during adverse weather events. A new process has now been put in place and additional resources allocated to help deliver on this measure and ensure customer levels of service are met.

4.6 Who We Engage With

Customers and Stakeholders

Customers are the end users of the system. Expectations in the community are very important in determining future levels of service and in assessing how well the Council is performing with respect to current levels of service. Stakeholders may include those who have an interest in how the service is delivered to their customers or have an effect on their strategic directions and needs, from Environment Canterbury to individual developers, they include but are not limited to:

- Road users: including motorist, cyclists, and pedestrians.
- Disabled users: including wheelchair and mobility scooter users.
- The community: citizens and ratepayers.
- Customers of business.
- Business owners and operators.
- The farming community.
- Schools and community organisations.
- Visitors to the District.

- Consultants and contractors.
- The elected representatives (Councillors and Community Boards).
- Tangata Whenua.
- New Zealand Transport Agency.
- Regulatory and monitoring bodies including Environment Canterbury, Ministry of Health, Department of Conservation, Audit NZ.
- Environmental and recreational interest groups including Fish and Game New Zealand.
- Automobile Association.
- Road Transport Association.
- Environment Canterbury.
- NZ Police.
- Utility operators.
- Developers.

The Council endeavours to accommodate the interests of the customers and stakeholders and will involve them in the decision process as required by statute.

4.7 How We Engage

Direct Consultation

Since its formation in 1989 the Waimakariri District Council has adopted a policy of consultation with its communities. It has surveyed its residents a number of times over the last 24 years and has undertaken a number of formal consultations on Roding matters or that have relevance to this plan. The annual LTP process provides very useful indicators of the stakeholders' concerns and whether levels of service are appropriate.

The Council's knowledge of customer expectations and preferences has traditionally been based on:

- Three yearly Customer Satisfaction Surveys.
- Council's Long Term Plan (LTP).
- Feedback from elected members, the Community Board and Advisory Groups.
- Analysis of customer service requests and complaints.
- Feedback and submissions to specific projects such as walking and cycling projects, road safety projects, Woodend community street review, and town centre plans.

In addition to the previous methods, Council carried out a series of targeted consultations with individual stakeholders such as freight companies, Fonterra, the local bus operator, and Daiken, a wood products company.

Levels of Service Engagement

The Council consulted with the public on its proposed levels of service for Roding in mid-2005. This process included mailing information to all ratepayers, public meetings in six different locations in the district, publication of a detailed Level of Service consultation document, and receiving, hearing and considering submissions.

Customer Satisfaction Surveys

Eight customer satisfaction surveys have been conducted since 2004. Surveys are conducted three yearly, and they are designed to continually monitor a set of organisation-wide key performance areas. A random sample of Council residents across the district are asked to complete a survey with a number of questions which form a longitudinal study. Occasionally questions may be added or deleted, but it is recognised that for good measurement changes should be kept to a minimum.

The following results are collated from previous and current customer satisfaction surveys. The most recent survey was conducted in 2022 with results presented to management in the form of a report in April 2023.

Satisfaction with rural roads is at its lowest level since 2004. A series of flood events has affected all roads adversely, as has the increase in traffic in the district, in particular heavy transport.

There has also been a decrease in satisfaction with cycling facilities despite adding new off-street cycleways. However, written comments to the most recent Customer Satisfaction Survey indicate that this dissatisfaction is primarily targeted at a desire for more cycling facilities than are currently available.

It is not surprising that satisfaction has declined on unsealed roads, both with the multiple flooding events over the last couple of years which have caused substantial damage that takes time to repair, and increased traffic volumes meaning that the metal is being consumed at an increased rate over the previous years. WDC is endeavouring to rectify this in coming years with an increased allocation to ensure adequate wearing course on the unsealed roads.

The Council plans to continue to survey its ratepayers, including questions relating to satisfaction with roads, and associated facilities, in those surveys. Where it is practical to do so questions will be repeated from survey to survey to allow trends to be ascertained.

In general, Waimakariri's Customer Satisfaction survey results are better than its neighbours.

Table 4-3: Percentage of respondents satisfied with aspects of the Roding network

Aspect of Roding	Percent satisfied								Percentage Change						
	2001	2004	2007	2010	2013	2016	2019	2022	2001 to 2004	2004 to 2007	2007 to 2010	2010 to 2013	2013 to 2016	2016 to 2019	2019 to 2022
Town roads	83.6	88.7	82.3	87.8	70.2	83.6	84.1	81.4	+5.1	-6.4	+5.5	-17.6	+13.4	+0.5	-2.7
Town footpaths	63.1	74.8	75.4	82.9	65.3	81.1	83.7	78.2	+11.7	+0.6	+7.5	-17.6	+15.8	+2.8	-5.5
Sealed rural roads	74.1	79	74.7	81.8	80.2	77.2	72	66.1	+4.9	-4.3	+7.1	-1.6	-3.0	-5.2	-5.9
Unsealed rural roads	54.1	53.2	53.9	56	54.1	60.0	60.3	49.5	-0.9	+0.7	+3.9	-1.9	+5.9	0.3	-10.8
Off-street parking in Rangiora	53.4	48.5	38.1	41.8	33.0	53.9	60.5	62.5	-4.9	-10.4	+3.7	-8.8	+20.9	6.6	2
Rangiora town traffic flow system	20.9	22.7	47.6	36.8	23.3	60.5	60.5	-	+1.8	+24.9	-10.8	-13.5	+37.2	0	NA
Kaiapoi off street parking	42.7	47.4	48	51.6	39.4	49.6	53.2	44.0	+4.9	+0.6	+3.6	-12.2	+10.2	3.6	-9.2
Kaiapoi town traffic flow system	38	37.9	36.6	41.3	33.2	50.6	49.6	-	-0.1	-1.3	+4.7	-8.1	+17.4	-1	NA
Provision for cycling	NA	NA	33.1	39.5	29.3	34.4	54.1	52.6	NA	NA	+6.4	-10.2	=5.1	19.7	-1.5
Provision for park and ride	-	-	-	-	-	-	34.9	-	NA	NA	NA	NA	NA	NA	NA
Provision for park and ride Rangiora	-	-	-	-	-	-	-	37.7	-	-	-	-	-	-	NA

Provision for park and ride in Kaiapoi	-	-	-	-	-	-	-	27.1	-	-	-	-	-	-	NA
Small settlement roads	-	-	-	74.2	65.7	70.6	73.3	66.4	-	-	-	-8.5	4.9	2.7	-6.9
Small settlement footpaths	-	-	-	82.9	65.3	59.3	59.6	58.9	-	-	-	-17.6	-6	0.3	-0.7

Customer Service Requests

Another method of monitoring community expectations and current levels of service is by monitoring the customer service requests relevant to the activity. Relevant statistics for the last 6-years are shown below.

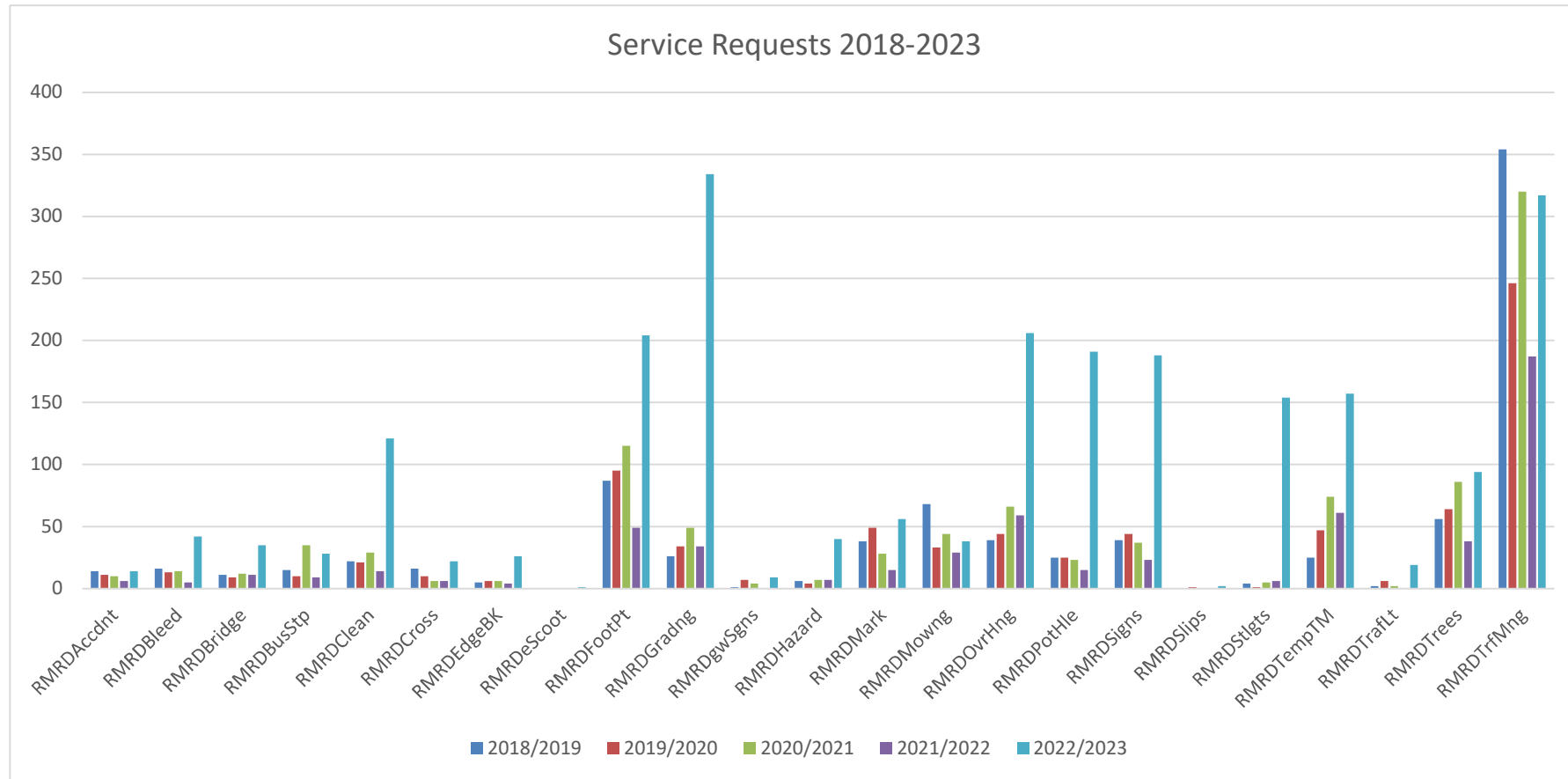
In previous years Traffic Management was the largest category by far for Service Requests, mainly because it encompasses a wide variety of issues, from speed limits to pedestrian crossings, road design etc. These are being reviewed to break them down into a more meaningful categorisation, but this will also include a review of the other categories to see which are still relevant – for example Earthquakes have not been an issue for a number of years.

2022/23 saw a substantial increase in Grading complaints. This supports Council's business case for increased metalling. Currently there has been insufficient investment in provision of an adequate base of metal to the roads. This, combined with high shoulder / poor drainage, and increased severe weather events has led to a significant decrease in levels of service in this area.

Footpath complaints have also increased significantly. As the general condition rating showed the quantity of poor and very poor footpaths is a small percentage of the whole network, these requests require further investigation to determine if there is any common pattern. This appears to be primarily related to tree roots uplift of concrete paths and damage to the path surface, however further investigation is required to determine if there are other problems that need to be dealt with.

Other issues that have increased in the number of requests received include overhanging trees, potholes and signs. An increase in potholes is likely due to regularly occurring severe weather events and the subsequent saturated pavement, resulting in more rapid deterioration. Wetter conditions can also cause increased growth during growing seasons.

Figure 4-2: Customer Service Request Trends



Investment Logic Workshops

In addition to the standard Council consultation such as the Satisfaction Surveys and Long Term Plan Consultation, Council has sought further views through a process known as Investment Logic Mapping. As part of the 2018 AMP, workshops were held with a small number of key stakeholders and were designed to uncover the key issues facing the district as they perceived them, examining the evidence around these issues to determine the extent these views were supported by solid information, and defining these issues. They were then examined to determine the benefits to the district and appropriate solutions to the issues.

Three workshops were held in Waimakariri District, the first with the Road Safety Committee as a representative user group to test the proposed format, then one workshop to determine the issues and one to define the benefits of resolving the issues. The Strategic Issues have been re-examined internally and amended to suit future directions, including national and regional. Although some progress has been made to implement the work programmes required to address these, there is still considerable work required to complete all this work, monitor and review.

For the 2021 AMP it was felt that work was still ongoing on many of the projects identified to mitigate or eliminate the problems. The new Problem Statements reframed the originals where appropriate, incorporating organisational and national direction. These were readdressed in 2022. It was felt that for the 21-24 NLTP the underlying issues and directions had not changed significantly, and it was considered the only action required was a refinement of the Problem Statements.

The resultant Problem Statements are:

1. *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*

Growth in population not only makes for increased vehicle density and more conflict, but also need for more physical improvements. The contractor also needs to maintain a higher level of service due to increased urbanisation. And in the interim transition to a multimodal network, there is a higher likelihood of conflict where alternative modes meet.

2. *Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, leading to effects ranging from temporary disruption to potentially life-changing impacts.*

These events have made it harder to maintain levels of Service as resources to carry out day to day work are diverted to deal with Emergency Works. The widespread nature of these events means many RCAs are facing the same issues, making skilled contracting staff harder to come by. It also impacts Council staff, as their ability to carry out proactive planning and management is impacted by the reactive nature of these works. From a customer perspective, the most current issues manifest as disruptions to lives and livelihoods as roads are cut off, but also the potentiality of unsafe road surfaces and bridges leading to fatal or serious injury.

3. *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, and social disconnect.*

Council has been actively working towards increasing opportunities for alternative modes. Levels of Service measures need to be expanded to provide a better means of demonstrating success in these areas.

4. *Road users on our network have little room for error or recovery from mistakes, which can result in fatal and serious injuries when crashes occur.*

Crash records show that in two of the last three years we had more fatal and serious crashes than in previous years.

These are often reflected indirectly in the Levels of Service measurements. Service requests tend to primarily focus on dissatisfaction with the status quo. Therefore, comments on footpaths and cycleways will tend to focus on trip hazards, rough surfaces, lack of maintenance etc. Requests for additional facilities, i.e. more cycle lanes, better public transport, will often feature in submissions to the Long Term Plan, and responses to the Customer Satisfaction Survey. Where these can be correlated reference will be made to the appropriate Problem Statement

Targeted Engagement

In addition to the data gained from Service requests and Customer Surveys, conversations are regularly held with key stakeholders, such as Police, education providers, and heavy transport operators, amongst others. This assisted not only in gaining a view into the high-level issues concerning these stakeholders, but also day to day detail where addressing these more minor issues could still assist in providing a more fit for purpose network to help people with their day to day lives, businesses etc.

4.8 Strategic Business Case Performance Measurement

Problems	KPI	Target	Result
Population growth and changing land use is resulting in increased vehicle use, making it harder to maintain safe and appropriate levels of service.	<p>Commitment to Waimakariri Freight Strategy from freight operators.</p> <p>Customer satisfaction with walking and cycling facility provision.</p> <p>The average quality of ride on a sealed road network, measured by smooth travel exposure. (DIA measure).</p>	<p>Commitment to Waimakariri Freight Strategy from freight operators.</p> <p>Increased approval rates for walking & cycling provision in customer satisfaction survey.</p> <p>95% for rural and 75% for urban roads.</p>	<p>Freight Strategy superseded by Integrated Transport Strategy.</p> <p>Approval rates declined.</p> <p>Target achieved.</p>
Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, leading to effects ranging from temporary disruption to potentially life-changing impacts.	Number of incidents where residents were affected by a road closure that could have been avoided with appropriate engineering measures.	<p>All high-risk, high impact routes reviewed annually to ensure they remain fit for purpose.</p> <p>Climate change review completed by March 2025.</p>	<p>Routes not defined.</p> <p>Ongoing.</p>
Lack of mode choice leads to social disconnect, increased need for more roads, environmental impacts due to vehicle emissions and lack of opportunity for safe and healthy activity.	<p>% of planned projects which assist with modal choice and access delivered.</p> <p>Park & Ride facility satisfaction.</p> <p>Bike stands / facilities.</p> <p>Number of people travelling by public transport.</p>	<p>100% delivery by June 2024.</p> <p>Increase in community satisfaction with Park and Ride Facilities.</p> <p>New bike stands installed as per cycle network strategy.</p> <p>Annual increase in boarding numbers.</p>	<p>Partially complete but change in funding may lead to some planned cycle network projects not being delivered. In all 6.2 km of new cycle facilities have been delivered to date in the current NLTP period.</p> <p>Park and Ride facility survey not been going long enough to comment on this.</p> <p>Funding for these was withdrawn by central Government.</p> <p>Between July 2021 and July 2023 there was an increase of 5,930 passengers, or a 17% increase.</p>

Problems	KPI	Target	Result
Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur.	<p>The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number (DIA measure).</p> <p>Reduction in 85th percentile speed on roads where able to be recorded through existing traffic counting system).</p>	<p>Reduction in fatalities and serious injury crashes.</p> <p>Reduction in 85th percentile speed on roads where able to be recorded through existing traffic counting system.</p>	Not achieved. Results in Table 4-2

4.9 Physical Measurement of Gaps – the One Network Road Classification (ONRC), and the Transition to the One Network Framework (ONF)

During 2013 the joint Local Government/Transport Agency implementation group, the Road Efficiency Group (REG), developed an integrated national road classification, the One Network Road Classification (ONRC).

The priority driver for developing a new single national road classification has been the nation-wide need to ensure the ongoing affordability of road maintenance and operations and the findings of the Ministerial Road Maintenance Task Force Report. The task force concluded that a national road classification could help to improve investment prioritisation.

The One Network Road Classification (ONRC) involved categorising roads based on the functions they perform as part of a national network. The classification is designed to help local government and Waka Kotahi Transport Agency to plan, invest in, maintain and operate the road network in a more strategic, consistent and affordable way throughout the country. It would also give road users more consistency and certainty about what standard and services to expect on the national road network.

A set of customer Levels of Service (CLOs) was developed for each classification (see below).

These Levels of Service were used to assist in assessing the level of funding NZTA considered appropriate from their funding perspective. Councils could choose to fund a higher level of service if that was the wish of their community. The CLOs that were developed were generally consistent with how the Waimakariri District Council is managed in practice..

However, what was noticeably missing from the ONRC was a consideration of the relevance of Place and Function as well as Movement (traffic volumes). Lack of measurability of pedestrian and cycling activity hindered the ability to properly allow for areas where these activities played an important, and sometimes primary, part in the function of certain roads.

This has led to a movement from the ONRC to the One Network Framework (ONF). This classification incorporates Planning considerations, so Place and Function will also be utilised to determine hierarchy of the network. For example, a road with a high pedestrian function but low traffic volume may be considered as requiring a higher level of service than a road with a similar volume of traffic but low pedestrian numbers in the suburbs.

Work has been undertaken to provide measurable and consistent measures for the ONF, to allow comparison across the country. Councils will still be able to set their own targets for these measures, however it is anticipated that there may be a minimum and maximum level of service set by Waka Kotahi New Zealand Transport Agency which will have an impact on the level of financial assistance made available. Where these do not align, Councils will have to choose whether to modify LOS to align with national standards / priorities or accept certain work will need to be carried out without financial assistance. This work has not yet been carried out and is identified as a future Improvement to the AMP.

It is anticipated by NZTA that by July 2024 all Councils will have identified their preferred future state for their Council's network as defined by the ONF.

Regional Levels of Service Results by ONF category

The Insights tool provided by Waka Kotahi allows comparison by ONF. Most of the charts provided describe some form of Technical Level of Service, and as such are incorporated in the Lifecycle Management Plan, however due to the small numbers in the ONF categories, where it is more relevant ONRC charts are still utilised.

Gap Analysis

The analysis of the current level of service allows the identification of gaps in the data, as well as what areas of service provision could be targeted for improvement in the future.

There are three gaps that should be considered:

- The current gaps between actual level of service and current level of service.
- The gaps that can be predicted to develop between intended and delivered levels of service in future years
- The gap between the ONRC Customer Levels of Service and the Council's Levels of Service (note that this may be replaced by ONF targets over the next year).

The gaps between actual and current levels of service are identified from network inspections, service requests and submissions to annual and LTP plan processes. When gaps are identified they are considered for improvement and programmed if budget allows, and need is justified. Where gaps cannot be improved then consideration is to be given to changing the level of service.

The gaps have been briefly summarised against the Problem Statements introduced earlier in this Chapter. Further information on how Council is managing compared to how the customers are experiencing the network is summarised in the discussions on Customer Satisfaction and

Service Requests, while the physical measures are explained further through ONF and ONRC measures, Waka Kotahi expenditure charts, and key asset summaries extracted from RAMM.

Gaps that can be predicted to develop due to actual or predicted change of use such as population growth, changing demographics or when there are funding constraints are identified and are discussed in the Demand Chapter of the AMP. These gaps should then be managed by obtaining increased funding, or changing the level of service in consultation with the community, for example accepting a lower Technical standard, or postponing/cancelling some proposed capital works.

The identified gaps in the actual assets, which in turn impacts on the Customer Experience and potential management of these gaps is discussed in greater detail in the Demand, Programme Business Case and Life Cycle Management Plan chapters.

Negative Effects of this Activity

The transport activity does have some negative effects on the community and environments and is summarised in the following table:

Table 2: Summary of Negative Effects

Negative Impact	Social	Economic	Environmental	Cultural	Mitigation
Dust from unsealed roads could impact on social amenity and air quality	✓		✓		Sealing roads in accordance to Council policy. Properly maintaining unsealed roads Note that the Council does not apply dust suppression on roads
Contaminants from surfaces entering natural waterways may have adverse effects on water quality			✓		Council manages road maintenance to comply with consent condition
Transport carries some risk and can lead to fatal and serious injuries	✓	✓			Ongoing road safety campaigns and education Engineering works through maintenance and improvements to the network
Maintaining a transport network is expensive, and diverts funds that could be used for other activities		✓			Ensuring value for money is considered in all expenditure

Positive Effects of this Activity

The positive effects of the transport activity are best summed up in Table 4-4.

Table 4-4: Summary of Positive Effects

Negative Impact	Social	Economic	Environmental	Cultural
Enables access to all activities supporting everyday life, such as work, social interactions, education, medical needs etc.	✓	✓	✓	✓
Provides an opportunity for healthy, enjoyable exercise, thereby supporting physical and mental well-being	✓	✓	✓	

4.10 Key Improvement Initiatives

Key improvement initiatives relating to the level of service include the following:

Table 4-5: Key LoS Improvements

Improvement action	Priority	Proposed Completion date	Owner and Key Staff
Consider engagement with community regarding government changes to GPS	Moderate	August 2025	APE, R&TM, STE
Review Levels of Service to determine their adequacy for Council needs	Moderate	June 2025	APE, R&TM, STE

Transportation Activity Management Plan 2024

Future Demand

June 2024



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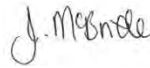
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Table of Contents

5	Future Demand	5
5.1	Background	5
5.2	Demand Drivers	9
	General.....	9
	Key Assumptions	12
5.3	Strategic context	13
	The Government Policy Statement (GPS) on Transport.....	13
	The National Policy Statement on Urban Development (NPS-UD).....	14
	Greater Christchurch Partnership	14
	Current and Historical Trends	14
	Population Age Profile	16
	Car Usage	17
5.4	Current and Historic Demand.....	17
	Utilisation of Roads.....	17
	Heavy Vehicle Demand	19
	High Productivity Motor Vehicles	19
	Footpath/Cycleway Utilisation	20
	Parking Demand	21
	Traffic Growth	22
	Effects of the Western Belfast Bypass and Christchurch Northern Corridor	23
	Footpaths and Pedestrian Demand.....	24
	E-Scooters.....	24
	Cycle Demand	25
	E-Bike Uptake.....	25
	Public Transport.....	26
	Shared Vehicles.....	26
	Impact of Community Expectations on Demand.....	27
	Impact of Climate Change on Demand	27
	Economic Development	28
	Changing Land Use	29

5.5	Meeting Demand.....	29
	Summary of Demand.....	29
	Ability to Meet Demand.....	30
	General.....	32
	Traffic Growth and Congestion on the Northern access into Christchurch	33
	Mitigation measures.....	33
5.6	Projects to Address Demand	33
	Southbrook Road - Rangiora	33
	New Rangiora Eastern Link Road.....	34
	West-Rangiora Route Improvements	35
	Skew Bridge Replacement.....	35
	Linkages to SH1 at Woodend	35
	Upgrades to Rangiora Woodend Road	36
	Town Centres	36
	Other Key Infrastructure (Not delivered by WDC)	36
	Other Ongoing and Future Potential Developments	36
	Other Towns	37
	Footpaths and Cycleways.....	38
	Public Passenger Transport.....	38
	Bridges	39
	General.....	39
5.7	Asset Projects to Meet Demand.....	40
5.8	Key Improvement initiatives	41

Figures

Figure 5-1: National versus District Population Growth	10
Figure 5-2: Changes in Population Age Groups	13
Figure 5-3: Waimakariri Population Estimates 2022-2053.....	16
Figure 5-4: Projected Demographic Changes 2018 - 2048.....	16
Figure 5-5: ONRC Length by category and urban/rural split.....	18
Figure 5-6: Annual quantities of HPMV permits by calendar year.....	20
Figure 5-7: Monthly Cycle counts from 2021 to 2024	21
Figure 5-8: Quantity of Imported Wheeled Pedestrian Vehicles	26
Figure 5-9: Figure 5 10: Vehicle Kilometers Travelled (VKT) Trends.....	32

Tables

Table 5-1: Major Projects and Costs	8
Table 5-2 Summary of the Waimakariri District Roads 2022/23 (ONRC).....	19
Table 5-3: Key Demand Factors	30
Table 5-4: Major projects to meet demand.....	40
Table 5-5: Key Demand Improvement Initiatives.....	41

5 Future Demand

5.1 Background

Many of the figures derived in this chapter are derived from Census 2018 data. It is almost 6 years since the previous census, and data from the 2023 census is expected available from May 2024. While occasionally estimates/projections have been used, it is considered in many cases that it would be better to wait until more accurate and up to date data is released prior to updating this information. Any estimates derived from projections should be viewed with this caveat.

Waimakariri District is a member of the Greater Christchurch partnership, which is a high growth area under National Policy Statement direction. The approved Future Development Strategy, (FDS), for Greater Christchurch anticipates steady District growth from the current population of 67,900 to around 82,000 by 2033, and in the order of 102,000 by 2052. Up to 15,000 additional homes are expected to be required to accommodate population change over the next 30 years. It is essential to ensure growth is well planned, and an integrated approach taken to land use and transport.

The need to provide better transport options for the Community and continuing changing demographics has refocused Waimakariri's transport direction over time. The population has indicated both through the customer satisfaction surveys and increasing uptake, that this is a community seeking greater opportunities to engage in healthy, environmentally friendly travel both for recreation and for commuting. There is an expectation that infrastructure will be provided so that this can be done safely. In addition, infrastructure needs to be provided locally, not only to reduce the likelihood of residents seeking these opportunities elsewhere, but to also attract visitors from outside of the district.

With age there can come an increase in health issues which often impact ability to drive. By providing options around travel modes, WDC supports this change in lifestyle which many more of the community are seeking, both for an aging population, and for younger families who may be considering moving to the district. A factor in developing improved infrastructure is that many of our urban areas and settlements are within relatively easy commuting distance from each other.

As more people choose to live in the district, providing them with options around how they travel them to consider the use of alternate modes of transport and can help reduce the number of vehicles on the road. This can mean fewer new roads and associated assets need to be built and maintained, and existing roading infrastructure can be better utilised.

Walking & cycling infrastructure is less expensive to build and maintain than roading infrastructure built for cars and trucks. Thus, responding to the demand of a growing community with a multi modal approach provides cost-effective environmental, social and health benefits to the community, and Waimakariri is working to meet these demands through the programmes and projects described in its Transport Activity Management Plan and the Long Term Plan.

While District job self-sufficiency is continuing to increase, there remains a significant commuter workforce available to Christchurch businesses that places peak demand on the capacity of the transport network. These employment areas are however spread across a large area within the Greater Christchurch area and as such establishing viable public transport routes can be challenging (around 40% of the workforce worked outside the Waimakariri District in 2021, down from 60% three years prior).

Capacity increases as well as a range of mode change initiatives to mitigate these effects are continuing. Public transport provides an alternate mode to the private motor vehicle, and an opportunity to indulge in activities only possible when not personally driving (e.g., working or resting). As the public transport network is improved to better meet the needs of potential customers, public transport will also offer an opportunity to transport more people with less impact on the road network.

In 2020, the Greater Christchurch Partnership prepared the PT Futures Business Case Foundations & Rest of Network Business Case, which set out a strategic approach to the development of the Greater Christchurch public transport system over the next decade. This was endorsed by all partners including the Waimakariri District Council in December 2020. The programme of works includes service delivery upgrades (delivered by ECan as the PT Service Provider), with supporting infrastructure delivered by Waimakariri District Council within the district.

Direct bus services were introduced in 2020 and have proven to be very popular, being fast, limited stops service, between Rangiora - Christchurch and Kaiapoi – Christchurch. To support the use of public transport, five Park & Ride sites have been developed, three in Rangiora and two in Kaiapoi. It is anticipated that as public transport services are improved, demand for these sites including complementary facilities (bike stands, lockers, showers / toilets etc.) may also be required, as well as the possible further expansion of the sites themselves. A further Park & Ride site is being investigated in the Woodend / Ravenswood areas, to also be able to connect to existing public transport routes.

It is anticipated that an increase in walking, cycling and public transport usage will lead to a corresponding reduction in car usage. The provision of a well-linked walking and cycling network, as per Council's "Walking and Cycling Strategy" and "Cycling Network Plan" assists by providing a network of walking & cycling facilities at different user grades to provide options for different confidence levels and opens up options for travel, which in turn leads to greater transition to alternative modes for commuting where possible. The current focus is to provide improved linkages into towns from major cycleways including connections to key activity centres and schools (which is currently a gap).

Much of the population growth in the district is currently occurring in the main centres of Rangiora, Kaiapoi, and Woodend (including Pegasus and Ravenswood), and this is expected to continue. There is also expected to be some continued demand for rural-residential and larger "lifestyle" type blocks close to Christchurch city. Meeting this demand is likely to result in ongoing land use change from large agricultural blocks to more rural-residential type blocks

close to townships. With the District Plan now requires subdivision to retain a minimum lots size of 20 hectares in many rural areas, extra pressure will be put upon those remaining rural areas closer to the main urban centres where subdivision into smaller lifestyle blocks may still be possible.

Ongoing gravel extraction to support further subdivision will continue to impact on the network, both from maintenance and safety perspectives.

The anticipated population growth, demographic changes, car use trends, and land use changes would suggest the following transport trends in the future:

- An increase in the demand for cycling facilities and corresponding increase in the numbers of cyclists.
- An increase in pedestrian demand and footpath usage, including an increase in use by vulnerable users such as the elderly.
- A need for improved infrastructure to support the increasing number of aging residents in the District, such as intersection improvements, footpath repairs (trip hazards), road marking and signage improvements.
- An increase in heavy vehicle numbers and size.

Generally, the District's roads and intersections have more than enough capacity to comfortably carry current traffic volumes. It is expected that most of the roads will continue to operate within their capacity for some time. However, locations remain within the network that are having difficulty accommodating current traffic volumes safely. Future growth is likely to put these locations under further strain, with longer delays at peak times being more likely in the future. A Capital Works Programme has been designed for the next 10+ years to address these issues.

In addition to the projects listed below, as mentioned previously, some areas of the network are experiencing much heavier wear due to the high numbers of heavy vehicles, and these have a significant impact on pavements and can take a disproportionate amount of the maintenance budget. Cycling is also more challenging to accommodate on the road network itself, particularly when there is an increased focus on meeting the freight need.

Major programmes and costs to meet the demand described above are shown in the following table. The full detail is shown in Section 7: Financial Summary. It should be noted that while some of these appear to be LOS projects (e.g., safety driven), the safety issues are as a result of increasing traffic volumes, which then increase the exposure and hence the risk of a crash occurring.

Table 5-1: Major Projects and Costs

Project	\$M	When
New Rangiora Eastern Link Road	35.1	2024/25 to 2029/30
West Rangiora Route Improvements	14.2	2024/25 to 2033/34
Skew Bridge Replacement	12.0	2024/25 to 2028/29
Kaiapoi to Woodend Cycle Connection	2.2	2031/32 & 2032/33
Woodend Improvements in conjunction with Woodend Bypass (Note: may need to be moved depending on Bypass progress)	2.0	2026/27 to 27/28 & 2031/32 to 2032/33
South Eyre / Giles / Tram Rd Roundabout	1.9	2026/27 & 2027/28
Tram Rd Route Improvements (widening, intersection improvements, delineation)	7.7	2023/24 to 2033/34
Rangiora / Woodend / Tuahiwi / Boys Rd Intersection Improvements	1.9	2026/27 & 2028/29
Robert Coup Drive / Ohoka Rd Intersection Improvements	1.2	2026/27 & 2027/28
Southbrook Future Improvements	3.9	2025/26 to 27/28 & 2031/32 to 2032/33
Northbrook / Ivory St intersection Improvements	1.5	2027/28 & 2028/29
North-West Rangiora Arterial – Lehman's to River Rd	2.2	2029/30 & 2030/31
Ravenswood Park'n'Ride	1.5	2026/27 & 2027/28
North South Collector Rd	6.0	2024/25 & 2028/29

The 'demand' needs above are generally based on an underlying assumption that transport in the next 10 years will be delivered in similar ways to transport in the comparatively recent past. While new technology is being introduced, it is unlikely to have a significant impact on motor vehicle use over the span of the LTP. Bigger effects on the network will likely come from the increasing growth of in population and an increase in fossil fuel costs over the life of the long term plan, or alternatively fuel taxes or congestion charging. There is still significant development planned for Waimakariri and this will lead to increasing demand in a number of areas. Rapidly increasing fuel costs or alternative forms of travel charging could impact the community and encourage the use of alternate modes such as public transport, in an effort to reduce overall household costs.

The following are the anticipated key demand related issues:

1. Continued increased growth in the Waimakariri District leading to more infrastructure needing to be provided and managed.
2. Increased heavy transport, both initially as construction materials are brought in, and longer term with the need to bring goods to service the growing population.
3. Safety issues caused by increasing volume of traffic. This includes maintenance and operation of the network.
4. Provision of walking & cycling infrastructure to support increasing Community demands, including supporting infrastructure such as cycle stands, repair stations, EV bike charging stations etc.
5. Provision of adequate infrastructure for changing vehicle fleet needs, including EV charging for cars, trucks, bikes, scooters etc. It is noted that EV charging for private and large vehicles is likely to be largely privately provided. Consideration may need to be given to how support can be provided for charging for public transport services. This is more likely in the form of spaces for charging facilities.
6. Provision of adequate infrastructure to support the use of Public Transport, including Park & Ride facilities, bus shelters, bus stop seats, bike stands etc.

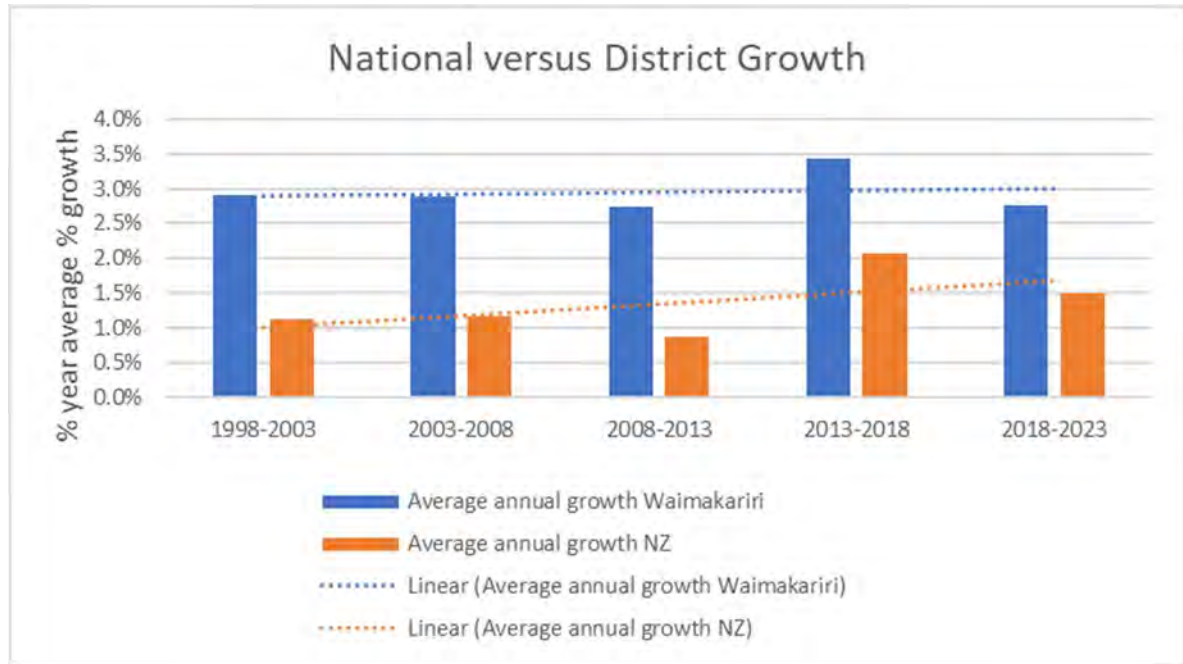
The development of technology, and changes in public attitudes towards transport will be monitored, along with population, demographic and land use trends. Expected transport demand will be reviewed and revised accordingly.

5.2 Demand Drivers

General

The Waimakariri district was one of the five fastest growing (measured as a percentage growth rate) local authorities in New Zealand in seven of the ten years between 2007 and 2016. At the 2018 census growth was 3.81%. In 2019, the national ranking dropped to 11thth, and growth now sits at around an estimated 2.7%, (67900-69,760) compared with an average estimated growth rate for New Zealand of 2.3% (5117100-5236300), from 2022-2023. However, this increase in the national population growth is very recent, compared with the 5 year average of 1.5% as shown below.

Figure 5-1: National versus District Population Growth



Growth in the district has largely been concentrated in the towns of Rangiora, Kaiapoi, and Woodend (including Pegasus and Ravenswood), and in the rural areas in the eastern areas of the district. Much of the growth in the rural areas has been in Residential 4A and 4B zones (typically referred to as Rural/Residential development), and in 4ha sites in Rural zones. 4ha was the minimum lot size in rural zones, however this was recently changed through the new District Plan. These sites were often purchased as “lifestyle” blocks rather than traditional rural “farming” operations, however the change to zoning rules has meant that a large part of the district now has a minimum lot size of 20 hectares, which will limit increasing densification in rural areas.

Travel time from Waimakariri to Christchurch has reduced considerably since the opening of the Western Belfast Bypass and the subsequent opening of the Christchurch Northern Corridor (CNC) in December 2020. As a result, further decreases in travel time are unlikely to influence decisions around buying or building in Waimakariri.

Figures on travel for employment show the percentage of Waimakariri residents working in Christchurch has decreased from 60% to 40% between 2018 and 2021, meaning there has been a significant increase in employment opportunities within the Waimakariri District.

The overall population growth in the district is expected to impact on the Roding and Transport network in a number of ways, including a greater demand for travel, driven by the need to access key activity centres, education, health services and employment. This demand is likely to be met by a combination of the following:

- Increased use of walking, cycling, or other micro mobility modes.
- Increased use of public transport.

- Reduce vehicle kilometres travelled. Without other interventions, an increase in vehicles is likely to result in increased crash numbers and congestion.
- Appropriate parking, improved town centre footpaths and amenity areas, bike stands and charging / repair stations.
- Improved infrastructure for walking & cycling (e.g., separated paths, neighbourhood Greenways, separated cycle lanes, shared paths etc.).
- Improved infrastructure to support public transport (e.g., bus shelters, real time information etc.).
- Improved first/last kilometre connectivity – facilities to support fuller uptake of walking & cycling with better end of journey facilities, and connectivity for mode change locations, such as bus stops, park & ride sites, key activity centres and other high generator areas. Includes installing footpaths where there currently are none, bike stands, charging / repair sites, safe crossing points, lighting for security etc.
- In terms of economic development, the construction, retail, manufacturing and health / community sectors in Waimakariri District are expected to continue to grow over the next three to five years.

One of the issues identified with on-going growth is maintaining access to and from Sh1, Christchurch City and Lyttleton Port. Restrictions to the ability to travel to and from these locations are likely to have impacts on freight servicing businesses. Key routes within the district such as Southbrook Road are already nearing capacity and cause the community access issues.

With growth to the north-east of Rangiora and further development planned to occur, this will increase traffic volumes accessing SH1 through Southbrook in future years. As such the timing of the construction of the Rangiora Eastern Link Road is critical, to ensure that this development can occur and is well supported by transport infrastructure. The new road has been brought into the Long Term Plan to align with the timing of development in this area, being 2024/25 to 2029/30.

The West-Rangiora Route includes Ohoka Road, Skewbridge Road, Flaxton Road, Fernside Road and Lehman's Road. This route provides an important alternate to Southbrook Road / Lineside Road for access between Rangiora and SH1 and connects directly into the Southbrook area which includes a large number of commercial and industrial businesses. There are a number of improvements required along the West-Rangiora route over the next 30 plus years to accommodate continuing growth in the area, and a key constraint on this route is Skew Bridge. Skew Bridge is narrow in nature, has challenging approach geometry and is not able to accommodate HPMV vehicles or pedestrians / cyclists safely, which restricts use and access to the state highway / Silverstream. The bridge has around 17 years life remaining, however continues to be a safety concern and access constraint on an important transport connection within the district.

Dairying continues to be an important activity within the district, with a number of dairy conversions being undertaken over the last 10 years. While the rate of conversion has slowed, the dairying operations themselves continue and with this requires good infrastructure to

support the operations. This has been particularly challenging particularly as the fleet has moved toward HPMV vehicles. Dairying is more labour intensive than the cropping and forestry that it has replaced over the years. It requires daily pick up by milk tankers and has an increased number of people living in the area, which means an increased number of heavy vehicles using the roads. Many of the roads servicing these areas are unsealed and their condition can change rapidly in response to weather extremes and increases in traffic volumes.

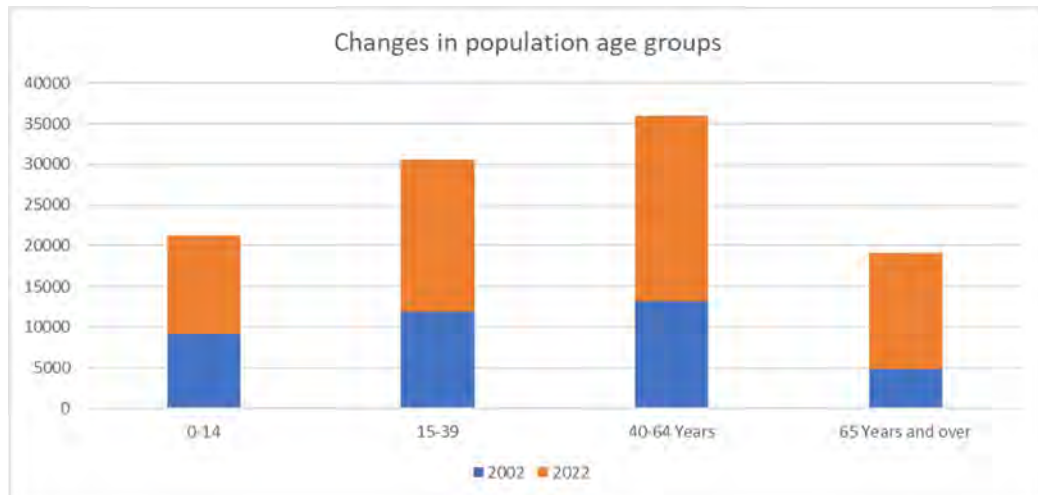
Ongoing construction activity and development in the Greater Christchurch area is continuing to impact the district's roads. This includes trucks carrying aggregates from the Waimakariri, Ashley and Eyre Rivers (and other sources), within the district and also into Christchurch, along the district's roads.

Key Assumptions

The key assumptions on community trends likely to impact on the long-term provision of transport in the Waimakariri District are:

- An increasing number of residents will work within the district. Between 2018 and 2023 this figure rose from 40% to 68%, as further employment opportunities were provided within the district. This trend towards self-sufficiency is anticipated to continue.
- Continued rural subdivision - the changes to rural property sizes in the new District Plan is likely to result in more traffic closer to urban areas and a slowing of development in the west of the District. Longer term this will result in a lower increase in the number of daily rural commutes.
- The continuing trend of forestry on hill-country and dairying and horticulture on the plains which are served by the Waimakariri Irrigation Scheme is anticipated to continue.
- The population is largely located in the eastern side of the district and is largely urban based with associated expectations of amenities such as shops, cafes etc. Population projections expect the proportion of urban versus rural population to remain much as it is now. In practice this means more people, and hence transport users, are likely to be urban based.
- The increasing number of older people in the towns is likely to increase demand for the pedestrian network to cater for motorised and other mobility devices. Population trends in WDC show an increasing number of over 65's in coming years.

Figure 5-2: Changes in Population Age Groups



- Increasing public awareness of environmental issues is expected to result in a greater demand to protect sensitive areas, upgrade damaged ones, and preserve areas of open space. In particular, the need to treat stormwater from roads is likely to increase costs associated with stormwater management.
- Increased awareness of the impacts of vehicle emissions on climate change, is expected to result in increased demand for improved walking and cycling facilities, and public transport services and infrastructure. Resident satisfaction survey written feedback indicated a high desire for increasing cycling facilities. Increased vehicle operating costs make PT, non-motorised, and EV travel more cost effective and thus popular.
- Increasing fossil fuel costs, fuel taxes and/or congestion charging may impact the way in which people choose to travel and may result in a move towards alternate modes including public transport due to cost.

5.3 Strategic context

The Government Policy Statement (GPS) on Transport

Transportation activities of local authorities are co-funded by central government from the National Land Transport Fund. Revenue raised from Fuel Excise Duty, Road User Charges, and motor vehicle registration and licensing fees supports this fund. The funding framework is currently undergoing a national review.

The standard Funding Assistance Rate (FAR) from the Fund for Waimakariri District is currently 51%.

Assistance from the Fund is guided according to central government's strategic priorities. These strategic priorities are outlined in the Government Policy Statement on Land Transport (GPS). The GPS covers a 10-year period and is reviewed every 3 years. The current GPS was released in September 2020, and covers the period from 2021 to 2031*.

** Note – The GPS 2024 was released on 1 July 2024, which was after the development of this plan.*

The Government release a draft amended GPS in March 2024, and a final GPS is due to be released by the end June 2024.

Particular areas of focus in the previous Government's GPS included resilience and climate change, including emphasis on providing for alternative transport modes. This is likely to be changed under the new Government, and as such could affect availability of co-funding in these areas. However, due to the short timeframe between requirement for submission of the Activity Management Plan to NZ Transport Agency (Waka Kotahi), no major changes will be made to this AMP, although there may be some changes required to the proposed capital projects.

Transport activities that are not aligned with the GPS Strategic Priorities are unlikely to receive funding from the Land Transport Fund.

The National Policy Statement on Urban Development (NPS-UD)

The National Policy Statement on Urban Development (NPS-UD) was implemented in August 2020. One of the provisions of the NPS-UD was to require Tier 1, 2, and 3 territorial authorities to remove minimum parking provisions from their District Plans. Waimakariri District is a Tier 1 territorial authority. Minimum parking requirements for developments will therefore need to be removed from the Waimakariri District Plan.

The NPS – UD encourages the use of comprehensive parking management plans to manage the effects associated with the demand and supply of car parking.

Greater Christchurch Partnership

Agencies which have responsibility for transport within the Greater Christchurch area include Christchurch City Council, Selwyn District Council, Waimakariri District Council, Environment Canterbury, and NZ Transport Agency (Waka Kotahi).

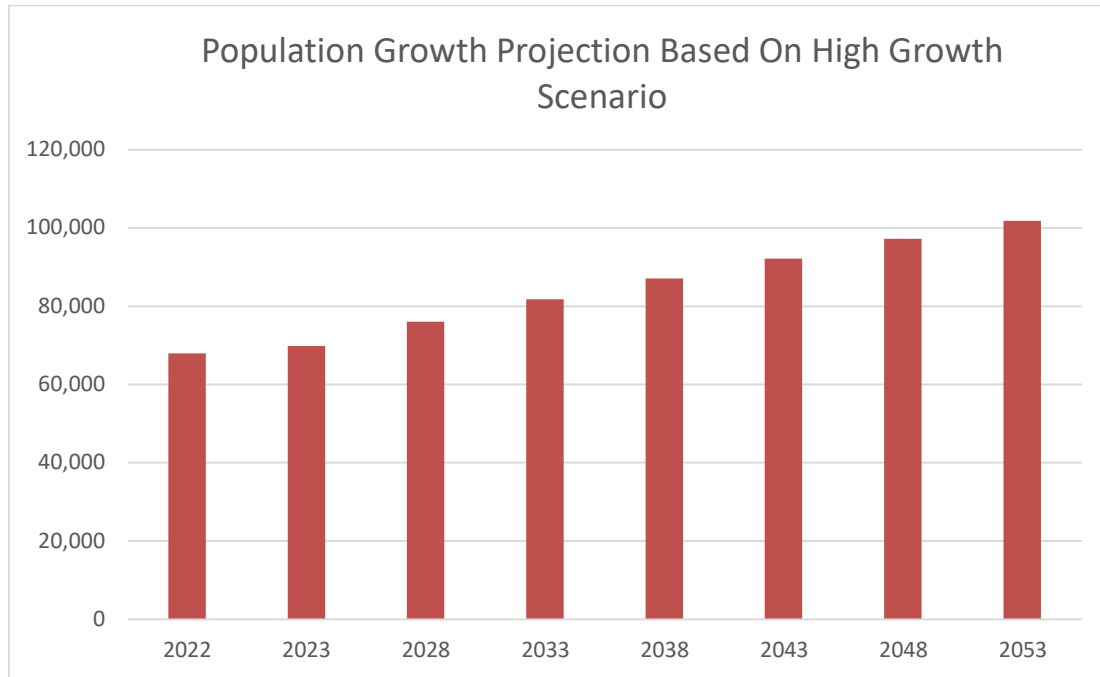
Historically, there have been concerns expressed about increasing vehicle numbers travelling between Waimakariri and central Christchurch via the urban areas north of central Christchurch. In 2020 the new Northern Corridor opened which linked the Northern Motorway with the top of Cranford Street and Queen Elizabeth II Drive. As part of this project, a third lane each way was added to the Waimakariri River Motorway Bridge, along with a walking & cycling path. The south bound third lane is a full time managed "T2" lane, and a morning peak "T2" lane is in operation on the Northern Corridor in the morning peak. Going forward the focus will be on better utilisation of infrastructure through Travel Demand Management and enforcement of the managed lanes.

Current and Historical Trends

- Figure 5-3 shows the Waimakariri population and growth rates for the period from 1996 to 2016. Actual census data from the 1996, 2001, 2006, 2013 and 2018 census results are shown as blue circles on the graph. This data shows the following trends:

- Waimakariri has had an increasing population trend over the past twenty-year period. This has equated to a population increase of 96% from 33,000 in 1996 to an estimated 67,900 in 20231.
- The population growth has resulted in an average growth rate of 2.8%. As a comparison, the overall growth rate for New Zealand for the same time is 2.2%.
- The Waimakariri district has been one of the faster growth districts in New Zealand over the past fifteen years.
- From StatsNZ
 - NZ Population growth rates are projected to be higher in 2018–2033 than in 2033–2048, due to population ageing and a narrowing gap between births and deaths.
 - Of New Zealand’s 67 territorial authority (TA) areas, 65 are projected to have more people in 2033 than in 2018, and 61 are projected to have more people in 2048 than in 2018 (medium projection). The highest projected population growth rates over the 30-year period (2018–2048) are for Selwyn (an average annual increase of 2.2 percent), and Waikato and Queenstown-Lakes districts (both 1.7 percent).
 - Fourteen other TA areas have projected growth higher than the national average (0.7 percent). These include Central Otago and Tauranga districts (1.3 percent), Hamilton (1.1 percent), Whangārei and Mackenzie districts (0.9 percent), and Auckland, Waipa, Far North, Tasman, and Hastings districts, and Chatham Islands territory (all 0.8 percent). Far North, Tasman, and Hastings districts, and Chatham Islands territory (all 0.8 percent).

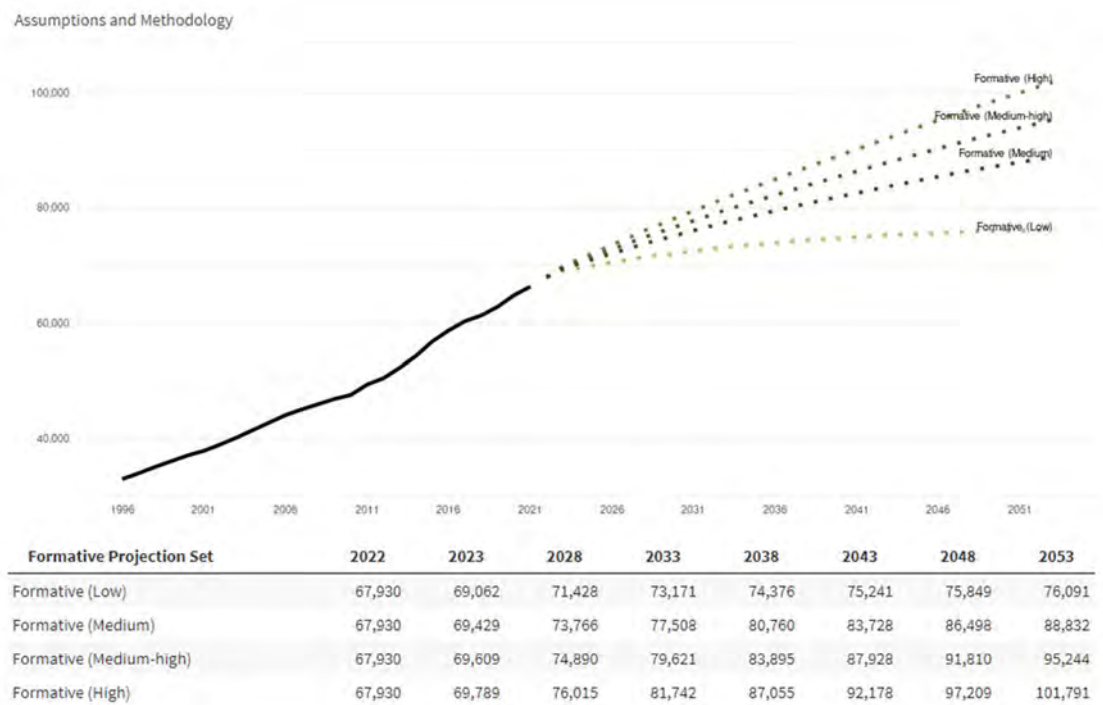
Figure 5-3: Waimakariri Population Estimates 2022-2053



Population Age Profile

Information company Formative have prepared estimates of demographic changes under each of their population growth scenarios. Figure 5-4 shows projected Demographics Changes to 2053. Council has chosen to adopt the high growth scenario.

Figure 5-4: Projected Demographic Changes 2022 - 2053



Car Usage

As the population grows so generally does the volume of motor vehicles using the roading network. The OECD International Transport Forum (2013) concluded that car use was declining internationally. However, reductions in car usage were generally less pronounced in rural areas.

The proportion of individuals who drove to work in New Zealand (either in a private vehicle, or a company vehicle) increased from 60% in 2001 to 62% in 2006. It then stabilised at 62% in 2013, increasing to 69% in 2018.

In Waimakariri the proportion increased from 65% in 2001 to 66% in 2006, 67% in 2013, and 78.2% in 2018. This will be updated once new Census statistics are released.

Population growth in the district is expected to impact on the transport network in a number of ways, including:

- An increase in the number of residents creating more demand for travel, resulting from the need to access key activity centres, education, health services and employment areas.
- More people accessing the key activity centres, resulting in increased pressure on parking, town centre footpaths, amenity areas and other supporting facilities.
- Increased demand for walking & cycling facilities including footpaths, shared paths, separated cycleways and neighbourhood Greenways.
- The growth in private motor vehicle travel is the most significant in terms of volumes and the cost of providing solutions. The cost to maintain the roads is likely to increase as the traffic volumes increase.
- Increased demand for EV chargers for vehicles and electric bikes / scooters and other micro mobility devices.
- Increased demand for improved public transport services and infrastructure (including bus shelters, real time information and supporting facilities).

5.4 Current and Historic Demand

Utilisation of Roads

In 2013 a hierarchy of roads was introduced to the country to classify by traffic volume, called the One Network Road Classification (ONRC). While this was an effective means at the time, it focused on the road use purely as a corridor with a focus of getting people from A to B. ONRC enabled RCA's to better focus decision making and for comparisons to be made across RCAs nation-wide.

ONRC is currently in the process of being replaced by the One Network Framework (ONF), which operates around Place and Movement framework. This framework recognises that streets not only keep people and goods moving, but they're also places for people to live, work and enjoy. The ONF is designed to contribute to improving road safety and build more vibrant and liveable communities.

ONF marries network-wide and local considerations. At its heart, the ONF organises transport links by their place and movement roles into road and street types. The ONF is a tool to help establish network function, performance measures, operating gaps and potential interventions for each road and street type. Movement and Place has many uses at the strategic network planning and development level, as well as at the detailed project level.

Local considerations

State Highway 1 (SH1) passes through the District, and State Highway 71 Lineside Road (SH71) connects Rangiora with State Highway 1 and Kaiapoi.

SH1 is categorised as a national road under the ONRC, and SH71 as an Arterial. Being state highways, both these roads are administered by NZ Transport Agency (Waka Kotahi). There are no other National or Regional roads within the Waimakariri District.

Figure 5-5 lists the total length of road and percentage of network for each ONRC category of road in the district.

Figure 5-5: ONRC Length by category and urban/rural split

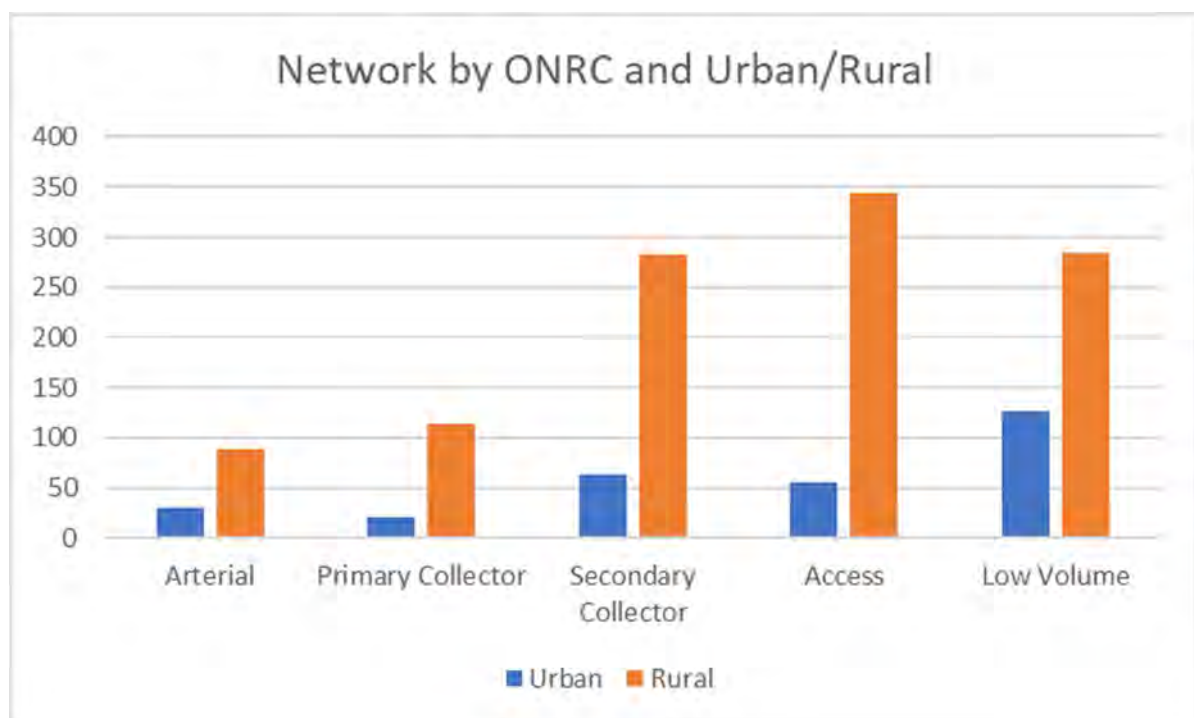


Table 5-2 Summary of the Waimakariri District Roads 2022/23 (ONRC)

ONRC	Total Length (Km)	Urban (Km)	Rural (Km)	Sealed (Km)	Unsealed (Km)	Lane (Km)	Urban Journeys (M VKT)	Rural Journeys (M VKT)	Annual Total Journeys Travelled (M VKT)	Percentage of length
Arterial	123	31	92	123	0.3	246	90.3	148.2	238.5	8%
Primary Collector	141	22	119	139	2.4	280	28.6	78.2	104.8	9%
Secondary Collector	393	87	326	361	32	775	26.2	52.6	78.8	25%
Access	489	56	413	202	267	811	6.2	13.4	19.6	29%
Low Volume	459	123	336	154	305	698	4.0	3.9	8.0	29%
Not Required	4.1	4.1		4.1		8.1				0%
Unclassified	3.6									0%
TOTAL NETWORK	1,594	303	1,287	983	607	2,818	153.4	296.2	449.6	

Heavy Vehicle Demand

The roading network carries a significant amount of heavy traffic due to the close proximity to Christchurch, and land-use activities such as dairying, cropping, forestry and gravel extraction.

Major employers and freight generators in the district include:

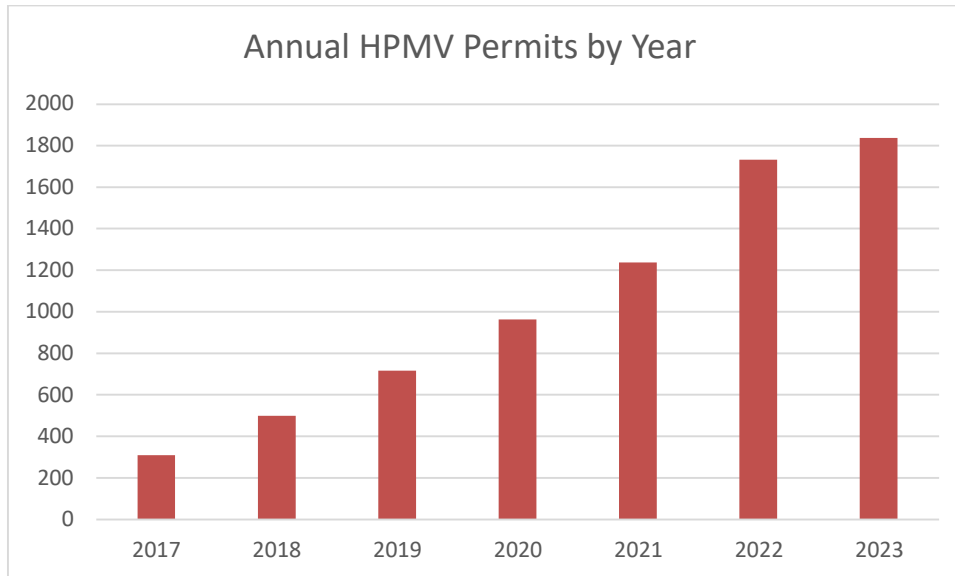
- Daiken (Sefton) - 120 staff, no reliable rail service, raw materials inbound from mills, outbound to Lyttleton Port Company primarily via Ashley River Bridge and through Rangiora (via Ashley Street / Ivory Street / Percival Street / Southbrook Road)
- Hellers (Kaiapoi)
- Luisetti Seeds (Rangiora)
- McAlpines (Rangiora)
- Rangiora Bakery (Rangiora)
- Steve Murphy (Kaiapoi)
- Fonterra (Darfield)
- Hallmark Group Doors (Rangiora)
- Grocery stores
- Sutherland Timber (Kaiapoi)
- Gravel extraction
- Readymix Kaiapoi

Weights will also vary, with ReadyMix for example carrying up to 57.8t per load, through its HPMV permit.

High Productivity Motor Vehicles

High Productivity Motor Vehicles (HPMV) were introduced in 2011. An HPMV exceeds the maximum length and mass requirements for standard vehicles and operates under a route specific permit issued by the Road Controlling Authority. Permits are valid for a period of two years. *Figure 5-6* shows the number of HPMV permits issued for travel on Waimakariri local roads per year since 2017. There has been continual growth, and 2023 is likely to be higher than currently shown due to December 2023 statistics not being fully compiled prior to chart production.

Figure 5-6: Annual quantities of HPMV permits by calendar year.



While there was a levelling-off of permits between 2015 and 2017, numbers then increased sharply between 2017 and 2020 (from 290 to 967). Council is currently working with Fonterra to investigate whether a general permit could be implemented to avoid having to re-apply each time there is a route change. This could reduce the number of permits but not the number of vehicles travelling. The permits themselves do not reflect the number of trips being made by a particular vehicle on a permitted route.

The five major industries operating with HPMVs in the district are dairying, logging, livestock cartage, general bulk cartage, and road metals / aggregate cartage.

Footpath/Cycleway Utilisation

No formal assessment of footpath usage in the district has been carried out, however it is expected that the following factors are likely to have resulted in changes in footpath usage in the district:

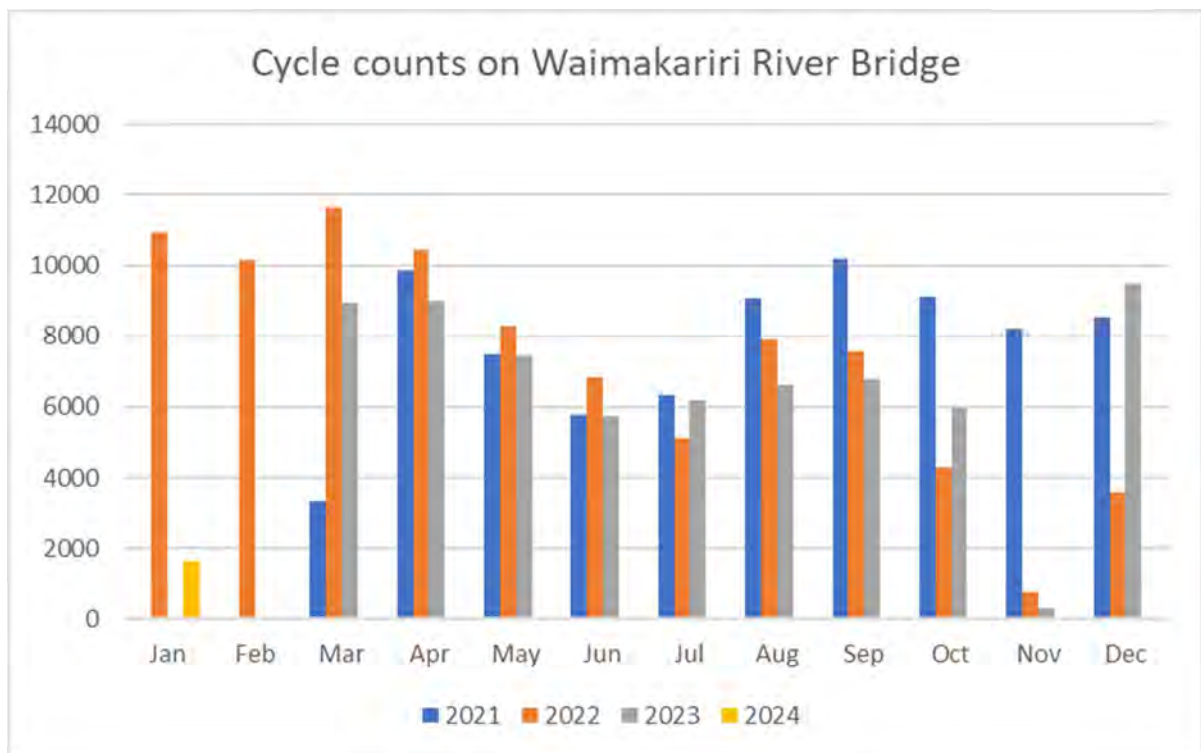
- Renewal and revitalisation of the Kaiapoi and Rangiora town centres (including replacement and repair of damaged buildings and improved pedestrian amenity) is expected to increase pedestrian numbers in both town centres.
- Older person housing (including retirement villages and over 50's complexes) are expected to increase pedestrian numbers in the vicinity of the complexes. The pedestrians associated with this housing are likely to use a greater proportion of mobility devices than the wider population.
- New Zealand Post has been granted approval to use small delivery vehicles on footpaths.
- E-scooter use
- Council approved a Walking & Cycling Network Plan in October 2022 with a number of key walking & cycling routes being identified as Priority One for delivery in the next 10 years. These will complement the existing off-road cycleways between Rangiora and Kaiapoi, Rangiora and Woodend and Kaiapoi to Belfast (linking to the northern motorway

shared path). The provision of these facilities has increased the demand for walking & cycling in the district, and the need specifically to complete the link between our main towns (particularly Kaiapoi to Woodend and Woodend to Ravenswood), as well as addressing the gaps within our urban areas (e.g., within Rangiora).

- Improved first/last kilometre connectivity – facilities to support fuller uptake of walking & cycling with better end of journey facilities, and connectivity for mode change locations, such as bus stops, park & ride sites, key activity centres and other high generator areas. Includes installing footpaths where there currently are none, bike stands, charging / repair sites, safe crossing points, lighting for security etc.

Daily cycle counts are available at the Waimakariri River Bridge. There is some count data which is not considered to be reliable due to technology issues, for example there were zero cyclists counted between 24 December 2022 and 1 March 2023, likewise from 1 November 2023 until the 29th. However, it is well accepted that this is a time of high usage for the cycle connection and as such these zero counts have been discounted. At this point the information available is not suggesting any significant change in uptake in cycling.

Figure 5-7: Monthly Cycle counts from 2021 to 2024.



Parking Demand

Typically, the only areas in which parking demand is not adequately met at all times by on street and private off-street parking is within the town centres of the District. There is demand for parking from both staff and customers of businesses in the town centres.

Parking surveys have been carried out in Rangiora in 2014, 2016, 2017, 2019, 2020 and 2022 and in Kaiapoi in 2014, 2017, 2019, 2020 and 2022. These have been extensive all-day surveys which have recorded parking occupancy at 30-minute intervals throughout the day.

These surveys have been supplemented by weekly spot surveys of Council operated off-street parking in both Rangiora and Kaiapoi.

Results in 2022 were similar to those in 2020. These surveys indicate that parking in both town centres continues to operate at less than 80% capacity most of the time, with some occasional periods of higher occupancy in localised places.

On-street and off-street parking is provided in the Woodend, Pegasus, Cust, and Oxford town centres. Parking in these centres is occasionally raised as an issue.

It is proposed that parking management plans are developed for the town centres, and for any significant new developments.

Traffic Growth

The Council's District Development Strategy framed within this wider future demand context anticipates ongoing residential growth in western and eastern parts of Rangiora and in northeast Kaiapoi.

The Minister for the Environment has agreed to progress under Streamlined Planning Process within the overarching Infrastructure Boundary and in accordance with a Change to the Regional Policy Statement.

As well, continued growth of the Southbrook business area is provided for in the FDS. These changes will result in significant increases in traffic volumes (including heavy vehicles) using Southbrook Road as well as the Fernside Road / Flaxton Road / Skewbridge Road route as a viable and attractive route between West Rangiora, Kaiapoi and State Highway SH1. Assessments of both these routes have been carried out and a number of improvements recommended, some of which commenced in the 18-21 AMP. Key Improvements along this route are included in Council's Long Term Plan, Infrastructure Strategy and this AMP.

Generally, the district's roads and intersections are far from their ultimate capacities and other than a few major roads the majority are likely to reach those points in the near future.

Traffic modelling has been used to assess the projected performance of the networks in both 2041 and 2048 (the Christchurch Transport Model base year, and Waimakariri District Council District Development Strategy horizon respectively). However, over the last three years the model has not been used for further project development.

The Christchurch Transport Model was used to assess traffic changes on the following key routes within the district, as a result of the growth forecast in the District Development Strategy.

Modelling carried out previously suggested the following:

- With a few exceptions (as discussed below), the majority of the district's roads are expected to cope comfortably with projected traffic increases through to 2048.

- Projected traffic volumes on SH1 at the Waimakariri River Bridge are expected to result in congestion at the bridge, even with the extra lanes having been constructed.
- Any congestion on SH1 at the Waimakariri River Bridge is likely to extend to local roads within the district, such as Tram Road.
- Congestion is expected to become more severe on Southbrook Road.
- Measures such as the Rangiora Woodend Road improvements (including improved access to SH1), Rangiora Eastern Link Route, and Flaxton Road / Skewbridge Road improvements are likely to relieve some pressure on Southbrook Road. However, a significant portion of the traffic on Southbrook Road is associated with the Southbrook business area and is less likely to use alternative routes to SH1.
- Traffic volumes on Rangiora Woodend Road and the Flaxton / Skewbridge route are expected to grow to carry a similar traffic volume to Lineside Road (SH71). This supports safety upgrades on these roads.

Modelled future traffic volumes assume that there will be little change in mode share and vehicle occupancy numbers in the future compared to current numbers. Travel Demand Management (TDM) measures which increase walking, cycling, and public transport use are expected to result in a corresponding reduction in private car usage. Such a reduction is expected to help to address the congestion issues identified above.

Another key connection is access from Woodend onto State Highway One. As development on the east of Rangiora occurs, there is likely to be increased demand for vehicles to access SH1 when travelling to Christchurch. Currently all access is via Give Way or Stop controlled intersections, with the exception of Bob Robertson Drive which has a roundabout at the SH1 / Pegasus intersection. Traffic volumes on State Highway One through Woodend are currently around 20,000 vehicles per day (vpd), making access onto the state highway extremely difficult, particularly at peak times. Safety improvement had been planned through Woodend, including signalling the Woodend Rd / SH1 intersection. This is currently on hold due to the new Governments commitment to build the Woodend Bypass. Not having controlled access out onto the state highway is likely to result in drivers instead choosing to access SH1 via Southbrook and SH71 Lineside Road.

This increase in traffic impacts on the capacity of the road network and also on the safety of the network. More vehicles result in a higher risk of crashes.

Effects of the Western Belfast Bypass and Christchurch Northern Corridor

The Western Belfast Bypass (WBB) opened in 2017 and the Christchurch Northern Corridor (CNC) was completed at the end of 2020 which included installing a third lane on the bridge in both directions. These two projects have reduced congestion on the Christchurch Northern Motorway at the Waimakariri River Bridge, and the northern approaches to Christchurch, leading to reduced, and more consistent travel times.

The Northern Corridor also includes a separated shared walking & cycling path and a full time “T2” High Occupancy Vehicle (HOV) lane across the Waimakariri River, and a morning peak

“T2” lane along the length of the CNC from Chaney’s Corner to QEII Drive. “T2” lanes are dedicated lanes for use by vehicles with two or more occupants.

The cycle path is connected to a shared path along the CNC corridor to Christchurch, which also links to Christchurch City’s Major Cycleway projects. A shared path has also been constructed between Tram Road and Kaiapoi, with a combination of shared paths and greenways through Kaiapoi to connect to Kaiapoi Town Centre and Mafeking Bridge, where the Passchendaele Path begins.

To complement the “T2” lanes, Waimakariri District has provided five Park and Ride facilities in Rangiora and Kaiapoi, and Environment Canterbury is providing “Direct” bus services during the morning and afternoon peaks, between the “Park and Ride” facilities and the Christchurch central city.

As these are currently operating well below capacity, there is currently little benefit in terms of travel time by carpooling or using public transport. It is anticipated that as volumes increase, this will change and help drive further behaviour change. At this point however, single occupant vehicles remain the mode of choice.

Footpaths and Pedestrian Demand

Council is planning for an aging population which is expected to have a major impact on future pedestrian facilities. With the proportion of elderly in the population projected to increase the use of mobility scooters is also expected to increase. This results in increased pressure for wider footpaths, particularly in areas such as around rest homes / retirement villages/ health facilities and other key activity centres. Historically footpaths have typically been 1.5m wide, however Council has moved to 1.8m wide which allows space for two mobility scooters or wheelchairs to pass.

A demand for smoother footpaths (fewer bumps, depressions, and potholes) is also likely as and any irregularities in the footpath surface may be difficult for the rider to negotiate. Current road crossings can have steep and/or stepped curbs that are difficult for mobility devices to use, therefore there is likely to be a demand for improvements in this area.

Elderly pedestrians are typically less sure-footed than younger users and therefore are likely to require a smoother surface of footpaths be provided.

E-Scooters

E-scooters and other micro mobility devices are allowed to travel on footpaths. “Flamingo” operate a hire of e-scooters and these can be seen around the townships, but are being used more around the fringes of the towns rather than in the town centres, therefore there are fewer pedestrian/scooter user conflicts than in Christchurch for example. However, the areas and manner in which they are left when not in use pose potential obstructions to visually impaired pedestrians.

There is an increase in the number of privately owned scooters within the district. The ability to be able to control the use of these remains more of a challenge than commercially provided scooters.

Cycle Demand

The construction of cycleways between Kaiapoi, Rangiora and Woodend, along with the connection to the Christchurch Northern Corridor cycleway, has increased cycle within the district. This, in turn has result in demand for improved cycle facilities in Rangiora and between Kaiapoi and Woodend, and Woodend and Ravenswood. There is also demand for similar facilities in other areas throughout the district, including around rural schools where school bus services are not available. The latest customer satisfaction survey indicated that the main issue concerning cyclists was a desire for more dedicated cycle facilities.

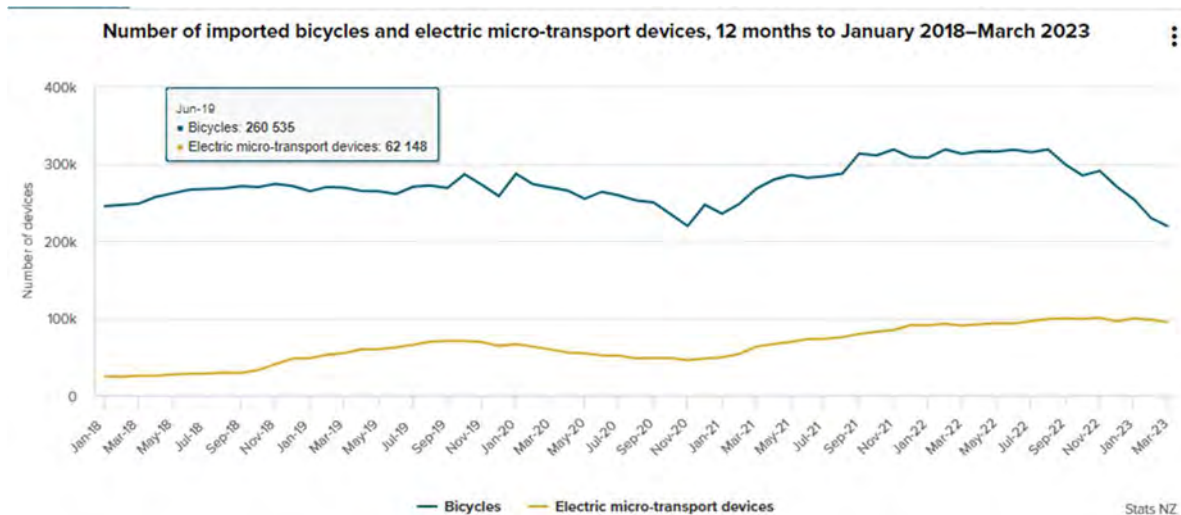
Council was initially successful in securing Transport Choices funding for progressing a number of walking & cycling projects around the district, including the Kaiapoi to Woodend, Woodend to Ravenswood & Rangiora cycle connections. With this being a ministerial fund and the recent elections in October resulting in a change in government, NZ Transport Agency (Waka Kotahi) made the decision to put this fund on hold until such time as the new government has an opportunity to consider its priorities going forward.

On 20th December 2023 the new Government announced that all projects on hold in the Transport Choices Programme will not receive any further funding or proceed to implementation. This impacts the Kaiapoi to Woodend, Woodend to Ravenswood & Rangiora cycle connections, plus the new footpath programme. Council will give consideration to how these projects will be funded going forward.

E-Bike Uptake

The numbers of e-bikes sold in New Zealand has increased steadily over the past few years. The number of e-bikes and e-scooters imported into New Zealand reached 94,811 in the 12 months to March 2023. It is anticipated that e-bikes will become an increasingly attractive transport mode choice in years to come. E-bikes are likely to be particularly attractive to travel the longer distances between towns in the Waimakariri District. An increase in e-bike popularity is likely to result in increased demand for cycle facilities which are appropriate for the increased number and higher speeds of e-bikes. However, currently non-electric bicycles still dominate the market, with 218,500 imported during the same period, although the gap is closing. An examination of the demographics of those using ordinary and e-cycles would be likely to show the majority of ordinary cycles will be bought for children and competition cyclists. For many others, e-bikes are proving to be a means of enjoying this activity without needing a certain level of fitness to do so.

Figure 5-8: Quantity of Imported Wheeled Pedestrian Vehicles



Public Transport

In 2020, the Greater Christchurch Partnership prepared the PT Futures Business Case Foundations & Rest of Network Business Case, which set out a strategic approach to the development of the Greater Christchurch public transport system over the next decade. This was endorsed by all partners including the Waimakariri District Council in December 2020. The programme of works includes service delivery upgrades (delivered by ECan as the PT Service Provider), with supporting infrastructure delivered by Waimakariri District Council within the district.

Direct bus services were introduced in 2020 and have proven to be very popular, being fast, limited stops service, between Rangiora - Christchurch and Kaiapoi – Christchurch. To support the use of public transport, five Park & Ride sites have been developed, three in Rangiora and two in Kaiapoi. It is anticipated that as public transport services are improved, demand for these sites including complementary facilities (bike stands, lockers, showers / toilets etc.) may also be required, as well as the possible further expansion of the sites themselves. A further Park & Ride site is being investigated in the Woodend / Ravenswood areas, to also be able to connect to existing public transport routes.

A Detailed Business Case is also being prepared for Mass Rapid Transport (MRT) in Greater Christchurch. This Business Case has not advanced sufficiently to be considering options for MRT, however early indications are that it is unlikely that Mass Rapid Transport will be viable within Waimakariri District for many years and that a bus system would provide adequate capacity for many years to come. Further work is to be done on the detailed business case and consideration will need to be given to complementary services to support MRT. Any recommendations arising from this Business Case will need to be considered in a future AMP as the business case progresses.

Shared Vehicles

Several different shared vehicle models currently operate. These models do not require private ownership of individual vehicles. Rather, users purchase rides on an as needed basis. These

rides are able to be shared with other users. Some of these models (such as Uber and Lyft) include drivers who drive the users. Others, such as Cityhop are self-drive models which enable users to rent vehicles by the hour.

These shared vehicle models currently rely on humans to drive them. However, they could be operated by autonomous vehicles should these become an option in the future.

Shared trips in which more than one person shares a trip from a common origin to a common destination have the potential to reduce vehicle usage. However, trips which involve vehicles travelling significant distances to pick up a rider may end up increasing vehicle trips.

Impact of Community Expectations on Demand

Feedback received from some areas of the community indicates a desire for an even higher level of service across the district's roads, despite current technical performance targets generally being met or exceeded. This includes wider shoulders, improved alignments, more permanent surfacing, smoother surfacing, more kerbing, streetscaping, and high levels of road safety intervention. Further engagement with the community will be required in the future to determine the extent of this in light of the generally favourable replies to community satisfaction surveys, with costed options to assist in realistic decision making.

Impact of Climate Change on Demand

Climate change and changing weather patterns are likely to result in more significant weather events, and associated emergency responses, in the 10-year life of this AMP.

Over the last three years, Waimakariri District has experienced a significant increase in the number of severe weather events occurring on three consecutive occasions. This has included severe rainfall events in May 2021, July 2022, February 2022, July 2023 and a severe wind event in October 2023.

The most significant impacts on transport demand are likely to be as a result of:

- Increases in intensity and duration of rainfall. This alters land use and therefore road usage. Rainfall affects the drainage requirements and the water proofing of roads. It also raises ground water levels which results in saturated pavements and quicker deterioration of roads.
- Changes in climate affecting the viability of some crops and agricultural land uses, thereby affecting land uses in the district. Changing land uses could affect transport demand across the district.
- Rising sea levels. This can affect the viability of a small number of small communities near the coast, (Pines Beach, Kairaki, Woodend Beach, and potentially part of Kaiapoi) and impact maintenance and construction of transport infrastructure near the coast.
- Vehicle emissions. Apart from providing better support for electric vehicles Travel Demand Management will be needed to encourage shared vehicle use and greater uptake of alternative modes, such as cycling and public transport.

- Some of these changes, particularly increases in rainfall, are already being experienced and work is underway to improve resilience in areas most affected. The full impact on pavements are not fully known however are anticipated to reduce the expected life of a pavement and potentially result in premature failure occurring.

Further work is required to assess the long-term effects of climate change on the roading network and to develop policies to manage this. Council have resolved to investigate this further during the period of the 24-27 LTP.

Economic Development

Economic development, as defined in the local economic development strategy², is those activities that cause a net gain of money flow into a community. In a broader sense, economic development means increases in business outputs through establishment of new businesses, relocation, or higher existing business productivity growth, increases in employment and real growth in incomes and asset values.

The local economic development strategy predicts that the construction, retail, manufacturing and health / community sectors are set to grow significantly over the next five years. One of the issues identified with that growth is the speed and connectivity of roads into Christchurch. This is particularly true for freight servicing those businesses. More heavy traffic, including HPMVs, on the network is likely to contribute to higher maintenance costs on roads not constructed for the greater loads.

Key Activity Centres (KACs) are required to be identified by the Canterbury Regional Policy Statement (CRPS). They are commercial centres identified as focal points for employment, community activities and the transport network that are suitable for intensive mixed-used development. Rangiora and Kaiapoi town centres have been identified as Key Activity Centres in the CRPS. North Woodend (Ravenswood) has been identified as a potential KAC.

It is anticipated that the retail floor area in the central business districts of Rangiora and Kaiapoi are likely to continue to grow as the population in and around the towns grows.

Recent trends have indicated a growth in online shopping and digital connectivity, and in the number and range of food, beverage, and hospitality activities in the town centres. Should these trends continue, they are likely to result in changes to the make-up and nature of the town centres, with a decreasing emphasis on retail, and a corresponding increasing emphasis on hospitality and social activities.

²Towards a Prosperous Economy Waimakariri Local Economic Development Strategy 2012

This may result in increasing demand for town, and key activity, centres to provide pleasant places to socialise. Amenity factors may become increasingly important in decisions regarding location and function of roads, and location of parking in these centres.

The draft District Development Strategy has identified Southbrook, north Woodend (Ravenswood), and south Kaiapoi as appropriate locations for Business 2 (industrial / manufacturing / warehousing type activities) growth. Further growth in business and employment is likely to result in increased traffic in these areas. This traffic is likely to be made up of workers, customers, and delivery of goods to and from businesses. Good linkages between those business locations and potential employees, sources of incoming goods, and markets are essential for businesses to thrive in those locations.

Changing Land Use

The rural sector of the district is continuing to change with increasing numbers of dairy farms, lifestyle blocks, and industrial and manufacturing businesses on rural land.

These changes increase the number of people living in the area, and the number of vehicles, including heavy vehicles, using the roads.

The development of lifestyle blocks can create conflict in expectations between farmers and “life-stylers”. There may be pressure to seal unsealed roads due to dust and road condition issues that may be acceptable to the farming community but are not necessarily acceptable to residents and drivers more accustomed to urban conditions.

5.5 Meeting Demand

Summary of Demand

- Most roads in the district have the capacity to cater for traffic growth into the future, with some key improvements around intersections to address safety issues.
- A Transport Model has been developed for Rangiora and this shows that the programmed and planned improvements will generally accommodate the demands of urban growth through to 2041.
- One critical road section is Southbrook Road leading into Rangiora. While some improvements have been completed along the corridor to address issues with access, further improvements will be required in the future.
- An alternative route between Rangiora and the Northern Motorway (SH1) is available, however requires further improvements to cater for the anticipated growth along the corridor, and this is the West-Rangiora Route. The West-Rangiora route includes Ohoka Road, Skewbridge Road, Flaxton Road, Fernside Road and Lehman's Road.
- A new road the “Rangiora Eastern Link Road” is proposed to the east of Rangiora, to cater for growth and to take some of the existing traffic from Southbrook Road, to ease the pressure on this corridor which is at capacity, causing access issues for residents, schools and businesses within the area.
- Increased population is likely to result in increased demand on parking, footpaths and amenities in Rangiora and Kaiapoi town centres.

- Increasing demand for walking and cycling facilities, provision for alternate modes and public transport will result in the need to provide targeted infrastructure within the road corridor for all users.
- Increasing need to consider and provide improved first/last kilometre connectivity facilities to support fuller uptake of walking & cycling. This includes better end of journey facilities, and connectivity for mode change locations, such as bus stops, park & ride sites, key activity centres and other high generator areas. Includes installing footpaths where there currently are none, bike stands, charging / repair sites, safe crossing points, lighting for security etc.
- Changing demographics mean that there will need to be more varied management of the network to cater for differing needs.

Rural land use changes, including increased dairy farming activities, quarrying activities, and rural-residential developments, are likely to put pressure on the rural road network.

Ability to Meet Demand

The key demand issues expected to be faced by the transport network in the district are summarised in *Table 5.3*.

Table 5-3: Key Demand Factors

Demand Factor	Impact on Service	Ability to Meet Demand	Management Strategy
Population Growth	Increased car usage resulting in reduced Levels of Service, increased congestion, and increased crashes	Expected growth is expected to be able to be managed with a mixture of: Improved LOS Appropriate planning Travel Demand Management	Projects to increase capacity are summarised in Table 5-1
			Transport planning is an integral part of the District Development Strategy and the District Plan Review process
			Working with Greater Christchurch partners on Travel Demand Management initiatives
Rural Land Use Changes	Increased car usage from increase in residential or “lifestyle” development	Expected growth is expected to be able to be managed with a mixture of: Increased capacity Appropriate planning Travel Demand Management	Projects to increase capacity are summarised in Table
	Increased heavy vehicle numbers from more intensive agricultural or commercial land uses		Transport planning is an integral part of the District Development Strategy and the District Plan Review process

Demand Factor	Impact on Service	Ability to Meet Demand	Management Strategy
Customer Expectations	A community desire for higher levels of service across the District.	Implementation of best practice standards across the District	Acknowledgement that best practice may not always match community expectations. Communicate this to the community appropriately
Increased Demand for Alternative Modes	A community desire for improvements to allow for alternative modes of transport.	Plan for Walking & Cycling Network with complementary facilities. First/last kilometre connectivity facilities to support fuller uptake of walking & cycling	Transport planning for infrastructure to support change.
Support increasing Public Transport Services	Support Greater Christchurch PT Futures Business Case and increase in Public Transport Services	Plan for infrastructure to support increasing public transport services. First/last kilometre connectivity facilities to support fuller uptake of walking & cycling.	Transport planning for infrastructure to support change.
Aging Population	Increased number of mobility devices (including scooters, walkers etc)	Wider footpaths included in all Council footpath renewals	Ongoing consideration of needs of aging population in future works.
	Reduced ability of users to cope with poorly maintained footpaths	Ongoing condition rating of footpaths	
	Increased demand for public transport as ability to drive declines	Consider public transport in all new infrastructure designs	
Increase in Heavy Vehicle mass and dimensions (including HPMVs)	Increased maintenance costs due to larger trucks	Budget for possible increased maintenance costs.	Consider needs of larger vehicles in review of District Plan and Engineering Code of Practice
	Larger vehicles require more space to manoeuvre	Consider larger vehicles in all new infrastructure designs	
Technology Changes	Likely impacts are unknown at the moment		Monitor developments and remain adaptable to rapid change if necessary

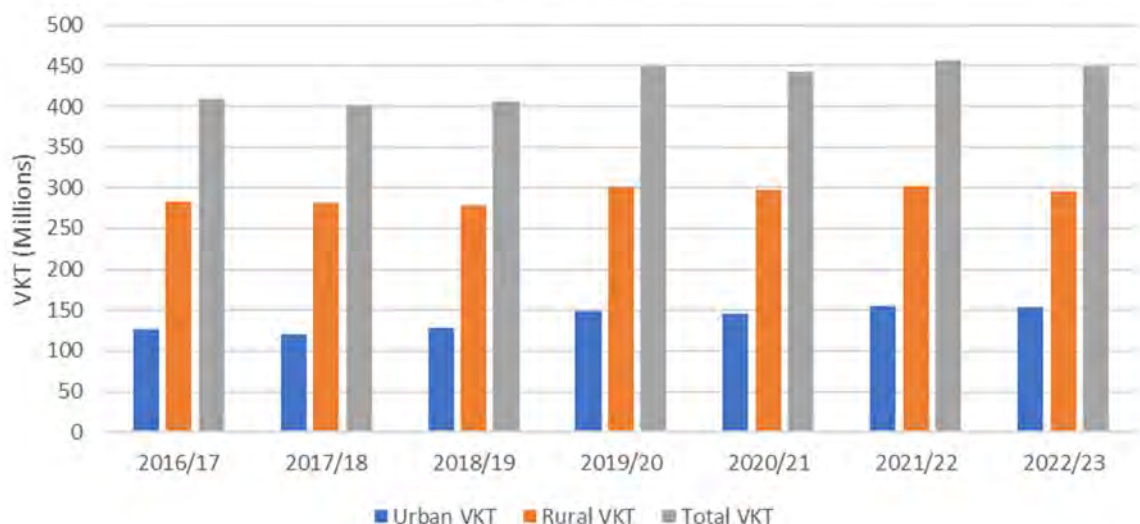
Demand Factor	Impact on Service	Ability to Meet Demand	Management Strategy
Climate Change	Likely impacts are unknown at the moment		Monitor developments and remain adaptable to rapid change if necessary

General

Most of the District's roads and intersections do not operate at close to capacity, and therefore have good levels of service with respect to safety and delays for car users. Few are likely to operate at near capacity (and experience deteriorating levels of service) in the near future. However, this is not the case for cyclists, who in many areas are still having to co-exist with motorists and the network is not as yet fully designed to cater for this. There are, however, some parts of the network that are having difficulty meeting the demand and where growth will put them under strain with longer delays at peak times being more likely in future. Increasing delays often result in a decline in safety as drivers accept greater risks in order to avoid delays.

The arterial and collector roads in the rural network are becoming increasingly important in terms of economic productivity. Maintaining a level of service that supports the economic productivity role of these roads is therefore critical. The increased traffic using the rural road network, particularly heavy traffic, is resulting in increased annual maintenance costs to meet the customer levels of service.

Figure 5-9: Vehicle Kilometers Travelled (VKT) Trends



From a safety perspective the increase in traffic volumes on rural roads, which are generally higher speed than urban roads, is likely to have an impact. For example, the head-on collision

risk increases with traffic volume increases on roads if the seal width is not sufficient³. Surface conditions may also impact on safety. Proactive maintenance and monitoring of aspects such as seal width will be required as traffic volumes increase. Intersection safety becomes more of an issue, as gap availability reduces, and this can then result in drivers taking risks when attempting to enter traffic flow. Road Safety is discussed further on.

Traffic Growth and Congestion on the Northern access into Christchurch

The opening of the Christchurch Northern Corridor (CNC) in 2020 has alleviated some congestion issues in the district, however ride sharing and an increased uptake of the PT system is still required to realise the benefits of this new infrastructure.

Mitigation measures

- Work with the Greater Christchurch partners on managing driver behaviour change to reduce the number of single occupancy vehicles travelling to Christchurch at peak times. Christchurch City Council TDM team currently undertake journey to work planning including working with businesses in Christchurch to encourage consideration of alternate modes of travel. In addition to this targeted planning work was undertaken in conjunction with the introduction of Direct bus services into Waimakariri. The costs of Greater Christchurch TDM work is shared by the Greater Christchurch partners.
- Continue to monitor existing park & Rides sites usage and further develop sites as / when required. Investigate a potential Park & Ride site in the Woodend / Ravenswood area, along existing PT routes.
- Work with ECan to review and change bus routes and services in the district as required, to maximise patronage and to promote bus usage.

5.6 Projects to Address Demand

The following projects have been identified to address demand:

Southbrook Road - Rangiora

Southbrook Road is one of the busiest roads within the district, and in Rangiora. It links central and northern Rangiora with the business area in Southbrook with Kaiapoi and Christchurch via SH71 (Lineside Road) and Flaxton Road. It also provides access to:

- Residential properties
- A large supermarket
- A large hardware retailer
- A large sawmill
- A restaurant

³ The next generation of rural road crash prediction models: final report December 2012, NZTA Research Report 509

- Two schools
- A childcare centre
- Various other hospitality, commercial, industrial businesses and a Refuse Station situated within Southbrook area, all generating traffic due to employment and the services they offer.

The Southbrook area is a larger generator in terms of traffic demand due to the key services it has to offer and as such will always be a destination on its own. The options for increasing the capacity of Southbrook Road by widening are limited due to its 20m road reserve, and the number of established residential and business properties. Taking this approach would create severance issues for Rangiora, where access is already a significant challenge. A wholistic approach needs to be taken, providing options for different routes of travel, to help ease pressure in the Southbrook area, which in parts carries around 26,000 vehicles per day. It is however noted that as Southbrook is a key destination within the district, that it will remain a high traffic generation area.

Future consideration will be required to ensure safe access can be provided for those needing to access and travel through the area.

The planned route improvements to both the western and eastern sides of the district (as noted in the following project outlines) are designed to lessen the demand on the Southbrook Road route, which is poorly equipped to meet the needs of children, residents, businesses, commuters and heavy freight all along the same congested route.

While widening this central route might could be a solution, this would result in greater social disconnect and access issues for those living on either side of the road or wanting to access services in the surrounding areas, more traffic would be encouraged to use this route leading to greater air pollution and vehicle noise, and eventually the road would again reach capacity. Meanwhile safety for pedestrians and cyclists would become worse, our youth would have greater problems accessing educational facilities, and the general neighbourhood would become even less pleasant for those living alongside the route.

An advantage to moving the traffic onto the western route, which is primarily rural, or to the east along an improved State Highway, or via the new Eastern Link Route, would be to spread the growing vehicular load, and in particular move heavy traffic off Southbrook Road, onto more appropriate routes.

Rangiora Eastern Link Road – New Infrastructure

While most of the residential growth in Rangiora in the past 10-years has been to the north-west of town, the development of the Bellgrove subdivision has placed an increasing demand to the north-east of Rangiora.

- A new road, the “Rangiora Eastern Link Road”, has been designated to the east of Rangiora, to cater for growth on the eastern side of the town, and to take some of the

existing traffic from Southbrook Road, to ease the pressure on this corridor which is at capacity.

- The new road corridor is also proposed to include a separated shared path to allow for walking, cycling and alternate modes to use the corridor. While this will not address the current issues identified in the Southbrook corridor, it is anticipated that the forming of this new road, along with other improvements to key routes, will help ease pressure in the Southbrook area.

West-Rangiora Route Improvements

The West-Rangiora route is an alternative route between SH1 and Rangiora, Ohoka Road, Skewbridge Road, Flaxton Road, Fernside Road and Lehmans Road. It is an attractive alternative between south Rangiora and the State Highway as it avoids Southbrook Road and SH71 Lineside Road.

To cater for growth and improve safety along the existing corridor, proposed changes to the route include intersection improvements, safety improvements, and an upgraded replacement of Skew Bridge which is a significant constraint on this important route and is outlined below.

Skew Bridge Replacement

The West-Rangiora route is an alternative route between SH1 and Rangiora (Southbrook). It is an attractive alternative as it avoids Southbrook Road and SH71 Lineside Road.

Skew Bridge is narrow in nature, has challenging approach geometry and is not able to accommodate HPMV vehicles or pedestrians / cyclists safely, which restricts use and access between the state highway / Silverstream and Rangiora.

The bridge has around 17 years life remaining, however continues to be a safety concern and access constraint, on an important transport connection within the district which carries around 10,000 vehicles per day.

Linkages to SH1 at Woodend

- Improvements to linkages between the east and north of Rangiora and SH1 at Woodend are also proposed, which will improve safety and cater for ongoing growth. They will also relieve pressure on Southbrook Road.
- Improved connections to SH1 in Woodend had been proposed by NZ Transport Agency (Waka Kotahi) as part of the Woodend SH1 Safety Improvements, however, are now less likely to proceed as the Government has committed to the construction of the Woodend Bypass, which would move traffic away from Woodend onto a new corridor to the east of the town.

Currently all access to SH1 in Woodend is via Give Way or Stop controlled intersections, except for Bob Robertson Drive which has a roundabout at the SH1 / Pegasus intersection.

Traffic volumes on State Highway One through Woodend are currently around 20,000 vehicles per day (vpd), making access onto the state highway extremely difficult, particularly at peak times. Safety improvement had been planned through Woodend, including signalling the

Woodend Rd / SH1 intersection. This is currently on hold due the commitment to build the Bypass. Not having controlled access out onto the state highway is likely to result in drivers instead choosing to access SH1 via Southbrook and SH71 Lineside Road.

Rangiora Woodend Road Improvements

- Improvements to linkages between the east and north of Rangiora and SH1 at Woodend are also proposed, which will relieve pressure on Southbrook Road. Rangiora Woodend Road is an alternative route between SH1 and Rangiora. It is an attractive alternative as it avoids Southbrook Road and SH71 Lineside Road.

To cater for growth and improve safety along the existing corridor, proposed changes on the route include improvements to the Rangiora Woodend Road / Boys Road / Tuahiwi Road intersection, widening and roadside hazard removal. This is an important route to help distribute traffic and ease the pressure on Southbrook area.

Town Centres

Increased population in the towns and visitors to the towns will continue to put pressure on town centre assets such as parking supply, footpaths and amenity areas. Town Centre Plans have been developed for Rangiora and Kaiapoi.

Other Key Infrastructure (Not delivered by WDC)

While not projects which will be delivered by Waimakariri District Council, it is noted that the following proposed and existing roads will have a significant impact on the transportation network within Waimakariri district and as such it is critical that Council works closely with NZ Transport Agency (Waka Kotahi) to ensure that a wholistic approach which provides a best for network (both national and local roads) result is achieved.

This includes:

- Woodend Bypass – The alignment of the Woodend Bypass was designated in 2015 and is seen as critical infrastructure to address severance and access issues within Woodend, as well as to allow for effective freight movement along SH1, to address existing safety issues and allow for growth which is anticipated within the Greater Christchurch area.
- SH71 Lineside Road Safety Improvements – SH71 is a critical link between the town of Rangiora and SH1. There are safety issues which need addressing on the corridor however it is critical that this is done in conjunction with consideration of impacts to the local road network.

Other Ongoing and Future Potential Developments

Ravenswood

This subdivision opposite Pegasus is expected to continue growing a number of years and will provide around 1200 additional properties. These will be a mix of residential and commercial use.

Bellgrove Development

Work has begun on this development north-east of Rangiora. At completion around 2030, it is expected to provide 1400 additional residential properties.

Townsend Fields

This development already contains around 30 private properties alongside a new primary school. Further growth is anticipated between 2024 - 2030 and will potentially account for an additional 600 residential properties.

Daniel Smith's Development

This development at the intersection of Flaxton and Fernside Roads is proposed to include commercial activities such as a hotel, museum and café.

Silverstream Development – Lime Living

Older persons housing / aged care developments in Silverstream.

Somerset Development – South Belt

Older persons housing / aged care developments on South Belt next to Southbrook Sports Park.

Waimak Junction

Commercial development with retail activities including a large supermarket etc.

Beach Grove

This subdivision off Beach Road is expected to continue growing for a number of years and will ultimately provide around over 1000 residential properties once fully developed.

Kaiapoi Mixed-Use Business Area

This land was previously red-zoned following the 2010 Canterbury Earthquakes however is now zoned for mixed-Use Business.

Woodland Estates

This subdivision on the east side of SH1 in Woodend is expected to provide around over 1200 additional residential properties.

Other Towns

Oxford and Woodend are the other main towns in the district. They have sufficient local road capacity to cater for the expected growth in traffic for the foreseeable future and so no growth-related works are planned in these towns.

However, State Highway 1 passes through Woodend. The Government have committed to construction of the Woodend Bypass, and this will require associated works on local roads, which there has been an allowance made for.

As noted above, the proposed safety improvement to SH1 through Woodend were planned, however due to commitment to Bypass, there is a risk these improvements may not proceed as previously planned.

Footpaths and Cycleways

More people are walking and cycling for both travel and recreation. There is also an increasing expectation that dedicated infrastructure will be provided to allow for alternate modes such as cycling. This will put pressure on ensuring the facilities are being extended and improved, and that gaps in the network are addressed.

Funding in the Low-Cost Low-Risk Programme for walking and cycling has been difficult to secure in the past and Council has had to consider alternate forms of funding or doing some works unsubsidised to enable infrastructure to be delivered (as is the case for the New Footpath Programme).

Council was initially successful in securing Transport Choices funding for progressing a number of walking & cycling projects around the district, including the Kaiapoi to Woodend, Woodend to Ravenswood & Rangiora cycle connections. With this being a ministerial fund and the recent elections in October 2023 resulting in a change in government, NZ Transport Agency (Waka Kotahi) made the decision to put this fund on hold until such time as the new government has an opportunity to consider its priorities going forward.

On 20th December 2023 the new Government announced that all projects on hold in the Transport Choices Programme will not receive any further funding or proceed to implementation. This impacts the Kaiapoi to Woodend, Woodend to Ravenswood & Rangiora cycle connections, plus the new footpath programme. Council will give consideration to how these projects will be funded going forward.

Public Passenger Transport

Across the Greater Christchurch area increasing the use of public transport is a means of reducing vehicle emissions and easing peak traffic demand on roads. While Environment Canterbury is responsible for providing public bus services, the Council is responsible for providing the infrastructure, such as bus stops, seats, shelters, and Real Time information displays, to support these services.

The increase in population in the district and move to provide improved services through the PT Futures Programme of works will increase the demand for these services. Providing good quality and convenient bus stops, seats and shelters will help encourage and manage that demand.

Park and Ride Facilities have been constructed at five locations across Kaiapoi and Rangiora, with further potential sites to be investigated in Woodend/Ravenswood, along existing PT corridors.

Bridges

The majority of bridges in the district have adequate capacity to cater for the projected future loading and traffic volumes. Council has also made allowance in the Infrastructure Strategy for improvements to the Old Waimakariri River Bridge which is jointly funded with Christchurch City. This is not anticipated to be required until 2041.

There are no designated and separated pedestrian or cycle facilities on the Old Waimakariri River Bridge. NZTA have addressed this by including a combined walk and cycleway across the river as part of the CNC. Improvements to the existing timber rail on the Old Waimakariri River Bridge are planned in the short term, with these being replaced with vehicle compliant barriers.

In addition to changes to the Old Waimakariri Bridge it is proposed to replace Skew Bridge within the next 10 years (as outlined previously in this section). This is due to levels of service, safety, and constraint issues. There is increased demand on the route this bridge is located upon, and the bridge does not cater for HPMV vehicles, cyclist, or pedestrians. The bridge has an estimated seventeen-year remaining life however is a major constraint on the West-Rangiora Route.

Work is planned to improve the Mafeking bridge to better accommodate cyclists as it is a very narrow bridge on an arterial walking and cycling route within the district. This is not a road bridge.

General

The management of the transport network to cater for future growth in the district will be by a combination of asset and non-asset solutions. The integration of land use planning and transport planning as envisaged by the Greater Christchurch Partners (formerly the Greater Christchurch Urban Development Strategy (UDS)) along with travel demand management, the increase in the provision of walking and cycling facilities and improved passenger transport will be key tools in reducing the reliance on the motor vehicle.

Creating more job opportunities in the district will reduce the need to travel to Christchurch for employment as will reducing the growth on key commuting routes to Christchurch. Roding improvements will be mainly focussed on ensuring adequacy of the existing network, and on safety improvements.

The general approach to be taken is as follows:

- Maintaining and using the existing transport infrastructure efficiently and effectively.
- Targeted investment in infrastructure improvements for both capacity and safety outcomes.
- Increased emphasis on walking, cycling and public passenger transport to provide greater transport mode choice, integration, flexibility and to promote good public health outcomes.

- Ensuring growth areas and development support modal choice and provide opportunities for people to travel less, especially by private motor vehicle.
- Continue to implement travel behaviour change initiatives in conjunction with the Greater Christchurch Partners, to encourage more efficient travel patterns.
- Funding the growth component of projects from development and financial contributions

This approach is consistent with the New Zealand Transport Strategy 2008 and Government legislation, mainly the RMA, LGA, Ministry of Transport Framework, and the LTMA which requires a more integrated approach to land use, transport planning, and funding to provide a sustainable land transport system that is supported by sustainable land use patterns and good urban form, and with the Regional Land Transport Strategy (RLTS). This is also consistent with the current GPS, however this may be subject to change as a new GPS is developed early in 2024.

The following strategies and implementation plans drive the programmes for managing growth:

- Greater Christchurch Urban Development Strategy and implementation plan
- Land Use Recovery Plan (LURP)
- Greater Christchurch Travel Demand Management Strategy and implementation plan
- Structure Plans and Outline Development Plans
- Rangiora Town Centre Plan (RTC 2020)
- Kaiapoi Town Centre Plan (New Foundations)
- Walking and Cycling Strategy, Implementation Plan & the Walking & Cycling Network Plan
- Road Safety Strategy and Road Safety Action Plans
- Metro Strategy and implementation plan, and Regional Passenger Transport Plan (Bus services)

5.7 Asset Projects to Meet Demand

Major programmes and costs to meet the demand described above are shown below. The full detail is shown in **Section 8- The Lifecycle Management Plan**.

Table 5-4: Major projects to meet demand.

Project	\$M	From
Kaiapoi to Woodend Cycle Connection	2.2	31/32-32/33
Ravenswood Park N Ride	1.5	26/27-27/28
North-West Arterial Rangiora – Lehman's Rd to River Rd	2.2	29/30-30/31
West Rangiora Route	14.2	24/25-33/34
Woodend Improvements in conjunction with Woodend Bypass (Note: may need to be moved depending on Bypass progress)	2	26/27-27/28 & 31/32-32/33
South Eyre / Giles / Tram Rd Roundabout	1.9	26/27-27/28

Tram Rd Route Improvements (widening, intersection improvements, delineation)	7.7	23/24-33/34
Rangiora / Woodend / Tuahiwi / Boys Rd Intersection Improvements	1.9	26/27 & 28/29
Robert Coup Drive/Ohoka Rd intersection Improvements	1.1	26/27-27/28
Skew Bridge Replacement	12	24/25-28/29
Southbrook Future Improvements	3.9	25/26-27/28 & 31/32-32/33
Northbrook / Ivory St intersection Improvements	1.5	27/28-28/29
New Rangiora Eastern Link Road	35.1	24/25-29/30
North South Collector Rd	6	24/25 & 28/29

Other capital works are identified via monitoring, community and Council input, and through statutory requirements. The condition of the network and its components are continually monitored, and council staff, contractors and consultants identify development opportunities. The concerns and desires of all stakeholders are also identified, considered, and taken into account through feedback and consultation.

5.8 Key Improvement initiatives

Key improvement initiatives relating to the future demand include the following:

Table 5-5: Key Demand Improvement Initiatives

	Improvement Action	Priority	Proposed Completion date	Owner and Key Staff
Section 5 Future Demand				
5.1	Investigate whether further modelling is required to accurately represent changed demands in Rangiora and Kaiapoi	Low	December 2024	STE
5.2	More in-depth analysis as to needs of the older demographic	Medium	June 2025	STE, APE
5.3	Populate One Network Framework future state		July 2024	STE, APE

Transportation Activity Management Plan 2024

Risk Management

June 2024



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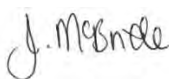
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Reviewed by	Joanne McBride	Roding & Transport Manager		24/06/2024
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Adopted by	Utilities & Roding Committee			

6	Risk Management.....	4
6.1	Introduction.....	4
	Risk Register	4
	Problem Statements	4
6.2	Strategic Risk Areas	5
	Safety 5	
	Sustainability	9
	Integration of Land Use Planning and Transport.....	10
	Resilience	11
6.3	Transport Related Infrastructure Strategy interventions	12
	Providing appropriately for growth	12
	Responding nimbly to a changing operating environment.....	12
	Changing government priorities and legislative environment (Environmental Sustainability)	13
	Ensuring resilient infrastructure (Resilience).....	14
	Transitioning to a sustainable future (Environmental Sustainability).....	15
6.4	Operational Risk Management.....	16
	Objectives.....	16
6.5	Risk Assessment Process	16
6.6	Risks Context	17
	Identify Risks	17
	Analyse Risks	18
	Evaluate Risks.....	21
	Manage Risks.....	22
	Monitor and Review	22
6.7	Key Improvement initiatives	23

Figures

Figure 6-1: All recorded crashes in Waimakariri District 2013-2022	6
Figure 6-2: Fatal and serious crashes in Waimakariri District 2013-2022	6
Figure 6-3: Fatalities and Serious casualties in Waimakariri District 2013-2022	7
Figure 6-4: Risk Management Process	16

Tables

Table 6-1: Road Safety Action Plan Interventions:	8
Table 6-2: Transport related IS interventions - Providing appropriately for growth	12
Table 6-3: Transport related IS interventions - Responding nimbly to a changing environment	12
Table 6-4: Transport related IS interventions - Changing Government priorities and legislative environment (Environmental Sustainability)	13
Table 6-5: Transport related IS interventions - Ensuring resilient infrastructure (Resilience)	14
Table 6-6: Transport related IS interventions - Transitioning to a sustainable future (Environmental Sustainability).....	15
Table 6-7: Risk Types	17
Table 6-8: Risk Likelihood Ratings.....	18
Table 6-9: Measures of consequences of failure	19
Table 6-10: Risks Priority Rating Matrix	21
Table 6-11: Risk Evaluation and Treatment Strategy Summary	22
Table 6-12: Key Risk Management Improvement Initiatives	23

6 Risk Management

6.1 Introduction

While it is not possible to eliminate all risk, it is possible to be proactive in the management of risk to minimise adverse outcomes. Council addresses risk to the Transport activity in the following ways:

Risk Register

Risk has been classified through a Risk Register which identifies potential risks arising from the operation of the roading networks, the consequences and likelihood of those risks occurring, and the mitigations used to manage them. It also establishes responsibilities for the management of identified risks.

The methodology for the assessment is explained further in this section of the AMP, however, it is recognised there are a number of serious risks which are outside of Council control. Risk is managed through the development and ongoing review of the risk register,

There are four strategic risk areas which have been identified and are outlined in this Transportation Activity Management Plan. These four strategic risk areas align with our Problem Statements and include:

1. Safety
2. Resilience
3. Sustainability
4. Changing Land Use and Population Growth

Problem Statements

The key transport issues identified for Waimakariri District are:

- Problem Statement 1:
Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.
- Problem Statement 2:
Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting effects ranging from temporary disruption to potentially life-changing impacts.
- Problem Statement 3:
Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, and social disconnect.
- Problem Statement 4:
Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur.

6.2 Strategic Risk Areas

Safety

- Problem Statement 2

Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur.

General

Road safety (or lack thereof) is a risk to the residents of our community on a number of levels. It has health, financial and quality of life implications, that is best solved with a multi-faceted, integrated approach.

What's happening in Waimakariri District?

On average around 4-500 crashes are reported to Police every year in Waimakariri. Of these, between 20 & 30 result in deaths or serious injuries. The social cost to Waimakariri of fatal and serious crashes on the local network for the period from 2018 to 2022 was calculated at just under \$215M, with another \$27M for minor injury crashes.

Increased traffic volumes mean more likelihood of an upwards trend in crashes unless mitigating measures are put in place.

Some initial analysis of crashes in the district shows a high level of intersection crashes, which is to be expected for this form of network, but also around half of all crashes involve loss of control, both on straight roads and bends. Where these involve a collision with an object, the most commonly hit objects in Waimakariri are fences, trees or poles. Nearly 30% all fatal and serious crashes were partially or fully caused by drivers aged between 15 and 24, while just two thirds of drivers had a full licence. 44% of fatal and serious crashes involved only one party, and over three quarters occurred on rural roads.

Just under 50% of all fatal and serious crashes in the district involved excess alcohol. Just over a third of fatal and serious crashes occur at night, but this is not significantly higher than for all injury crashes.

Figure 6-1. All recorded crashes in Waimakariri District 2013-2022

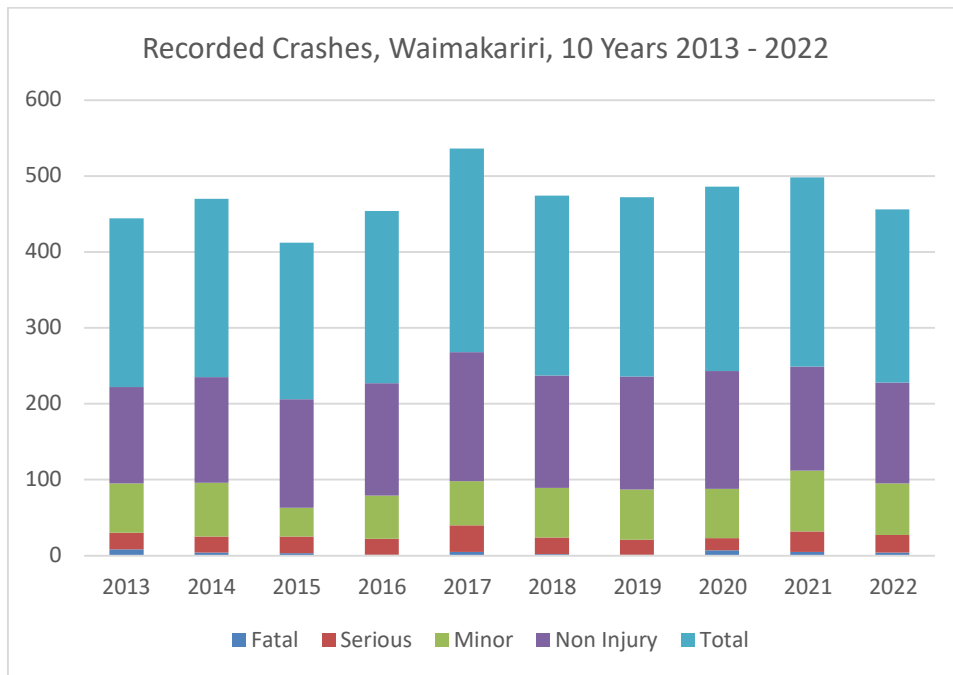


Figure 6-2: Fatal and serious crashes in Waimakariri District 2013-2022

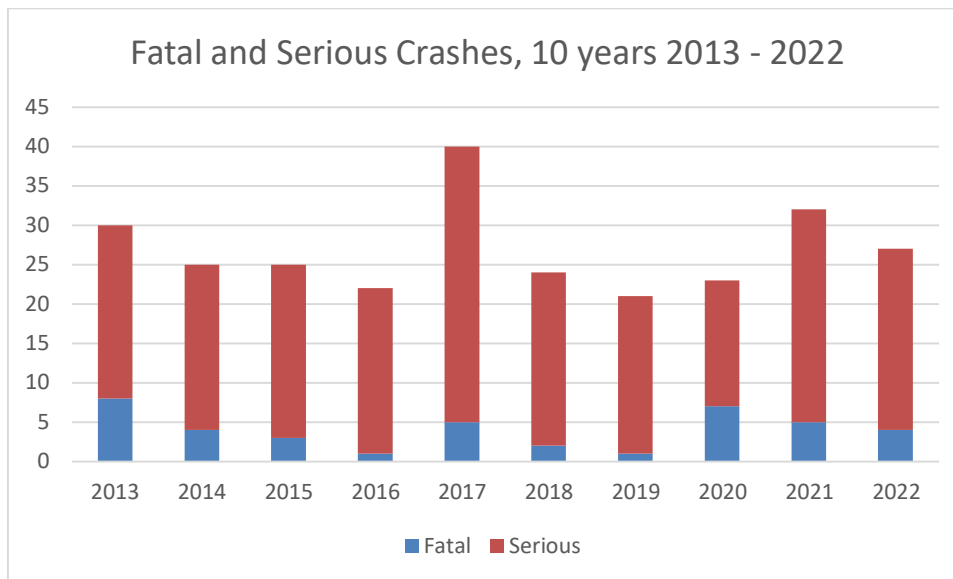
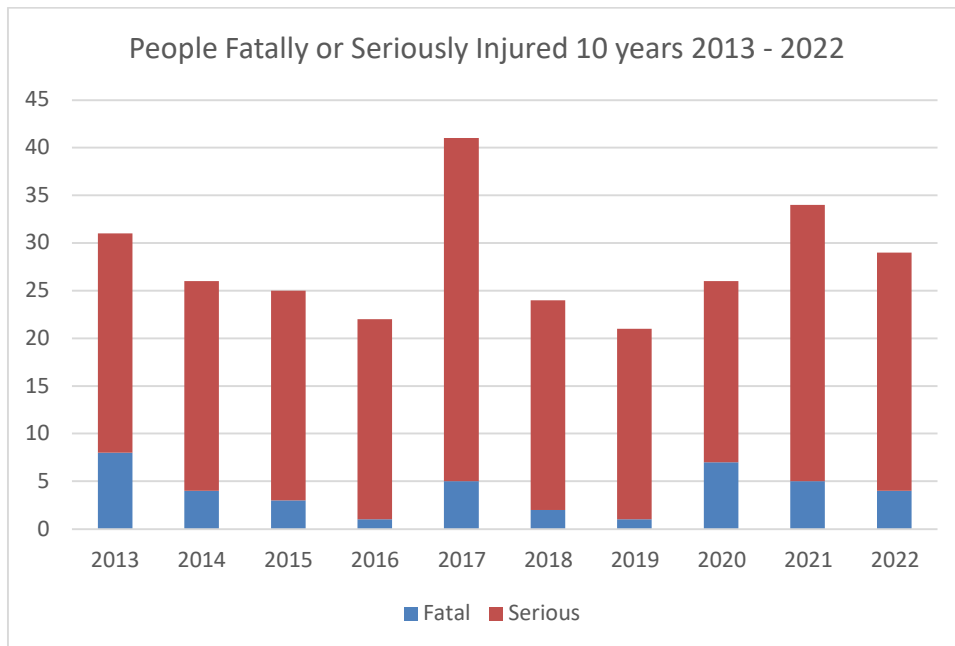


Figure 6-3: Fatalities and Serious casualties in Waimakariri District 2013-2022



Solutions

With regards Problem Statement 2, numerous parties are involved in the attempts to prevent fatal or serious injury in the event of a crash. Thus, Council can only commit to doing its best through the activities that lie within its scope, for example, Council does not have the legal ability to enforce illegal driving behaviour, however we can liaise with the NZ Police around joint campaigns. The key activities Council does engage in are summarised as follows.

- Preparation of a Road Safety Action Plan, which includes enforcement and education initiatives.
- Preparation and regular review of a Hazard Register
- Ongoing Safety Audits of individual projects, both before, during and post construction as appropriate.
- Development and implementation of a Speed Management Plan.
- Ongoing Network Safety inspections by staff and the contractor, both day and night-time – carried out annually on a percentage of the network, depending on hierarchy.
- Ongoing Crash investigations studies (black spot/route/crash type) – as required.
- Serious and Fatal Crash investigations (immediately following a serious crash or fatality).
- Engineering measures such as:
 - School safety improvements
 - Deficiency Database projects

- Route improvements, particularly key growth areas such as Flaxton / Fernside / Skewbridge Roads route, and Tram Road
- Proposed improvements on key routes through the Safety programme, including RIAWS (Rural Intersection Activated Warning Signs), and the lowering of speed limits where appropriate.

Table 6-1: Road Safety Action Plan Interventions:

Safety Area	Target Audience	Strategy	Intervention Type
Cycling	Cyclists	Continuing to use the North Canterbury Sports and Recreation Trust to deliver CycleSense in schools. Consider what can be done in terms of offering cycle training for adults. Possible information sharing on WK safe cycling for riders.	Education Programme
Cycle safety for drivers	General motoring population	Raising the awareness of drivers as to vulnerable road users.	Advertising information /
Licensing/ Training	Older Drivers	Continue to use Age Concern to deliver Staying Safe courses for residents. Council support to consist of promotion of courses to ensure high attendance rates.	Education Programme
	Young Drivers	RYDA to be delivered in Rangiora and Kaiapoi High Schools. Consider Leading Learners as an option for residents.	Education Programme
Motorcycling	Motorcyclists	Continue to promote Ride Forever as the focus for improving motorcycle safety. Primarily through the Kickstart series of events.	Event(s)
Restraints	General motoring population	Collaborate with Regional partners in promotion of restraint wearing. Work with Police where appropriate to support their enforcement focus on restraints. Child car seat checkpoints to be made available to parents.	Advertising information /
Impairment	General motoring population	Collaborate with Regional partners in promotion of responsible alcohol use in the driving context. Work with Police where appropriate to support their enforcement focus on breath testing as a deterrent.	Advertising information /

Distraction	General population motoring	Continue to improve public understanding of the hazards of driving while distracted. Regional wide messaging.	Advertising information /
Speed	General population motoring	Raising public awareness of the societal benefits of slower speeds near schools, and in neighbourhoods.	Advertising information /
Intersections	General population motoring	Raising public awareness of the risks associated with intersections across the district.	Advertising information /

Sustainability

Problem Statements:

- Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, and social disconnect.
- Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.
- Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting effects ranging from temporary disruption to potentially life-changing impacts. (longer term sustainability issue)

Sustainability is the ability for an asset or activity to be maintained at a certain rate or level. In the transportation sector, it includes financial, environmental and asset sustainability.

It is widely recognised that climate change is a real issue which threatens society and which we should all be playing our part in mitigating. As a wider organisation, the Council is involved with understanding and preparing for climate change, across all its activities. The sustainability of our transport activity is a key part of this.

To assist in mitigation, WDC is endeavouring to provide greater access to alternative transport modes which in turn will lead to lower greenhouse gases. This includes improved public transport, improved walking and cycling facilities, provision of Park and Ride facilities and ensuring sustainability is considered in all future planning decisions.

However, it is also recognised that even with international change in behaviour that some form of sea level rise is inevitable and must be accommodated going forward. Waimakariri District Council has a number of coastal communities potentially affected by inundation, and also low-lying areas where ground water level rise will affect the liveability. This also affects ability for groundwater to drain away during and after a flood event. This in turn leads to pavements weakened or overtopped, and in extreme cases, washed away.

At this stage of the Council's maturity in this area, there is a large amount of uncertainty. The Council is actively involved with its regional neighbours to share information and experiences however this will not provide definitive answers in the short to medium term. Therefore, for the period of this AMP, Council proposes to investigate the extent of the problem, the risks posed and potential solutions. This will be done in conjunction with other departments so that there is a cohesive and consistent approach to long term land-use planning, and infrastructural planning (whether it be drainage, water or transportation).

In addition, WDC is participating in a research programme investigating and attempting to quantify the issue of ground water rise, which in turn will help determine effects on cost to the ratepayer, and potential mitigation methods.

Integration of Land Use Planning and Transport

Problem Statements:

- Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.
- Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, and social disconnect.

Waimakariri has been one of the highest growing Districts in New Zealand over the past decade. Even as growth slows, it is still ranked 15th highest in the country. This growth has placed considerable strain on maintaining the network and providing safe and effective linkages for people wanting to move around the district. It is important that the whole transportation network (including cycling, walking and public transport) enhance the quality of life for its residents.

It is important to integrate district land use and transport to ensure that any future growth occurs in conjunction with the appropriate transportation infrastructure. This ensures that existing residents are not detrimentally affected by growth (due to congestion, loss of opportunity, and drop in Level of Service), and that future residents are properly catered for.

In order to ensure that this happens, Waimakariri is part of the Greater Christchurch Partnership (GCP) of Christchurch, Selwyn and Waimakariri which seeks to manage growth in a planned and logical manner and provide integrated regional-wide solutions to that growth. This includes ensuring alternative modes are catered for where possible in initial planning stages, so that residents have good access to safe cycling routes, and adequate and safe pedestrian facilities are provided, such as tactile markers, kerb cutdowns and traffic islands, and adequate lighting. Council also liaises with Ecan regarding its public transport provisions through the GCP.

In addition, the Council planning and roading departments maintain close working relationships as transportation strategies are prepared, new growth areas are planned, programmes are prepared, costs are allocated, and development occurs.

Resilience

Problem Statement:

- Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting effects ranging from temporary disruption to potentially life-changing impacts.

Emergency Events can have a significant effect on infrastructure, homes and lives Resilience is the capacity to recover quickly from difficulties, and in the transport context, refers particularly to recovery from natural hazard events, but also includes planning for events, and finding ways to mitigate or avoid some of the effects completely.

Large scale risks to the network include earthquakes, floods, snow events, fires and strong winds. WDC has proven its ability to deal with these through a high degree of planning and networking. Mitigation measures include the Civil Defence and Emergency Management structures, participation in the Canterbury Lifelines Group, the Council's Business Continuity Plan, and the maintenance contractor's Response Plan which includes a list of critical infrastructure to which access must be maintained, such as pump stations, Mainpower headquarters etc.

Apart from the impact on the community itself, the cost of repairing the transport infrastructure during this current NLTP period currently sits at around \$7.5M. This has a flow on effect to work planned in the community. Council has identified areas where the current infrastructure is inadequate to deal with major events, in particular heavy rainfall. Improved drainage and retaining walls will assist with maintaining connectivity and reducing future cost through ongoing reactive work.

Issues such as fire and wind are also likely to increase in future years. A severe wind event some years ago knocked over a number of trees which were likely to be a hazard going forward but this is an ongoing issue with mature shelterbelts in these events and are an ongoing risk for motorists.

Regarding fire, emergency services can and do close roads when smoke is a hazard to drivers.

It is acknowledged that there are recurring risks, many of which are unpredictable and unpreventable and Council must continue to improve its processes and planning to prepare for events, minimise the disruption and improve the recovery outcomes. An improvement for the next 3 years will be to compare the outcomes of the Lifelines group to the contractor list to determine if any assets have not been considered and plan for how they will be managed.

6.3 Transport Related Infrastructure Strategy interventions

The Infrastructure Strategy considers a range of interventions for various risk-scenarios. The following tables address these from a transport perspective and indicate progress on these.

Providing appropriately for growth

Table 6-2: Transport related IS interventions - Providing appropriately for growth.

Issue	Council's Response	Progress
Predicting level and distribution of growth and using this to inform infrastructure planning	Adopting a corporate growth model, including changing demographic projections, that informs Council decision making	Done
	Adopting strategies, such as the District Development strategy, that signal directions for growth and implementing these through the District Plan review	District Plan review still underway
	Integrating land-use planning and infrastructure provision, especially for transport services by adopting a multi-modal approach to deliver sustainable solutions	Some movement towards the multi-modal approach, however, may be influenced by Government direction
	Designing infrastructure on a minimum 50 year planning horizon.	Dependent on the type of infrastructure – bridges are designed for a minimum of 100 years.
	Preparing/refreshing strategies for community facilities, aquatics, walking and cycling, sports fields, access and Age Friendly to determine future requirements	Ongoing updates carried out. Includes consideration of transport-related access

Responding nimbly to a changing operating environment

Table 6-3: Transport related IS interventions - Responding nimbly to a changing environment

Issue	Council's Response	Progress
Addressing rates affordability	Keeping rates increases to a minimum by smoothing rates via a combination of loan funding, implementing austerity measures and deferring some large infrastructure projects to later years.	Ongoing, however must keep in mind other objectives and recognising the disbenefits of austerity measures and deferring projects.
Addressing changing funding environment	Ensure Waka Kotahi is kept informed of Council's needs and appropriate funding requests made; seek alternative funding sources where possible	Ongoing

Changing government priorities and legislative environment (Environmental Sustainability)

Table 6-4: Transport related IS interventions - Changing Government priorities and legislative environment (Environmental Sustainability)

Issue	Council's Response	Progress
Meeting Land and Water Regional Plan requirements for urban stormwater discharge standards by 2025	Securing consents for all urban discharges	As required for roading projects
	Assessing the improvement programme (capital, operational and educational) required to enhance and improve discharges to waterways	As required for roading projects, also planting considered for some capital roading projects alongside waterways and other mitigations
	Develop and consult on a long-term plan of work and associated budget provision to give effect to the programme	Business As Usual
	Monitor and evaluate network and system performance and continue to work collaboratively with partners, particularly mana whenua, to develop affordable and viable solutions to meet the consent conditions	Continuing to work to improve on monitoring and developing innovative, affordable, and viable solutions
Expectations that higher standards of flood protection will be provided in high rainfall events	Extensive flood modelling work has been completed, and will continue to be refined, to identify at-risk areas and influence where further network upgrades should occur, and inform decisions about future development and building proposals	Ongoing – at risk areas identified, sumps cleaned ahead of flood events, and ongoing programme of upsizing drainage assets as required, bridge heights considered for flooding.
	Implementing an ongoing programme of flood improvement works storm events	Ongoing.

Ensuring resilient infrastructure (Resilience)

Table 6-5: Transport related IS interventions - Ensuring resilient infrastructure (Resilience)

Issue	Council's Response	Progress
Adopting a risk-based renewals and investment strategy	Ensuring renewals investment is prioritised to the most vulnerable and critical infrastructure so that the overall resilience of the infrastructure networks is continually enhanced.	Part of the standard Optimised Decision Making Process
Identifying climate change and natural hazard risks	Preparing an annual stocktake of Council's climate change issues and response.	Stocktake refreshed in 2023
	Refining comprehensive flooding modelling carried out to assess potential flood impacts and where further land development should occur.	Done as part of BAU when processing resource consents. Flood overlays in PDP provide rules for developing in areas prone to flooding.
	Incorporating results from flood and reticulation network modelling into AMP's and the District Plan Review.	Latest flood modelling incorporated into PDP and AMPs.
	Completing and consulting on natural hazards risk assessment in 2020 as part of the District Plan review.	Natural hazards GIS layer & public portal
	Carrying out risk assessments for essential infrastructure.	Phase 1 of risk assessment completed for 3 waters assets in 2021
Setting a strategic framework in place for climate change mitigation and adaptation	Adopting a Sustainability Strategy in 2020.	
	Adopting a Climate Change Policy in 2020.	Draft adopted in 2020 for consultation
	Developing a WDC Climate Change Scenario Technical Report in 2022.	Done
	Developing a Climate Change Response Strategy in 2024/25.	
	Developing a community based sustainability strategy in 2024/25.	
	Adopting design and modelling standards for infrastructure that reflect the latest climate change	Been doing this since 2008. Any new design or modelling reflects

Issue	Council's Response	Progress
	<p>predictions (e.g. rainfall patterns) and are built using materials and best-practice technologies to improve resilience allowing for the implications of sea level rise and changing weather patterns in asset management planning.</p> <p>Allowing for the implications of sea level rise and changing weather patterns in asset management planning.</p> <p>Making appropriate District Plan provisions in relation to known active faults, flooding and sea level rise.</p>	<p>the latest available information from MfE</p> <p>Been doing this since 2008. Any new design or modelling reflects the latest available information from MfE and NIWA</p> <p>Natural Hazards provisions have been included in PDP</p>
Increasing the resilience of Council infrastructure and the wider community to natural disasters and climate change	Participating in the national and regional climate change forums to influence and ensure best practice is developed and implemented.	Ongoing
Increasing governance and collaboration	<p>Participating in the Canterbury Climate Partnership Plan.</p> <p>Utilising a Climate Change Coordination Group to ensure climate change response efforts are co-ordinated across Council.</p>	<p>Ongoing</p> <p>Ongoing</p>

Transitioning to a sustainable future (Environmental Sustainability)

Table 6-6: Transport related IS interventions - Transitioning to a sustainable future (Environmental Sustainability)

Issue	Council's Response	Progress
Measuring and monitoring greenhouse gas emissions	Undertaking regular emission assessments, utilising the 2017/18 base-line assessment to enable the Council to set emissions targets and assess progress.	Carried out by Environment Canterbury, however difficult to assess vehicle emissions separate from other sources.
Reducing the organisation's carbon footprint	Implementing initiatives to embed sustainability practices in the organisation such as sustainable purchasing policies and practices, flexible working policies and investigating sustainable energy efficiency opportunities.	Policies allowing working from home implemented, support for staff to purchase e-bikes at discount.

Issue	Council's Response	Progress
Developing a more sustainable District	Introducing and maintaining sustainable solutions as kerbside recycling, electric vehicle charging stations, enabling and encouraging alternative transport solutions such as public transport, cycling and walking alternatives.	Well underway but needs to be ongoing.

6.4 Operational Risk Management

Objectives

Council strives to manage risk in a responsible manner to enable business objectives to be consistently met recognising social, cultural, environmental and economic impacts of its activities.

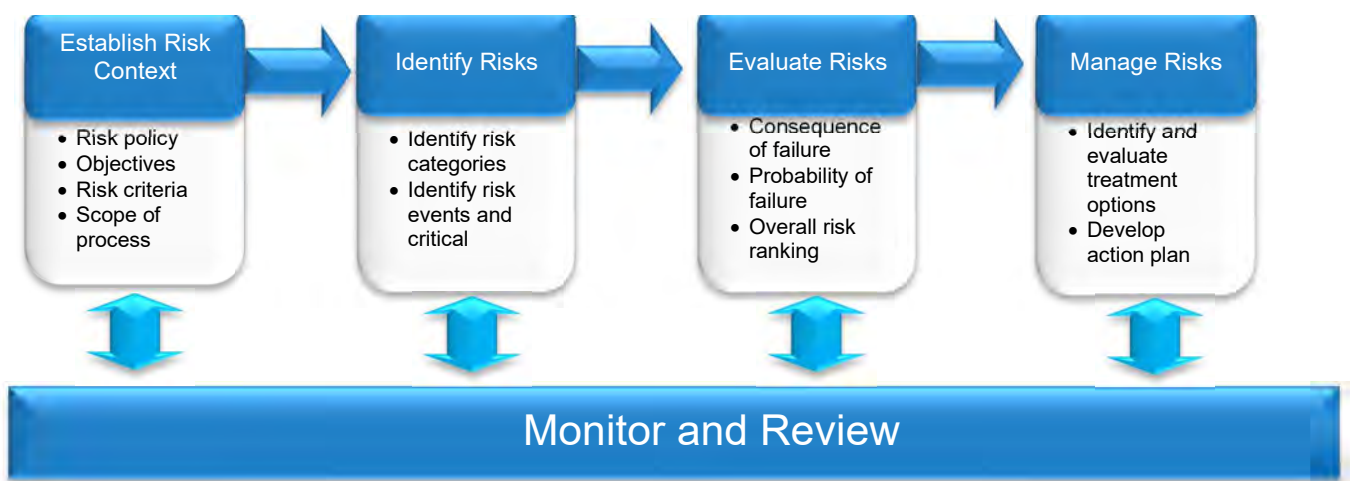
The overall objectives of a risk management process are to ensure that:

- All significant operational and organisational risks are understood and identified
- The highest risks that should be addressed in the short to medium term are identified
- Risk reduction treatments which best meet business needs are applied
- Responsibilities for managing risk are allocated to specific staff.

6.5 Risk Assessment Process

The adopted roading network risk management process is consistent with Australian New Zealand Standard AS/NZS ISO 31000:2009 and the IIMM (2011), to ensure that risks are managed on a consistent basis.

Figure 6-4: Risk Management Process



A series of risk identification workshops were initially conducted involving the Council roading team and Sicon, the network maintenance contractor, to develop and review the current roading risk register. These workshops included the whole of the roading infrastructure to:

- Identify the risk events relevant to each risk type using Table 6-7
- Evaluate of the likelihood of the risk event occurrence using Table 6-8
- Evaluate the consequence of the risk event using Table 6-9
- Determine the risk priority using Table 6-10
- Determine the treatment strategy using Table 6-11

These have since been reviewed by the current roading team, and 'champions' of various risks allocated by who is most appropriate to monitor and report back if a risk appears to be getting worse. Note that this risk and consequences method of assessment is a common methodology for assessment.

6.6 Risks Context

The key risk criteria adopted for WDC for assessing the consequences identified risks are:

- Health and Safety
- Environmental/ Sustainability
- Business/ economics
- Technological Image/ Cultural/ Spiritual

Identify Risks

The Potential risk events were identified and categorised into four areas, as shown in the table below:

Table 6-7: Risk Types

Risk Type	Descriptions
Planning Risks	Events generated by events outside the control of the organisation such as the effects of natural events, either long term such as climate change or sudden (earthquakes), change in legislation, change in network demand where influenced by neighbouring councils growth and decision making
Management Risks	Events associated with incomplete planning information and processes, lack of resources, financial restraints.
Delivery Risks	Events largely caused by breakdown of operational processes such as inadequate inspection, lack of communication, inadequate quality system, health and safety.
Physical Asset Risks	Events mainly associated with the failure of the assets due to loading characteristics, material and equipment failure.

Analyse Risks

The likelihood and impact ratings used to determine initial risk ratings are defined in the tables below:

Table 6-8: Risk Likelihood Ratings

Level	Likelihood	AS/NZS ISO 31000:2009 Definition
5	Almost certain	The event is expected to occur in most circumstances
4	Likely	The event will probably occur in most circumstances
3	Possible	The event would not be very surprised if the event was experienced
2	Unlikely	The event could occur at some time
1	Rare	The event may occur only in exceptional circumstances

Table 6-9: Measures of consequences of failure

Level	Consequences	AS/NZS ISO 31000:2009 Definition	Health & Safety (TNZ descriptors in bold)	Environmental/ sustainability	Business/ economic	Technological	Image/ cultural/ spiritual	Delays
5	Catastrophic	Death, toxic release off-site with detrimental effect, huge financial loss	Multiple fatalities and/or widespread serious acute or chronic health effects	Widespread irreparable environmental damage, national concern, high profile legal challenge	Loss of revenue or opportunity and working days lost in excess of \$10 million	Catastrophic failure of systems to perform as intended.	Major concerns at an international media cover , significant media attention, impact on reputation of industry as a whole	Several years
4	Major	Extensive injuries, loss of production capability, off-site release with no detrimental effects, major financial loss	Multiple serious or a fatality - Single fatality, some chronic health effects or localised serious acute health effects	Localised long lasting environmental damage, community outrage, potential for legal action	Loss of revenue or opportunity and working days lost \$1 million to \$10 million	High complex, extensive or novel buildability or operational requirements resulting in significant under performance of system.	Major concerns at a regional level, sustained national adverse media coverage , major implications within industry	Year
3	Moderate	Medical treatment required, on-site release contained with outside assistance, high financial loss	Serious Injuries - Serious health impacts to several people, requiring hospital attention	Significant rectifiable environmental damage or persistent small-scale effects, major local concerns, significant economic sanctions	Loss of revenue or opportunity and working days lost \$100,000 to \$1 million	Complex buildability or operational issues that result in failing to meet operational or performance targets.	Regional media cover or short term national - Significant local concerns and opposition, temporary loss of image.	Months

Level	Consequences	AS/NZS ISO 31000:2009 Definition	Health & Safety (TNZ descriptors in bold)	Environmental/ sustainability	Business/ economic	Technological	Image/ cultural/ spiritual	Delays
2	Minor	First aid treatment, on-site release immediately contained, medium financial loss	Minor Injuries - Single serious health effect and/or several minor health effects - requiring medical attention	Significant localised short-term effects, significant breach of consents, open to fines	Loss of revenue or opportunity and working days lost \$10,000 to \$100,000	Complex or significant buildability or operational issues that require special ways of working	Some local media cover , difficulties and concerns.	Weeks
1	Insignificant	No injuries, low financial loss	Slight injuries - Short term health effects - first aid attention only	Short term environmental effects, minor infringements of consent	Loss of revenue or opportunity and working days lost less than \$10,000	Minor technological issue that can be relatively easily overcome	Possible local media cover - No significant issues as regards image, cultural or spiritual aspects	Days

Evaluate Risks

After the likelihood and consequence factors have been determined, the level of risk is calculated by multiplying the Likelihood of Occurrence (Table 4.3) and the Consequence Rating (Table 4.4).

Risk = the likelihood of an event occurring X the consequence of such an event.

The final outcome is a risk rating as shown in the table below. Four risk categories have been used: Extreme, High, Moderate, and Low risk.

Table 6-10: Risks Priority Rating Matrix

Likelihood of Occurrence	Almost Certain 5	5	10	15	20	25
	Likely 4	4	8	12	16	20
	Possible 3	3	6	9	12	15
	Unlikely 2	2	4	6	8	10
	Rare 1	1	2	3	4	5
		Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Severity of Outcomes						

This allows all assets and corporate risks to be compared and ranked. The risk policy specifies the following broad treatment strategy for the level of risks:

Table 6-11: Risk Evaluation and Treatment Strategy Summary

Risk Severity	Treatment Strategy
Low Risk	Manage by routine procedures
Medium Risk	Management responsibility must be specified, and risk control annually reviewed
High Risk	Treatment options must be reviewed, and additional action taken to manage risk
Extreme Risk	Immediate action required to reduce risk

Manage Risks

Once the risks have been assessed and rated, along with the management option, they are compiled in a Risk Management Register.

The Risk Register for the roading and transport network is included in **Appendix E**. This identifies individual risk, description of the risk, the gross and net risk, current mitigation strategy, defines responsibility and management options.

Monitor and Review

An process is to be developed to ensure that risk management is actioned, monitored, reported on and reviewed regularly. It is important to identify and constantly review the following:

- The nominated person responsible for ensuring that risks are managed and improvements carried out in accordance with the programme.
- The best practices that should ideally be carried out to manage risks to an acceptable level.
- The date of entries and revisions, target date for actions to be taken and actual task completion dates.

Most of the time, the risks identified will remain the same and reviews will occur in the context of these risks. However, it will be important to recognise when a new risk arises, or an existing risk may change in nature. In the latter case, the Initial risk also needs to be re-evaluated.

6.7 Key Improvement initiatives

Key improvement initiatives relating to the Risk Management include the following:

Table 6-12: Key Risk Management Improvement Initiatives

Section References	Improvement action	Priority	Proposed Completion date	Owner and Key Staff
Section 6Risk Management				
6.1	Analyse effects of changes to key assumptions (from 2015 Peer review) (Section 8, Financial Summary)	Medium	2026	APE

Transportation Activity Management Plan 2024 Life Cycle Management Plan

June 2024



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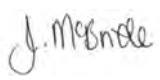
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Table of Contents

7	Life Cycle Management Plan	14
7.1	Overview.....	14
	Roading and Transport Work Categories.....	16
	Programme and corridor coordination.....	17
	State Highway interface	17
	Data Confidence and reliability	17
	Policies, standards and guidelines	20
	Staffing20	
	Funding for the 2024-2027 Programme	20
	Key Improvement Initiatives	21
7.2	The Asset Lifecycle.....	22
	Operations	22
	Maintenance	22
	Renewals/ Replacement.....	22
	Asset Creation/Acquisition/Augmentation	23
	Disposal.....	23
	Supporting Services.....	24
	Optimised Decision Making (ODM) in Lifecycle Management	24
	Sustainability.....	27
	Physical Works and Professional Service Delivery	28
	Routine Operations and Maintenance.....	29
	Renewal / Replacement Plan.....	32
	Creation/Acquisition/Augmentation Plan	33
	New / Upgraded Assets for Development Projects.....	33
	Low Cost/Low Risk Projects.....	35
	Capital Investment Strategies	36
	Disposal Plan.....	37
7.3	Road Carriageway	43
	Purpose	43

Problem Statements	43
Improvements	45
Background Data	45
Network Summary	46
Pavement Surfacing	46
Asset Capacity/ Performance	49
Traffic Loading	49
District Plan Road Hierarchy	51
Road Safety	52
Safety Interventions	54
Customer Satisfaction	55
Asset Condition	55
Smooth Travel Exposure (STE)	59
ONRC Comparisons with Peer Performance	60
Condition Rating	62
Pavement Integrity Index	62
Surface Condition Index	62
Age Profile	64
Surfacing Remaining Life	65
Pavement Structure Age profile	66
Unsealed Roads	66
Asset Valuation	67
Historical Data	68
Expenditure last six years	68
Infrastructure Risk Management Plan	69
Routine Operations and Maintenance Plan	70
Operations and Maintenance Strategies	71
Responsiveness and preparedness	71
Summary of Future Cost	71
Renewal/ Replacement Plan	72

Sealed Road resurfacing	73
Pavement Rehabilitation	76
Unsealed Roads Remetalling	77
Renewal Strategies.....	79
Problems	79
Solutions.....	79
Summary of Future Cost.....	79
Creation/Acquisition/Augmentation Plan	80
Seal Widening.....	80
New / Upgraded Roads.....	80
Minor Improvement /Low Cost Low Risk Projects	81
Seal Extension.....	82
Intersection Upgrades.....	82
Selection Criteria	82
Disposal Plan.....	82
7.4 Bridges and Road Structures	83
Purpose	83
Problem Statements	83
Other Issues	84
Background Data	85
Physical Parameters	85
Asset Capacity/ Performance.....	86
Waimakariri Major Bridges	87
Ashley River Bridge	87
Old Waimakariri Bridge	87
Waimakariri Gorge Bridge.....	87
Asset Condition.....	87
Asset Criticality	89
Asset Valuation.....	91
Historical Data	91

Routine Operations and Maintenance Plan	92
Summary of Future Costs	93
Renewal Plan.....	94
Renewal Strategies.....	94
Summary of Future Costs	97
Creation/Acquisition/Augmentation Plan	98
Disposal Plan.....	98
7.5 Footpaths & Cycleways	99
Purpose	99
Background Data	99
Relationship to Problem Statements	99
Physical Parameters	100
Asset Capacity/ Performance.....	102
Customer Satisfaction	103
Asset Condition	104
Asset Valuation.....	106
Historical Data	107
Infrastructure Risk Management Plan	107
Routine Operations and Maintenance Plan	108
Summary of Future Costs	109
Renewal/ Replacement Plan.....	109
Asphaltic Concrete Paths.....	110
Concrete Paths	111
Renewal Strategies.....	111
Summary of Future Costs	112
Creation/Acquisition/Augmentation Plan	112
Selection Criteria	112
Summary of Future Costs	113
Disposal Plan.....	113
7.6 Road Drainage	114

Purpose	114
Strategic Issues -	114
Infrastructure Issues	114
Solutions	115
Background Data	115
Physical Parameters	115
Asset Capacity/ Performance	117
Asset Condition	117
Asset Valuation	120
Infrastructure Risk Management Plan	121
Routine Operations and Maintenance Plan	121
Renewal/ Replacement Plan	122
Expenditure	123
Creation/Acquisition/Augmentation Plan	124
Disposal Plan	124
7.7 Streetlights	125
Purpose	125
Key Issues	125
Solutions	125
Background Data	125
Physical Parameters	126
Asset Capacity/ Performance	127
Asset Valuation	128
Routine Operations and Maintenance Plan	129
Summary of Future Costs	129
Renewal/ Replacement Plan	130
Renewal Strategies	131
Historical Data	131
Financial Summary	132
Creation/Acquisition/Augmentation Plan	132

Disposal Plan.....	133
7.8 Traffic Services	134
Purpose	134
Key Issues	134
Solutions	135
Background Data	135
Physical Parameters	135
Asset Capacity/ Performance.....	139
Asset Condition.....	140
Asset Valuation	142
Historical Data	145
Infrastructure Risk Management Plan	146
Routine Operations and Maintenance Plan	147
Summary of Future Costs	148
Renewal / Replacement Plan	148
Summary of Future Costs	149
Creation/Acquisition/Augmentation Plan	149
Summary of Future Costs	150
Disposal Plan.....	150
7.9 Passenger Transport	151
Purpose	151
Background	151
Key Technical Issues	152
Solutions	152
Background Data	152
Physical Parameters	152
Asset Capacity / Performance.....	152
Age profile/ Condition.....	153
Historical Data	154
Infrastructure Risk Management Plan	154

Routine Operations and Maintenance Plan	155
Summary of Future Costs	155
Renewal/ Replacement Plan	156
Creation/Acquisition/Augmentation Plan	156
Summary of Future Costs	156
Disposal Plan	157
7.10 Parking	158
Purpose.	158
Key Issues specific to parking	158
Solutions	158
Background Data	159
Physical Parameters	159
Asset Capacity/Performance	159
Asset Condition	159
Valuation	159
Historical Data	160
Routine Operations and Maintenance Plan	160
Operation and Maintenance Plan	161
Planned Maintenance	161
Unplanned Maintenance	161
Operations and Maintenance Strategies	161
Summary of Future Costs	161
Renewal/ Replacement Plan	162
Creation/Acquisition/Augmentation Plan	162
Proposed Works	162
Summary of Future Costs	162
Disposal Plan	162

Figures

Figure 7-1 Asset Work Category	16
Figure 7-2 ODM Process	26
Figure 7-3: Balancing Proactive and Reactive Maintenance	30
Figure 7-4: History of Point asset creation (Council and Vested).....	34
Figure 7-5: History of linear asset creation (Council and Vested).....	35
Figure 7-6: Strategic Context Map 21-33	42
Figure 7-8: Distribution of Urban Pavement Surface Types by Length (km)	48
Figure 7-9: Distribution of Rural Pavement Surface Types by Length (km)	48
Figure 7-10: Road by One Network Framework Road Classification	50
Figure 7-11 District Plan Roding Hierarchy	51
Figure 7-12: Network by District Plan Hierarchy	51
Figure 7-13: All Motor Vehicle Crashes 2013-2022	52
Figure 7-14: Fatal and Serious crashes and corresponding injury severity 2013-2022	53
Figure 7-15: Fatalities and Serious Injuries 2013-2022	53
Figure 7-16: Customer Satisfaction Survey	55
Figure 7-17: Network Roughness per Roads Hierarchy 85th percentile by ONRC classification and annual trend 58	
Figure 7-18: Smooth travel exposure by ONRC annual trend – Urban.....	59
Figure 7-19: Smooth Travel Exposure by ONRC annual trend - Rural.	59
Figure 7-20: Historical Trend in STE for Waimakariri District Sealed Roads	60
Figure 7-21: Trend of percentage of travel on roads smoother than ONRC threshold	61
Figure 7-22: Smooth Travel Exposure by ONRC	61
Figure 7-23: Performance against Peers, Region, and Nationally	61
Figure 7-24: Historical Trend in PII.....	62
Figure 7-25: Historical Trend in SCI	63
Figure 7-26: Top Surfacing Age profile (stackedd)	64
Figure 7-27: Top Surface Age Profile 2022	64
Figure 7-28: Top Surfacing Remaining Useful Life	65
Figure 7-29: Pavement Age Profile	66

Figure 7-30: Carriageway Maintenance Forecast Expenditure	72
Figure 7-31: JunoViewer recommended renewals lengths	74
Figure 7-32: JunoViewer Renewals Chart.....	75
Figure 7-33: Annual Reseal Quantities	75
Figure 7-34: Annual Pavement Rehabilitation Quantities	77
Figure 7-35 Remetalling achievement over time	78
Figure 7-36: Carriageway Renewal Forecast Expenditure	80
Figure 7-37: Carriageway Vested Assets since 2004	81
Figure 7-38: Bridges by Construction Type	86
Figure 7-39: Large Culverts by Construction Type	86
Figure 7-40: Bridges and Large Culverts Age Profile	88
Figure 7-41: Bridge Condition by Quantity of Bridges.....	89
Figure 7-42: Bridges & Road Structures Historical Expenditure	91
Figure 7-43: Bridge and Road Structures Maintenance Forecast Expenditure	94
Figure 7-45: Bridge Financials	98
Figure 7-46: Footpath Type by Length (km).....	101
Figure 7-47: Footpath Type by Replacement Cost 2023	102
Figure 7-48: Typical footpath widths.	103
Figure 7-49: Footpath and Cycling Satisfaction.....	103
Figure 7-50: Footpath Age Profile	104
Figure 7-51: Footpath Condition Rating	106
Figure 7-52: Footpath Condition by length	106
Figure 7-54: Footpath Maintenance Forecast Expenditure.....	109
Figure 7-55 Footpath Renewal length 24/25-26/27	110
Figure 7-56: Footpath Renewal Forecast Expenditure	112
Figure 7-57: New Footpath Forecast Expenditure	113
Figure 7-58: Culvert Length and Quantity by Size	116
Figure 7-59: Culvert Age Profile	117
Figure 7-60: Surface Water Channel (SWC) Age Profile	118
Figure 7-61: Surface Water Condition 2023	120

Figure 7-62: Drainage Past & Future Expenditure.....	123
Figure 7-63: Streetlight Poles Quantities by Road Hierarchy.....	126
Figure 7-64: Poles Age profile.....	127
Figure 7-65: Streetlight Infrastructure Risk.....	128
Figure 7-66: Streetlight Maintenance Forecast Expenditure.....	130
Figure 7-67: Streetlight Renewal Forecast Expenditure	131
Figure 7-68: Streetlight Expenditure.....	132
Figure 7-69: Percentage of Respective Sign Types	136
Figure 7-27: Railing Types by length.....	136
Figure 7-71: Percentage of Respective Railing Types.....	138
Figure 7-72: Traffic Island Quantities 2023	138
Figure 7-73: Signs by Class	140
Figure 7-74:: Signs Age Profile	141
Figure 7-75: Islands Age profile.	142
Figure 7-76: Traffic Services Historical Maintenance Expenditure.....	145
Figure 7-77: Traffic Services Historical Renewals Expenditure	146
Figure 7-78: Traffic Services Maintenance Forecast Expenditure	148
Figure 7-79: Traffic Services Renewal Forecast Expenditure.....	149
Figure 7-80: Passenger Transport Infrastructure Condition Profile.....	153
Figure 7-81: Passenger Transport Historical Expenditure	154
Figure 7-82: New Passenger Transport Expenditure.....	157
Figure 7-83: Carpark Historical Expenditure	160
Figure 7-84: Car Park Future Maintenance, Operations and Renewals Costs.....	161
Figure 7-85: New Parking Expenditure.....	162

Tables

Table 7-1 Confidence.....	18
Table 7-2: Rating18	
Table 7-3: Key Improvement Initiatives	21
Table 7-4: Ten Year Capital Projects Proposed Programme for 2024/25 - 3033/34 LTP.....	38
Table 7-5: Kilometres of Roads.....	46
Table 7-6: Pavement Components.....	46
Table 7-7 Lengths of Roads by Traffic Loading and Hierarchy (km).....	49
Table 7-8: Summary of Carriageway Asset Valuation as at 30 June 2023	67
Table 7-9: Summary of Road Carriageway Historical Expenditure (Update) (Include Network and Asset management as a % of all).....	68
Table 7-10: Infrastructure Risk Management	69
Table 7-11: Renewal Work Types	72
Table 7-12: Remetalling Frequency	78
Table 7-13: Summary of Structure Types.....	85
Table 7-14: List of Critical bridges.....	90
Table 7-15: Summary of Road Structures Asset Valuation as at 30 June 2023.....	91
Table 7-16: Risks Associated with Bridges	92
Table 7-17: : Footpath Surface Material by length (km).....	101
Table 7-18: Footpath Rating System.....	105
Table 7-19: Summary of Footpath Asset Valuation as at 30 June 2023	106
Table 7-20 Risks related to Footpath Infrastructure.....	107
Table 7-21: Surface Water Channel by Type	115
Table 7-22: Drainage Comparative quantities	116
Table 7-23: SWC Condition Rating System	119
Table 7-24: Summary of Surface Water Channel Asset Valuation as at 30 June 2023	120
Table 7-25: Drainage Infrastructure Risks.....	121
Table 7-26 Summary of Streetlights Asset Valuation at 30 June 2023.	128
Table 7-28: Miscellaneous Traffic Furniture and signs	139
Table 7-29 Summary of Signs Asset Valuation at 30 June 2023.....	143

Table 7-30: Summary of Railings Asset Valuation as at 30 June 2023	144
Table 7-31: Summary of Traffic Islands Asset Valuation as at 30 June 2023	144
Table 7-32: Summary of Traffic Control Asset Valuation as at 30 June 2023	145
Table 7-33: Signs Infrastructure Risk	146
Table 7-34: Summary of Passenger Transport Asset Valuation at 30 June 2023	154
Table 7-35: Public transport infrastructure Risks	155
Table 7-36: Passenger Transport Future Maintenance Expenditure	156
Table 7-37: Council Carpark Locations and Quantities	159
Table 7-38: Car Parking Infrastructure Risks	160
Table 7-39: Carpark future costs	161

7 Life Cycle Management Plan

7.1 Overview

Life Cycle Management Plans focus on options and strategies for managing assets, or components of assets, throughout their life, taking into consideration all relevant economic and physical consequences from initial planning through to disposal.

This section of the Activity Management Plan describes the life cycle management plans for the following key asset groups:

- Road Carriageways
- Bridges and Road Structures
- Footpaths and Cycleways
- Road Drainage
- Streetlights
- Traffic Services
- Public Transport Infrastructure
- Parking



The lifecycle management plans outline for each asset:

- The purpose of each asset group
- The key issues related to managing and using those assets
- The background data for each asset group including:
 - Physical Parameters
 - Asset Capacity/ Performance
 - Asset Condition
 - Asset Valuations
 - Historical Data

The management tactics to achieve the level of service, based on 'Optimised Decision Making' principles (ODM) include:

- Routine Operations and Maintenance Plan
- Renewal/ Replacement Plan
- Creation/Acquisition/Augmentation Plan
- Non-physical associated work (education, enforcement)

An important modification to the Activity Management Planning Process has been the incorporation of both the Business Case approach and the One Network Road Classification (ONRC), and now the One Network Framework (ONF).

The Business Case Approach is a philosophy used to guide planning, investment and project development processes. It is a principles-based approach that aims to clearly link a strategy to outcomes and works off the premise that problems and their consequences should be thoroughly defined and understood before solutions are considered. This approach ensures a shared view of problems and benefits early in the transport planning process giving wider scope to ensuring the best solutions are used, not that an existing solution is 'shoe-horned' to fit a problem.¹

Reiterated throughout this document are the Problem Statements/Issues that have been considered most relevant to Waimakariri District Council at a strategic level taking into consideration local, regional and national needs, and the Benefits that could be achieved by introducing remediation, mitigation or elimination strategies, these provide a framework to the Why for the work we do. The Life Cycle Management Plan seeks to align the Problems and Solutions with the assets and programmes, by focusing not only on the basic philosophy of how to get best possible value for money in an asset's life, but also to ensuring those assets contribute to the overarching needs of the district.

Waimakariri's key problem statements for the 24-27 NLTP are:

- *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*
- *Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, leading to effects ranging from temporary disruption to potentially life- changing impacts.*
- *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.*
- *Road users on our network have little room for error or recovery from mistakes, which results in fatal and serious injuries when crashes occur.*

¹ <https://www.nzta.govt.nz/planning-and-investment/planning/planning-process/business-case-approach/>

One Network Road Classification

The One Network Road Classification (ONRC) was developed as a means by which local government and the Transport Agency could plan, invest in, maintain and operate the road network in a more strategic, consistent and affordable way throughout the country.

It involved categorising roads based on the functions they perform, based primarily on traffic volumes. However, it was found this classification was too simplistic and did not allow for the primary use of the roading network with regards to land use. For example, a main street in the centre of a city or town may have low motor vehicle use because it has been pedestrianised but has a high importance due to its location and land use. This led to the development of a more land-use based classification.

One Network Framework (ONF)

The successor to the ONRC is the ONF. Councils are now moving towards integrating the One Network Framework into their Activity Management Plans, and their general planning processes. This work is being introduced in the preparation period for this AMP. The new hierarchy still features traffic volume as part of the planning and decision making, but now incorporates Place classifications, for example Civic Spaces, Urban Connectors, Rural Roads, Rural Connectors, and others.

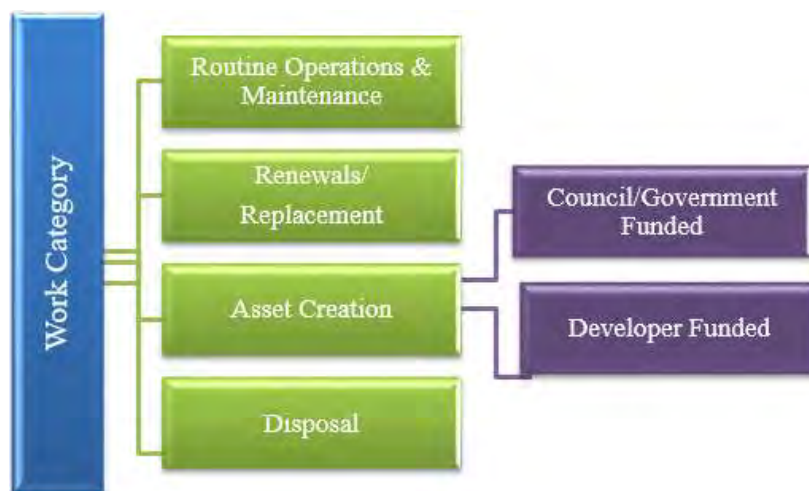
This hierarchy will require a different look at assets and how they relate in the network. This will provide consideration of the different customers and how all their needs can be catered for appropriately.

Roading and Transport Work Categories

The Local Government Act 2002 requires that the Activity/Asset Management Plan (AMP) details all asset management activities undertaken to meet the community outcomes.

This AMP incorporates the lifecycle of the roading and transport asset activities as shown in Figure 7-1.

Figure 7-1 Asset Work Category



Programme and corridor coordination

Road Controlling Authorities are not the only bodies who work within the road corridor. Other utilities, such as power companies and telecommunication companies, also utilise the corridor. Providing an interface ensures assets are maintained as best as possible and road users suffer the least possible disruption. The Council holds regular liaison meetings with other utility service providers, both in-house and external to co-ordinate planned works in terms of the National Code of Practice for Utilities Access to the Transport Corridors. Information about proposed projects is circulated prior to finalising future works programmes to determine what timing needs to be changed. A project is underway to post programmes on the Council GIS map to allow real time spatial planning.

State Highway interface

Council's roading and transport network interacts with Waka Kotahi assets through SH 1 and SH71. The Council manages the street cleaning, street lighting power, maintenance and renewal of footpath and kerb and channel on behalf of Waka Kotahi. Council recognises that highway traffic can have a significant impact on the efficient and safe travel on adjoining roads, and vice versa, and has been working with Waka Kotahi through the following programmes:

- *SH 1 Christchurch Northern Corridor Improvements.*
- *SH 1 Saltwater Creek to Cam River Safety improvements.*
- *SH 71 Safety Improvements.*
- *SH 1 Woodend Bypass.*

Changes in government have meant however that the Saltwater Creek to Cam River and Speed Infrastructure safety improvements are on hold, and likely to not go ahead, while the Woodend Bypass has been endorsed by the Government and brought into the coming ten-year period, however details are not yet available on the timing of this.

Data Confidence and reliability

Table 6-3 shows the confidence framework NAMS (IIMM) uses to determine the confidence in the transport asset data. Work is constantly underway to improve quality of data where this is feasible, useful, and/or economically worthwhile (refer Table 1.2).

The in-house Asset Information Team, in addition to inputting new assets, have taken on two additional tasks:

- Reviewing and updating older data as time allows
- Quality auditing of data entered by contractors.

In the past there has been considerable use of Pocket RAMM by the contractor to enter data. There is a move towards introducing an intermediate stage where all data is held when supplied by the contractor, checked, corrected as required and uploaded into RAMM. This is planned to allow for additional checking and confidence for new data. In time Pocket RAMM itself will be superseded by simply taking RAMM out into the field.

Table 7-1 Confidence

Confidence Grade	General Meaning
A	Highly Reliable: Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment.
B	Reliable: Data based on sound records, procedures, investigations and analysis which is properly documented but has minor shortcomings.
C	Uncertain: Data based on sound records, procedures, investigation and analysis which is incomplete or unsupported, or extrapolation from limited sample for which grade A or B data is available.
D	Very Uncertain: Data based on unconfirmed verbal report and/or cursory inspection and analysis.

Table 7-2: Rating

Asset Type	Rating	
Formation	B	Only updates will be as new roads are built, or where dig-outs occur
Sealed Pavement Surface	A	Due to pavement renewals, minimal assets remain which have not been replaced and updated, other than on the more remote low volume roads.
Sealed Pavement Layers	A	Due to pavement renewals, minimal assets remain which have not been replaced and updated, other than on the more remote low volume roads.
Unsealed Pavements	B	Some updating required of widths and start/finish points, as these tend to vary due to grading practices and wear and tear, however more detailed information about renewal quantities is being added to the database, to enable easier prediction of renewal requirements.

Bridges and Bridge Culverts	B	Estimates of bridge ages has been carried out where these were not known. Some field checking of basic asset data such as location, length and width is also required, but occurring slowly.
Minor Structures	B	This is relatively up to date, however will need review at end of financial year to ensure new assets have all been included
Islands	B	Still requires checking, however there is confidence in islands added in last five years
Drainage (Culverts, Sumps and Subsoil Drains)	B	A desktop review of sumps has been carried out, and data on culverts and sumps has been updated for quantity and size, and assets are being condition rated.
Drainage (Under channel pipes)	A	Data captured through 3 Waters
Surface Water Channels	A	Quantities and locations complete, along with condition.
Footpath & Cycleway	A	Quantities and locations complete, along with condition.
Street Lights	B	Data captured by the Street Light Contractor and checked by Project Manager.
Traffic Facilities – Tactile Indicators	B	No review carried out prior to this review. Good capture of new assets however condition rating is to be carried out in the next 12 months.
Traffic Services- Road marking	B	Frequency of repainting means this does not incur depreciation therefore not needed for the valuation. Markings have recently been added into RAMM to assist with contract management
Traffic Services- Signs	C	Updated as replaced.
Traffic Services- other	B	Updated as replaced.
Railings	C	Best practice now separates these from Bridges into Railing table; this still needs to be carried out.

In addition, significant effort has gone into improving data quality by providing measurements against asset data reliability and accuracy, via the ONRC (now Insights) Data checking tool. As the Insights team roll out more tools for reviewing data reliability, Council asset staff implement additional error checks. Whilst there are still gaps in the data, the processes to update and improve data have enabled WDC to have more confidence in the RAMM database.

Policies, standards and guidelines

The Council standards and specifications for maintenance and operational activities reflect the most appropriate current technologies, national standards, and legislative requirements. All work performed and materials used should be in accordance with the latest edition of the Waimakariri District Plan and the Council's Engineering Code of Practice, unless specifically instructed otherwise.

These in turn reference other documents including those produced by Austroads, Waka Kotahi the New Zealand Transport Agency and Standards New Zealand. The Engineering Code of Practice contains a full list of appropriate reference documents and standards.

The maintenance, repair and replacement of proprietary equipment is to be carried out in accordance with the manufacturer's recommendations.

Staffing

Until recently Council had an extremely experienced roading team with an extensive knowledge of the district. There have been a number of changes to this since the last AMP and the majority of the team has joined this department in the last three years. There has been a strong emphasis on team fit and Council is confident that the new team is motivated and very capable of lifting Council performance further, through better performance monitoring and innovations.

In addition, the Maintenance contractor has a number of very experienced and senior staff with vast knowledge of the district and will pass this on to new Council staff. It is expected however that there will be a greater requirement for technology and external resources to assist in the transition.

Funding for the 2024-2027 Programme

The period since the last AMP has seen a massive increase in inflation which will have a significant impact on the programme. Waka Kotahi is already indicating there may be some constraints in funding, particularly capital projects.

Overall, Council has provided funding for unsubsidised works where it sees these as being critical to providing and caring for appropriate infrastructure in order to meet Community Outcomes. This assistance reaches across the range of activities, from maintenance to new capital. It is likely that this will need to continue to be the case for the 24-27 programme.

Key Improvement Initiatives

Key improvement initiatives relating to the Life Cycle Management Plan include the following:

Table 7-3: Key Improvement Initiatives

Section References	Improvement action	Priority	Proposed Completion date	Owner and Key Staff	Progress
7.1	Prepare Heavy Transport strategy for District	Medium	June 2023	APE, TE, R&TM	Incorporated into ITS
7.2	Undertake a sensitivity analysis to consider the impact of differing levels of growth on the funding requirements.	Medium	June 2023	APE, TE, R&TM, Planners, Accountant	Council has decided to only consider the high growth scenario
7.3	Develop systems and implement processes for collecting data for relevant ONRC performance measures not currently captured.	Medium	June 2021	APE, RE	Will potentially be superseded by ONF,.
7.4	Capital renewal and development project planning – develop plans and processes to utilise spatial analysis to improve the analysis of maintenance, construction date, condition and performance data for 1. identification and prioritisation of renewals and development projects, 2. optimisation of maintenance programmes (modified from 2015 Peer review)	High	June 22	APE, GIS Team	User Defined Tables currently being set up to allow spatial analysis of District. JunoViewer will allow view of defects and programmes in a continuous, integrated manner. This will also assist with optimising programmes through different scenarios

7.2 The Asset Lifecycle

Operations

- Operational activity is work or expenditure that is necessary to provide or keep the asset functioning, but has no effect on asset condition, such as:
- Power costs for streetlights
- AM systems and database operations and maintenance, e.g.: RAMM
- Road opening procedures and utility liaison
- Street cleaning
- Vegetation control
- Customer service response
- Council overhead costs that have not been specifically allocated to activities.

Maintenance

Routine Maintenance is the day-to-day work required to keep assets operating at required service levels, and falls into two broad categories:

- **Planned Maintenance:** Inspection and maintenance works planned to prevent asset failure.
- **Unplanned Maintenance:** Action to correct asset malfunctions and failures on an as-required basis (e.g. urgent repairs).

The Council sets its funding for roading and transport operations and maintenance three yearly through its Long Term Plan (LTP) process, and reviews it annually, between LTPs, with the Annual Plan. In general, funding of maintenance is set to match the long-term needs established by the maintenance programmes set out in this Activity Management Plan. Funding assistance from central Government is subject to Waka Kotahi approval through the three-year Land Transport Programme.

Renewals/ Replacement

Renewal works occur when it becomes too expensive to maintain the asset or where the Levels of Service can no longer be met through maintenance,

These works include:

- The renewal and rehabilitation of existing assets to their original size, condition, and capacity,
- The replacement of the entire asset with the equivalent size or capacity,
- The replacement component of the capital works which restores the asset to original size and capacity.
- Renewal expenditure includes the following:

- Resurfacing of roads –chip seals and thin asphaltic surfacing
- Rehabilitation of roads – area wide pavement treatment, replacement of pavement structure and surfacing, and smoothing of roads
- Replacement of footpaths and kerb and channel
- Replacement of bridges, culverts, retaining walls, and cattle stops, replacement of traffic signs, streetlights, and bus shelters.

The main factor used in determining when to replace road and transport assets in Waimakariri is asset condition subject to the needs and priorities based on agreed levels of service unless the current LOS is seriously inadequate.

Asset Creation/Acquisition/Augmentation

These are works that extend or upgrade the network or which are required to cater for new development and growth, or to achieve an improved LOS, and may include:

- Works which create an asset that did not previously exist in any shape or form, or
- Works which improve an asset beyond its original size or capacity

Asset creation works fall into separate categories as follows:

- 1. Council funded: works funded and constructed by WDC, some of which may attract financial assistance from the New Zealand Transport Agency (Waka Kotahi). Council contribution is usually funded through general rates although some work, such as sealing unsealed roads, may also require funding from local residents.*
- 2. Developer funded: works funded by developers as part of subdivision or other development or by way of contributions that are then vested in Council.*

Disposal

Disposal is the retirement or sale of assets, whether surplus, or superseded by new or improved systems. Assets may become surplus to requirements for any of the following reasons:

- Underutilisation.
- Obsolescence.
- Provision exceeds required level of service.
- Uneconomic to upgrade or operate.
- Policy change.
- Service provided by other means (e.g. private sector involvement).
- Potential risk of ownership (financial, environmental, legal, social, vandalism, etc.).

The significant disposals that have occurred to date have been associated with bridges and pavements bypassed where road realignments have occurred.

Supporting Services

While managing the asset condition is a critical part of the lifecycle, asset consumption can often be impacted by how the asset is used. Thus, education of road users can be a valuable adjunct to the actual physical management. This can include Travel Demand Management, speed modification and other safety initiatives.

Optimised Decision Making (ODM) in Lifecycle Management

The NAMS Group's Optimised Decision-Making Guidelines (published in November 2004) provides the framework for decision making for the maintenance, renewal and development of new assets, based on economic principles and multi-criteria objectives reflecting community well-being. It represents best practice, advanced asset management.

The Optimised Decision Making (ODM) process involves the consideration of different options for solving a particular problem, allowing for different trade-offs and financial outcomes.

This framework from the Guidelines, shown Figure 7-2 below, can be applied to single project or network level decision making processes. The process is closely linked to community outcomes and is particularly important for significant decisions.

Council regularly updates its roading procurement strategy to ensure that procurement planning reflects the Waimakariri District Council's corporate aims and priorities and is consistent with Council strategies and policies and Waka Kotahi funding and procurement rules. This has been reviewed against the Smart Buyer Self-Assessment. The last review was in 2022 and will be due for updating in 2025.

The primary use in Waimakariri District of Optimised Decision Making is the utilisation of the Net Present Value process for decision making for the timing of pavement renewals, as per NZTA requirements. ODM is also carried out for these new works. However, the general principle of deciding importance of work to be carried out, the timing, and the best means of doing so, are considered in all roading work carried out by Council.

It should be noted that while ODM provides an indication of the best timing for a project, in real life all programmes are a combination of competing needs. Within a transport budget are multiple budgets for multiple assets, and the criticality of one may outweigh the needs of another. Also requiring consideration in all of this is willingness or ability to pay. The overall budget available needs to be kept in mind at all times and although Asset Management Planning presents the ideal, at times this will not be affordable, and compromises may need to be made. This AMP will present ideal and recommended treatment plans and renewals recommendations, but these will be balanced, and the programme put forward is almost never that delivered.

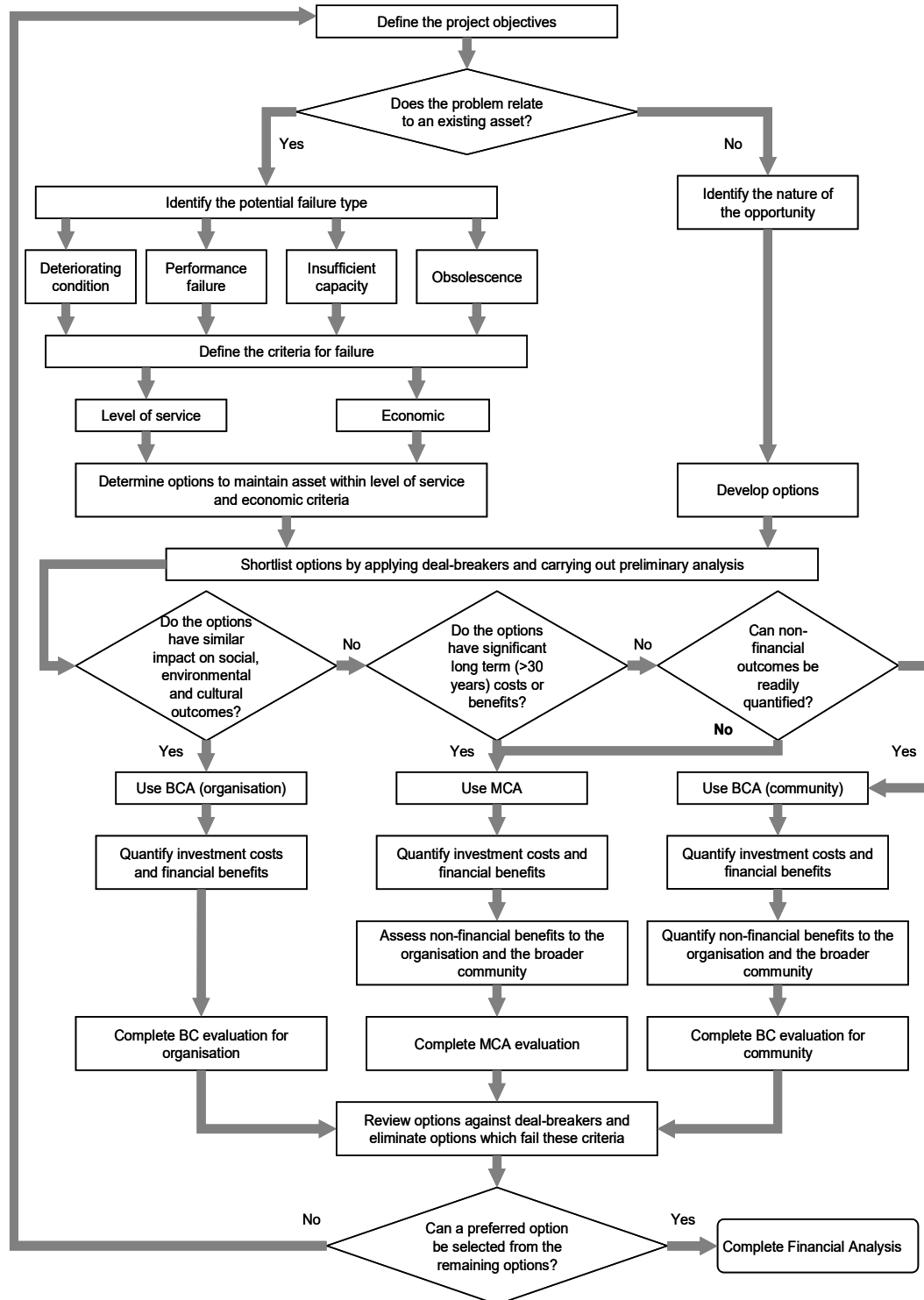
Prioritisation

As part of this ODM, prioritisation processes are being developed for each of the programmes Council delivers. For road resurfacing and rehabilitation, programming through JunoViewer (previously DTIMs), with validation, provides guidance as to which roads require renewal, although decisions as to how much of the programme is affordable is decided as much by external factors such as degree of available funding. However, under JunoViewer, the weighting can be adjusted by Council, and this requires further investigation.

For many of the other assets, safety is the key priority. For example, the bridge renewals carried out over the last two years were prioritised because they were at point of failure, and other considerations such as HPMV needs, traffic volume/hierarchy, length of alternative routes, while also relevant, were not needed in these prioritisations but may well need to be employed for new renewals. Currently renewals of footpaths are currently decided by condition, but other aspects such as location (e.g. in the vicinity of schools or retirement homes), may influence the decision process.

For other assets, prioritisation processes have been developed to differing degrees and these will be further documented, refined and utilised in next programmes, with exceptions noted and justified.

Figure 7-2 ODM Process



Sustainability

Council's most important decisions regarding sustainability used to be considering how sustainable alternatives to traditional processes could be incorporated in Council projects, where possible, and economically viable. Examples of this include:

- Crushed concrete being used in the base of a new road rather than carting it away and dumping, re-milling road surfaces and stabilising with cement rather than removing and replacing; and utilising swales to help filter ground water. Where feasible, sumps are fitted with filter bags to capture rubbish such as plastic and prevent it entering the ecosystem.
- Utilising river gravels for high end use products such as concrete products and sealing chip, and the use of lower quality products for road aggregate when using stabilisation methods, alternative pavement designs and a mix of aggregates in the pavements.
- Monitoring of maintenance chip sealing designs to ensure the optimal size and life is chosen for long term cost and least use of the high-quality product.

However, in recent times sustainability has taken on a new and much wider meaning.

The increased awareness and urgency of providing solutions to the problem of climate change, and the high priority placed on the issue by Government, have meant that it is a major consideration in planning for the future of the network.

Multi-modal transport and travel demand management initiatives are being progressed in conjunction with the Greater Christchurch Partners, with the intention of promoting behaviour change which will help alleviate pressure on the network, reduce emissions and fossil fuel usage, and reduce the quantity of new road building required. Better utilisation of infrastructure is being introduced through various initiatives.

Many new subdivisions (e.g. Silverstream, Beach Grove and Ravenswood) are achieving a much high housing density (as low as 350m² for stand-alone homes), and more apartment style housing. Initially this was in response to a need for lower cost sections during the Christchurch earthquake rebuild, however "Our Space" identified a need to evaluate and consider whether the minimum housing densities in the Canterbury Regional Policy Statement were appropriate and whether changes were required. "Our Space" states that it is expected that new urban housing in Rangiora will achieve a minimum net density of 12hh/ha, which does result in less infrastructure required per head of population, and a resulting environment which is more attractive for walking and cycling, and more opportunity for public transport.

As part of any funding application process for Waka Kotahi for new infrastructure, consideration must be given to all possible alternatives including non-asset demand solutions. For example, at Skew Bridge, where the asset is no longer considered fit for purpose from a demand and safety perspective, but still has an estimated 20 year's useful life remaining, the interim solution installed to improve safety is electronic warning signs. While still assets, the signs are considerably less costly than a new bridge and the main driver is to change behaviour.

Physical Works and Professional Service Delivery

Physical Works

All physical maintenance activities in the district are carried out by external contractors. The Council reached this decision after considering the options for the delivery of these services as required by the Transit NZ Act 1989 (since renamed as the Government Rounding Powers Act 1989). Despite the removal of this requirement (to consider tendering), the Council believes that the current arrangement provides the best solution for maintaining the roading network. The Council does not employ any physical works maintenance staff, either directly or through a CCO², to carry out any road maintenance activities.

The current District Road Network Maintenance Contract was awarded to Sicon Ltd (now Corde) and commenced on 1 November 2020. This contract is managed on a network management basis under a term service contract, using a design and build delivery model and using NEC3 conditions of contract with a maximum five-year term. It is managed in a collaborative working environment by Council in-house staff and the Contractor. Supplier selection was by the Price Quality method.

The District Road and Drainage Maintenance contract includes all routine maintenance, and some renewals work for roads, bridges, footpaths, signs, street cleaning, road grading and remetalling, roadside mowing, emergency work etc., with the addition of road marking and resealing. Also included are the land drainage functions of the Council business. Including this work helps to ensure the contractor has a total network management focus leading to more responsive, better decision making and greater efficiency, resulting in lower costs.

The Maintenance Contractor has recently completed their Maintenance Management intervention Strategy, in conjunction with Council. This helps to document existing and improved construction processes, and seeks to introduce greater levels of efficiency, innovation, and consistency to the management of the network. This document will assist not only in 'raising the game' but also in providing much more data for monitoring and reporting on how the network is performing, and where work is best targeted.

This contract also includes footpath resurfacing, road resurfacing, and routine pavement rehabilitation on a design and build basis, excluding those rehabilitation projects that require more major associated work involving specific design, which are separately designed and tendered. It does not otherwise include new capital works projects, except for some minor improvement works. This type of work is more likely to be large scale, for example the Rangiora Eastern Route.

Street light maintenance and renewal work is managed on a network management basis under a term service maintenance contract combined with NZ Transport Agency (Waka Kotahi) street

² Council Controlled Organisation. These were called LATEs (Local Authority Trading Enterprises) under previous legislation.

lighting on its North Canterbury Network and with Hurunui District Council, using a design and build delivery model with a maximum five year term. It is managed in a collaborative working environment by Council in-house staff with Waka Kotahi and Hurunui District Council representatives. Supplier selection is by the price quality method. This contract was competitively tendered in 2019 and awarded to Power Jointing Ltd. The contract cost increased from \$801,058 for 3 years to \$1,696,555 in 2019.

Professional Service Delivery

Professional services for routine network management, programme management, routine investigations and reporting, asset management, project management and for delivering community road safety programmes are carried out in-house.

Specialist professional services such as bridge inspections and structural advice, road safety audits and advice, transport planning and traffic assessments, traffic counting, road condition rating and surveys, are provided by external consultants. A staged delivery model is used for external consultants under a price-quality based supplier selection process or by direct appointment for lower value appointments.

The Professional Services Contract was awarded in 2020 to WSP for a 3+1+1 period.

Routine Operations and Maintenance

The general operations and maintenance strategies applied to the roading network include:

Operations Plan

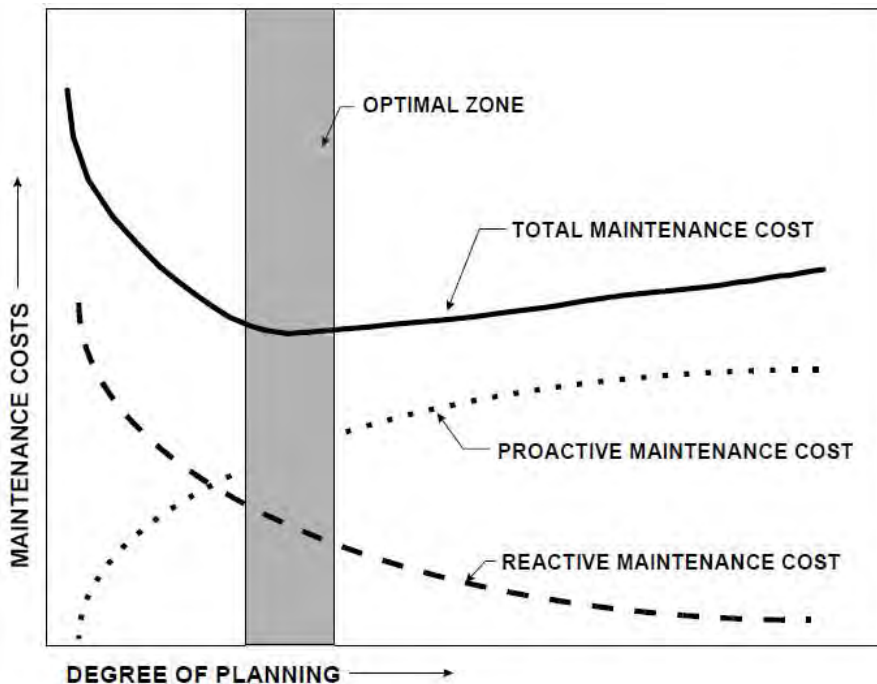
- Council manages the assets in a manner that minimises the long term overall total cost. Scheduled inspections are undertaken as justified by the consequences of failure on levels of service, costs, safety, i.e. the frequency of inspection is proportional to the importance in the hierarchy. Best value has been obtained by using the process as outlined in the procurement strategy and ensured by using competitively priced contract structures and NEC term service contracts, however Council is always open to varying this approach if this produces a better outcome.
- Contractors are required to use RAMM to ensure more efficient management of workflow, claiming, auditing, and asset data updating.
- Asset monitoring processes include RAMM rating of pavements, routine bridge inspections and periodic performance and condition assessments of specific assets.
- Customer enquiries and complaints are recorded on the “Customer Services” database, summarising data on the date, time, details, responsibility and action taken.

Maintenance Plan

The Council utilises two maintenance approaches / strategies: planned maintenance and unplanned maintenance. A key element of asset management planning is determining the

most cost-effective mix of planned and unplanned maintenance in order to minimise the total maintenance cost as illustrated in Figure 7-3. This is generally more proactive on arterial and primary collector (higher risk and higher cost) roads, and more reactive on access and low volume roads.

Figure 7-3: Balancing Proactive and Reactive Maintenance



Planned Maintenance

The programme of planned asset maintenance is undertaken as necessary to deliver the required levels of service, minimise the risk of failure, and ensure safety at an appropriate level for the relevant classification, i.e. a higher level of service is required for roads which are more heavily trafficked and which provide the greatest support for the GPS, regional, and key local objectives.

Once a defect has been identified, remedial work is programmed before the risk and consequence of failure become unacceptable, with priority given to defects which:

- Compromise safety.
- Are likely to cause premature failure prior to the next inspection.
- Cause severe economic deterioration of an asset.
- Maximise value to the district, i.e. utilise the hierarchy in the decision making when prioritising against importance, as above.

Unplanned Maintenance

The planning of non-critical maintenance (i.e., where risks associated with failure to perform are low) is the responsibility of the network maintenance contractors, who optimise the work activity required to meet specified minimum service standards. Such works include pothole repairs, replacement of missing signs and streetlight outages due to crashes.

For unplanned maintenance a suitable level of preparedness is maintained allowing prompt and effective response to emergencies and asset failures by ensuring the availability of suitably trained and equipped staff and service delivery contractors. The initial response to asset failures is to restore service as quickly as possible using the most economic method available. Temporary repairs will only be made if major repairs or renewals are required and cannot be carried out immediately.

The Council's maintenance contractors are required to:

- Maintain, at all times, an effective means of communication with their staff in the field.
- Act on notices from the Council's Service Manager.
- Receive and investigate complaints and service requests from the public and act on them where appropriate.
- Maintain a suitable level of preparedness for prompt and effective response to all reasonable requests.
- Initially respond to asset failures in a manner that will restore minimum acceptable levels of safety and environmental protection as quickly as possible and by the most economic method available. Temporary repairs are acceptable in these circumstances if major repairs or renewals are required to effect permanent restoration.
- Unplanned maintenance works are programmed in accordance with the following priorities:
 - Safety of road users or adjacent property owners is compromised.
 - Safety of road users or adjacent property owners may be compromised.
 - The structure or integrity of the road or road-component is or is likely to be compromised.

Maintenance Inspections/Monitoring

The Council's operational maintenance strategy includes monitoring the condition and performance of assets, investigating any system deficiencies outside the parameters of the target level of service, and identifying the work required to correct defects. The Contractor then is responsible for putting processes in place to avoid repetition where possible.

The Council undertakes the following monitoring to determine trends and monitor performance:

- RAMM rating and roughness surveys of all sealed roads every two years starting in 2013 (previously RAMM rating and roughness survey of 100% of the strategic, arterial, collector routes and 50% of local sealed routes).
- One day and one night of external safety audit concentrating on strategic/arterial routes and surrounding areas, all arterial and primary collector roads being inspected annually, and 30% of secondary collector and low volume routes.
- Annual bridge and road structures inspection with inspection frequencies set by type of structure and condition at last inspection. All bridges are inspected at least every 3 years, with timber bridges and bridges identified as being at risk inspected annually.

It should be noted that Waka Kotahi is moving towards a nationally consistent condition rating framework which will govern what information is collected when, how often, and how. This is expected to be in place by mid-2024.

The Road Maintenance Contract sets out the inspection frequency for each asset type as outlined in the contract LOS Appendix C. This currently incorporates the One Network Road Classification categories but some consideration will need to be given to how to transition this to the One Network Framework.

In addition to the above, The New Zealand Transport Agency (Waka Kotahi) carries out audits to review the performance of Road Controlling Authorities in all aspects of their work on the road networks. In July 2011 Waka Kotahi carried out a Road Infrastructure Safety Assessment (RISA) for a sample of the District's rural sealed roads, and an Investment Audit in 2013. The latest Technical Audit was carried out in March 2021. Council has also carried out High Speed Data collection previously on key arterial roads. This programme was to be reviewed this year with an aim to increasing the quantity of data collected. Council is also moving to make use of JunoViewer, a RAMM based platform which will allow better real-time decision-making and more personalised renewals modelling.

Renewal / Replacement Plan

Renewals are programmed with the objective of achieving:

- A net benefit to the national and/or local economy from the renewals.
- The lowest life cycle cost for the asset, i.e. it is uneconomic to continue repairing the asset through maintenance interventions.
- An affordable medium term cash flow.
- Other savings by co-ordinating renewal works with other planned works within the road reserve or adjacent to it.
- Reduced risk: The risk of failure and associated financial and social impact or potential failure can justify replacement or renewal of an asset, for example, the effect or impact

and extent of discontinuation of a service, the probable extent of property damage, an unacceptable increased risk of crashes or other health risk.

Generally, road renewal projects are subject to Net Present Value calculations to determine whether it is cheaper to replace /renew an asset (e.g. resealing, bridge renewal) or simply carry on with day to day maintenance.

Creation/Acquisition/Augmentation Plan

New capital projects are identified by the Council as a response to growth and demand, to better meet customer needs, or to achieve target LOS. The major projects and roading assets groups are considered and prioritised through the development of the Council's Long Term Plan (LTP). The projects may be partially funded by external funding sources such as the NZ Transport Agency (Waka Kotahi), or through other third party contributions, such as from developers. In some cases where Council has been unable to source third party funding it has funded entirely from ratepayers, for example minor safety works such as Hazard Removal, (tombstone bridge ends, trees) or new footpaths

New / Upgraded Assets for Development Projects

When new developments such as subdivisions are constructed, there are two types of road works that may be required:

- Construction of assets inside the subdivision or development.
- Upgrading of assets outside the subdivision to service the new demand.
- Construction of new assets within subdivisions is generally funded by developers and must be constructed in accordance with the Council's subdivision standards as set out in the Engineering Code of Practice. On completion, provided the roads and associated assets comply with the subdivision standards, they are vested in the Council.

The following graph shows the distribution of capital assets produced by both the Council's capital programmes, and the assets vested by private developers, for each significant asset group.

The upgrading of assets external to the new development, required to service the new demand, is an asset creation issue. Because development is developer driven, the Council is limited in what measures it can take to support any development. The Local Government Act 2002 has introduced a mechanism for funding such growth costs by way of development contributions.

Section 7: Financial Summary of this plan explains in more details the type of contributions that are used.

Figure 7-4: History of Point asset creation (Council and Vested)

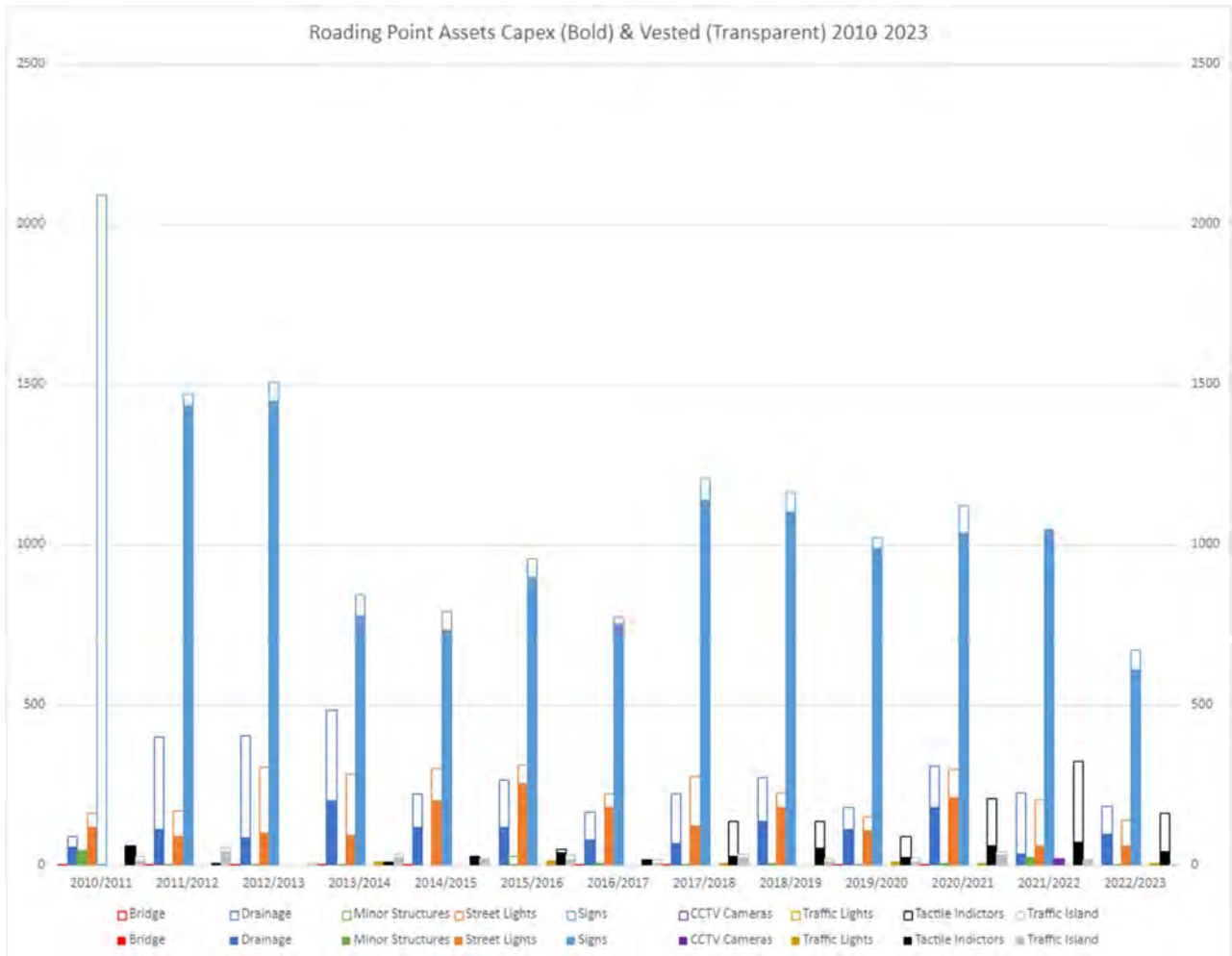
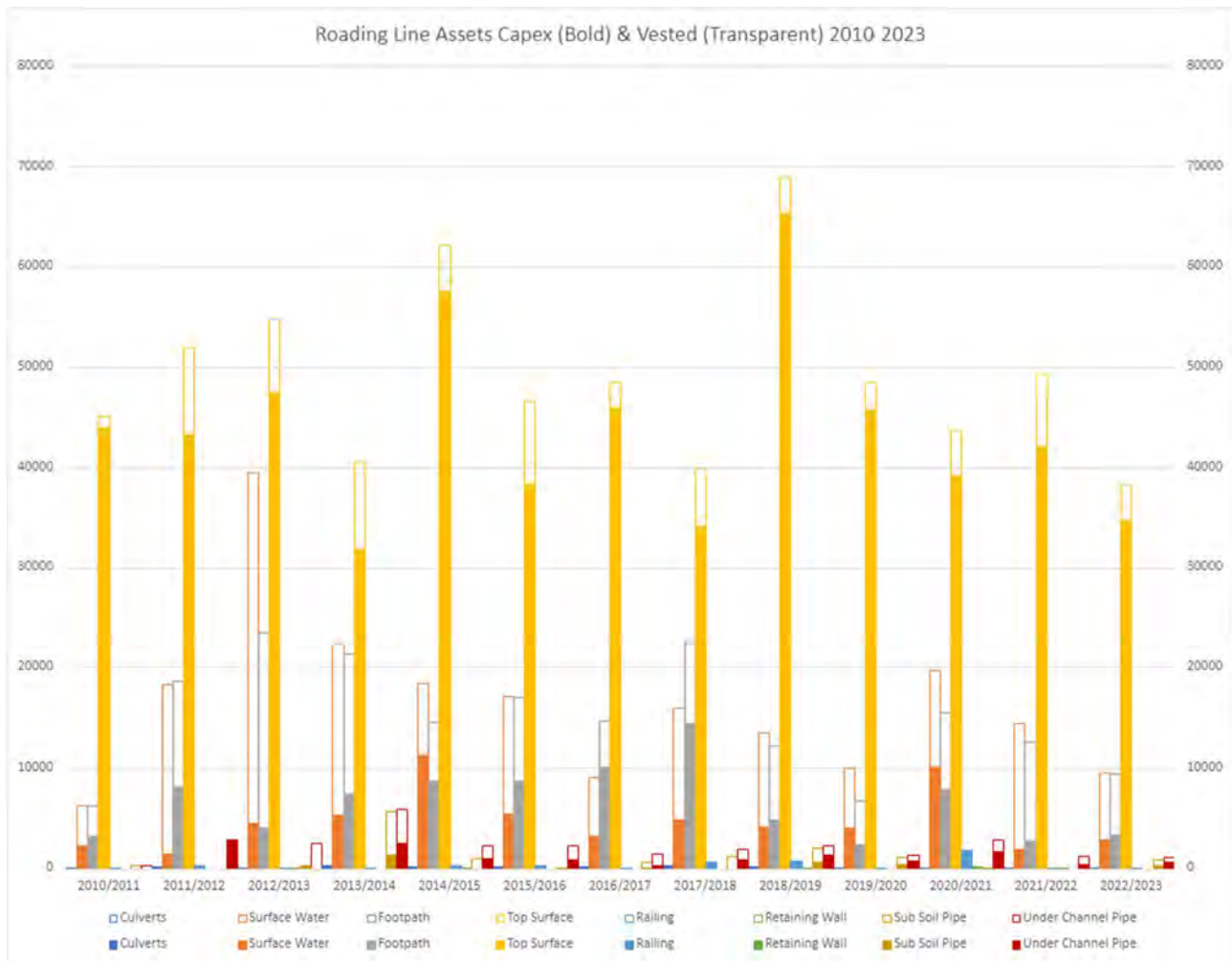


Figure 7-5: History of linear asset creation (Council and Vested)



Low Cost/Low Risk Projects

- Low Cost/Low Risk projects (formally Minor Improvements) are described under NZ Transport Agency (Waka Kotahi) definitions as capital projects up to a maximum value of \$2,000,000. Examples of qualifying activities include:
- isolated geometric road and intersection improvements.
- roadside hazard removal.
- traffic calming measures.
- lighting improvements for safety.
- installation of new traffic signs and pavement markings, or upgrading these to the current standard.
- provision of guard-railing.

- sight benching to improve visibility.
- new bridges.
- stock access structures.
- walking and cycling facilities, and
- minor engineering works associated with community programmes.

Projects completed with co-funding during this period included (amongst others)

- Coldstream Rd Improvements at Sports Hub.
- Rangiora Woodend Rd Improvements.
- Ivory / Queen widening.
- Southbrook / Coronation / Torlesse St traffic lights
- Fernside / Flaxton Roundabout
- Kaiapoi to Belfast Cycleway

For the 21-24 AMP period, these were funded in different sub-categories. These included:

- Road to Zero
- Walking and Cycling
- Local Road Improvements
- Passenger Transport Infrastructure

For the 2024-27 NLTP, the Road to Zero activity class will be incorporated into Local Road Improvements activity class. The available funds for Road to Zero projects are expected to be less than for the 2021-24 NLTP.

Capital Investment Strategies

Capital projects carried out by the Council are prioritised by considering the total benefits to road users and the land transport system.

Generally, Council will seek Waka Kotahi funding for projects, however where the project does not meet funding criteria, provided the project meets Council objectives, it may consider and choose to carry out the work solely funded by rate payers, such as a number of minor improvement projects which do not qualify as Low Cost Low Risk projects

Table 7-4: Ten Year Capital Projects Proposed Programme for 2024/25 - 3033/34 LTP, lists all Capital projects whether or not they may be co-funded by Waka Kotahi. To qualify for Waka Kotahi financial assistance the capital projects are assessed using the Investment Prioritisation Method, which consists of the three following assessment criteria.

- GPS Alignment - alignment with GPS strategic priority
- Scheduling - criticality or interdependency of the proposed activity or combination of activities with other activities in a programme or package or as part of a network.
- Efficiency - expected return on investment and considers the whole of life costs and benefits through cost-benefit analysis.

There have been occasions when funding is available from other sources, for example the Crown Funding for earthquake recovery, and recently, the Climate Emergency Response Fund. It has been indicated that there will be an increasing focus on seeking alternative funding sources rather than simply relying on NLTP share.

Disposal Plan

When considering disposal options all relevant costs of disposal will be considered, including:

- Evaluation of options
- Consultation / advertising
- Obtaining resource consents
- Professional services, including engineering, planning, legal, and survey.
- Demolition / make safe.
- Site clearing, beautification.

The use of revenue arising from the sale of any assets will be credited to the respective operating account at the time of the asset's disposal.

Table 7-4: Ten Year Capital Projects Proposed Programme for 2024/25 - 3033/34 LTP

Project	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost
New Kerb and Channel										
Major Towns	-	-	350,000	-	-	350,000	-	-	350,000	-
New Footpaths and Streetlighting										
New Footpaths Major Towns	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
New Streetlighting Major Towns	50,000	-	50,000	-	-	-	-	-	-	-
Tuahiwi Gritted Footpath Surfacing	100,000	-	-	-	-	-	-	-	-	-
Bridge Reconstruction										
Bridge Renewal & Widening Projects	-	-	-	500,000	-	-	500,000	-	-	500,000
Minor Improvements										
Minor safety - Lighting - LCLR LRI	25,000	25,000	25,000	30,000	30,000	30,000	35,000	35,000	35,000	40,000
Minor safety- Intersection Improvements	120,000	120,000	120,000	130,000	130,000	130,000	140,000	140,000	140,000	150,000
Minor Safety - School Safety Project	50,000	50,000	50,000	60,000	60,000	60,000	70,000	70,000	70,000	80,000
Minor Safety - Speed Treatments	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Minor Safety - Walking & Cycling improvements	100,000	100,000	100,000	110,000	110,000	110,000	120,000	120,000	120,000	130,000
Minor Works - other	50,000	50,000	50,000	60,000	60,000	60,000	70,000	70,000	70,000	80,000
Minor safety - Roadside Hazards Removal	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Minor safety- Delineation upgrades	-	100,000	-	-	100,000	-	-	100,000	-	-
Minor safety - High Risk rural Intersections Treatments - RTZ	200,000	200,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Flood Projects (Tram Rd, Depot Rd & Woodfields Rd) - RESILIENCE	300,000	700,000	-	-	-	-	-	-	-	-
Minor Improvements - Drainage (culverts)	-	-	-	100,000	-	-	100,000	-	-	100,000
Broad Road subsidised LCLR	50,000	-	-	-	-	-	-	-	-	-
School Safety Improvements	550,000	-	-	-	-	-	-	-	-	-
Mafeking Bridge Improvements	50,000	550,000	-	-	-	-	-	-	-	-
Town Centre Upgrades										
Town Centre Upgrades	295,000	-	-	300,000	-	-	300,000	-	-	300,000
Kippenberger Ave - Cenotaph Corner to Warehouse	-	-	-	-	-	-	-	-	-	-
Town Centre to North East	-	-	-	-	-	-	-	-	-	-
Car Parking Provision - Town Centre Parking	-	-	-	-	-	2,250,000	-	-	-	-
North of High St New Road Link	-	-	-	-	-	-	-	-	-	-
North East Subdivision area	-	-	-	-	-	50,000	200,000	-	-	-

Project	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost
Streetlight upgrade High St from East Belt to King St	-	100,000	-	-	-	-	-	-	-	-
Streetlight upgrade Williams St Bridge to Cass St (Kaiapoi Town Centre	-	-	-	-	500,000	-	-	-	-	-
Improvements to Hilton/Williams St Pedestrian facilities (Linking Western Precinct to town)	-	-	37,500	250,000	-	-	-	-	-	-
Land - Blake St Extension	-	675,000	-	-	-	-	-	-	-	-
Durham Land Purchase for Carparking	-	-	-	2,250,000	-	-	-	-	-	-
Keir St Land Purchase	-	-	-	-	-	-	-	-	-	-
Keir St Rd Connection - Rangiora Town Centre Improvements	-	-	-	-	-	-	-	-	-	-
Support for MUBA (Area directly adjacent to KTC) (LoS portion)	12,500	125,000	125,000	-	-	-	-	-	-	-
Land Purchase										
Land Purchase - improved LOS	100,000	-	-	100,000	-	-	100,000	-	-	100,000
Subdivision Contribution Projects - Council Share										
Direct payment to Developers	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608
Design Fees	41,861	41,861	41,861	41,861	41,861	41,861	41,861	41,861	41,861	41,861
Cost of Council Performed Works	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608	418,608
Rangiora Airfield/Prior Rd Upgrade contribution	-	-	-	-	-	-	-	-	-	-
Rangiora Airfield/Prior Rd Upgrade	-	1,012,000	-	-	-	-	-	-	-	-
West Rangiora Route Improvement	-	-	-	-	-	350,000	-	-	-	-
Woodend East ODP	-	-	200,000	-	-	600,000	-	-	1,000,000	1,000,000
Gladstone Rd Rural section Upgrade	-	-	-	-	-	-	-	-	-	-
Kaiapoi Pa Rd Upgrade	-	-	-	-	-	-	-	-	-	-
ODP Development Contribution Funded Projects										
East Woodend ODP - north south road & widening existing	-	-	-	300,000	300,000	300,000	300,000	300,000	-	-
West Rangiora Growth ODP	0	0	0	684,888	228,296	456,592	228,296	228,296	228,296	228,296
Kaiapoi North Improvements - Smith St/Williams St, Smith St/Ranfurly St and other intersection improvements	-	-	-	-	-	-	-	600,000	-	-
Support for MUBA (Area directly adjacent to KTC)	37,500	375,000	375,000	-	-	-	-	-	-	-
North/South Collector Road	-	1,500,000	-	-	-	-	3,000,000	-	-	-
Shared Path (East/West Collector Road)	-	-	-	-	-	-	220,000	-	-	-
TRIP Programme - (used for District Wide Development Contributions calculation)										
New Passenger Transport Infrastructure	125,000	200,000	200,000	125,000	200,000	200,000	125,000	100,000	51,000	51,000
Skew Bridge Replacement	50,000	623,000	-	-	-	-	-	-	-	-
New Eastern Link Road	-	50,000	666,000	-	-	-	-	-	-	-
Minor safety - Roadside Hazards Removal	-	-	-	50,000	666,000	-	-	-	-	-
Lees Valley Willow Walls & culverts	-	-	-	-	50,000	712,000	-	-	-	-
Ashley Gorge Rd / German Rd	-	-	-	-	50,000	712,000	-	-	-	-
Realignment and Safety Improvements Oxford / Tram Road Intersection	350,000	-	-	-	-	-	-	-	-	-
Intersection Safety Improvements Two Chain Road / Tram Road Intersection	-	-	-	-	-	-	50,000	746,000	-	-

Project	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost
Town Centre Upgrades	-	-	-	-	-	-	-	-	-	1,210,000
Flood Projects (Tram Rd, Depot Rd & Woodfields Rd) - RESILIENCE	-	-	-	-	100,000	1,400,000	-	-	-	-
Widen culvert on Townsend Rd	-	-	-	-	-	-	-	612,000	-	-
Fernside/Todds Intersection	-	-	-	-	-	-	-	600,000	-	-
Direct Payment to Developers	-	-	-	-	-	-	-	100,000	1,458,000	-
Council Performed Work	414,000	-	-	-	-	-	-	-	-	-
Walking and Cycling Projects	-	50,000	450,000	-	-	-	-	-	-	-
School Safety Improvements	-	-	-	-	-	-	-	-	-	514,000
28 Roundabout installation at Bradleys / McHughes / Tram Road Intersection	-	-	-	-	-	-	-	-	-	562,000
Sub Totals	-	-	-	-	-	-	-	-	-	318,000
Rangiora Airfield/Priors Rd Upgrade contribution	-	-	-	-	-	-	-	-	323,000	-
Marsh Rd / Railway Rd - Intersection	-	-	-	-	-	-	-	-	648,000	-
Fernside/Townsend Intersection	-	-	-	-	-	100,000	1,300,000	-	-	-
Intersection Upgrades Island Road / Greigs Road / Tram Road	50,000	150,000	-	330,000	-	-	-	-	-	-
Durham Land Purchase for Carparking	-	-	500,000	500,000	-	-	-	-	-	-
Durham Land Purchase for Carparking	100,000	100,000	150,000	-	-	-	-	-	-	-
Widen Skewbridge Rd - Mulcocks to Threlkelds	-	50,000	450,000	-	-	-	-	-	-	-
Minor safety- Delineation upgrades	250,000	-	-	-	-	-	-	-	-	-
Streetlight upgrade High St from East Belt to King St	-	-	100,000	-	1,800,000	-	-	-	-	-
Mulcocks and Fernside Rd closure - Kiwirail & NZTA	250,000	-	-	-	-	-	-	-	-	-
Land - Blake St Extension	-	-	-	-	-	-	-	430,000	-	-
Land - Blake St Extension	-	-	-	-	-	-	-	486,000	-	-
East Mixed Business Use Development (Growth portion)	-	-	-	-	-	-	-	-	330,000	-
Kaipoi Roding improvements - Williams St south intersections.	-	-	-	-	480,000	-	-	-	-	-
Johns Road/Plasketts Road Improvements	-	-	-	-	-	-	840,000	-	-	-
Fernside Rd/Townsend Rd Roundabout	1,800,000	-	-	-	-	-	-	-	-	-
Minor Improvements - Drainage (culverts)	-	-	-	-	-	-	420,000	-	-	-
East Mixed Business Use Development (LoS portion)	-	-	-	-	420,000	-	-	-	-	-
Intersection Safety Improvements South Eyre Road / Giles Road / Tram Road Intersection	-	-	-	-	-	370,000	-	-	-	-
Rangiora Woodend Rd / Boys Rd / Tuahiwi Rd Intersection	-	-	-	-	-	-	570,000	-	-	-
Woodend East ODP – Council share of road upgrading	-	-	-	-	-	-	-	-	-	-
Robert Coup Dr/Ohoka Rd Implementation	-	-	-	-	-	-	-	-	-	-
New Kerb and Channel - Major Towns (unsub)	-	-	-	-	-	-	-	-	-	-
Woodend Improvements in conjunction with NZTA PBC and Woodend Bypass	-	-	-	-	-	-	-	-	150,000	-
Pegasus road connection to Gladstone Road	-	-	-	-	-	-	-	-	-	-
Southbrook ODP – new footpaths and road improvements	-	-	-	-	-	-	-	-	400,000	-
Kaipoi Park and Ride	-	-	-	223,000	290,000	-	-	-	-	-
Rangiora Park and Ride	-	-	-	476,000	360,000	-	-	-	-	-
Ravenswood Park and Ride	-	-	-	-	500,000	1,000,000	-	-	-	-

Project	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost	Projected Cost
Coldstream Rd/Golf Links Rd Improvements	-	-	-	-	330,000	-	-	-	-	-
Johns Rd/Plasketts Rd/Fernside Rd Improvements	-	-	-	-	200,000	-	-	-	-	-
Kaiapoi Roothing Improvements	-	-	-	-	-	-	-	-	-	1,500,000
West Rangiora Roothing Improvements - Lehmans to River Rd	-	-	-	-	-	200,000	2,000,000	-	-	-
Walking and Cycling Projects	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Land Purchase - growth	-	-	-	-	-	-	-	-	-	-
Rangiora Woodend Road Intersection Improvements	-	-	100,000	-	1,800,000	-	-	-	-	-
Ohoka/Island Road Implementation	-	-	-	-	-	-	-	-	-	-
Robert Coup Dr/Ohoka Rd Implementation	-	-	200,000	1,000,000	-	-	-	-	-	-
Skew Bridge Active Warning / Safety Improvements	-	-	-	-	-	-	-	-	-	-
Skew Bridge Replacement	180,000	1,220,000	400,000	10,150,000	50,000	-	-	-	-	-
Southbrook General Route - pre-implementation	-	-	-	-	-	-	-	-	-	-
Southbrook Rd/Torlesse St/Coronation St - Intersection Improvements - Traffic Signals	-	-	-	-	-	-	-	-	-	-
Southbrook Rd Future Improvements	50,000	50,000	50,000	-	-	-	-	-	-	-
Rangiora Woodend Rd Traffic Calming	-	-	-	-	-	150,000	-	-	-	-
River Rd - Ashely to Enverton - Associated with Park & Ride and includes shared path upgrade	-	-	-	-	-	-	-	-	-	-
Main North Rd / Wrights Rd Intersection - safety concerns, initiated by Park and Ride	-	-	-	-	-	-	-	-	-	-
Charles Upham Dr / Oxford Rd Roundabout	-	-	-	-	-	-	700,000	-	-	-
Oxford Rd / Lehmans Rd Roundabout	100,000	1,400,000	-	-	-	-	-	-	-	-
Fawcetts Rd / Cones Rd Intersection	-	100,000	400,000	-	-	-	-	-	-	-
North Eyre Rd / No. 10 Rd	-	-	-	-	-	200,000	-	-	-	-
Swannanoa Rd / Johns Rd	-	-	-	-	-	-	-	500,000	-	-
Ashley Gorge Rd / German Rd	250,000	-	-	-	-	-	-	-	-	-
Northbrook Rd / Ivory St Intersection	-	-	-	150,000	1,350,000	-	-	-	-	-
Lees Valley Willow Walls	200,000	200,000	280,000	-	100,000	-	-	100,000	-	-
Marsh Rd / Waikoruru Rd - Sealing of unsealed Rd	-	-	-	50,000	750,000	-	-	-	-	-
Marsh Rd / Railway Rd - Intersection	-	-	-	-	-	-	-	150,000	850,000	-
Kaiapoi to Woodend Cycle Connection	-	-	-	-	-	-	-	-	-	-
Mulcocks and Fernside Rd closure - Kiwirail & NZTA	-	200,000	-	-	-	-	-	-	-	-
Car Parking Provision - Town Centre Parking	-	-	-	-	-	750,000	-	-	-	-
North of High St New Road Link	-	-	-	-	-	-	-	-	-	-
Land - Blake St Extension	-	225,000	-	-	-	-	-	-	-	-
Durham Land Purchase for Carparking	-	-	-	750,000	-	-	-	-	-	-
Keir St Land Purchase	-	-	-	-	-	-	-	-	-	-
New Eastern Link Road	187,500	1,350,000	162,500	275,000	7,750,000	7,800,000	-	-	-	-
New Eastern Link Road	93,750	675,000	81,250	137,500	3,875,000	3,900,000	-	-	-	-
New Eastern Link Road	93,750	675,000	81,250	137,500	3,875,000	3,900,000	-	-	-	-
North/South Collector Road	-	500,000	-	-	1,000,000	-	-	-	-	-

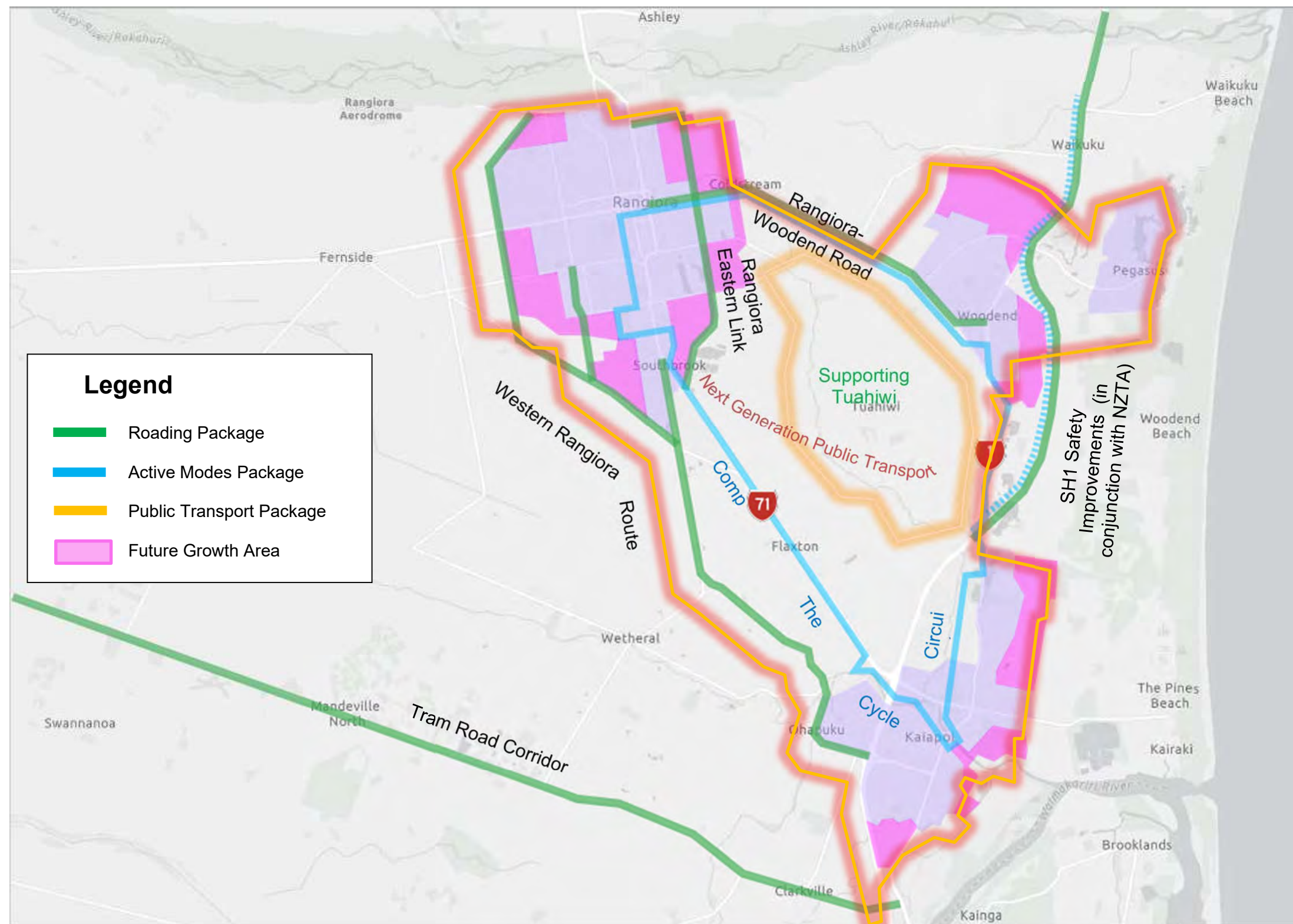


Figure 7-6: Strategic Context Map 21-33

Programmes of Improvements

Strategic Infrastructure

- Rangiora Eastern Link Road
- Woodend Bypass (NZ Transport Agency)

Growth Related Projects

- *Kippenberger / MacPhail Roundabout*
- North / South Collector Road
- Gladstone Road connection to Pegasus
- Woodend East North / South Road Collector Rd

Network & Resilience Management

- Lees Valley Willow Walls & Culverts

Completing the Walking & Cycle Circuit

- *Passchendaele Memorial Path*
- *Rangiora-Woodend Path*
- Woodend-to-Kaipoi Path
- Woodend-to-Pegasus Path

Supporting Public Transport

- Kaipoi Park & Ride Facilities
- Keir Street Connection
- *Rangiora Park & Ride Facilities*
- Ravenswood Park & Ride Facilities

Rangiora-Woodend Road Corridor

- *Rangiora-Woodend Path*
- Rangiora-Woodend / Boys Roundabout
- Widen Rangiora-Woodend Rd

Rural Safety Management

Safety Improvements

- Northbrook / Ivory Intersection
- Fawcetts / Cones Intersection

Tram Road Corridor Safety Improvements

- Tram / Poyntz Intersection
- Tram / Two Chain Intersection
- Tram / No 10 Intersection
- Tram / McHughes / Bradleys Roundabout
- Tram / Burgesses Intersection
- Tram / S Eyre / Giles Intersection
- Tram / Heywards Intersection

Western Rangiora Route Safety Improvements

- Widen Skewbridge Rd (Skew Bridge-Threlkelds)
- Widen Flaxton Rd (Threlkelds-Fernside)
- Skew Bridge Replacement
- *Fernside / Flaxton Roundabout*
- Lehmans / Johns Intersection
- Lehmans / Oxford Roundabout
- Widen Lehmans (Fernside-Oxford)
- *Ohoka / Island Traffic Signal*
- Widen Fernside Rd (Flaxton-Lehmans)
- North-west Rangiora New Arterial Rd

Supporting Tuahiwi (MR873)

- To be Determined

Note projects in *italics* are in progress or completed

7.3 Road Carriageway



Purpose

- To provide a pavement network that is suitable for the effective and efficient movement of vehicles and people, has a suitable all-weather surface that is appropriate to its location and function in terms of skid resistance, noise reduction and smoothness, and has a structure suitable for legal traffic loading requirements.
- To protect public safety and property by providing a carriageway network that meets generally acceptable safety standards.
- To support business by providing a carriageway network that permits the efficient movement of agricultural, commercial, and industrial goods and produce.

Problem Statements

- Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.
- Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting in disruption.
- Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.
- Road users on our network have little room for error or recovery from mistakes, which results in fatal and serious injuries when crashes occur.

Benefits for Pavements in Addressing these Issues.

- a. *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*
- Appropriate pavement management enables users to travel at optimum speeds safely and efficiently. Carrying out maintenance and renewals at the optimum time provides best value for money.
- b. *Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting in disruption.*
- Climate change issues will affect pavements in a number of ways.
- Coastal areas such as Pines Beach are already suffering from the effects of high groundwater but will in future need to be considered for permanent retreat. These areas are being identified through various studies and will be modelled to determine when is the most appropriate time to take action for optimum whole of life treatment.
- Some inland areas, such as Mandeville, also have issues with permanent high groundwater which is being exacerbated by increased adverse high rainfall events. Currently the effects of ongoing saturation are being investigated and these will be used to inform future pavement design and new road locations. Also under investigation are which areas will benefit from simple improvements such as replacing culverts with larger ones. This will be addressed further under Drainage Assets.
- Hill country, in particular Lees Valley, is prone to slippages in high rainfall events. There are a number of sites where resilience improvements such as larger culverts have already been identified and a funding request submitted under the Low Cost Low Risk Improvements category.
- c. *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.*
- The most obvious area for improvement in the district for mode choice is for cycling. While off-roads cycle lanes are the gold standard for cycling, much travel is still carried out on-road, and cyclists are relegated to the shoulders. These are often an issue with services, trenches, poor shoulder sweeping and steep crossfall. While it is recommended that cyclists should feel comfortable in taking the centre lane, this can lead to aggressive behaviour by motorists.
- d. *Road users on our network have little room for error or recovery from mistakes, which results in fatal and serious injuries when crashes occur.*

- Carriageway width and surfacing are significant contributors to crashes. Inadequate shoulders for recovery, poor and inconsistent intersection design, inadequate camber, defects such as potholes and ruts, and flushed surfaces, all contribute to both occurrences of crashes and ability to recover. Waimakariri is 4th on the 2022 Risk register for rural intersection crashes, up from 9th in 2021. Short term Council is planning to carry out some low-cost improvements at its worst sites, but longer term it is planned to provide a no surprises environment by ensuring where possible the roading environment is consistent District wide for its ONF family.
- This will be addressed through the programme of works with evidence to better explain the problem.

Improvements

- Work is planned to record all future dig-outs with photographs and information regarding the respective pavement layers in RAMM. This will be incorporated in the data capture process being carried out by the AIM team.
- Alternative transport modes will continue to be promoted, more predictive modelling carried out and trials of new materials and methodologies carried out wherever possible.

Issues identified specifically related to Pavements in the previous AMP were:

- Pavement Structure information within RAMM is limited
- Accelerated traffic growth on the network, particularly trucks
- High shoulders retaining water on road
- Loss of metal on unsealed roads
- Drainage issues

Most of these are within Council control and can be addressed, subject to available funding and resources to deliver, however traffic growth is an issue Council must manage as best it can.

Background Data

The road carriageway assets account for 67%³ of the total transport asset group, based on replacement cost. This includes the public car parks owned by the Council.

³ From 2023 valuation

Network Summary

The Council manages 1,586 kilometres of roads (as at 30 June 2023)⁴ split as below:

Table 7-5: Kilometres of Roads

	Urban	Rural	Total
Sealed	318	677	995
Unsealed	2.3	584	586.3
Bridge	0.57	1.85	2.41
Grand Total	320	1263	1586

The carriageway pavements are comprised of the following major asset components:

Table 7-6: Pavement Components

Pavement Asset Group	Description
Formation	Cutting or filling of the natural ground/terrain to establish a suitable surface (subgrade) upon which the road is constructed. It is considered to have an indefinite life because once constructed it does not deteriorate over time therefore is not depreciated.
Subbase	The compacted material (usually AP65) that sits above the subgrade. The thickness of this layer is determined by the strength of the subgrade.
Basecourse	The compacted granular material (AP40) that sits above the subbase.
Surfacing	Final layer of material over which vehicles pass, typically a chip seal or running course for unsealed roads.

Pavement Surfacing

The primary purpose of pavement surfaces for sealed roads is to provide a smooth ride, waterproofing for underlying pavement, and to maximise the life cycle of the pavement. The type of pavement surface used generally depends on the traffic volume and mix of traffic using the road. Noise, dust, safety and appearance may also be significant factors for some roads

as the roading network must be maintained to a standard that meets the required levels of service. The main types of pavement surface used by Waimakariri District Council are:

Sealed Road surface:

Chipseal: A layer (or two layers in two coat seals) of sprayed bitumen with stone chips spread on the bitumen layer as a running surface. The life cycle for chipseal surfacing varies dependent on the chip size used (small chip means less bitumen that can be sprayed as the waterproofing membrane and so has a lower life but is quieter when driven on so more suitable in urban areas which do not justify asphaltic concrete) and by traffic volume (the higher the volume the lower the life).

Asphaltic Concrete: commonly known as hotmix, is a mix of graded aggregate and asphaltic binder heated to a specific temperature to provide a high-density binding. It is normally laid 30mm thick however 50mm may be used on high traffic volume roads. This is hard wearing and provides a quiet and smooth-running surface for main urban areas. Primarily used at roundabouts, busy intersections, cul-de-sac heads, and where high stresses and road noise can be an issue.

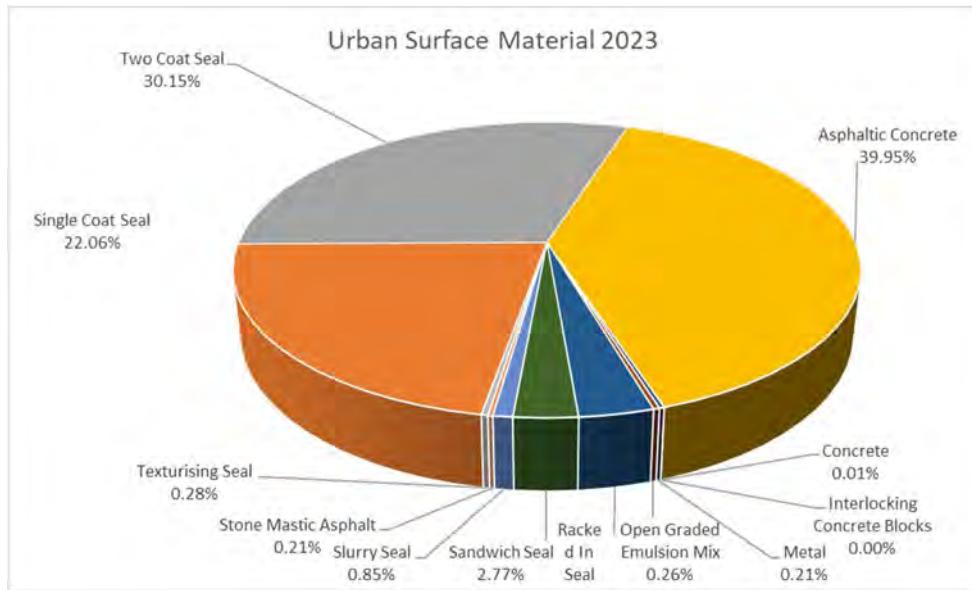
Unsealed road surface

Graded metal (gravel)

Unsealed roads are generally low volume rural roads where the cost to regrade and occasionally re-metal the surface is generally lower than the cost to fix issues such as edge-break and potholes, resurface and renew as per the lifecycle of a sealed road.

- e. *The breakdown of surface component for urban and rural network by pavement surface type is shown in the following two figures:*

Figure 7-7: Distribution of Urban Pavement Surface Types by Length (km)⁵⁶

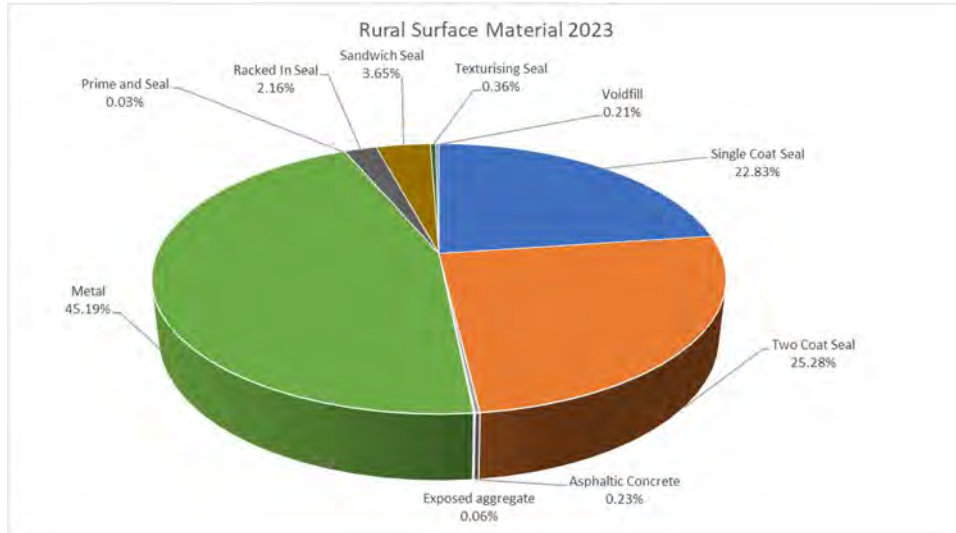


Traditionally, while asphalt has a longer life, its greater cost means it is rarely used by Council except in high traffic areas. Where it has been laid in new developments for aesthetic/increased LOS reasons, at the end of the Life Cycle of these roads, when they are due for resealing, the decision will need to be made as to whether re-laying AC is affordable.

Figure 7-8: Distribution of Rural Pavement Surface Types by Length (km)

⁵ Roadway Valuation 2023

⁶ From RAMM



Asset Capacity/ Performance

The road carriageway is the main transport asset that enables the movement of vehicles. Therefore, it is important that the carriageway provides for adequate capacity, good performance under the required conditions and is ensuring long term sustainability as per LOS requirements.

Traffic Loading

The major factor in determining road construction requirements is an evaluation of the expected traffic volumes and loadings. Table 7-7 describes the expected traffic volumes relative to road hierarchy by year, as used in the valuation methodology.

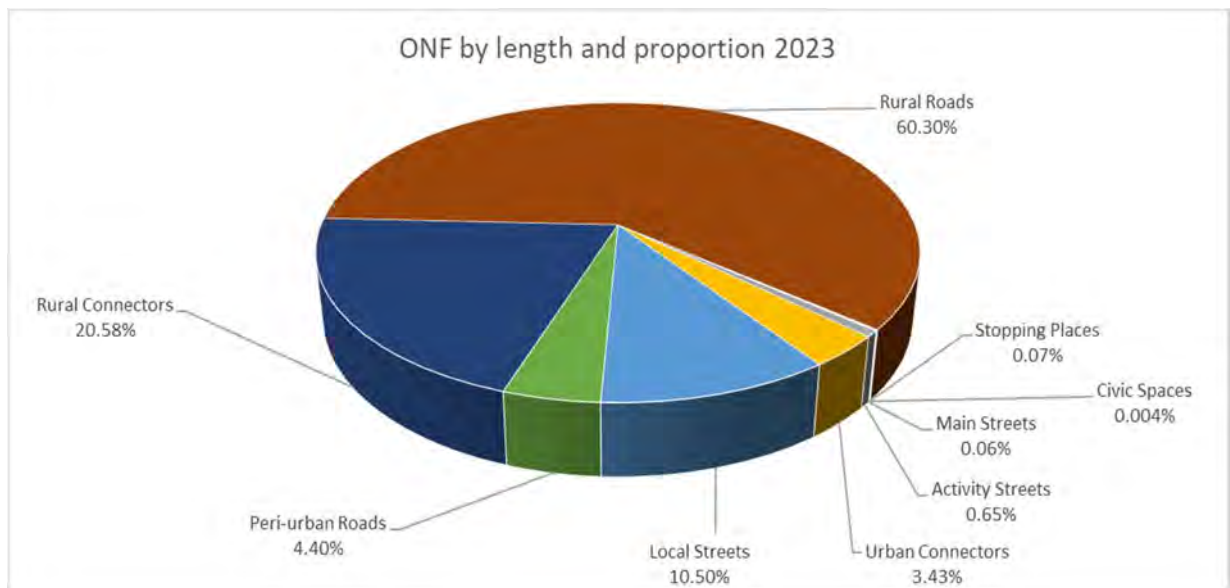
Table 7-7 Lengths of Roads by Traffic Loading and Hierarchy (km)

Pavement Use	2014	2017	2020	2023	Change 2014-2017	Change 2017-2020	Change 2020-2023
< 100 pd	712.60	755.50	721.06	714.9	42.90	-34.44	-6.16
100 – 500 vpd	451.10	409.70	396.35	427.71	-41.40	-13.35	31.36
500 – 2,000 vpd	206.40	219.30	244.70	258.67	12.90	25.40	13.97
2,000 – 4,000 vpd	111.30	128.50	125.03	115.23	17.20	-3.47	-9.80
4,000 – 10,000 vpd	37.90	49.70	61.69	56.03	11.80	11.99	-5.66
10,000 – 20,000 vpd	7.50	7.70	8.42	12.78	0.20	0.72	4.36
>20,000 vpd	0.80	0.80	0.82	0.82	0.00	0.02	0.00

The above table shows changes to traffic patterns over the last six years. These are of relevance because they are sorted by traffic volume bins as per valuation calculations/best practice.

Although the table demonstrates that the majority of activity is on the low volume roads, there can be isolated periods or roads where this is not the case. For example, a small number of local roads are experiencing high traffic loadings due to isolated works. Examples include work on stop-banks by Environment Canterbury, which involved high cartage over a short period, or logging. This tends to be extremely damaging to both sealed and unsealed roads.

Figure 7-9: Road by One Network Framework Road Classification



While traffic volume is a good proxy for wear and tear on a road, this does not take into account road surface. Many of the new sealed low volume roads are asphalt due to being part of a subdivision and as such will not require renewal for many years. By contrast, unsealed low volume roads can deteriorate quickly due to even a small amount of extra traffic or have vehicles and also weather conditions.

Sealing of unsealed roads is considered under the following circumstances:

- maintenance costs exceed the cost of sealing, over the road's lifetime,
- when financial contributions from subdivision activity reach 30% of the cost of sealing
- when local residents pay 50% of the cost.

Urban roads are likely to experience continued traffic growth, as the population increases and new development occurs. These impacts require specific strategies to be developed to enable the network to cope, including a decision on whether asphalt surfaces in subdivisions will be replaced like for like. Currently they are valued as such, which places an extra cost on depreciation which may not be warranted. Developers primarily seal with asphalt for amenity value when sealing however NZ Transport Agency (Waka Kotahi) may not be prepared to fund

replacements on this basis as they will be looking at whole of life and these roads do not receive enough wear and tear to warrant this treatment.

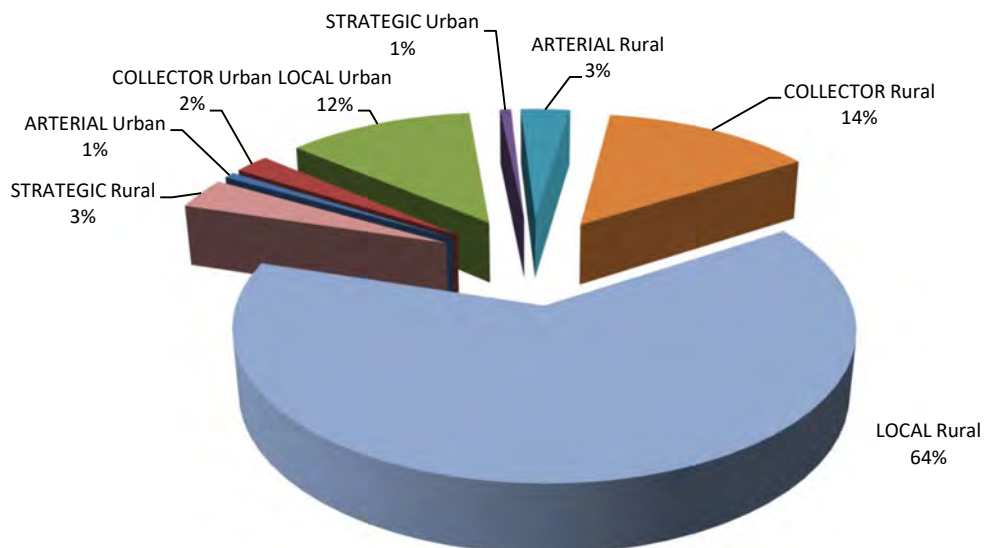
District Plan Road Hierarchy

The Waimakariri District Council roading network is classified in the District Plan. The roads remain in their allocated category for the life of the plan, unless there is a plan change, and are not subject to change due to traffic volume or function change.

Figure 7-10 District Plan Roading Hierarchy

District Plan Hierarchy	Description
Strategic	Generally, a road that is a present, former, or proposed state highway serving as an inter-regional route.
Arterial	Generally, a road that is of major importance in the district serving significant populations and functioning as a prime access to other major centres inside and outside the District.
Collector	Generally, a road that is the preferred route for travel from within, and between, areas of population and principle activities and includes roads serving as prime egress from major production forests in the District and on its borders.
Local	Generally, means a road whose primary function is property access.

Figure 7-11: Network by District Plan Hierarchy



Road Safety

“Road users on our network have little room for error or recovery from mistakes, which has resulted in fatal and serious injuries when crashes occur”.

Road safety continues to be an important component in managing the carriageway. A road in poor condition is more likely to lead to loss of control. The main source of information regarding crash history is maintained in the Crash Analysis System database. This data is monitored and used for a number of interventions including those listed below. The following charts show that there is no significant trend line to crash numbers in the district. Fatal and serious crashes continue to only make up a small percentage of total crashes, but their social cost is significantly higher. Conversely, many minor and non-injury crashes could have been significantly more serious if the crash had occurred in a slightly different place or time, and all crashes need to be treated as a potential indication of a problem which warrants addressing.

Figure 7-12: All Motor Vehicle Crashes 2013-2022

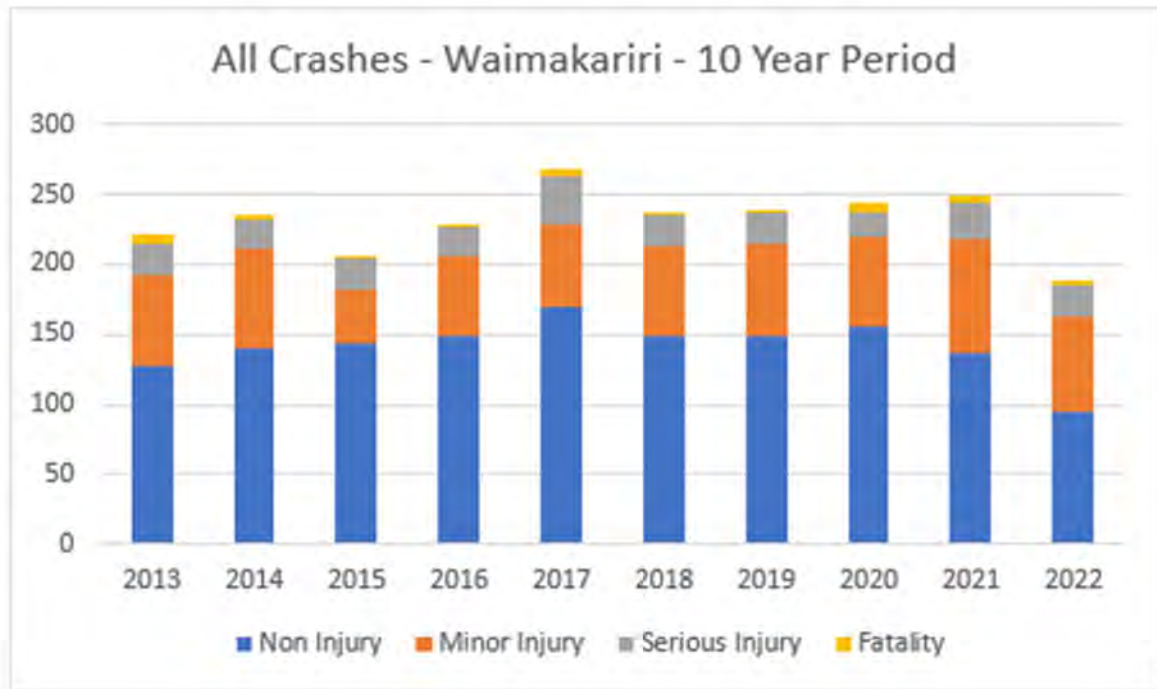


Figure 7-13: Fatal and Serious crashes and corresponding injury severity 2013-2022

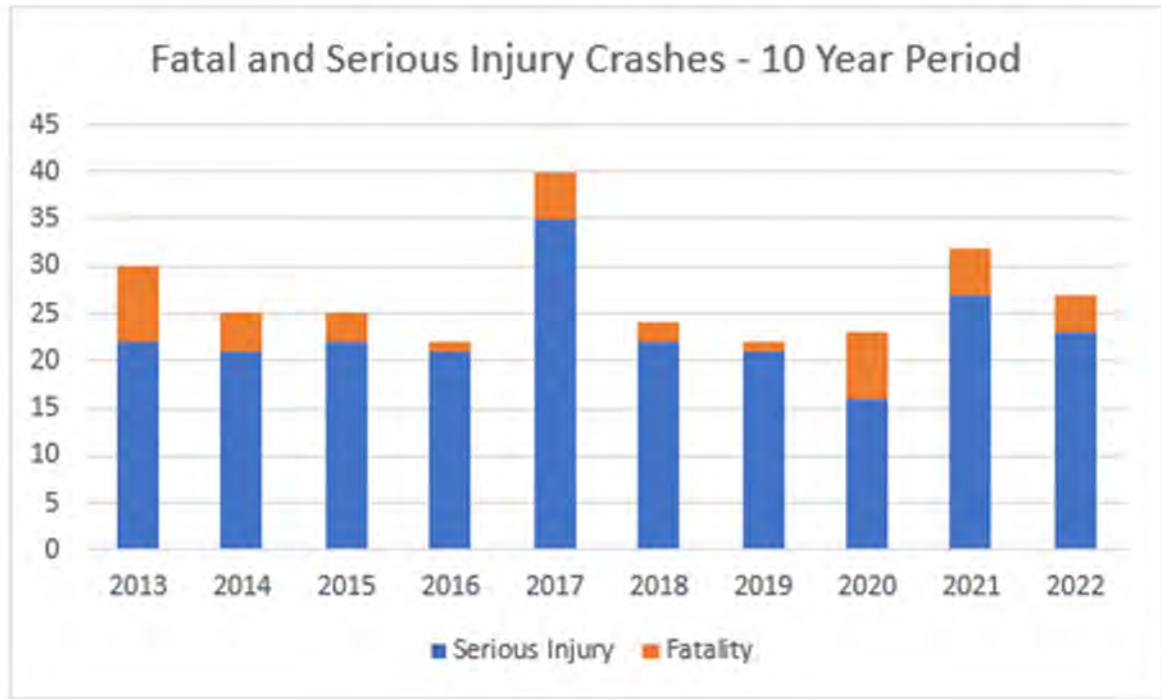


Figure 7-14: Fatalities and Serious Injuries 2013-2022



Safety Interventions

There are many individual components to providing a safe network. Many of the interventions described below have been part of Council work programme for years, while others are innovations that are government led. While the first thought in providing for infrastructure is physical management of the asset, whether by maintenance or renewal, how the asset is used is becoming increasingly important, such as through Travel Demand Management. However, the use of 'soft' components of asset management such as education has long been a part of the safety practitioner's toolkit and many of the interventions listed below are as important as physical works in providing for a safe network. Included are the following:

- Road Safety Action Plan

This document is compiled by the Road Safety Coordinator in conjunction with the Road Safety Committee, a group of stakeholder representatives with a high interest in road safety. These include the NZ Police, representatives of the Heavy Transport industry, Engineers, including those from Waka Kotahi State Highways, Waka Kotahi funding representatives, and other agencies from time to time such as schools.

Much of the work carried out in this area includes education both with schools and with the wider public.

- Hazard Register

This list, maintained by the maintenance contractor, details hazards which cannot be easily removed and must be mitigated, or are being managed until such time as they can be dealt with, for example areas where ice is a problem in winter.

- Safety Audits

These include network audits, which review both compliance with levels of service in safety areas such as signage, and also potential areas of concern in design such as out of context curves or incorrect camber, and project audits. These are carried out both prior to and following design, and post-construction and are a funding requirement for Waka Kotahi.

- Deficiency Database.

These include potential hazards identified through Service Requests, and contractor or staff observations. They may involve changed signage, improved visibility, intersection changes or a variety of other projects. The Deficiency Database is revised bi-annually and proposals are evaluated and prioritised for inclusion in the Minor Improvements Programme.

- Speed Management Plan

This was a nationally led initiative which aimed to introduce consistent lower speeds around the country. Although Council has prepared a plan for the District, the change of government means that little of it is likely to be implemented, at least in the near future.

Also proposed, to improve safety in Waimakariri, is taking a route approach to roads such as Flaxton Road, Skewbridge Road, and Tram Road and applying safety interventions such as seal widening, intersection improvement and improved signage and delineation.

The full list of proposed Capital Projects is included in Table 7-4: Ten Year Capital Projects Proposed Programme for 2024/25 - 3033/34 LTP.

Customer Satisfaction

The WDC conducts a customer satisfaction survey every three years. The following table sets out the percentages of respondents satisfied with the carriageway network from surveys in 2001, 2004, 2007, 2010, 2013, 2016, 2019 and 2022. There has clearly been a drop in satisfaction since the last customer satisfaction survey, particularly with rural roads.

Figure 7-15: Customer Satisfaction Survey



Asset Condition

Asset condition can be measured in a variety of ways. The main performance measures used by Council to determine the condition and performance of the carriageway are Road Roughness and Surface Condition Rating, followed by maintenance costs.

This data has been collected over a number of years and is stored in the RAMM database.

NZTA requires that roughness and condition rating surveys of all sealed roads must be undertaken biennially, while condition rating surveys of all sealed roads carrying more than 500 vehicle per day are to be undertaken annually.

High speed data is collected by technology which can assess network condition continuously while driving the network at normal driving speed. It is extremely comprehensive but also

expensive. It was last utilised in Waimakariri in 2015 on a selection of Strategic and Arterial roads. This data will be provided to Council in future through the Consistent Condition Data Collection project, whereby high-speed condition rating is collected nationally. This is to be fully funded in the next collection cycle by NZTA. This funding support will allow Council to redirect resources to other data collection. Of particular interest to Council is the Falling Weight Deflectometer readings, which give an indication of pavement strength, and which were last carried out in 2017.

The roughness and condition rating data produce a number of indices from which trends in pavement performance can be determined. These include:

- Smooth Travel Exposure (STE)
- Pavement Integrity Index (PII)
- Surface Condition Index (SCI)

Of these, only NZTA reports provide information on PII and SCI. Only PII measures the subsurface faults. For performance the smoothness of travel is the measure by which most people judge their trip, along with safety, however the other two measures are critical as determinators for future work in extending the life of the asset.

Sealed Roads

Roughness

Road roughness count is defined in terms of NAASRA. As well as a measure of the road roughness which impacts on vehicle operating costs it is also used to calculate Smooth Travel Exposure.

The following figure shows the roughness trends for the sealed network since 2018/19.

Note: the higher the roughness value, the rougher the road

Figure 7 17:: Network Roughness per Roads Hierarchy 85th percentile by ONRC classification comparison with Selwyn and Ashburton

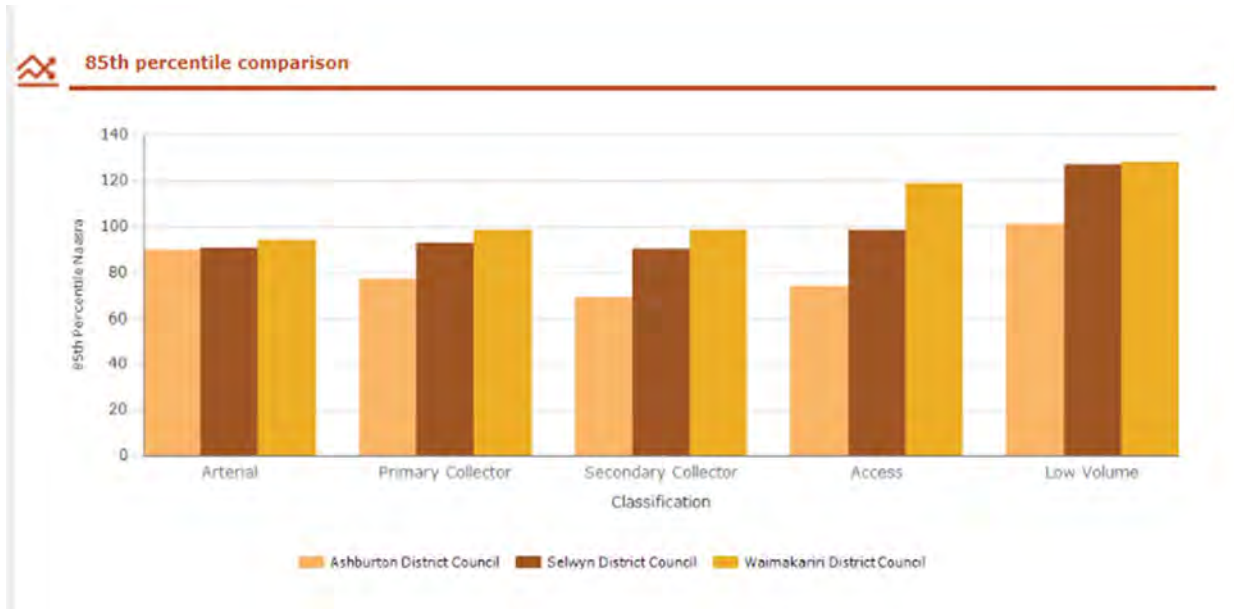
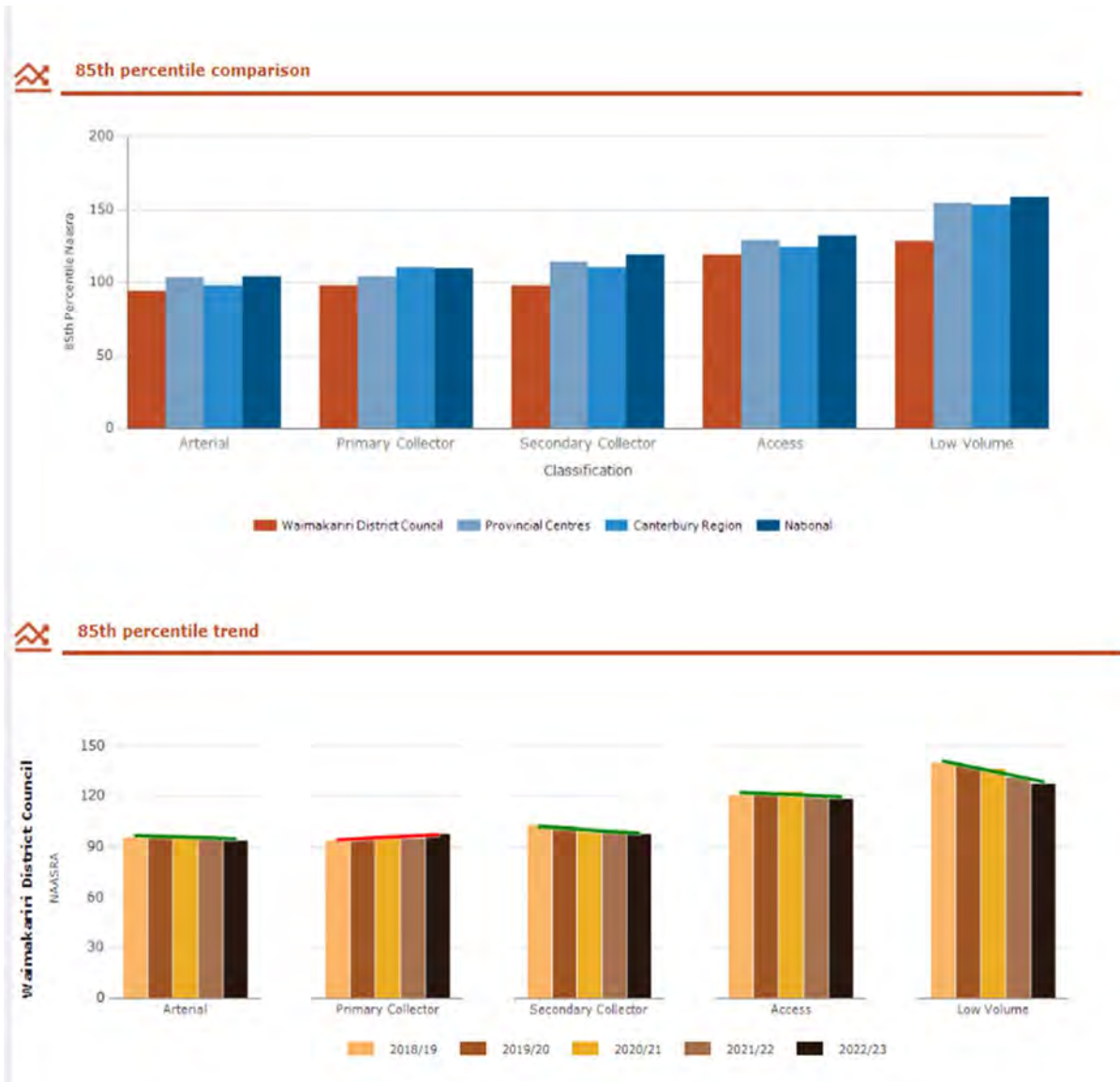


Figure 7-16: Network Roughness per Roads Hierarchy 85th percentile by ONRC classification and annual trend



The above graphs show minimal difference in road roughness apart from a slight peak for primary collector roads. The overall ride comfort is still within target levels as shown by the Smooth Travel Exposure (STE) index noted below. The STE index takes into account traffic volume and the fact that low volume roads are 'allowed' to be rougher than high volume roads. Waimakariri also has lower roughness than its peers. However, its roughness ratings are higher than for similar local networks, i.e. Selwyn and Ashburton.

Figure 7-17: Smooth travel exposure by ONRC annual trend – Urban.

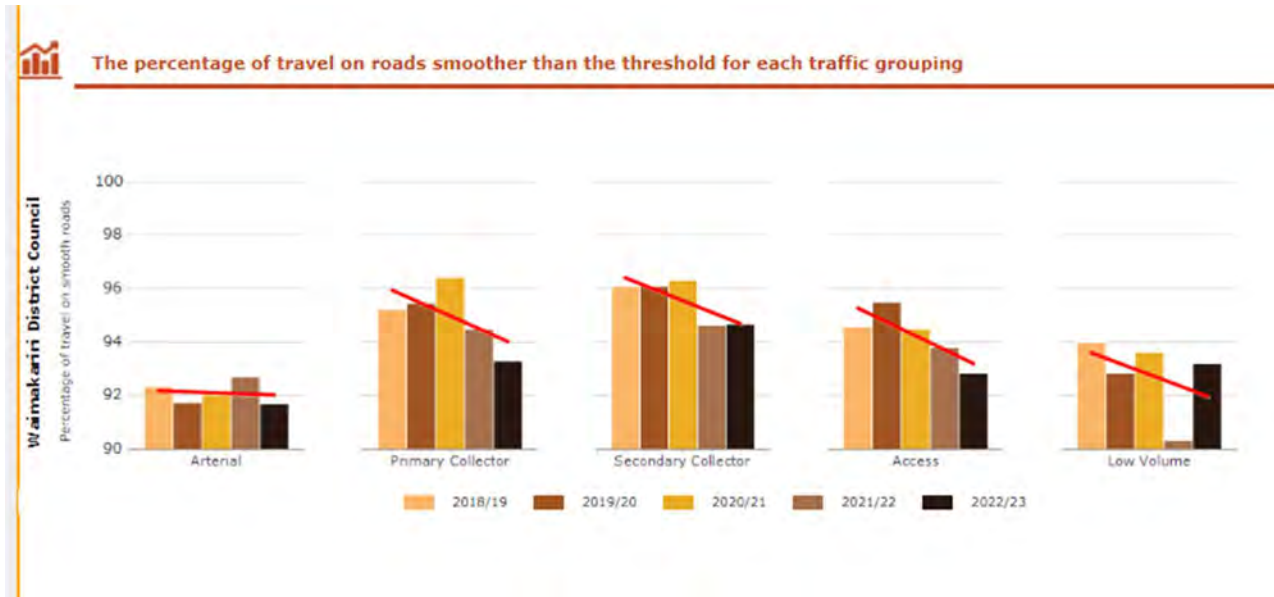
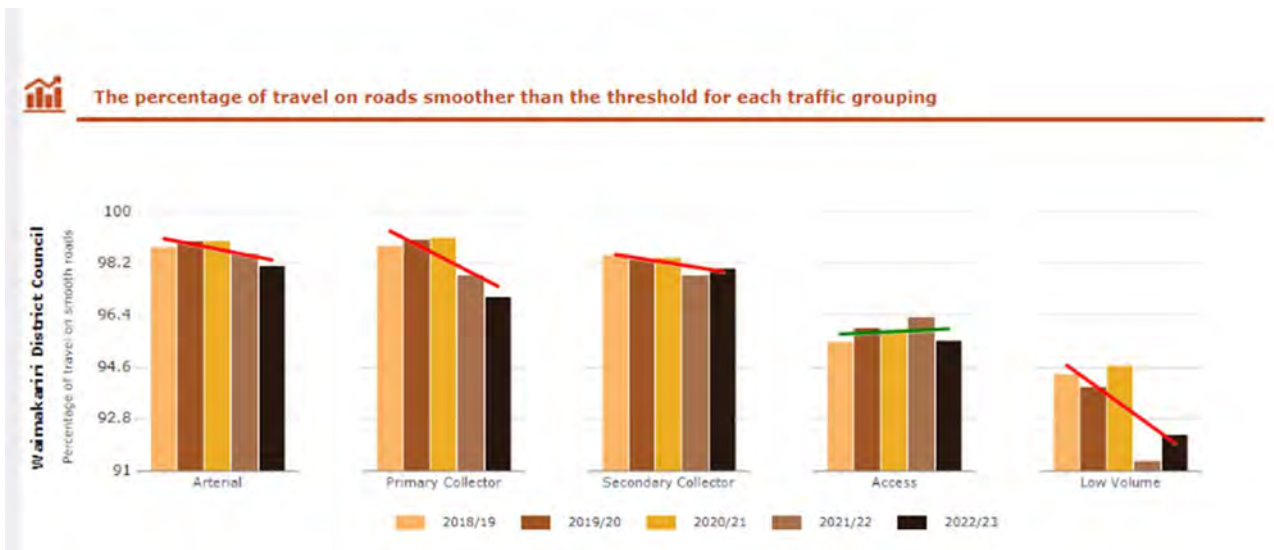


Figure 7-18: Smooth Travel Exposure by ONRC annual trend - Rural.



Smooth Travel Exposure (STE)

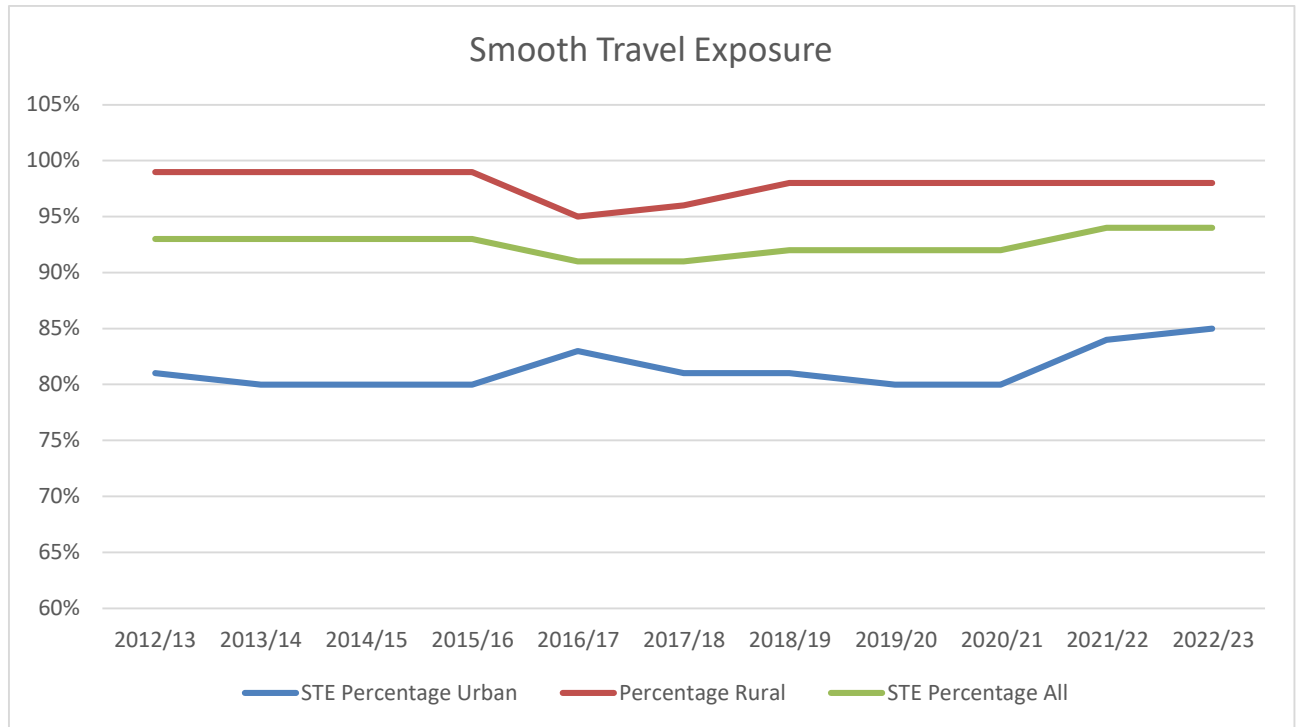
Smooth Travel Exposure (STE) index is used by Waka Kotahi to compare the roughness of the road network in relation to proportion of total travel on roads that are ‘smoother’ than a target level and is collected by use of a laser ‘profilometer’, which measures the bumps as the road is driven over.

The LOS measure in **Section 3** of this AMP is that at least 75% of the vehicle travel is on smooth roads in urban areas and at least 95% is on smooth roads in rural areas.

Data for STE can be analysed through the NZTA reports, which currently collect by historic traffic volume bins and are the groupings typically used for valuations, and by total road numbers, by ONRC classification, or by ONF classification.

The figure below illustrates the trend in STE from RAMM data collection from 2012 for the urban and rural sealed network as per NZTA reports.

Figure 7-19: Historical Trend in STE for Waimakariri District Sealed Roads



The above graph indicates that across all roads there is a slight improvement in smooth travel on urban roads, while rural STE has flattened off.

The 2023 survey indicated that urban roads have experienced an increase in smoothness from the previous AMP with around 85% of roads considered smooth against a target of 75%. Rural roads are sitting at around 98% compared with a target of 95%. Further analysis shows that this roughness is being experienced on urban arterial roads, while the rest of the network is still showing a positive trend.

ONRC Comparisons with Peer Performance

Note: The higher the percentage, the smoother the network is performing. As can be seen below, the condition of arterial roads has plateaued, whereas other roads are showing a decline in STE, and to a lesser extent access roads is getting rougher, with an improvement in all other categories.

Figure 7-20: Trend of percentage of travel on roads smoother than ONRC threshold

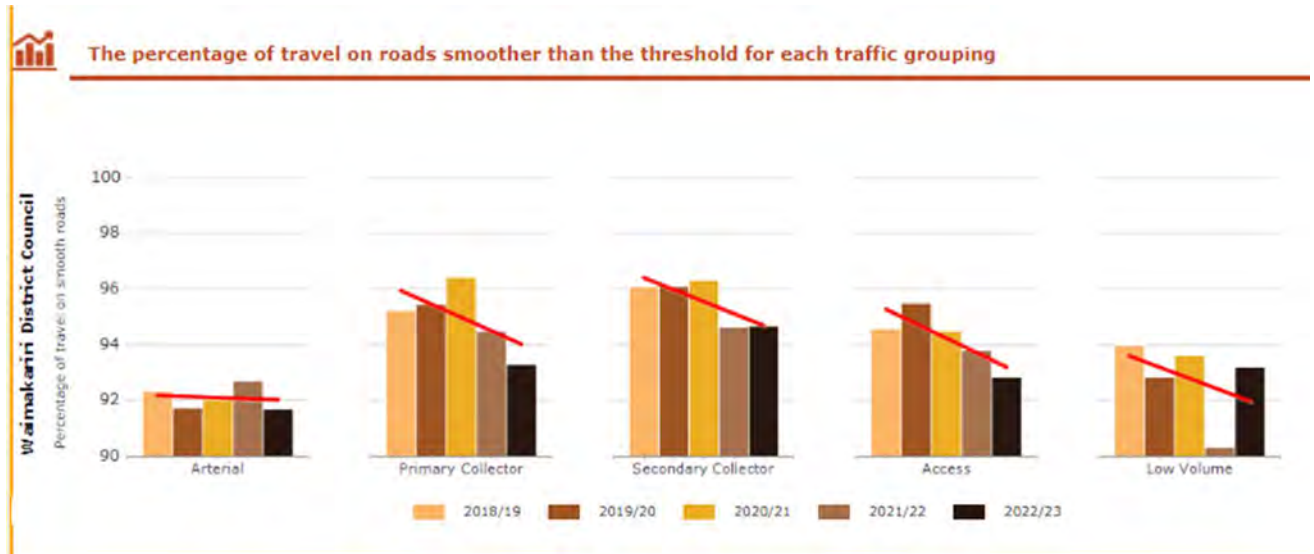


Figure 7-21: Smooth Travel Exposure by ONRC

The percentage of travel on roads smoother than the threshold for each traffic grouping

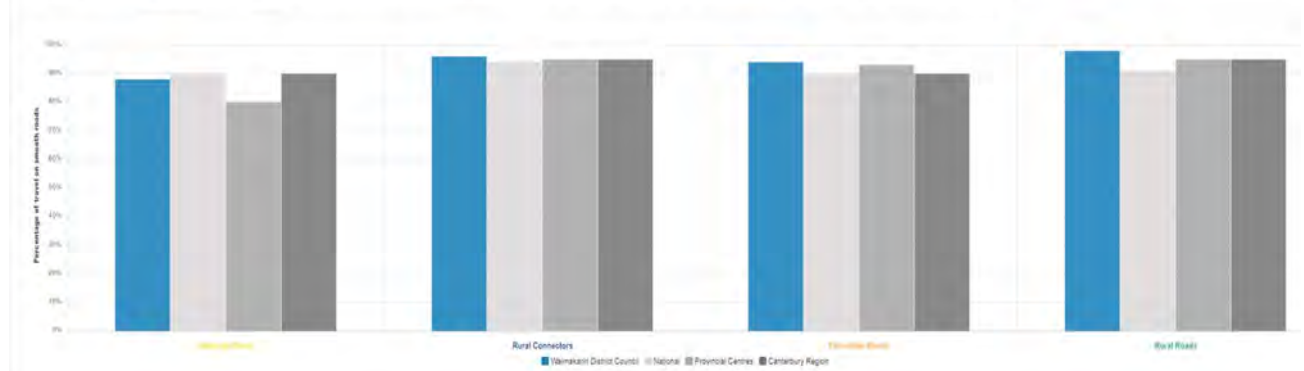
These graphs show the annual change of smooth travel on the roads in each ONF Street Category and the linear trend (green is improving, red is declining).



Figure 7-22: Performance against Peers, Region, and Nationally

The percentage of travel on roads smoother than the threshold for each ONF Street Category

This chart shows the percentage of travel on smooth roads for your network compared to other networks you choose. If no other networks are chosen, the chart compares your RCA with their peer group, region and the National figures.



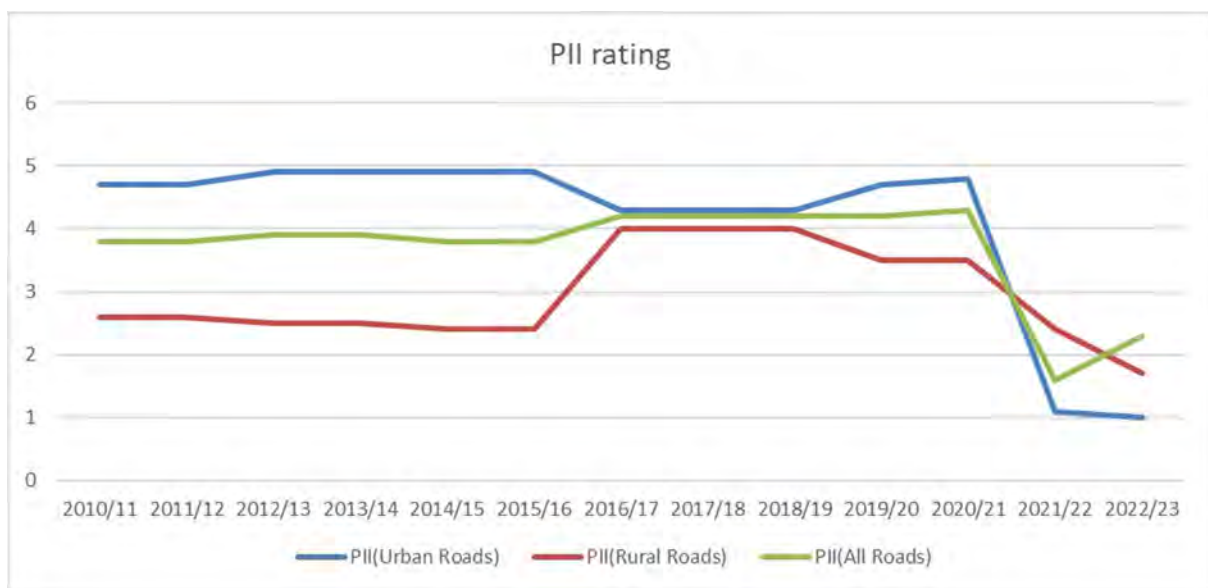
Condition Rating

The RAMM condition rating surveys involve physical inspection of 10% of the sealed road network. This equates to an inspection length of 50m every 250m in urban areas and 100m in every 500m in rural areas (the length of the rating section). The survey assesses rutting, cracking, potholes, shoving, flushing, bleeding, and scabbing. These surface defects are used to calculate the pavement integrity Index (PII), and the Condition Index (CI) as detailed below.

Pavement Integrity Index

Pavement Integrity Index (PII) is a performance indicator for the structural condition of a pavement, calculated by combining certain condition ratings, faults, and roughness.

Figure 7-23: Historical Trend in PII



The pavement integrity chart indicates that road conditions, particularly rural appear to have improved in the last couple of years. Observation of the network would say this is not the case, and the move to the Consistent Condition Data Collection surveys by NZTA are a welcome move to ensure consistency and reliability in results.

Surface Condition Index

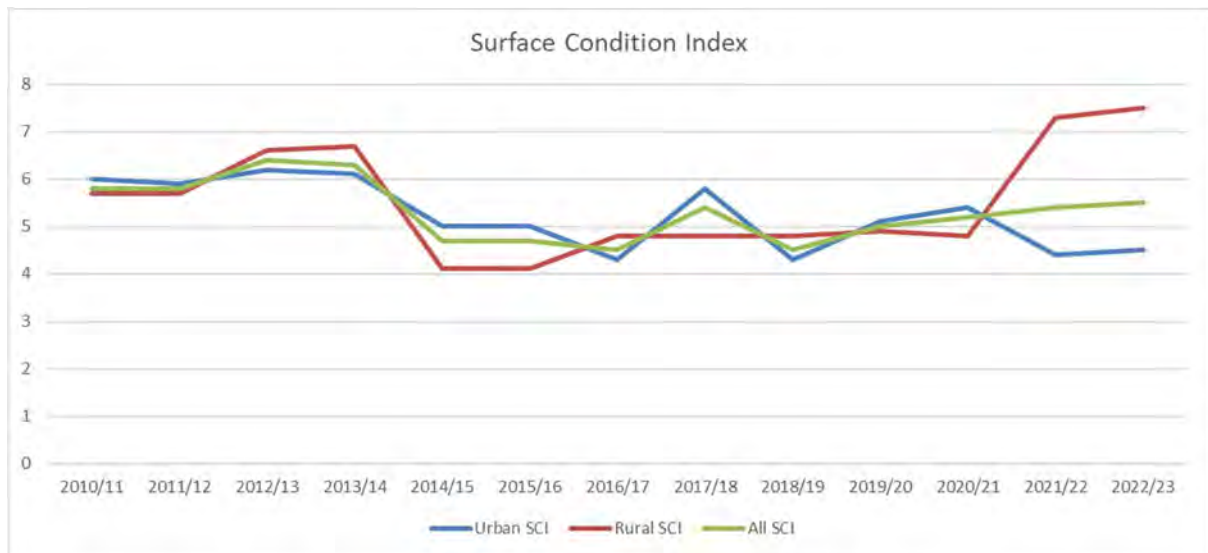
Surface Condition Index (SCI) is a composite index that describes the network surface condition and allows comparison of historical and future surface conditions. SCI has two key components, The Condition Index (CI) - based on RAMM condition rating data, and the Age Factor Index (AI) of the surface – using the surfacing remaining life held in RAMM.

The SCI triggers resurfacing or reseal treatments. Figure 7-25 shows the SCI for both the urban and rural networks, which is showing a decline for rural roads. This decline is most likely due to a combination of the increasing traffic growth on the network, and many roads exceeding an expected life due to the maintenance management decision making processes employed by the contractor in conjunction with council staff.

While RAMM sets a default for Seal Life, and WDC has a default for different categories tailored to local conditions, individual roads will invariably last for periods other than these defaults. New predicted lives have been allocated to all roads due for resealing within the next ten years.

Note: the higher the SCI value the better the network condition

Figure 7-24: Historical Trend in SCI



Like the PII, the SCI shows a fluctuating result. The changes in the last two years compared to previous, for both PII and SCI, can be attributed to two factors.

1. *Survey methodology changed, to collect data at closer intervals. This was a feature the contractor offered at minimal extra cost, and because it was going to provide a greater quantity of data, it was expected to be beneficial. However, in this case it meant also that the data was no longer consistent with previous years.*
2. *The other factor that had an impact was changes in Treatment Lengths, the lengths over which a particular type of work is to be, or has been applied. This was reviewed over the last two years, and the changes will have had an impact on the data year on year, even though the rating is only done every two years. Council intends to continue this improvement work this year, and it is then hoped that by the time the Consistent Condition Data Collection is rolled out, that there will be a limited number of changes required year on year.*

Age Profile

A JunoViewer assessment of the network generally is in agreement with the assessment of network inspections showing the actual length of road requiring sealing is consistent with the previous plan of around 50km per year. That results in an average resealing age of 18 years, with variance for years when a greater quantity of asphalt surfacing is applied.

Figure 7-25: Top Surfacing Age profile (stackedd)

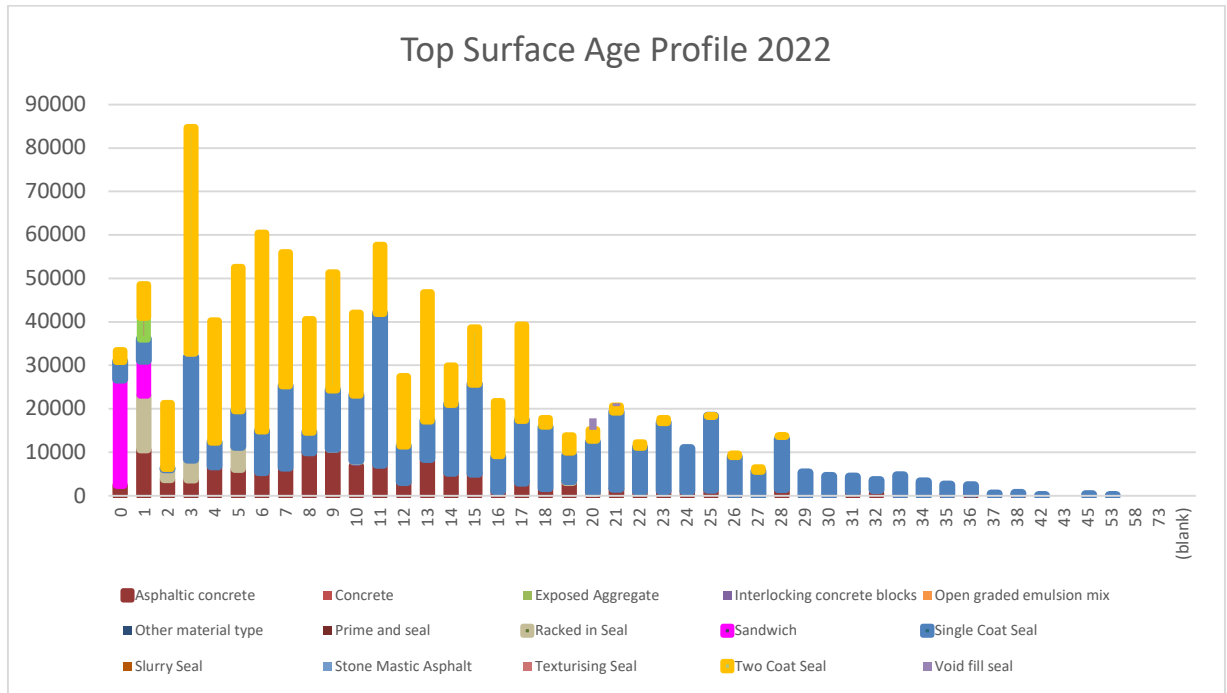
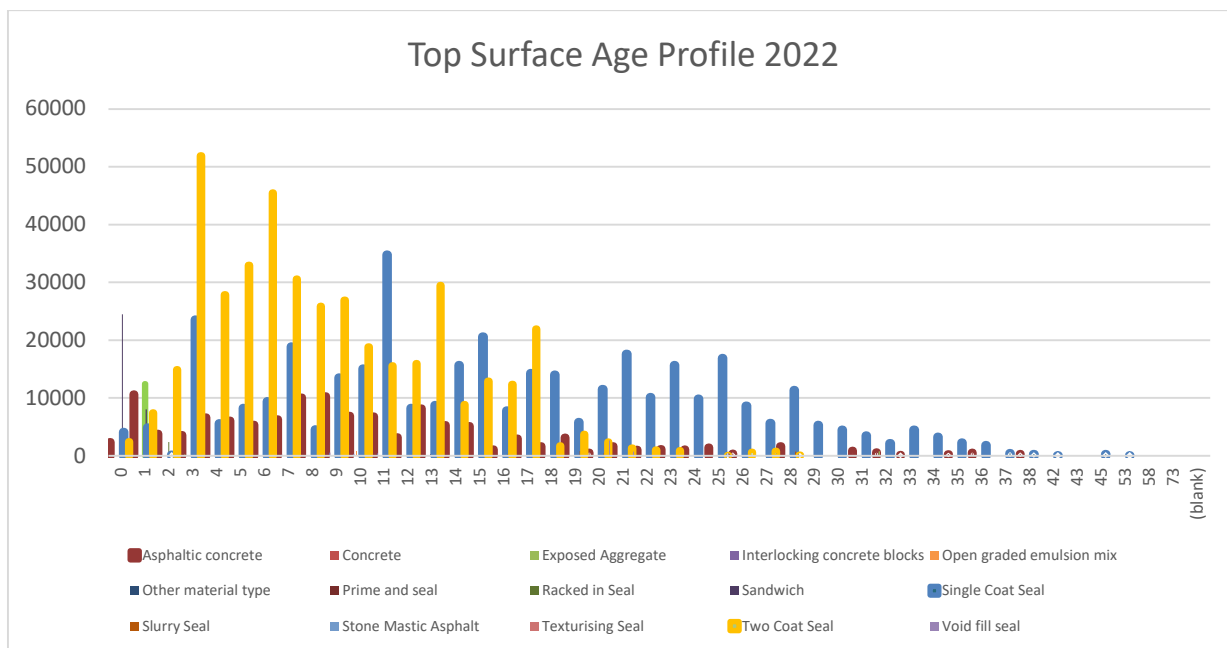


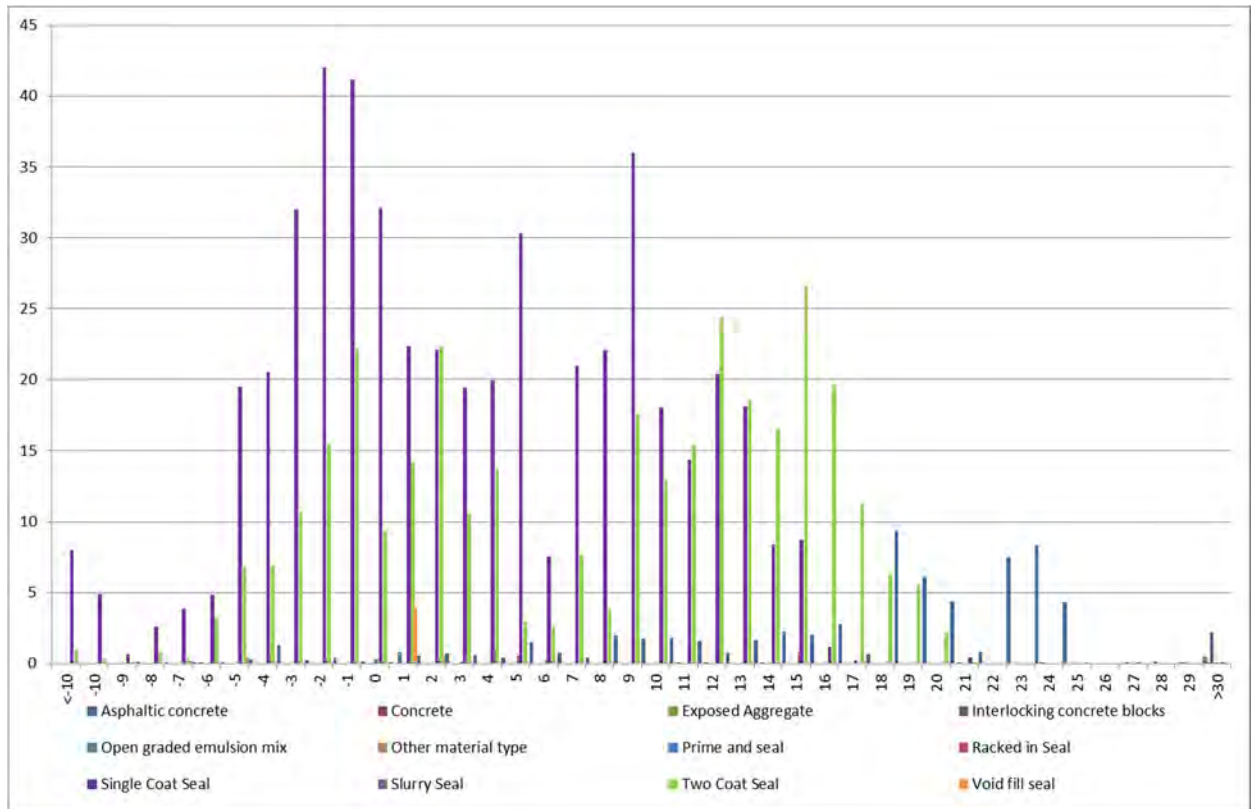
Figure 7-26: Top Surface Age Profile 2022



Seal lives are continually reviewed as part of the programme preparation process and expected lives are reviewed and amended as part of valuation validation to update assessed seal lives.

Seal types have changed over the years from single coat to two coat seals. Modelling of our roads has suggested that on low volume roads single coat seals may provide as long a life as two coat seals and therefore better value for money. More investigation of individual roads is required to determine the accuracy of this proposition and whether it might provide a new approach in managing the network.

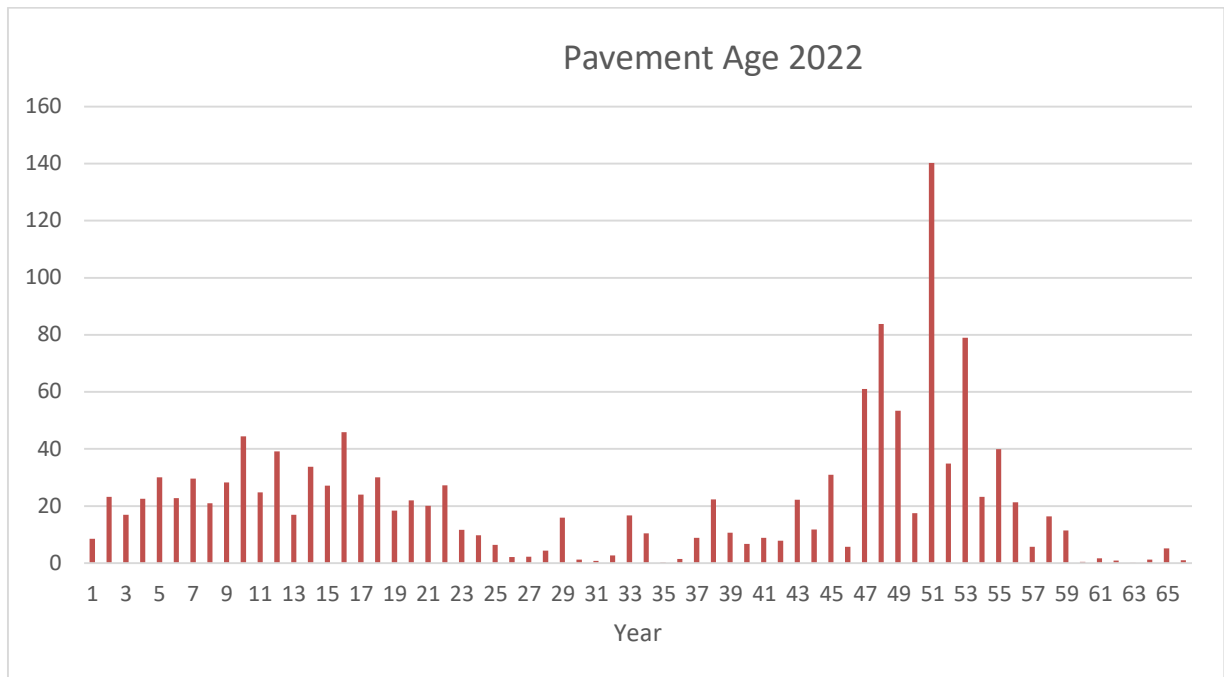
Figure 7-27: Top Surfacing Remaining Useful Life



Surfacing Remaining Life

The surface remaining useful life chart above indicates a significant length of the network is holding its own past the expected useful life. These roads are regularly checked to determine whether they have actually reached that end point. Roads that condition rating has indicated are due for renewal are assessed prior to being programmed and a likely new life is added into RAMM if it is deemed that the road has some life left. This process is not complete, and some roads may be overly influencing the results.

Figure 7-28: Pavement Age Profile



Pavement Structure Age profile

There is a lack of historical pavement information stored in RAMM therefore the depths of pavement layers used are estimated based on traffic load and the Council Engineer's experience.

For previous valuations the pavement age was extracted from historic RAMM surfacing data. As part of the 2005 valuation these estimates were confirmed, and updated, where possible using the Council's hard copy records from the seventies, eighties and early nineties.

The peak shown at 51 years represents the effects of assumed construction dates. As dig-outs are carried out information is gathered as to the type of material and construction underneath the surface throughout the network and in time this will allow a more reliable picture of the whole asset life.

Unsealed Roads

Formal condition rating has not historically been undertaken on unsealed roads; condition is monitored through contractor and Council staff inspections as well as service requests received from road users. Based on this information unsealed roads are generally considered to be in average to poor condition. Increasing traffic can cause rapid surface deterioration producing potholes, poor drainage, corrugations, and a dust nuisance to adjacent properties and road users and this is managed by regular inspections and by adjusting maintenance frequencies such as grading to deal with the increased use. It does not compensate for a historic loss of metal due to poor drainage, higher traffic numbers and increased weather events.

The maintenance contractor plans to commence utilising Roadroid and JunoViewer shortly, to help better monitor roughness, and to enable easy on-site data analysis. Roadroid is a device which measures the roughness of the road, while JunoViewer provides an on-site report of expenditure, remedial work carried out, condition and forecast expenditure on site to enable real-time decision making with regards to maintenance. It is likely that this will be rolled out in future to sealed roads.

The customer satisfaction surveys (see Levels of Service) have shown a declining satisfaction with rural roads in the district.

Asset Valuation

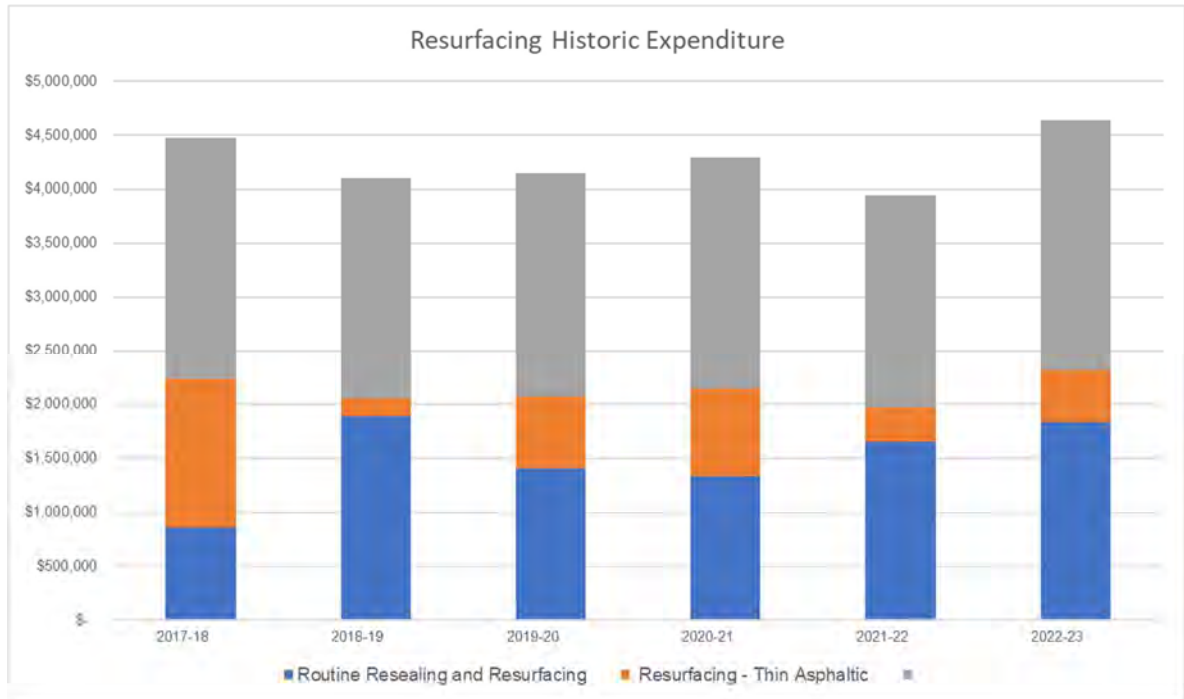
The following table presents a summary of the road carriageway valuation, refer to [Appendix C](#) for the full report.

Table 7-8: Summary of Carriageway Asset Valuation as at 30 June 2023

Description	Unit	Quantity	Replacement Cost (RC)	Depreciated Replacement Cost (DRC)	Annual Depreciation (AD)
Formation	m ²	29,138,073	\$461,875,841	\$461,875,841	-
Sealed Pavement Basecourse <small>(Note includes First Coat Seals)</small>	m ³	1,212,356	\$139,527,526	\$73,572,049	\$1,721,593
Sealed Pavement Subbase	m ³	1,556,876	\$98,844,396	\$98,844,396	
Sealed Pavement Surface	m ²	10,171,848	\$85,995,417	\$46,364,349	\$3,844,220
Unsealed Pavement Subbase	m ³	273,443	\$22,036,850	\$22,036,850	-
Unsealed Wearing Course	m ³	163,684	\$3,430,974	\$1,771,520	\$394,502
Total			\$811,711,004	\$704,465,005	\$5,960,315

Historical Data

The following graphs and table summarise the road carriageway expenditure over the past six years.



Note, information is extracted from capitalisation information so for new projects costs may be carried into following financial year as work in progress.

Expenditure last six years

Table 7-9: Summary of Road Carriageway Historical Expenditure (Update) (Include Network and Asset management as a % of all)

Financial Year	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Maintenance & Operations	1,141,163	1,584,740	1,269,468	1,513,667	1,464,394	2,037,766
Renewals	3,064,280	2,966,345	2,746,971	3,217,242	2,669,260	3,475,502

Infrastructure Risk Management Plan

The Risk Management section in this AMP outlines the formal review relating to the roading and transport network (refer to SECTION 5 Risk Management).

The risk mitigation indicated is consistent with good asset management. The severity of each individual risk can depend on the particular activities being carried out.

Table 7-10: Infrastructure Risk Management

Risk Description	Risk Assessment	Current Mitigation
Poor design of carriageway geometry resulting in poor drainage leading to pavement deterioration and risk of crashes	Medium	Regular network inspections carried out to identify deficiencies, Analysing crashes for possible road effects, regular grading/ maintenance programme in place
Unplanned road closure due to crashes, spillages	Medium	Road maintenance contractor is required to respond to emergencies on the network
Roadside is used for stockfood storage thus presenting possible safety risk and damage to road surface	Medium	Identified through Contractor Inspection and reported to roading team, Complaints followed up with property owners who will be requested to stop the practice.
Crashes caused by poor skid resistance, surface condition, loose chip or metal	Medium	Regular network inspection, Biennial pavement condition rating, Contract level of service for detritus and loose metal well defined, Analysing crashes records for trends in crash causes
Pavements have insufficient strength to carry traffic loading, resulting in reduced pavement useful life	Medium	Network inspections, condition rating, early warnings system are in place to identify these issues. Adequate budget to carry out works is available
Poor reinstatement after utility installation resulting in deteriorating network pavement condition and reduced pavement useful life	Medium	New national code in place with the use of RAMM CAR Manager to manage trenching work, Road Compliance Engineer position has managing CARs as a specific responsibility
Rapid deterioration in pavement due to prolonged wet weather	Medium	Ensuring the road meets best practise standards in term of shape and drainage. Keeping ahead of regular inspection

Routine Operations and Maintenance Plan

All pavement maintenance activities are currently carried out under a single District Road Network Contract 19/43. The Contractor is responsible for regularly inspecting the network, reporting all faults, programming maintenance works and obtaining the Engineer's approval on a monthly basis, quality assurance, completion of all specific/ or agreed works, unscheduled works and emergency works. The Contractor is required to use RAMM Contractor for programming, reporting, and claiming.

All the operations and maintenance activities on legal road are eligible for Waka Kotahi financial assistance except for amenity maintenance and off street car parking.

Operations and Maintenance Plan

Routine maintenance is the ongoing day-to-day work activity that is required to keep assets serviceable and prevent premature deterioration of failure. Two categories of routine maintenance are carried out:

Planned Maintenance

Network inspections, programming and reporting using RAMM.

Pavement evaluation and roughness survey

The maintenance of sealed road and car park pavements including:

- Repair of surface defects
- Repair of structural defects.
- Repair of minor surface deformations.
- Maintenance of unsealed shoulders.
- Adjusting surface covers
- Repair of edge break.
- Pre- reseal repairs.
- Carriageway cleaning.

The maintenance of unsealed road pavements including:

- Routine grading.
- Surface repairs.
- High shoulder removal.

Unplanned Maintenance

- Repair of potholes.
- Emergency work, spillages, crash debris.

- Snow clearing.
- Frost and ice gritting.

Operations and Maintenance Strategies

The following specific strategies are adopted, in addition to the general strategies discussed previously.

Service delivery

Council has endeavoured to make its contracts as attractive to the market as possible so as to obtain best value. It has combined all road network maintenance, road marking, pavement rehabilitation, and the resealing and resurfacing into one contract which is the NEC term service contract. The reason for this is to gain a total network management focus and to provide full flexibility for decision making by the contractor. Efficiencies, clearer responsibility and better responsiveness result from this approach.

Maintenance priorities

General maintenance work is classed as priority work where:

- The safety of road users may be compromised.
- It is likely that the areas of distress may expand or the method of repair change, such that the cost of any repair may increase.
- Subsequent maintenance or renewal works depends on the completion of the planned maintenance repair, such as pre-seal repairs.

Responsiveness and preparedness

A suitable level of preparedness for prompt and effective response to asset failures and emergencies is maintained by ensuring the availability of suitably trained and equipped staff and service delivery contractors through the contract. Asset failures are responded to with the initial objective of restoring service as quickly as possible by the most economic method available, and making temporary repairs if major repairs or renewals are required.

Summary of Future Cost

Growth in the District and increasing inflation means the current level of expenditure is not keeping up with network needs. The balance between pavement maintenance, rehabilitation and resurfacing is adjusted constantly to meet the needs of the pavement, while the total overall spend on individual roads is a balance of pavement needs, service levels and other priorities such as the GPS and Regional needs.

Expenditure projection is shown in the figure below in 2024/25 dollars. Allowance has been made in the sealed pavement maintenance to cater for growth and increased flood events, leading to higher ground water levels. An underinvestment in drainage has exacerbated the problem. For some time expenditure was adequate for the network needs, however a

combination of network growth, weather events and high cost fluctuations has led to insufficient maintenance being able to be carried out.

Figure 7-29: Carriageway Maintenance Forecast Expenditure



Renewal/ Replacement Plan

Renewal expenditure is work that restores an existing asset to its original capacity or condition. For pavements, both surfacing and pavement structural layer (basecourse and sub-base) must be considered separately as their lives and treatment options are quite different, although closely related.

The type of renewal works undertaken are summarised in Table 7-11:-11 below:

Table 7-11: Renewal Work Types

Work Type	Objective	Methods
Unsealed Road Remetalling	To maintain a waterproof road surface	Unbound aggregate spread on the road
Sealed Road Resealing/ Resurfacing	To maintain a waterproof and skid resistant road surface	Chip sealing Asphaltic concrete
Pavement Rehabilitation	Strengthen road (basecourse)	Rehabilitation: increases the strength of existing basecourse materials by: Adding a stabiliser (hydrated lime or cement) and re-compacting Constructing an additional layer of road metal on top of the existing pavement construction

Renewal Plan

The Renewal Programme is identified through:

- Network inspections.
- Treatment selection report from RAMM.

The required level of renewal varies depending on:

- The age profile of carriageway surfacing and structure.
- The condition profile of the carriageway.
- The deterioration of the top surface.
- The level of ongoing maintenance demand.
- The differing economic lives of the materials used.

The Waimakariri District Network Road Maintenance contract includes:

- The metalling of unsealed roads including development of programmes, design and construction.
- The resealing and resurfacing of sealed pavements including development of programmes, surfacing design and construction of chip seals, asphaltic concrete surfacing, and slurry sealing.
- The rehabilitation of sealed pavements including economic justification, design and construction.

Sealed Road resurfacing

The main surfacing treatment used in the Waimakariri district is chip seal with around 88% of all sealed roads surfaced with this material. This is the most appropriate treatment considering the type of roads and traffic volumes. Asphaltic concrete is used on strategic and arterial roads in the residential areas of Kaiapoi and Rangiora to reduce road noise, and in other areas to reduce wear and tear on the pavement in those areas subject to scuffing from turning vehicles, such as major intersections and cul de sacs.

The programme for sealed road resurfacing has been previously developed incorporating the recommendations from the RAMM Treatment Selection report. The treatment selection process uses data from the bi-annual road condition rating, seal age compared with seal life data, and includes maintenance cost. The RAMM Treatment Selection list is field validated by the Council's maintenance staff and professional service providers, and adjusted appropriately before the programme is finalised.

For roads on the Treatment Selection list not deemed to requiring sealing, staff assess the remaining useful life of the seal, and this is used to update RAMM thus improving the accuracy of the data.

In terms of utilising predictive modelling, Council has purchased a licence and had preliminary modelling carried out with JunoViewer

Falling Weight Deflectometer readings, which measure pavement strength, were carried out in 2017 on all Arterial and Collector Roads, and a selection of Access roads in the District and it is hoped to repeat this exercise in the next LTP. Results of this showed that most of the network is built on a strong base, as is expected for a District built on river gravels. The exception to this is the areas of Kaiapoi and Rangiora, and to some extent Oxford. The previous DTIMS model provided 3 spending scenarios for the next twenty years (\$2.5M, \$3M and \$3.5M / annum), with recommended reseal lengths ranging between 41.2 and 42.8 kilometres per annum for the first ten years, followed by 47.1 - 49.0 for the following ten, which put the the ten year reseal target slightly below the average length of road resurfaced annually over the last five years of 44km.

WDC has moved from utilising DTIMS for modelling to JunoViewer. An initial forecast has been developed, as shown below, which gives an estimated length of pavement renewals suggested are required to maintain the life of the network.

Figure 7-30: JunoViewer recommended renewals lengths

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	10 year average
Asphaltic Cement Rehabilitation	0.12	0.26	0.89	0.14	0.00	0.30	0.73	0.44	0.45	0.52	0.38
Chipseal Rehabilitation	5.14	2.67	0.97	3.64	4.14	2.38	1.33	1.62	3.00	1.89	2.68
Reseal	38.37	44.19	46.63	45.55	46.39	45.52	39.57	44.66	44.43	46.37	44.17
Second Coat Seal	46.36	11.49	10.71	2.67	0.97	3.64	4.14	2.38	1.33	1.62	8.53
Thin Asphaltic Cement	1.34	1.97	1.11	1.78	2.45	2.45	1.81	1.64	1.68	1.41	1.76

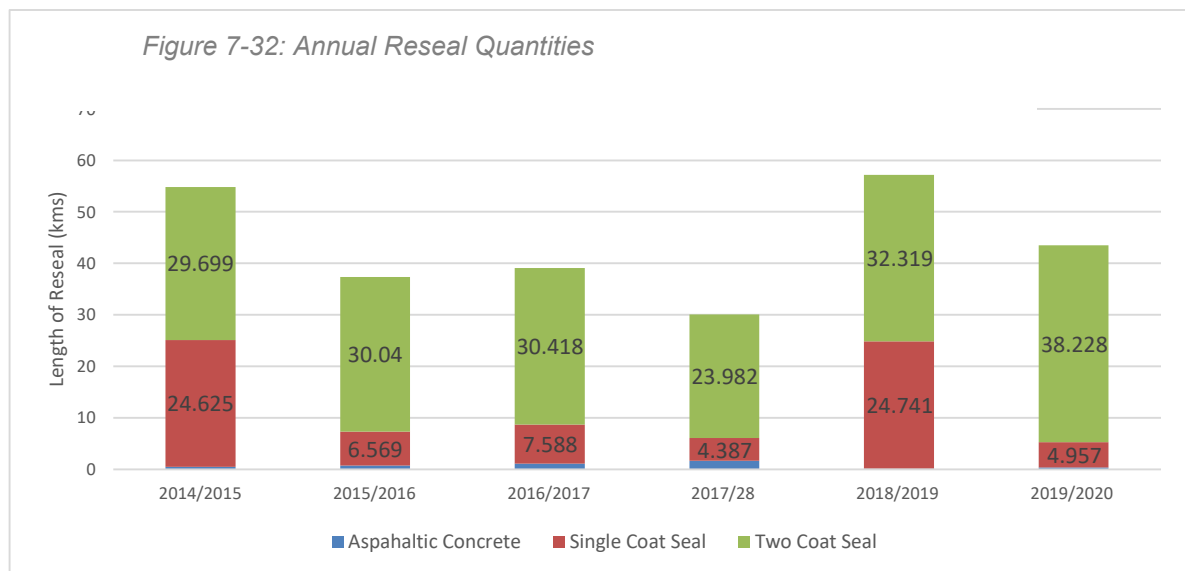
This are more easily visualised through a chart. It should be noted that this recommendation is primarily through desktop assessments and on-site validation still needs to be carried out.

Figure 7-31: JunoViewer Renewals Chart.



The current length of annual resurfacing achieved across the sealed network is close to 4%. If the current annual resurfacing rate continues at 4%, then every sealed surface would need to achieve actual seal life of 25 years before it is resurfaced again. At this rate to ensure all sealed roads on the network are resurfaced at least once it would take 25 years to complete. This is an unrealistic achievable surface life for the sealed roads on this network especially with significantly increasing traffic volumes. The surfacing programme is driven by identified need and failure to keep the roads waterproof will lead to increased budgets for sealed pavement maintenance repairs.

With more investment a realistic and feasible achieved life for the sealed surfaces on this network would be 5% of the network per year. At this rate the sealed surfaces on the network would be resurfaced at least once in 20 years which is what has been achieved historically on the network. A further increase to address the backlog from the last 5 years of underinvestment may be necessary.



Pavement Rehabilitation

Pavement rehabilitation is carried out when it is the “Least Maintenance Cost”⁷ solution to pavements faults and is essentially the renewal of the pavements basecourse layer. Work carried out under this activity results in pavement renewal and the techniques employed include overlays, rip and remake and chemical stabilisation. Pavement rehabilitation is rarely used on metal roads in the district.

Forecasts of the need for pavement rehabilitation are based on a combination of road condition assessment, engineering judgement with all recommendations from the treatment selection report, and economic evaluation.

In the previous LTP period pavement rehabilitation needs and hence quantities had started to decline. However, increased pavement failures have seen this quantity creeping up again, particularly on Arterial and Primary Collector roads. An assessment of the balance of the amount of rehabilitation versus resurfacing (resealing) has been carried out based on pavement and condition trends and on observed pavement performance. The main condition trend relating to structural condition is roughness and roughness has been slightly improving over the years. This is backed up by the observed pavement condition where areas of failure justifying rehabilitation are not occurring and are not likely to occur as long as good maintenance and regular resurfacing is carried out.

The average rate of pavement renewal since 2014/2015 has averaged around 4.4 km/year. The exception to this was 2019/20 where Covid-19 lockdown prevented the full range of work required to be carried out.

⁷ To be the Least Maintenance Cost solution the cost of the work must, over a 25-year term, be cheaper for the Council, and NZ Transport Agency where appropriate, in terms of Net Present Value (NPV) than maintaining the existing asset over the same period. The Discount rate specified by NZTA for the NPV calculation is 8%.

Figure 7-33: Annual Pavement Rehabilitation Quantities



Unsealed Roads Remetalling

Unsealed roads in the district have deteriorated during the period from May 2021 to July 2023. This is due primarily due to insufficient metal on the roads, both due to an ongoing lack of sufficient metal application for the growing traffic volumes, and several large flood events which washed the surface away on many of the unsealed roads. Council responded by carrying out work unsubsidised, but NZTA have since provided co-funding for this work.,

One area of unsealed road that deteriorates quickly is the unsealed fords. Discussions have been held as to the appropriate time to re-open these following flood events, which typically cause severe damage. As these are generally on lightly trafficked roads the cost to reinstate becomes harder to justify. This will be monitored.

Back in 2010 NZ Transport Agency completed a gravel loss study which monitored the deterioration rates of gravel roads. This study involved ten Councils, including WDC. The study indicated a loss of metal of around 10mm per year for roads carrying 100vpd. At a metal depth of 60mm this would indicate a life of 6 years for these roads; however, experience in the Waimakariri district is that the loss is higher due to a predominately dry climate and dry winds. Also not included in this study is the effect of larger percentages of heavy traffic and how these should be factored into the calculations. It is proposed that gravel loss be monitored during the period of the next AMP to ensure that Council is utilising an appropriate rate of renewal for the Waimakariri District.

Table 7-12: Remetalling Frequency

Traffic Volume	Years Between Remetalling	Roads	Length (m)	Road Width (m)	Depth of metal (mm)	Volume for road length	No. of Applications	Volume of material over 12 years (m ³)
300 to 375 vehicles per day	1	2	3000	6	100	1800	12	21600
200 to 230 vehicles per day	2	5	7500	6	90	4050	6	24300
150 to 200 vehicles per day	3	11	12500	6	80	6000	4	24000
100 to 150 vehicles per day	4	39	53000	6	70	22260	3	66780
80 – 99 vehicles per day	5	37	53000	6	70	22260	2	44520
50 – 79 vehicles per day	8	134	155000	6	60	55800	1.33	74400
<50 vehicles per day	12	224	303000	6	60	109080	1	109080
								364680
								Annually
								Loose Measure
								30390
								36468

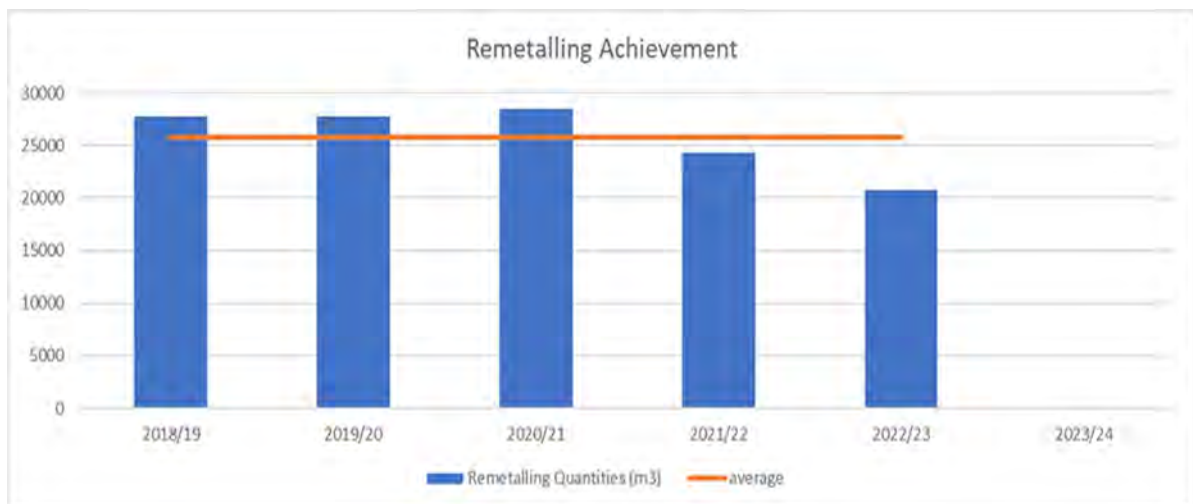
Based on this frequency, the metal depths and the traffic volumes, the length of remetalling required each year is 58km. This equates to approximately 36,500m³ (loose) of metal per annum based on the latest traffic volumes. However, the quantity of remetalling carried out over the last three years has been around 27,000m³ (loose measure) per annum.

It is noted that the area calculated is based on RAMM widths and these have not been recently validated, however the average width of the road at around 4.7m is not unlikely.

The remetalled roads programme is developed from maintenance inspections by the road maintenance contractor and Council roading staff. As the rate of deterioration can vary due to a number of factors this is the most reliable means of programming this work.

Actual quantities are shown in the figure below.

Figure 7-34 Remetalling achievement over time



Renewal Strategies

The following specific strategies are adopted, in addition to the general strategies discussed previously.

- High Shoulder Removal
- Shoulder Reclaiming
- Increasing quantity of metal

Problems

- Reseal pavements at intervals close to the maximum seal life cycles as confirmed by field validation, unless earlier intervention is warranted by the condition of the pavement such as:
- Lack of water proofing
- Loss of texture resulting in loss of skid resistance
- There is evidence of crack initiation from binder condition and stone loss

Solutions

- Applying the correct treatments at the optimum time so that the required level of service is delivered whilst minimising the total life cycle cost.
- Engage the Road Network Maintenance contractor recommendations on the type of renewal.

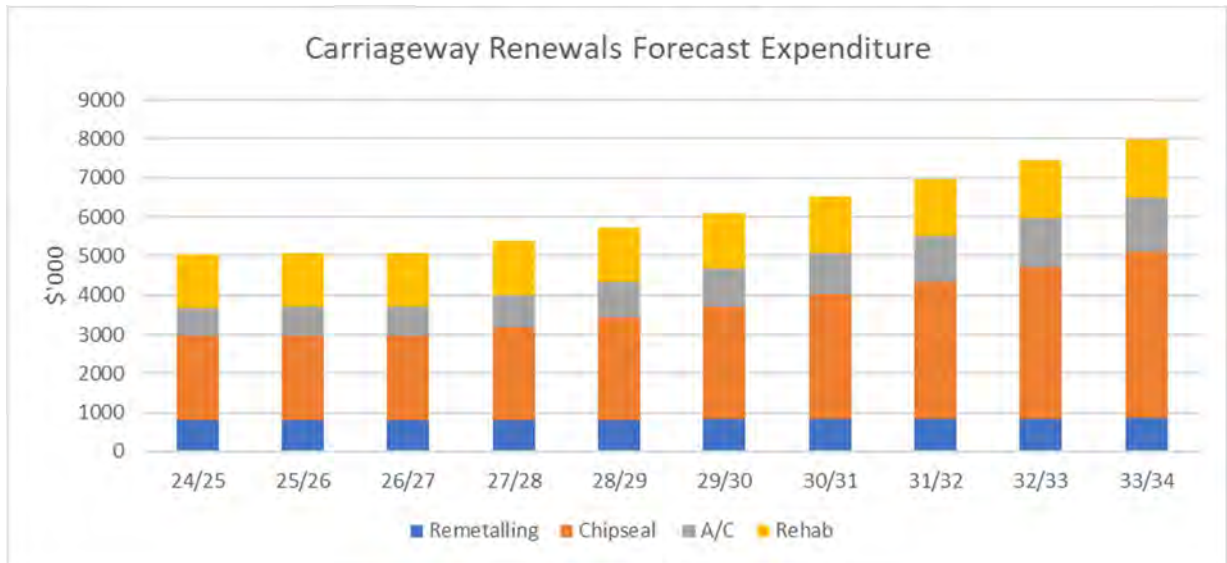
Although the length of unsealed roads has declined slightly as a result of seal extensions in areas becoming more extensively populated, this is offset by the extra traffic over the network, and it is becoming harder to meet expected levels of service within budget.

As with other aspects of the contract, experience has played a big part in ensuring good value for money, as shown in the ONRC comparison with our peers. However, as experienced grader drivers become harder to find, it becomes more important to use technology as a tool in better management. It is planned to monitor unsealed roads more closely in this AMP period, using Juno Viewer and Roadroid. These will not only allow the maintenance to be better tailored to conditions but will help target remetalling.

Summary of Future Cost

The figure below shows the renewal cost, in 2023/24 terms for the next 10 years, which is relatively steady for the period of this plan with allowance for the cost of second coats on new seals in subdivisions, but will need to be increased in future to cater for the network growth, e.g. new subdivisions are predominantly AC which has a useful life of 25 years. Therefore in 25 years' time the renewal programme may need to be increased to allow for this, however, the 25-year figure is a theoretical one and in reality this is likely to be smoothed to an affordable programme.

Figure 7-35: Carriageway Renewal Forecast Expenditure



Creation/Acquisition/Augmentation Plan

This section of the plan covers strategies for the creation of new assets (including those created through subdivision and other development) or works which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in traffic needs or customer expectations.

In summary, the types of projects which result in creating new assets are:

- Seal widening.
- New/ upgraded roads.
- Minor improvement projects.
- Seal extension.
- Intersection upgrades.

Seal Widening

Seal widening of existing seals is carried out to overcome edge break or to reduce shoulder maintenance. Seal widening is dependent on Waka Kotahi funding approval. It is unlikely that any roads will meet Waka Kotahi criteria for seal widening.

New / Upgraded Roads

New road construction mainly occurs through the subdivision process and the new roads are vested in the Council. 51.4 km of roads have been vested in Council in the last decade, compared with 78.6 in the decade prior, as shown in the graph below.

Figure 7-36: Carriageway Vested Assets since 2004

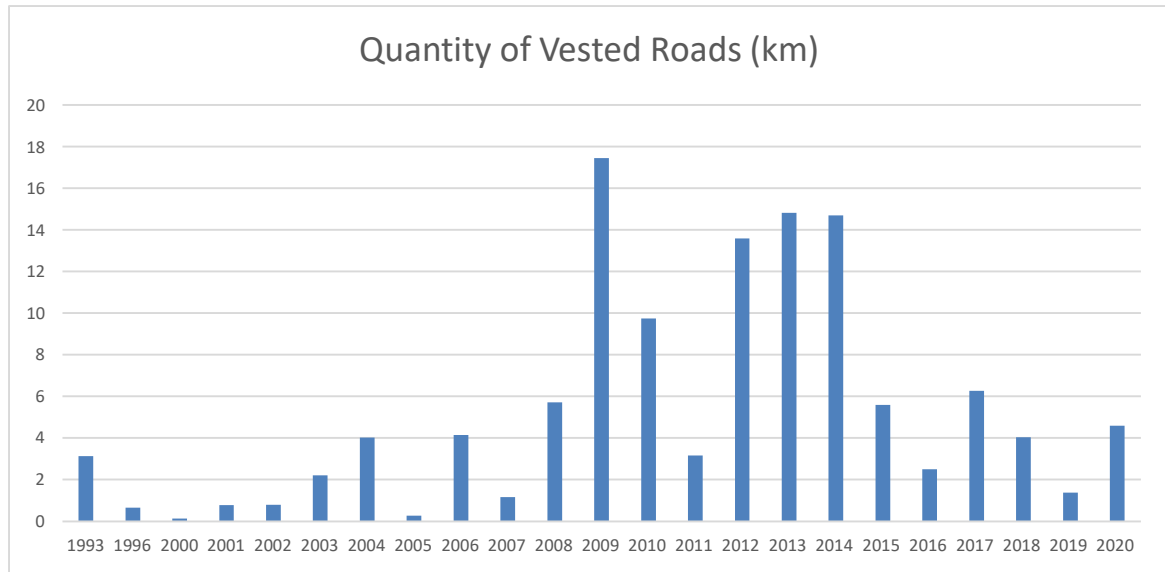


Table 5-1 in the Future Demand section of the AMP notes the projects that have been identified to improve LOS or respond to growth.

Minor Improvement /Low Cost Low Risk Projects

This category of projects was originally designed to allow Councils to carry out lower value capital works to improve the levels of service for safety and for walking and cycling, without requiring the level of supporting detail required for more major projects. Low Cost Low Risk (formerly Minor improvements) projects are prioritised taking into account crash history, Waka Kotahi audits and assessments, community feedback and Council strategies. For walking and cycling projects an emphasis is on improving facilities at schools to encourage more children to walk and cycle and to improve safety, however planned projects have been expanded to include commuting cycling to link the main centres of Rangiora, Kaiapoi, Woodend, and on to Christchurch. These paths are predominantly off-road, to provide a safer environment and encourage more people to travel by modes other than the private car. In the rural areas the results of the Waka Kotahi Road Infrastructure Safety Assessment (RISA) provides input to the programme. The RISA identified roadside hazards as a priority area, and this is being addressed through Minor Improvements.

In 2013 this category was expanded to include bridges under \$300,000 replacement cost. The funding level for Minor Improvements was increased to \$1,000,000 in the 18/21 funding round. The Low Cost Low Risk category has been significantly changed for the 21-24 AMP. With a rise in funding to \$2 million comes a higher level of accountability and a requirement to demonstrate alignment with national and regional priorities as well as local. Projects will also be scrutinised and potentially ranked nationally. Some information has been received from Waka Kotahi regarding likely funding, but this is not sufficient to provide any certainty as to

what projects will receive funding. As occurs every three years, funding will officially be allocated in the new financial year at which time some certainty will be available for planning.

Seal Extension

The Council has a large number of rural unsealed roads and there is ongoing pressure to seal them, predominantly by the rural lifestyle communities. Included in the plan is 1 km of sealing of unsealed roads annually, \$400,000 every 3 years from year 2018/19 for unsealed road sealing. Roads are also sealed on availability of financial contributions from subdivisions. The current Council Policy is to seal roads when 30% of the cost is available from financial contributions. Where there are no financial contributions available the cost share is 50% property owner and 50% Council.

Intersection Upgrades

Intersection improvements are carried out to cater for growth and to improve the safety when the crash rate is high. \$120,000/annum has been proposed for miscellaneous intersection improvements for 2024/25 to 2026/27. In addition, a further \$580,000 is proposed for 27 high risk rural intersections where it is felt relatively low-cost measures can be undertaken which will provide a substantial risk reduction. Co-funding for this work has been more difficult to obtain in the last three years.

Selection Criteria

Capital projects are mainly influenced by:

- Growth – projects focused on meeting increased traffic or changes in traffic patterns.
- Service Level – projects planned to improve the level of service.

Disposal Plan

The disposal of the old pavement as result of the renewals programme will have an impact which has to be taken into account. There is also the practice of recycling and reuse where suitable. The unsuitable material for further use (cut to waste) shall be disposed in specific designated sites.

7.4 Bridges and Road Structures



Purpose

To provide roading structures to ensure safe, reliable and continuous usage of the transport network.

Problem Statements

- *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*
- This is particularly apparent on our single lane bridges on high volume routes, such as Skew Bridge and the Waimakariri Gorge Bridge, which is shared with Selwyn District. Appropriate funding has not been allocated to this work category in the past, leading to deterioration of the bridge stock. The process of remedying this was started in the 21-24 AMP, however more rigorous study of the WSP inspection reports indicated a significant increase in expenditure will be required to bring the stock up to fit for purpose, and the funding request reflects this.
- *Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting in disruption.*
- This is particularly important for bridges and large culverts which often form critical links, especially at end of roads, where they may be the only form of access. A particular concern with some of these going forward is that bridge heights may be too low, or culverts undersized as climate events become increasingly larger.
- *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.*

- Few bridges are designed for pedestrians and cyclists, and for these to share the road with motorised traffic in a corridor with no room to escape often results in this group choosing not to utilise walking or cycling due to the risk or choosing other less desirable routes. An example of this is Skew Bridge, which is on a high-volume route designed to provide an alternative to the main route through the centre of Rangiora. Skew Bridge is barely wide enough for two trucks to pass each other, and pedestrians and cyclists have been known to use the nearby rail bridge rather than cross on Skew Bridge.
- *Road users on our network have little room for error or recovery from mistakes, which results in fatal and serious injuries when crashes occur.*
- Bridges are inherently dangerous due to lack of recovery room, and few of our structures either have modern guardrail, or appropriate end treatments, often terminate in concrete obstructions, or are only protected by sight-rails, many of which require significant maintenance.

Other Issues

A number of issues were identified in the 21-24 AMP, and some progress made as below, however some aspects continue to be ongoing. Those issues s include:

- Limitations to stored data related to bridges. Few construction plans for bridges are available and those that are, are stored in various locations. These should all be added into central repository when required in an emergency. As designs are completed these are attached to RAMM as well as stored in TRIM, Council's file system. This is still only a small portion of the total number of structures and cannot replace on site investigations.
- Insufficient funding to keep up with inspection recommendations. Most funding is directed to the most critical work identified, and many recommendations remain to be implemented long after the year they were identified, often due to emergency reactive work taking priority. Those renewals that were implemented in the 21-24 NLTP included the relining of several Armco culverts, which extended their lives by around 25 years. In terms of maintenance, the work was primarily reactive, including guardrail/handrail repairs.
- Damage to bridge handrails due to oversize agricultural vehicles. An ongoing issue, particularly since it is impossible to identify the parties causing the damage as vehicles are not required to be registered.

Solutions

- Continue to build up data from inspections, both scheduled professional service inspections, and those carried out by in-house staff.
- Establish what is critical information to hold in RAMM and back capture where possible, beginning with the most critical, whilst eliminating the unnecessary. One impediment to

making major progress on this was the change to the bridge database which only allowed editing in the last year.

- Additional funding was applied for the 21-24 period in order catch up on recommended renewals and some progress has been made to renewals.

At this stage no one solution has been determined for oversized vehicles. As a trial, large bollards were installed at one bridge to deter the vehicles. These were in turn broken as well as the handrails. Further consideration could be given to a suitable education campaign.

Background Data

This section includes bridges, bridge culverts (culverts which have a cross-sectional area greater than 3.4m² are considered bridges, this being an NZTA definition), underpasses, cattle stops, and retaining walls. These assets are held in RAMM tables.

There are two boundary bridges, i.e. bridges spanning the boundary between the District and neighbouring authority. They are:

- The Old Waimakariri River Bridge (Main North Road), shared with Christchurch City Council
- The Waimakariri Gorge Bridge (Depot Road), shared with Selwyn District Council

Bridges and road structures assets account for 11.4% of the total roading and transport asset group, based on replacement cost.

Physical Parameters

The Council manages a total of 332 bridges and road structures, 79% of these bridges are in rural areas. The breakdown of these structures is shown in the table below:

Table 7-13: Summary of Structure Types

Structure Type	Unit	Quantity	Quantity	Quantity
Bridges	ea	153	157	155
Large Culverts	ea	132	131	134
Pedestrian underpass	ea	0	0	0
Stock underpass	ea	13	13	13
Cattle stops	ea	20	19	28
Retaining walls	ea	9 (826m)	12 (900m)	25 (1581m)

Bridges vary from high standard concrete structures to very low standard timber structures with severe restrictions placed upon them. The figures below summarise the bridges and large culverts by construction type:

Figure 7-37: Bridges by Construction Type

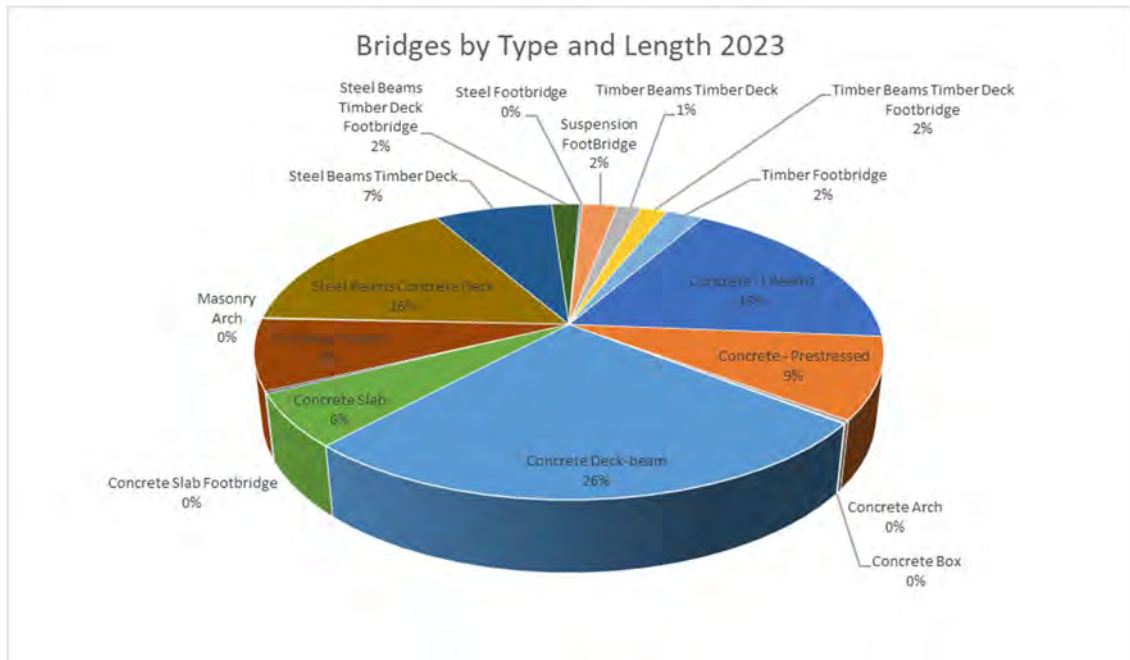
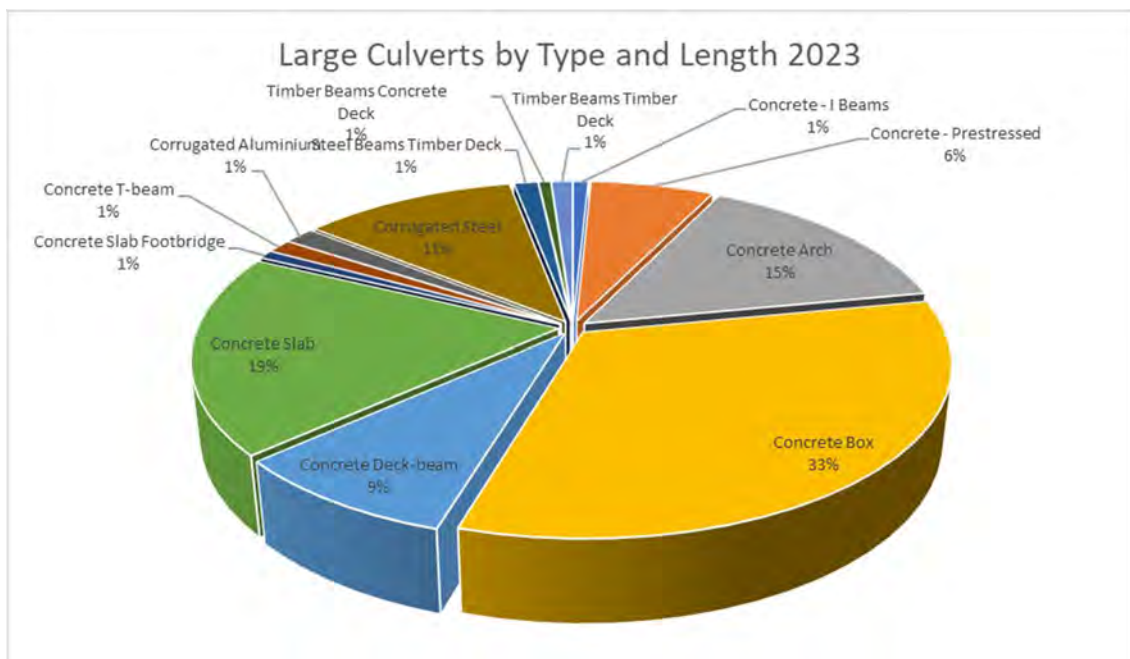


Figure 7-38: Large Culverts by Construction Type



Asset Capacity/ Performance

There are several narrow bridges on the network that may require widening in the future as traffic volumes increase. This plan provides for some bridge widening when it is economic to do so based on road users' cost and safety. Other changes have been made to some narrow bridges, such as re-signing as one lane, as a means of improving safety.

All new bridges are constructed to carry HN-HO-72 traffic loadings.

Waimakariri Major Bridges

Ashley River Bridge

The Ashley River Bridge on Cones Road was replaced in 2014/15. The old bridge had reached the end of its economic life and because of the short pile length and scouring in high river flows the old bridge was required to be closed during high river levels. This caused major disruption to the local community. The old bridge was also very narrow and not suitable for the 10,000 vpd that cross the bridge and it had no walking or cycling provision. The new bridge caters for both cyclists and pedestrians. Its construction has virtually eliminated one of the Lifelines Risks, particularly as it provides an alternative route for times when the nearby State Highway route is impassable.

Old Waimakariri Bridge

The Old Waimakariri Bridge is jointly owned by the Christchurch City Council and Waimakariri District Council.

The bridge has a narrow width which will limit its ability to carry future traffic volumes and provide sufficient facilities for cyclists. The Council, along with Christchurch City Council, budgeted for a “clip on” cycle path in the 2012-22 LTP and 2012-15 NLTP but the project did not gain Waka Kotahi funding approval. This need for this alteration has been mitigated by cycle lanes added to the Northern Motorway, as part of the Christchurch Northern corridor project.

Christchurch City Council has assessed that the Old Waimakariri Bridge will require replacement in 2051/52. Prior to that time some renewals of components will be required, including handrail replacement, concrete crack repairs, deck joint replacing, deck surface replacement and upgrading beam to pier fixings. These works are planned for the 24-27 AMP period.

Waimakariri Gorge Bridge

The Waimakariri Gorge Bridge is jointly owned by the Selwyn District Council and Waimakariri District Council. Recently the bridge suffered rapid deterioration of the timber deck and road surface.

The deck has not achieved its expected life and a replacement deck is being constructed in the 2023/24 financial year, with funding from Waimakariri District, Selwyn District and NZ Transport Agency (Waka Kotahi). This is a laminated plywood deck.

Asset Condition

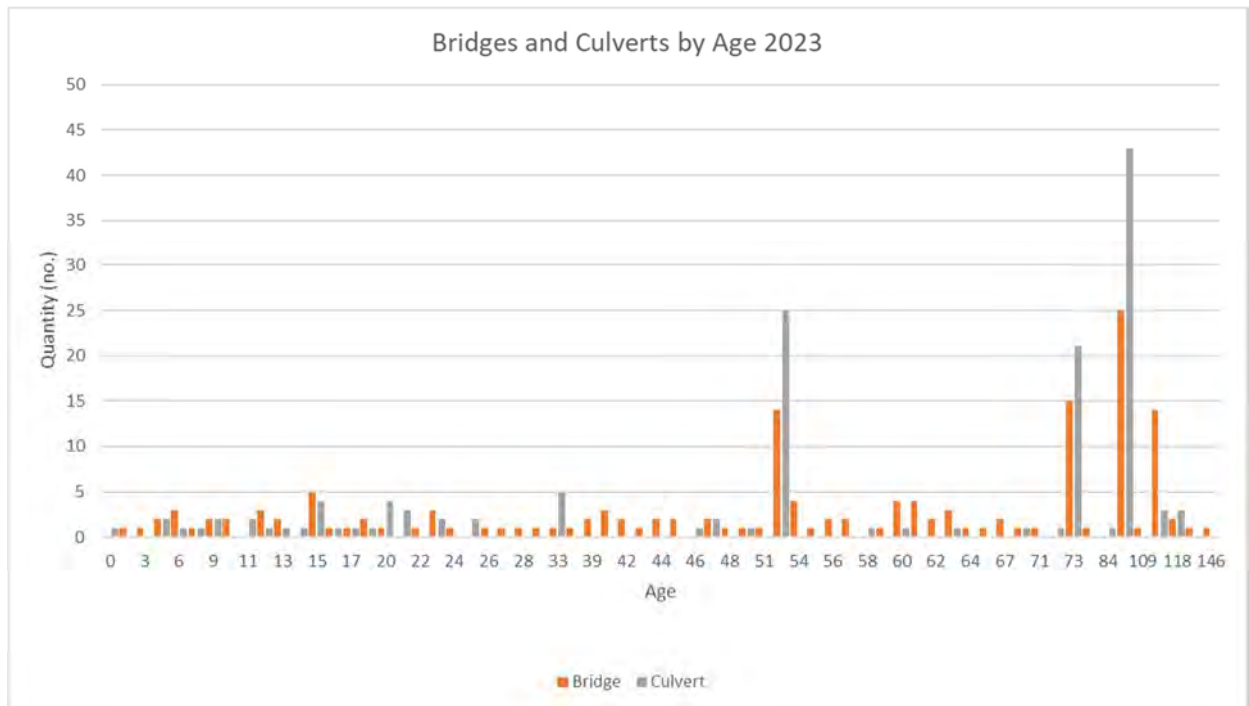
Age profile

Ages of bridges and road structures vary in the district as indicated in the figure below. In September 2014 all bridges and large culverts were assessed to assess a) whether the entered construction dates are reasonable and likely to be correct, and b) assign construction dates

where either none was known or appeared incorrect. New dates were estimated based on construction types known to have occurred in particular eras.

As with all assets, this data provides a useful initial summary of likely replacement dates but more emphasis is placed on the condition of bridges to determine remaining useful life because the life of a bridge is more dependent on its condition and how well it is maintained than on the date it was built. However, age will still provide a high level indication of likely replacement date.

Figure 7-39: Bridges and Large Culverts Age Profile



Condition

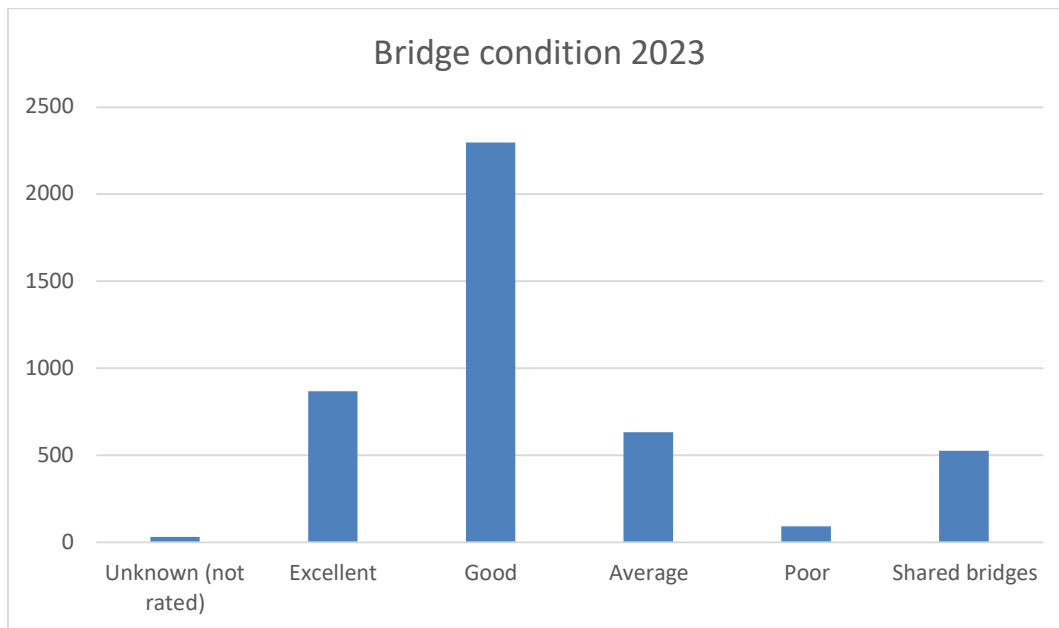
The Council engages WSP Ltd to carry out a detailed structural inspection of bridges and large culverts annually in accordance with Waka Kotahi guidelines. This inspection includes 100% of the timber bridges, 100% of all posted (weight or speed restricted) bridges, one third of all other bridges, and all other bridges flagged as requiring ongoing monitoring, with all bridges being inspected at least every 3 years.

The maintenance contractor inspects bridges on a regular basis to identify and correct routine maintenance items. This includes an inspection after every flood event to determine whether there has been any detrimental impact.

Weight and speed restrictions are placed on 8% of the district's bridges to advise heavy transport road users where it is safe to cross. This is dependent on axle loadings and is a key factor in determining which routes are not accessible by HPMV (High Productivity Motor Vehicles), and '50 max', as the name suggests, vehicles carrying up to 50 tonne. Usual maximum loading is 46 tonnes.

A 1-5 condition rating grade has been assigned to each bridge and large culvert based on the general condition, the superstructure condition, foundation and substructure condition, and the scouring and waterway. This assessment indicates that just 4% are rated as being in poor or very poor condition, while 19% are in average condition and 76% are in good to excellent condition. This assessment compares with 2% rated as being in poor or very poor condition, 16% average condition and 81% good to excellent condition back in 2020. This would indicate that despite some specific issues with some bridges, overall, their condition is holding fairly well. However, those few in the Poor to Very Poor category will need attention in the near future.

Figure 7-40: Bridge Condition by Quantity of Bridges



Over the last 5 years there has been a growing backlog of work identified by the annual inspections. While some recommendations have been dealt with, in other cases work arising from emergency events, crashes or simply over-width vehicles damaging handrails or guardrails has led to insufficient funding to complete these planned works. Additional funding was received for the current NLTP and this has enabled some catch up works, however there is still a substantial amount of general maintenance that requires attention and funding has been requested to address this.

Asset Criticality

Critical bridges were identified through the Lifeline Disaster Resilience Assessment in 2009. Criticality was determined for structures based on traffic volume, road function, availability of alternative routes, and impact of bridge failure in isolating communities. Seismic assessments have been completed on priority 1 bridges and will be carried out on remaining bridges when funding allows.

The following bridges have been identified as critical assets:

Table 7-14: List of Critical bridges

Bridge Number	Bridge Name	Road Name
Priority 1		
149 A	Ashley Bridge	Cones Rd (149)
178 B	Eyre River Bridge	Depot Rd (Ex Sh72) (178)
178 D	Waimakariri Gorge Bridge	Depot Rd (Ex Sh72) (178)
183 A	Makerikeri Bridge 1	Dixons Road West (854)
23 A	Ashley Gorge Bridge	Ashley Gorge Rd (23)
399 A	Old Waimakariri Bridge	Main North Rd, Old Waimakariri Bridge (565)
487 A	Stoke Bridge	Oxford Rd (Ex SH72) (487)
59 A	Garry River Bridge	Birch Hill Rd (59)
59 C	Bullock Creek	Birch Hill Rd (59)
708 A	Kaiapoi River Bridge	Williams St (708), Kaiapoi
Priority 2		
373 B	Gillespies Bridge	Lees Valley Rd (373)
373A	Middle Bridge	Lees Valley Rd (373)
373D	Five Gullies	Lees Valley Rd (373)
721 A	Coopers Creek	Woodside Rd (721)
286 A	Sauleys Bridge	Harmans Gorge Rd (286)
386 C	Grey Bridge	Loburn Whiterock Rd (386)

Asset Valuation

Valuation table as at 30 June 2023, full valuation is included in Appendix C

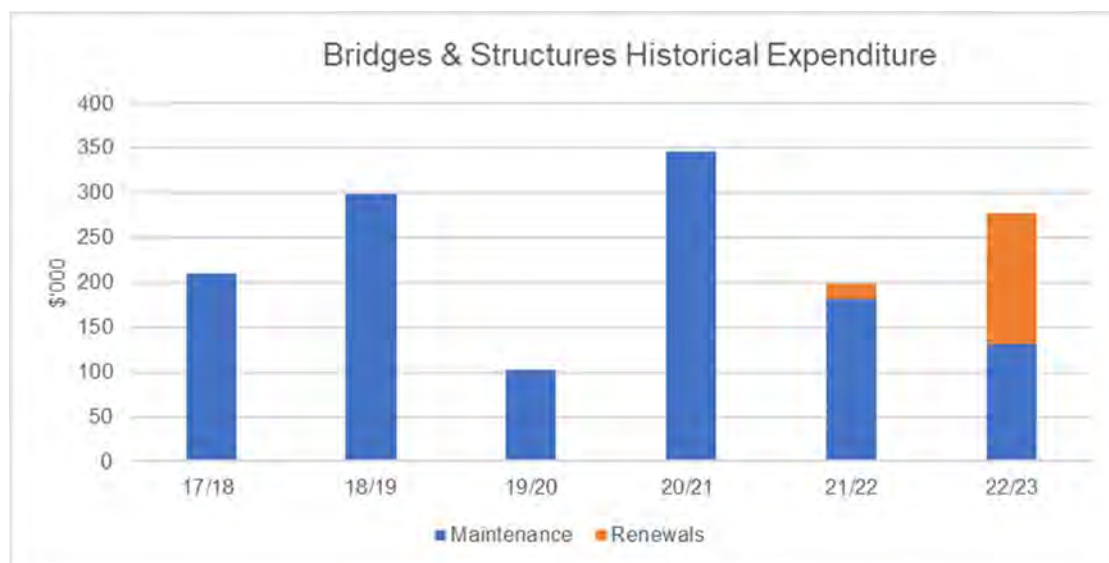
Table 7-15: Summary of Road Structures Asset Valuation as at 30 June 2023

Description	Unit	Quantity	Replacement Cost (RC)	Depreciated Replacement Cost (DRC)	Annual Depreciation (AD)
Bridges	m	3,809	\$130,314,306	\$72,227,666	\$935,892
Bridge Culverts	m		\$18,906,793	\$11,432,422	\$200,999
Cattle Stop	ea	27	\$794,815	\$367,970	\$9,935
Retaining Wall	ea(m)	26(1285)	\$675,484	\$528,667	\$13,495
Total					

Historical Data

The following figure summarises the total expenditure for the bridges and road structures over the past 6 years:

Figure 7-41: Bridges & Road Structures Historical Expenditure



The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Table 7-16: Risks Associated with Bridges

Risk Description	Risk Assessment	Current Mitigation
Bridge damage caused by over dimension vehicles.	Medium	<ul style="list-style-type: none"> • Overweight and dimension permit system in place • Police enforcement, • Public feedback
Damage or collapse of structures in adverse event	High	<ul style="list-style-type: none"> • Annual bridge inspection, regular maintenance programme, lifelines Disaster Resilience Assessment, and bridge seismic assessment
Under designed culverts resulting in surface flooding and possible crashes	Low	<ul style="list-style-type: none"> • Robust maintenance and renewal programme, • Regular detailed inspections during and following flood events
Vandalism to footbridges leading to personal injury	Medium	<ul style="list-style-type: none"> • Customer feedback through Service Request, • Regular inspections
Crashes due to narrow bridges	Low	<ul style="list-style-type: none"> • Monitoring and identifying narrow bridges, • advance warning signs, sight lines, sight distance, • Convert to one way if required

Routine Operations and Maintenance Plan

Bridges and road structures maintenance works are carried out under the Road Network Maintenance Contract 19/43. Maintenance works are identified through contractor routine maintenance inspections and through the annual detailed inspections carried out by WSP.

Maintenance provides for all work which contributes to life extension of a structure without replacing significant components, such as cleaning, painting, patching, bolt tightening.

Structures Component Replacement is a renewals activity which extends the life of the structure without replacing the total asset, e.g. deck or pier replacements

All routine operations and maintenance on bridges and road structures qualify for Waka Kotahi financial assistance. Replacing an asset will require a cost benefit analysis.

Operations and Maintenance Plan

Operations and maintenance activities include:

a. Planned Maintenance

- Regular bridge inspections by the road maintenance contractor
- Annual detailed bridge inspections by Stantec
- Cleaning and clearing bridge joints and drainage channels.
- Repairs to handrails.
- Replacement of timber blanks.
- Replacement of damaged or deteriorated structural members,
- Sand blasting and painting of structural members,
- Foundation scour protection,
- Repair of retaining walls,
- Stream clearing and debris removal to maintain water courses under bridges.

b. Unplanned Maintenance

- Immediate response emergency work on bridge and road structures.
- Special inspections after specific events such as earthquakes and severe floods

Operations and Maintenance Strategies

Maintenance programmes are developed from the schedules of defects identified during the annual and regular inspections, with priority given to repairing defects which constitute a risk to public safety. Repair treatments and priorities are determined by considering the impact on:

- Public safety.
- Traffic movement.
- Future costs if the work is not done.

Summary of Future Costs

The following graph shows a steady maintenance cost forecast in 23/24 dollars for the next 10 years. There has been a significant increase in identified scour holes requiring attention, and more work is also required to address vegetation in waterways. Also likely to impact maintenance costs is the reletting of the current contract one year into the next LTP, and the lump sum expenditure will be very dependent on how that particular item is loaded.

Figure 7-42: Bridge and Road Structures Maintenance Forecast Expenditure



Renewal Plan

Asset renewal is undertaken when the structure has reached the end of its economic life. The type of renewal work undertaken includes:

- Entire replacement of bridges/road structures.
- Partial components replacement e.g. deck, piers.

During the last five years there has been an increasing occurrence of unplanned reactive maintenance required, such as when a bridge approach collapses during scouring. There has also been an increase in the damage done to hand and guardrails due to over-width farm vehicles. Due to these not requiring a registration plate it is very difficult to find the driver to recover the cost. This has meant that much of the identified renewals have been postponed due to funding constraints. It is hoped that the increased funding requested will allow some of the backlog of identified work to be addressed before the repairs worsen and repairs move into renewals work.

Renewal Strategies

- Renewal needs are identified following the planned inspection programme, or after some unforeseen event causes damage which has resulted in previously planned work needing to be postponed. Other than in these cases, prioritisation is based on consideration of which require immediate attention for safety reasons. However, to date renewals have all been in cases where a critical component has failed and requires urgent attention, such as the loss of the base steel in Armco culverts. In addition, in order to qualify for funding, renewals require an economic evaluation to qualify for co-funding consideration. Other considerations in prioritising repairs or replacement include:
 - Distance for alternative routes in case of closure.
 - Number of vehicles affected by the closure.

- Age profile of the structures.
- Condition profile of structures.
- Level of ongoing maintenance.
- Economic lives of the materials used.
- HPMV need

And consideration of either component or total replacement.

Of these currently condition is the dominant criterion for work. Age is a factor when applying for funding for replacement but prior to that condition helps determine whether a structure is approaching its end date or is unsafe.

The average economic life for structures is assessed at:

- Concrete and steel constructed bridges 150 years.
- Timber 75 years.
- Other (e.g. Steel Armco culverts) 50 years

The guidelines and principles contained in the Waka Kotahi Bridge Manual are used to determine standards. All anticipated costs over the life of an asset are considered when evaluating designs and construction materials.

Timber Bridges

Not including the five (5) footbridges, there are ten (10) bridges with structural timber components remaining in the district. Seven (7) of these have load and/or speed restrictions and the remaining three (3) bridges are adequate for normal Class 1 vehicle loadings. It is unlikely that replacement of these bridges will meet current criteria for NZ Transport Agency requirements for subsidy, therefore they will be maintained as timber bridges until their replacement can be justified or they are replaced with fords or closed. Some of these are historic footbridges and as such are subject to additional requirements for their maintenance to retain existing form wherever possible.

In addition to regular repairs, these bridges require regular timber drilling to ensure they are still structurally sound, and a new round of timber drilling will be required in the coming NLTP period.

Armco Culverts




A number of these culverts were identified early in the 2021-24 NLTP as being at risk and requiring further investigation. The table below shows the outcome of the investigation.

Table 3-1: Summary of Structural Maintenance Recommendations

Culvert ID	Road Name	Condition	Est. Remaining Life (yrs.)	Recommendations	Est. Remaining Life After Repair (yrs.)	ROC \$000s	Timing
183 B	Dixons Rd East	Severe surface corrosion to a height of 400mm above invert. Invert completely corroded through in places.	1	Culvert invert at end of life. Construct reinforced concrete invert within 1 year.	30	30	< 1 yrs
053 A	Beatties Rd	Severe surface corrosion to a height of 1.8m above invert.	1	Culvert invert at end of life. Construct reinforced concrete invert within 1 year.	30	150	< 1 yrs
614 B	Southbrook Rd	Severe surface corrosion to a height of 0.4m above sediment level.	2	Culvert invert at end of life. Assess waterway capacity and explore remedial options.	Dependent on solution	TBC	< 2 yrs
073 A	Boys Rd	Moderate surface corrosion both barrels to a height of 1.0m above invert.	50	Continue to monitor corrosion and take steel samples in 2028.	N/A	2.5	6 yrs
229 A	Factory Rd	Moderate surface corrosion to a height of 1.43m above the sediment level.	50	Continue to monitor corrosion and take steel samples in 2028.	N/A	2.5	6 yrs
300 B	Hicklands Rd	Minor surface corrosion to a height of 0.18m above the sediment level.	50	Continue to monitor corrosion and take steel samples in 2028.	N/A	2.5	6 yrs
109 A	Carnside Rd	Minor surface corrosion to a height of 0.95m above invert.	50	Continue to monitor corrosion and take steel samples in 2028.	N/A	2.5	6 yrs
497 A	Park Tce	No corrosion noted.	50+	Continue to monitor invert for corrosion.	N/A	N/A	N/A

From this report, two culverts were identified as requiring renewal work within a year, in addition to three other culverts which had been previously identified and had reached the stage of requiring urgent repairs. These culverts have now all been relined and have an estimated extended useful life of 25 years. The remaining culvert requiring work in the near future is Middlebrook Culvert, Southbrook Road.

As part of the investigation process, samples were taken to determine remaining thickness of the culvert steel. The findings are summarised as follows:

Sample 1 – True RHS barrel 310mm above sediment level	Sample 2 – True LHS barrel 290mm above sediment level	Sample 3 – True RHS barrel 500mm above sediment level
		
Steel thickness: 1.08mm	Steel thickness: 2.41mm	Steel thickness: 3.68mm

Discussion

The steel samples obtained from the culvert invert (1.08mm minimum) suggest that 100% of sacrificial steel has been lost, and structural steel is starting to be lost. The culvert is nearing its end of life and requires intervention.

As well as the issue of minimal remaining useful life is Southbrook Road's status as the busiest road in Waimakariri District (25-26,000 vpd). It is the main route through Rangiora, provides access to schools, businesses and residences, and having to repair this reactively would be a major disruption to Rangiora. The favoured option from the recommended short list of possible repair methods was also the cheapest, at an estimated \$1.1 Million., and it was recommended that it be replaced within 3-5 years. From report date of 2022 this places replacement date between 2025 and 2027. It is proposed to begin design in 2024/25, with culvert replacement in 2025/26 in line with this recommendation.

The other bridge requiring replacement is the Lees Valley Bypass Bridge. This was a bridge posted at 10%, and served to maintain access for the community at times of floods (light vehicles only). However, at some point a truck attempted to cross and the bridge was irreparably damaged. Work is currently underway on assessing options, and the cost put into the funding application is indicative only.

Summary of Future Costs

The 21-24 NLTP period has seen a large increase in Renewals expenditure. Several bridges/large culverts had declined significantly and required urgent repair. This has led to a substantially increased budget, both currently and what will be required in future. The only bridge actively planned to be replaced in the foreseeable future other than for end of life purposes is Skew Bridge.

It is currently included in the RLTP as an indication of Council commitment to this project, as it is seen as a key component in an integrated approach to providing a safe network for all users and accommodating growth in the district along a key transport corridor. However, it is very low in the regional prioritisation list and would require a major shift of direction from the Agency to support this replacement.

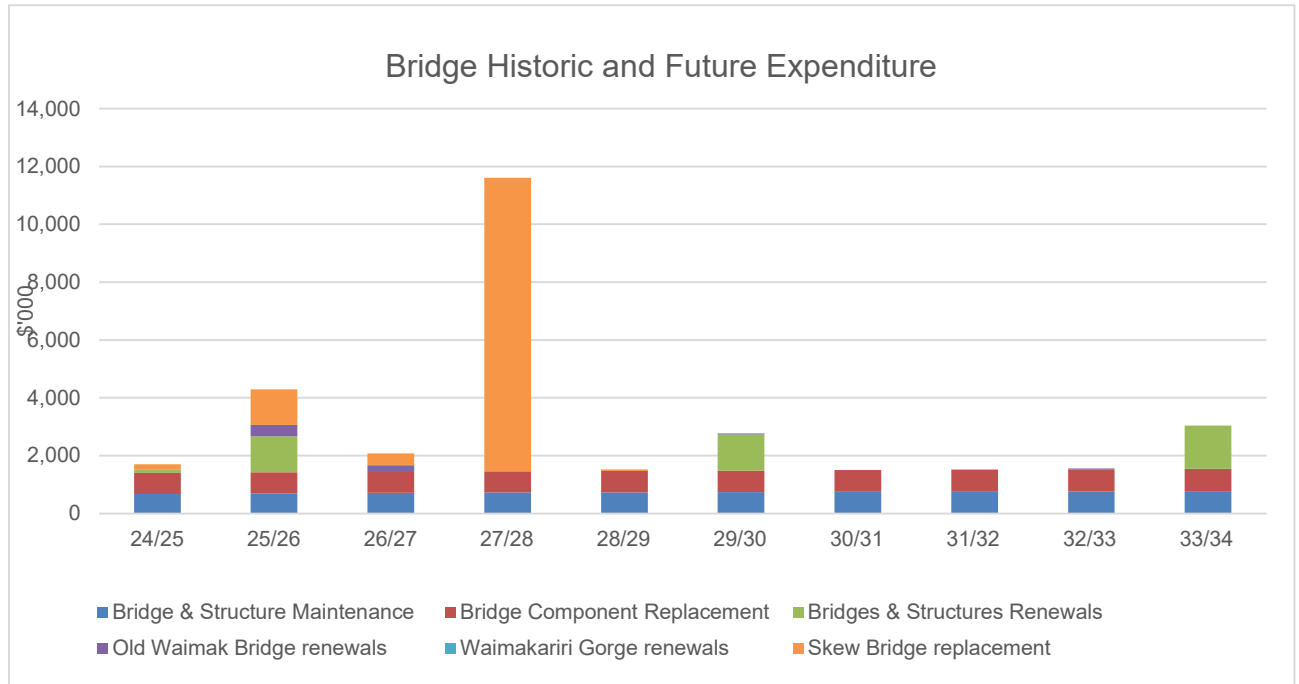
It is currently proposed to carry out pre-implementation work in the early years of the LTP, with construction occurring in 2028/29. at an estimated cost of around \$12 million, provided funding is available, either subsidised or without Agency funding.

An average of just over \$750,000 has been requested per annum to catch up on component replacement, and a further \$1.4M for Structures Renewals as described above. The component renewals annual expenditure forecast has been extended for the remaining 7 years of the LTP, plus an allowance for further bridge replacements in 29/30 and 33/34 however, revisiting this will be a key feature of the 24-27 Transport AMP.

Also required in the near future is funding for both the Old Waimakariri Bridge and the Waimakariri Gorge Bridge. Previously maintenance work was funded completely by both Christchurch City and Selwyn District respectively, however due to increased activity in these areas, and the fact that both bridges are 50/50 share, Christchurch City has officially requested Waimakariri District formally sign up to a Memorandum of Understanding and agreement for a half share in local share cost.

Other future expenses will include additional repairs and component replacement for some identified concrete bridges, and timber bridges, including a number of historic footbridges.

Figure 7-43: Bridge Financials



Creation/Acquisition/Augmentation Plan

Selection Criteria

- Development works include:
- Construction of new structures to allow land development.
- Upgrading the dimensions, structural capacity or waterway capacity of existing bridges.

Disposal Plan

There are no bridges and road structures intended for immediate disposal.

7.5 Footpaths & Cycleways

Purpose

To provide a safe and efficient network of footpaths and cycleways catering for pedestrians and cyclists (including mobility scooters).



Background Data

The footpath inventory is maintained in the RAMM database. This allows continual maintenance and updating of asset information and more accurate predictions of component lives and renewal needs.

Footpaths on State Highways are included in this asset as they are owned and managed by Waimakariri District Council.

Footpaths identified in this AMP are those located within the road reserve or serve as a direct walking connection between two roads, as opposed to providing access to a recreational space. Those footpaths located in parks and reserves and whose primary function is to facilitate access to recreational properties are included in the Greenspaces AMP.

Relationship to Problem Statements

- *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*
- Increased motor vehicle usage results in more situations where vulnerable users and motor vehicles can collide, usually resulting in some injury to the non-motorised network user.
- *Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, resulting in disruption ranging from minor to potentially life-changing impacts.*

- All the aspects that affect a motorist will affect pedestrians and cyclists, not only during emergency events but also potentially needing to relocate infrastructure away from low-lying areas.
- *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, and social disconnect.*
- Provision of appropriate facilities will continue to encourage travel by more environmentally friendly means.
- *Road users on our network have little room for error or recovery from mistakes, which results in fatal and serious injuries when crashes occur.*
- Consideration for safety must take into account all users, not only car drivers.

Physical Parameters

The Council manages a total of 395⁸ km of footpaths and cycleways. This is split to approximately 349 km of footpath and 44 km of shared footpath and cycleway. Most of the footpath is within urban areas with a relatively small amount of footpath within the rural areas.

The graph and table below show the breakdown of footpath by surface material type. Concrete is the predominant material type, comprising 49% of all footpaths, asphaltic concrete footpaths comprise 42%, and the remaining is a mix of metal, seal, interlocking block, exposed aggregate, and cobblestone paving. This is much the same as the previous AMP, with a 1% increase in asphalt (approximately 4 km). This reflects the increase in concrete footpaths balanced by increased cycle/shared path construction. The average width of footpaths in the district's network is 1.73m.

⁸ As at 30 June 2023

Table 7-17: : Footpath Surface Material by length (km)

Material	Length (km) 2011	Length (km) 2014	Length (km) 2017	Length (km) 2020	Length (km) 2023
Asphaltic concrete	133.089	135.34	138.21	150.67	164.03
Concrete	112.321	146.96	164.74	177.25	195.29
Metal	6.882	8.02	18.33	18.92	17.95
Seal	7.646	7.05	7.15	8.64	8.95
Interlocking blocks	1.019	1.08	1.07	1.75	1.76
Covacrete Cobblestone Paving	0.675	0.74	0.75		
Exposed Aggregate	0.508	3.89	5.08	5.35	3.87
Timber		0.19	0.19	0.18	0.19
Crusher Dust					2.77
Total	262.14	303.60	335.69	362.76	394.81

Figure 7-44: Footpath Type by Length (km)

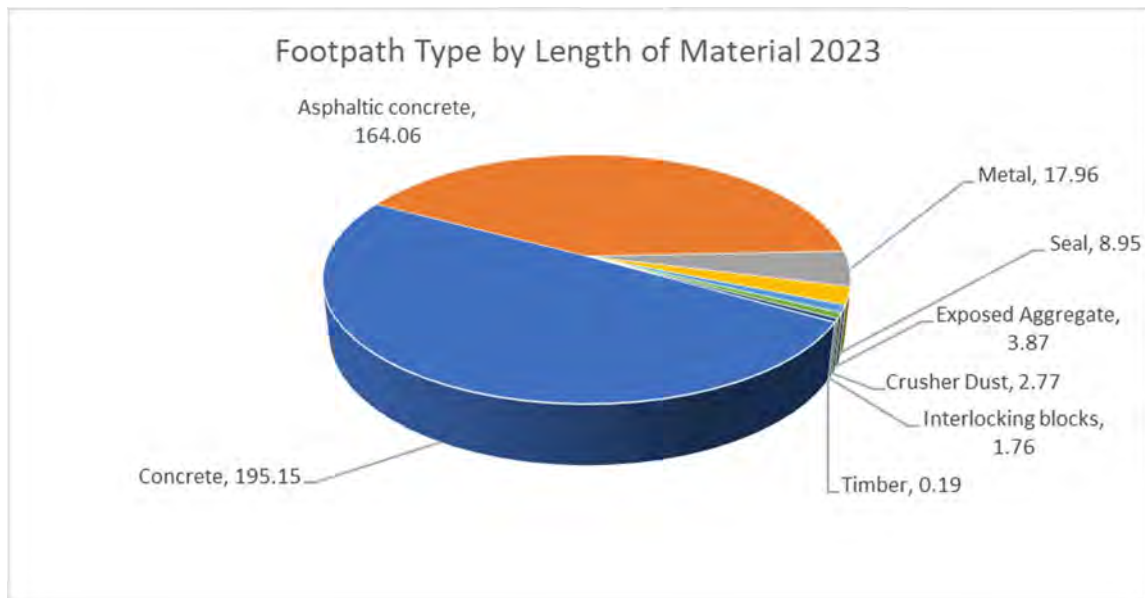
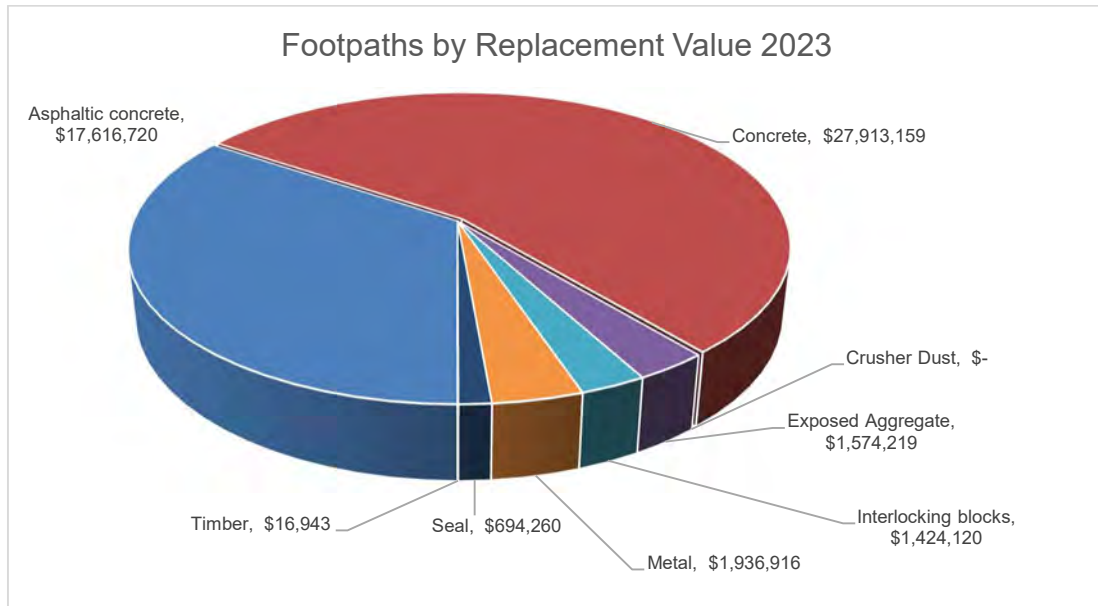


Figure 7-45: Footpath Type by Replacement Cost 2023



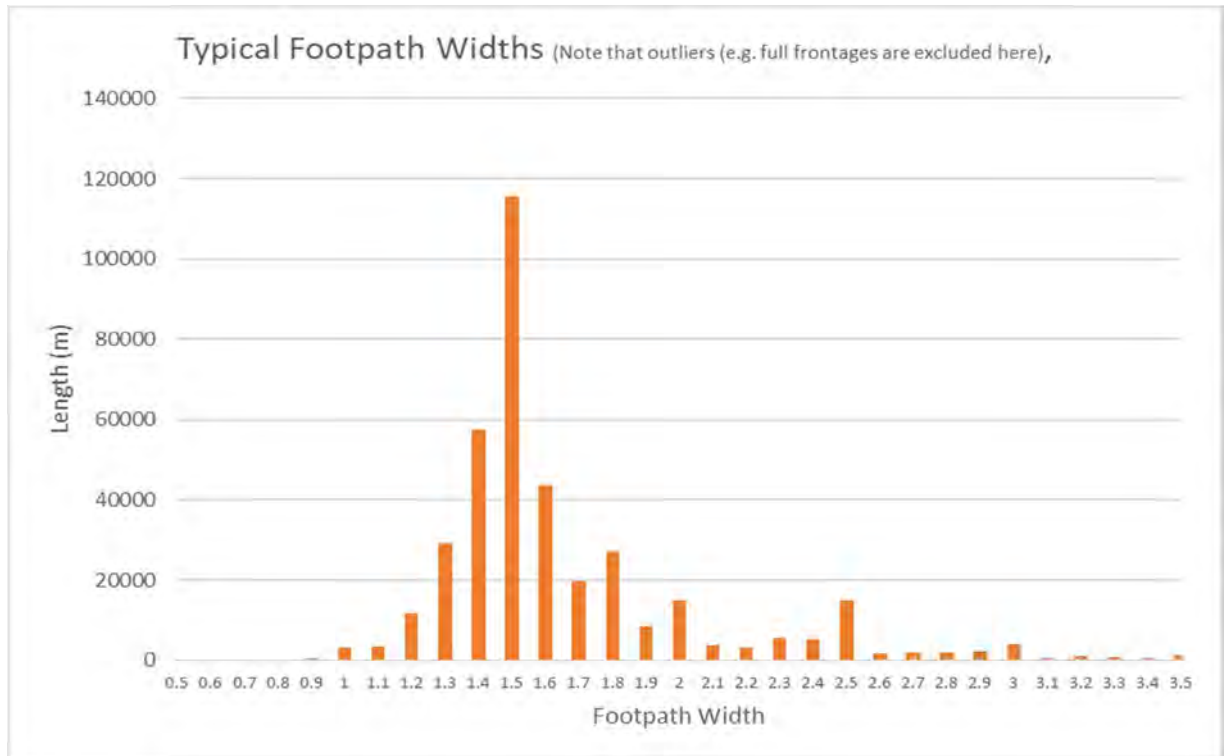
Total Replacement Cost for footpaths in 2023 was \$51.2M compared with \$42.1M in 2020.

Asset Capacity/ Performance

The footpath is the transport asset which enables the movement of pedestrians, and the cycleway is the transport asset which enables the movement of cyclists, therefore, it is important that the footpaths and cycleways perform well under the required conditions to ensure the agreed level of service are met. The provision of safe and convenient footpaths and cycleways will encourage more people to use these modes of transport thus reducing the demand of motorised traffic.

New footpaths are designed to Council's Engineering Code of Practice, which the new draft specifies an absolute minimum of 1.8m width for new residential and industrial area, 2.5m for cycle paths, and minimum of 2.5m width for town centre paths. Shared paths are required to be a minimum of 2.2m, however where there a high pedestrian demand this will need to be increased. As can be seen below most footpaths are 1.5m wide, however the length of the network which is greater than this width is slowly increasing. This is especially important with the increasing volume of users, and with other vehicles such as electric scooters choosing to travel off-road. These can travel much faster generally than non-motorised methods of travel, and there is a potential for harm in the case of a collision.

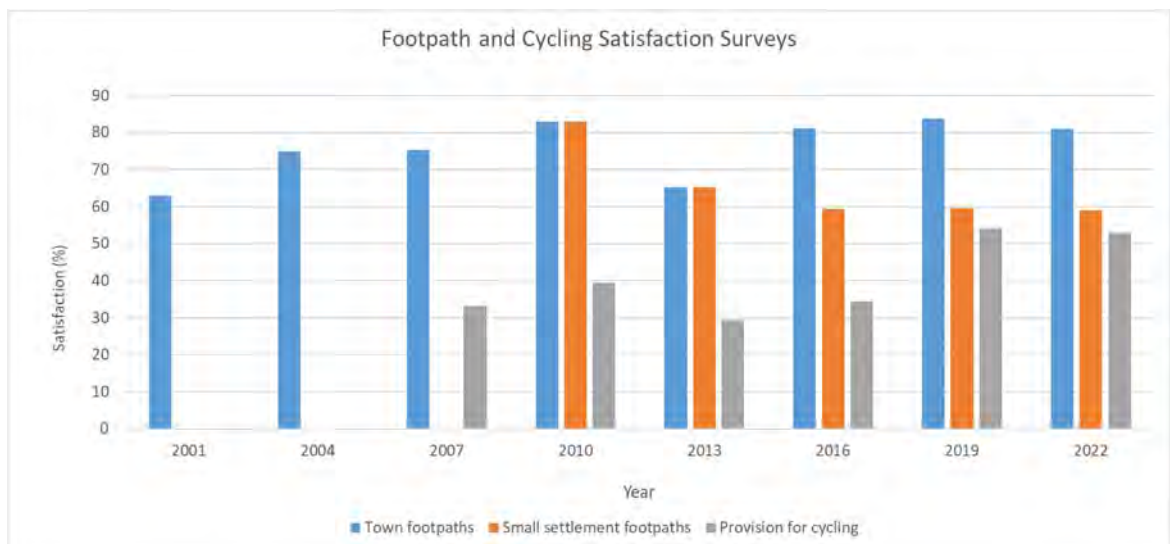
Figure 7-46: Typical footpath widths.



Customer Satisfaction

The WDC conducts a Customer Satisfaction Survey every three years. The following chart sets out the percentages of respondents satisfied with the footpath network from surveys in 2001, 2004, 2007, 2010, 2013, 2016, 2019, and 2022.

Figure 7-47: Footpath and Cycling Satisfaction



Overall, the main reasons given by survey respondents for dissatisfaction in general in this asset area are more footpaths and cycleways needed, tripping hazards, and footpath maintenance.

Satisfaction is generally high for Town footpaths, which reflects the renewals programme, while the lower satisfaction in settlement footpaths is indicative of the growing desire for residents of small towns to walk and a need to ensure there is at least one footpath for each road. Despite appearing to be a lower level of satisfaction with cycle facilities residents have indicated they are extremely happy with the new cycleways; they just want to see more.

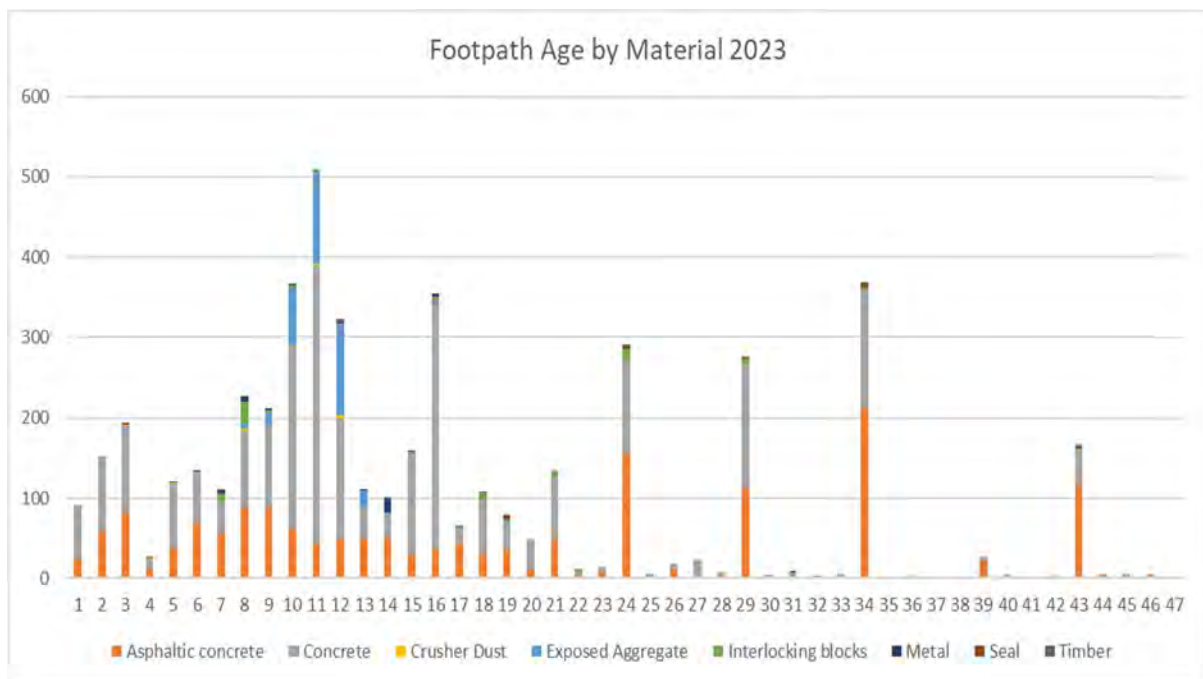
The Cycle Network Plan provides a direction going forward as budget and policies allow. How far this will proceed under new government policies.

Asset Condition

Age Profile

The age profile of footpaths is summarised in the figure below and shows an increase in the length of footpaths built during the last 10 years, indicative of the development which has been occurring over recent times. The average age of footpaths in the network has reduced to 7.2 years. Outer lying spikes tend to occur with older assets which are given a nominal age (in this case most likely 1/1/1980 and 1/1/1990, which was when much of the current asset data collection began). These footpaths will be updated through the condition-based renewals programme.

Figure 7-48: Footpath Age Profile



Condition

Condition rating of footpaths in urban area is undertaken every three years.

The condition rating survey is based on a rating system which includes health and safety factors, structural defects, and visual amenity of the assessed footpath section. Through condition rating information, the broad condition of the footpath can be determined, ranging from Very Poor to Excellent, as shown below.

Details of the full footpath rating system are shown in Table below:

Table 7-18: Footpath Rating System

Grade	Condition	Footpath
1	Excellent	Fully functional (i.e. walking surface comfortable with no trip hazard), No evidence of deterioration, No defects and/or previous repairs.
2	Good	Fully functional (i.e. walking surface comfortable with no trip hazard), Showing some aging or wear and tear, Minor deterioration, No obvious defects and/or previous repairs.
3	Average	Functionally sound (i.e. generally a reasonable walking surface with some uneven surface). Moderate deterioration, Some defects and/or previous repairs.
4	Poor	Functionally useable (i.e. generally adequate walking surface with uneven sections of footpath) Significant deterioration, Several defects and/or previous repairs.
5	Very Poor	Barely functioning (i.e. defective walking surface with mostly uneven surface) Extensive deterioration High number of defects and/or previous repairs Due for replacement

The outcomes of the footpath condition rating process drive the development of the footpath renewal work programme. The graph below indicates that 97.7% (307 km) of the footpath network is in average to excellent condition, with just 2.3% (9 km) poor or very poor. This does not seem to be reflected in the large quantity of trip defects appearing due to tree roots, and may be due to differing understanding of the rating system,

Figure 7-49: Footpath Condition Rating

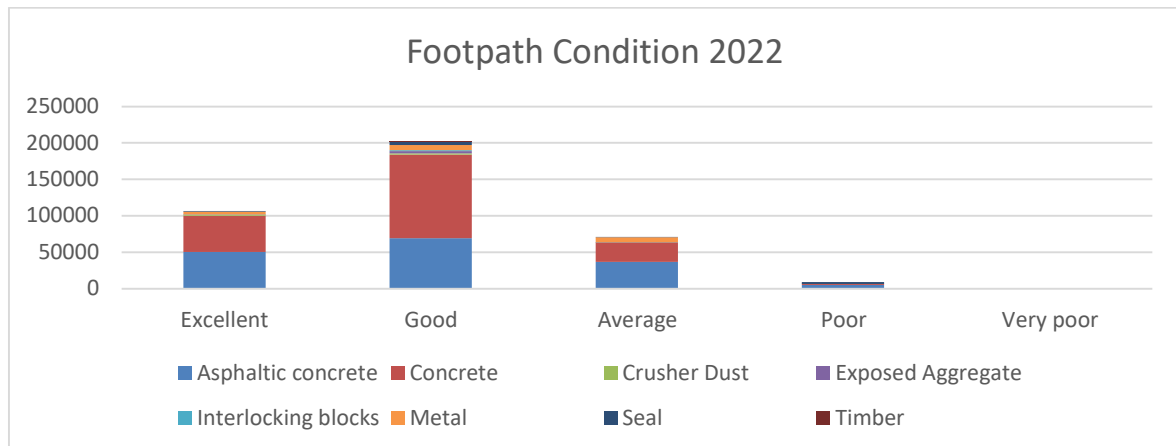
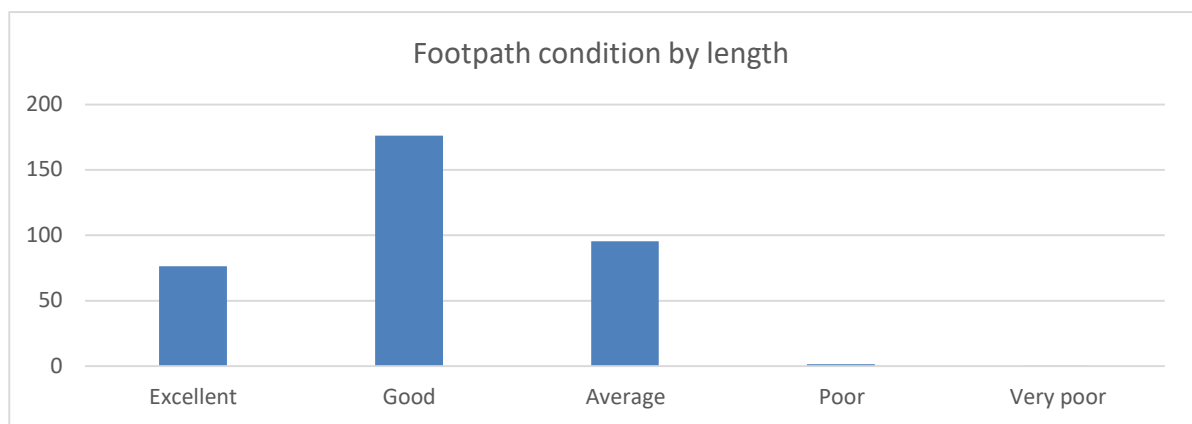


Figure 7-50: Footpath Condition by length



Asset Valuation

Valuation table as at 30 June 2023, Refer to Appendix C for the full valuation report.

Table 7-19: Summary of Footpath Asset Valuation as at 30 June 2023

Footpaths Asset Description	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Asphaltic Concrete	m ²	289,684	\$18,411,742	\$9,618,861	\$695,919
Concrete - Exposed Aggregate	m ²	7,116	\$1,649,753	\$1,499,389	\$14,996
Concrete - Plain	m ²	309,038	\$29,247,433	\$26,151,321	\$227,258
Timber	m ²	248	\$15,762	\$10,114	\$525

Interlocking Block	m ²	5,653	\$1,492,505	\$1,157,785	\$29,850
Metal	m ²	32,716	\$2,029,922	\$909,579	\$80,949
Seal	m ²	14892.3	\$727,626	\$290,538	\$27,811
Total		659,347	\$53,574,742	\$39,637,587	\$1,077,309

Historical Data

Footpath maintenance, reconstruction, and augmentation expenditure over the past six years is summarised in the graph below. This expenditure does not cover the cost of new footpaths constructed as part of sub-divisional works and vested in the Council.

Infrastructure Risk Management Plan

The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Table 7-20 Risks related to Footpath Infrastructure

Risk Description	Risk Assessment	Current Mitigation
Inadequate Footpath & cycleway quality – caused by poor design, construction materials, utilities reinstatement etc. resulting in inaccessibility and pedestrians tripping and injury.	Medium	Regular inspections, customer feedback through Service Requests, management of utilities, annual replacement programme, condition rating
Inadequate accessibility for wheelchairs, walkers, prams, mobility scooters, visual impaired	Medium	Upgrade footpaths to meet current standards as part of footpath renewal programme, include improvements in minor improvement programme. Monitor feedback from the community, Council has adopted a disability strategy
Heavy vehicles damaging footpath	Low	Customer feedback (Service Request), vehicle crossing policy in place, regular inspection programme
Lack of footpath resulting in people walking on the roads	Low	Minor improvement programme prioritises the footpath where safety is an issue New footpaths programme

Routine Operations and Maintenance Plan

The footpath and cycleway maintenance is carried out under the Road Network Maintenance Contract 19/43. Identification of footpath maintenance needs is identified through public complaints and routine maintenance inspections.

Operation and Maintenance Plan

Operations and maintenance activities include:

a. Planned Maintenance

- Footpath inspection by the contractor and Council roading staff
- Repair of surface defects prior to footpath resurfacing
- Removal of tree roots
- Replacing footpath battens
- Scrubbing (removal of moss/ lichen)
- Filling cracked area
- Repair/ replace sections of footpath < 10m length
- Footpath cleaning

b. Unplanned Maintenance

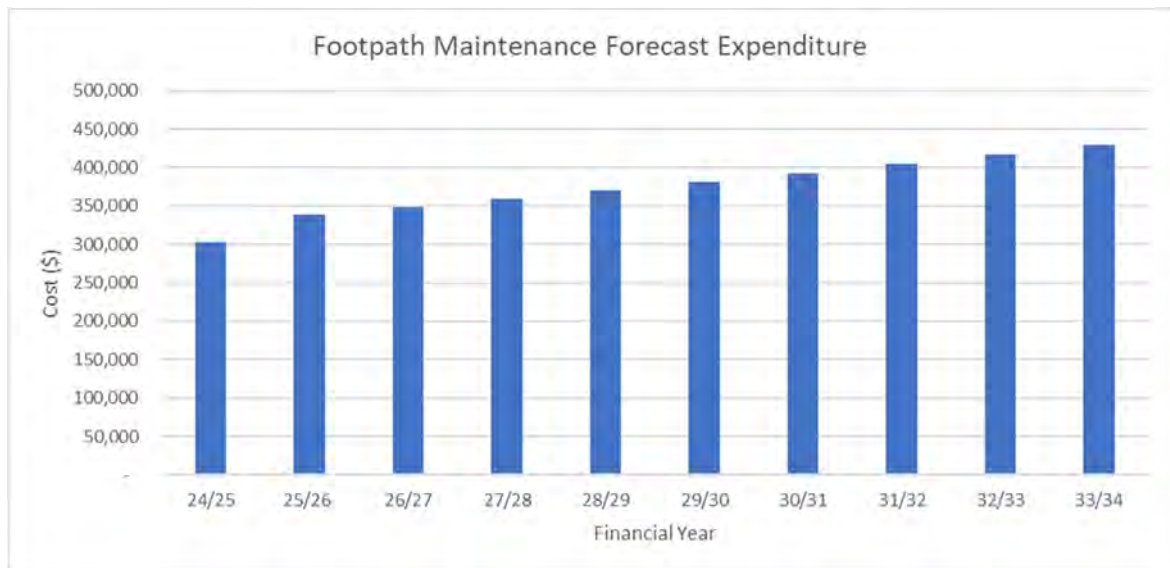
- Urgent Response
- Emergency Response
- Potholes repairs

Operations and Maintenance Strategies

The overall strategy for footpath maintenance is to undertake general maintenance in order to retain the integrity of the footpath and to promptly repair defects that are hazardous. This may mean, for example that panel replacement (of concrete) or patching (of asphaltic concrete or seal) is carried out to prevent the defect from causing a pedestrian to trip and fall.

Summary of Future Costs

Figure 7-51: Footpath Maintenance Forecast Expenditure



Renewal/ Replacement Plan

Renewals include the replacement of damaged sections of footpath when replacement is more economic than repair. Generally this is described as any repair over 10 metres in length or outside the scope of general maintenance.

The annual renewal programme is developed using information from a combination of condition rating data followed by roading staff field inspection, routine inspections, and public feedback records. A high emphasis is placed on field inspections to confirm and finalise the programme. Special consideration is given to areas with a high

Footpaths in Waimakariri are generally renewed on a condition basis. Repairs are carried out as necessary to maintain acceptable functionality for as long as possible, however when they reach a state where cracking is excessive and forming a hazard for pedestrians (rated poor/very) these footpaths are considered for renewal, particularly in areas of higher than average pedestrian activity, such as in the vicinity of schools or older person's homes.

The overall condition of the footpaths and cycleways in the district is satisfactory. This assessment is based on observations during regular inspections, the number of service requests and the recently completed condition assessment.

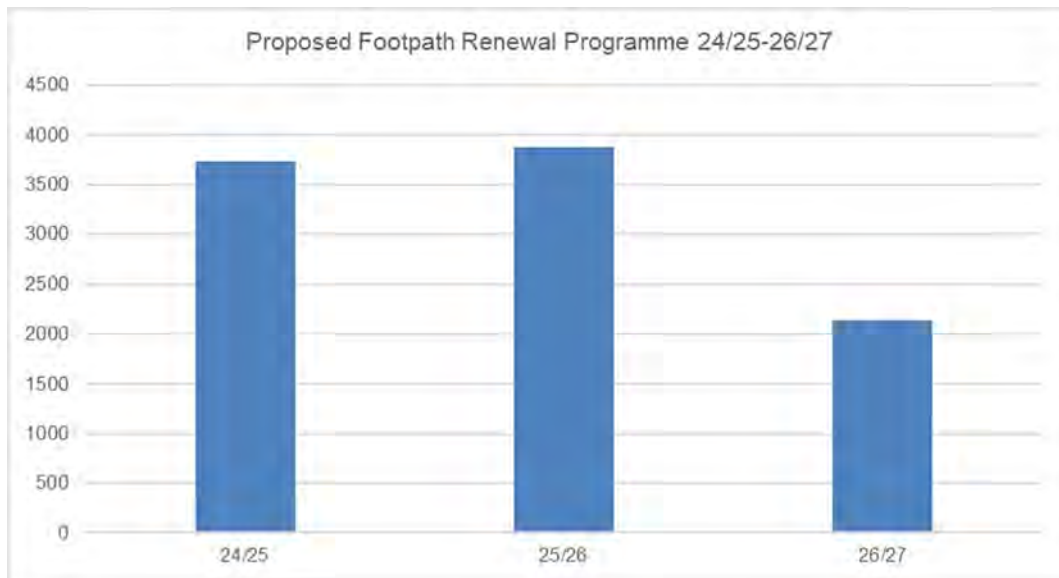
One recurring issue is causing an increased cost in footpath maintenance. A new process has been implemented with jointed slabs over tree roots allowing for movement of the slab without separation, causing the trip hazard. With a number of older trees intruding into the footpath, some means had to be found to reduce the trip hazard risk.

The following graph illustrates the actual and projected length of footpath renewal. This shows target lengths are being met and an appropriate level of renewal being achieved.

Due to the increase in lengths of off-road cycleways being constructed, a slight increase in maintenance cost has been allowed for over and above a 1% increase for inflation.

Footpath condition rating is carried out every three years. Currently the footpath rating indicates fewer footpaths in the lowest condition rating than previously, with only around 0.5% poor or very poor.

Figure 7-52 Footpath Renewal length 24/25-26/27



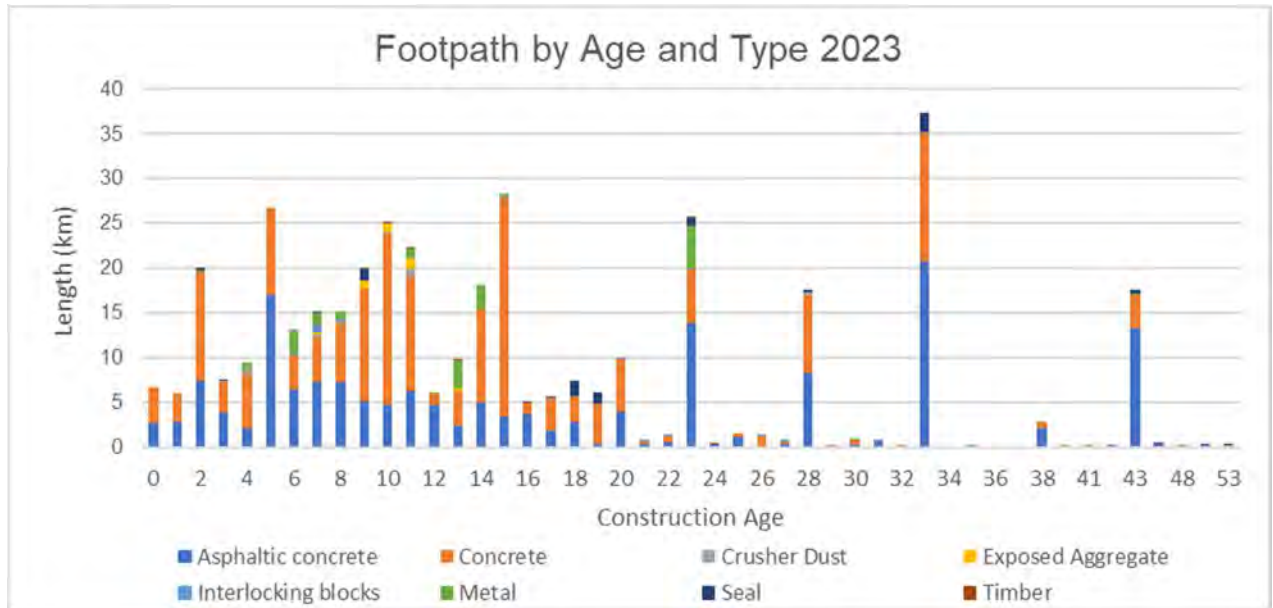
Asphaltic Concrete Paths

The life of asphaltic concrete surfacing is approximately 23 years and the life of the basecourse is approximately 80 years. The basecourse life is normally determined by the life of the adjoining kerb and channel. The base layer of paths not adjoining kerb and channel will have a longer life.

Footpaths are renewed on a cyclic basis. The plan is that on average after 23 years the new footpath will be resurfaced and at this time the base will still be in good condition and the level will not be a problem. Repairs will be undertaken as necessary prior to the resurfacing. After 46 years the existing surface will generally have to be removed, the base layer repaired and re-compacted, and a new surface layer applied. After 69 years the footpath will be repaired and resurfaced if required to align its remaining life to the remaining life of the kerb and channel. After 80 years the footpath, including the base layers will be fully renewed and this will normally be done in conjunction with the kerb and channel renewal. This is of course a theoretical life cycle, and individual circumstances will dictate actual construction lives.

There is currently approximately 169 km of asphalt footpaths in the district. At a 23-year life about 7.35 km should be resurfaced each year. Current condition rating indicates 5.3 km is in poor or very poor condition. The current budget allows for 7km of footpath renewal, annually. This renewal plan should be adequate to enable the footpath network to meet the defined

levels of service however this may vary depending on the quantity of associated kerb and channel work



Concrete Paths

The life of a concrete footpath is assessed at 80 years. This is conservative considering the long-term strength and durability of concrete. There are no concrete footpaths in the district older than 53 years so there are no plans to renew significant lengths of concrete paths within the 10 year period of this plan.

Some of the older concrete footpaths built in developments through to the early 1980's has little or no metalised foundation. In these cases, there was an expectation that the concrete would be strong enough to carry the pedestrian traffic and they were built without significant foundations. While the concrete is generally performing adequately there are a number of cases where there is differential settlement between adjacent slabs, causing lips and ledges on the walkways. These irregularities can present safety problems for pedestrians. These are identified and assessed through routine inspections and repaired or reconstructed as required.

Currently the older concrete paths are generally replaced with asphaltic concrete (hot-mix), as concrete presents too many difficulties when used to replace existing paths in fully developed residential streets.

Renewal Strategies

The strategy is based on the need to maintain the assets in a safe, efficient and cost-effective manner. Works identified are priorities based on:

- Condition profile of footpaths
- Co-ordination with other works, such as kerb and channel replacement, storm water upgrading and water main replacement, and underground utility renewal.

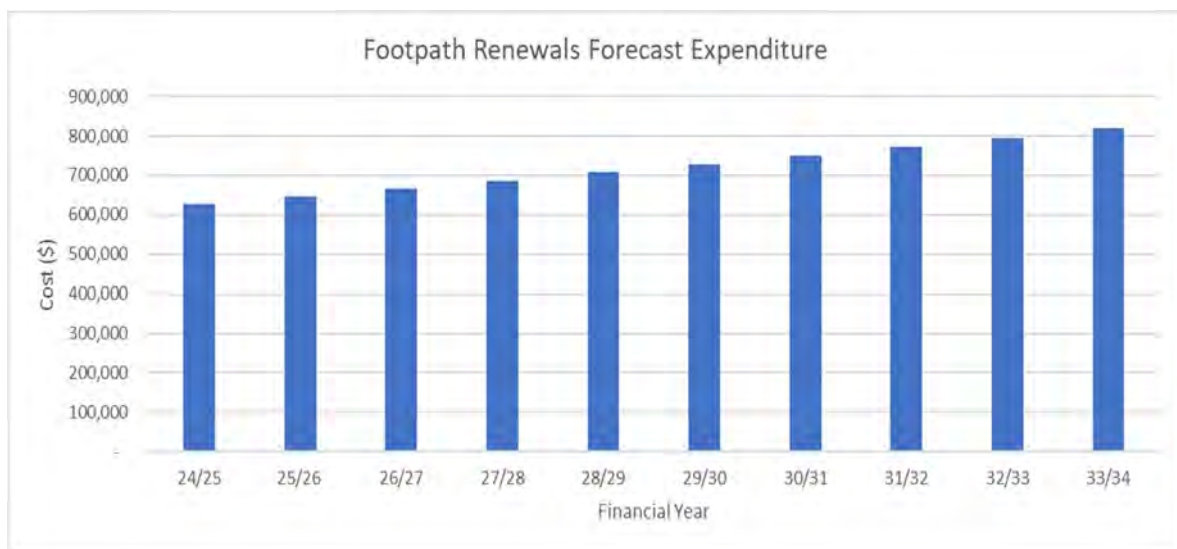
- Level of service deficiencies including safety issues- cracks, potholes
- Level of on-going maintenance

The types of renewal work undertaken to restore footpaths to the required condition are:

- **Resurfacing:** Overlaying the existing surface with Asphaltic Concrete
- **Light reconstruction:** Removal of the existing surface only and laying a new surface.
- **Full reconstruction:** Full replacement for the surface and base metal.

Summary of Future Costs

Figure 7-53: Footpath Renewal Forecast Expenditure



Creation/Acquisition/Augmentation Plan

The majority of the new footpath assets are created through new subdivisions, however a number of new footpaths and cycleways have been constructed through Low Cost Low Risk or other subsidised programmes. These will assist in providing an attractive safe alternative to cycling on-road and should encourage a greater uptake of cycling, for both commuting and recreational purposes. A connection between Kaiapoi and Woodend was planned to be built through the Transport Choices Fund, but this funding has now been cancelled and Council will need to decide whether to proceed with this unsubsidised.

Selection Criteria

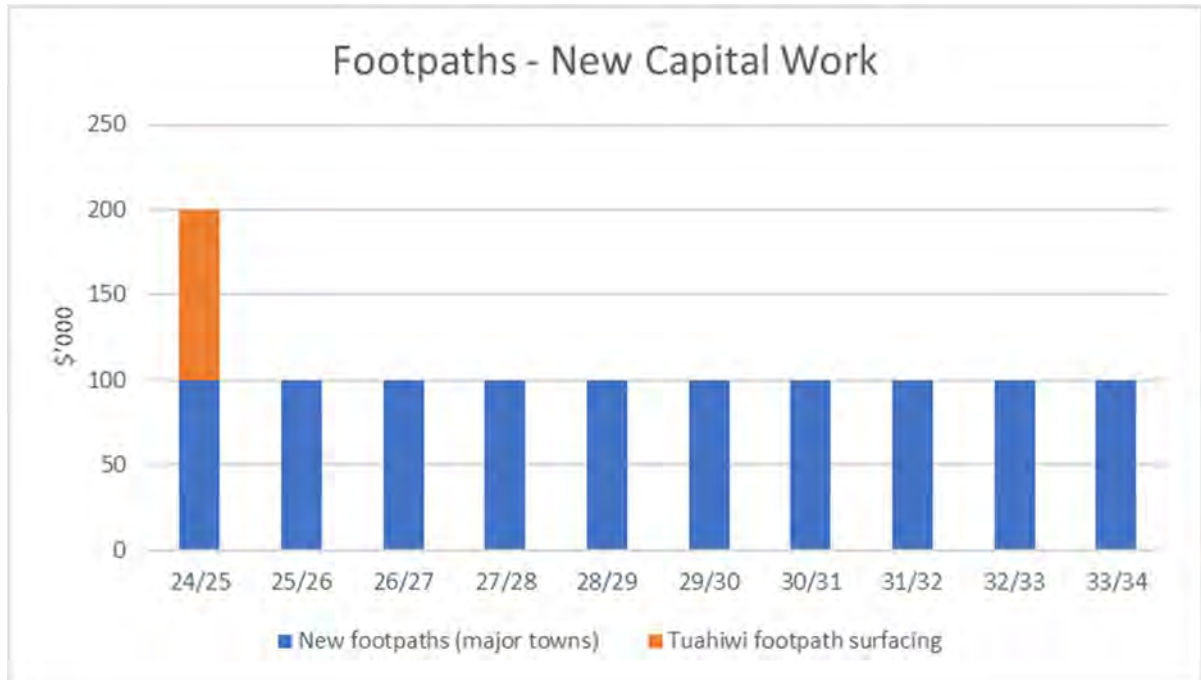
The addition to the footpath network and cycleway occurs in one of the following ways:

- Extensions constructed by Council where no footpath previously existed.
- Taking over new footpaths constructed with subdivisional development.
- Requests from Community Boards, Councillors, Public, and Staff.

- Safety improvements.
- Pedestrian Demands.

Summary of Future Costs

Figure 7-54: New Footpath Forecast Expenditure



Individual asset forecast will be completed once a full breakdown of new capital works for the next ten years is completed, including funding. The forecast expenditure for this work is \$100,000 which allows for new footpaths in small communities where none currently exist, for example in Oxford, plus surfacing the gritted footpath constructed in Tuahiwi.

Council also applied for funding through the Transport Choices Fund for walking and cycling projects but some of this has been put on hold until a formal decision has been made as to whether or not these activities can progress.

Disposal Plan

The Waimakariri District Council has no plans to dispose of any of its footpath assets.

7.6 Road Drainage

Purpose

To protect the road edge and substructure from storm water erosion and damage, and to divert runoff into the main stormwater system.



Strategic Issues -

Relationship to Problem Statements

- *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*

Increasing densification can lead to issues of flooding where stormwater runoff exceeds ability of the stormwater system to cope, whether by pipe, kerb and channel and sumps, or roadside drains. This in turn can cause safety issues whenever there is heavy rainfall.

- *Climate change is expected to result in increasing numbers of extreme weather events, rising groundwater and coastal inundation, leading to effects ranging from temporary disruption to potentially life- changing impacts.*

Culverts are going to increasingly require upsizing to cope with these extreme events.

- *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.*

Kerb and channel helps to better separate different transport modes where it is not possible to have them intermingle.

Infrastructure Issues

The Key issues relating to road drainage are:

- Incomplete data and lack of asset condition data especially for culverts
- Ineffective drainage
- Size of pipes
- High shoulder maintenance

Solutions

- Continue to update data as more culverts are repaired or replaced.
- Investigate potential areas likely to need upgrades where lack of drainage is an issue.
- Increase programme of high shoulder work.

Background Data

The road drainage data is held in the surface water channel table and in the drainage table in RAMM. The road drainage network consists of:

- Kerb and channel, dish channel, and mountable kerbs.
- Swales.
- Sumps.
- Soak Pits.
- Sub soil drains.
- Culverts with end areas less than 3.4m² (those greater are classified as bridges).

Also included in this category are stormwater pipes where they are part of the Council's reticulated stormwater system and are identified as roading assets, i.e. they are predominately required for road drainage. The balance of the system is included in the Drainage Activity Management Plan. Information on these assets is not detailed in RAMM but is instead held in the Councils GIS system with the asset 'owner' of Drainage or Roading identified against each asset.

The surface water channels, and other drainage assets account for 15.7 % of the total roading and transport asset group, based on replacement cost.

Physical Parameters

The Council manages a total of 410.8 km of Kerb and Channel (K&C). A breakdown of the road drainage network is summarised below:

Table 7-21: Surface Water Channel by Type

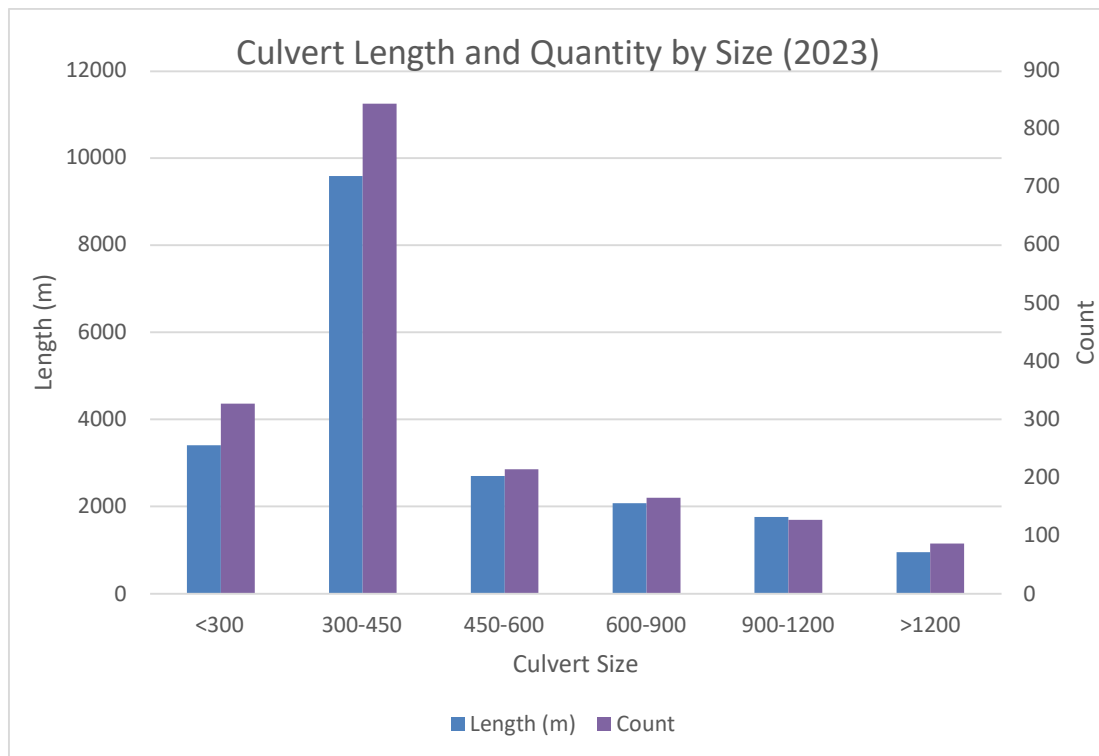
Figures from 2014, 2017 and 2020 valuations	2017	2020	2023
Dished Channel	9.5	8.913	11.95
Engineered Swale - Surface	30.2	29.99	30,,31
Kerb and Channel	313.5	338.79	384.50
Kerb and Deep Dished Channel (rep. Kerb and Channel)	21.9	19.75	17.71
Kerb Only	13.9	16.66	18.59

Mountable Kerb and Channel	18.0	18.18	18,.38
Mountable Kerb Only	3.3	2.29	2,.38
Precast Mountable Kerb Blocks (rep. Mountable Kerb)	0.4	0.42	0.57
TOTAL	410.8	434.99	484.36

Table 7-22: Drainage Comparative quantities

Type	Number	Length (km)	Number	Length (km)	Number	Length (km)
	2017		2020		2023	
Culverts		21.15		19.29		26.61
Sumps	4141			4107		4843
Subsoil drains		5.85		0.411		22
Soak pits	507		574		617	626
Aquacells	23.4			23.4		23.4

Figure 7-55: Culvert Length and Quantity by Size



Asset Capacity/ Performance

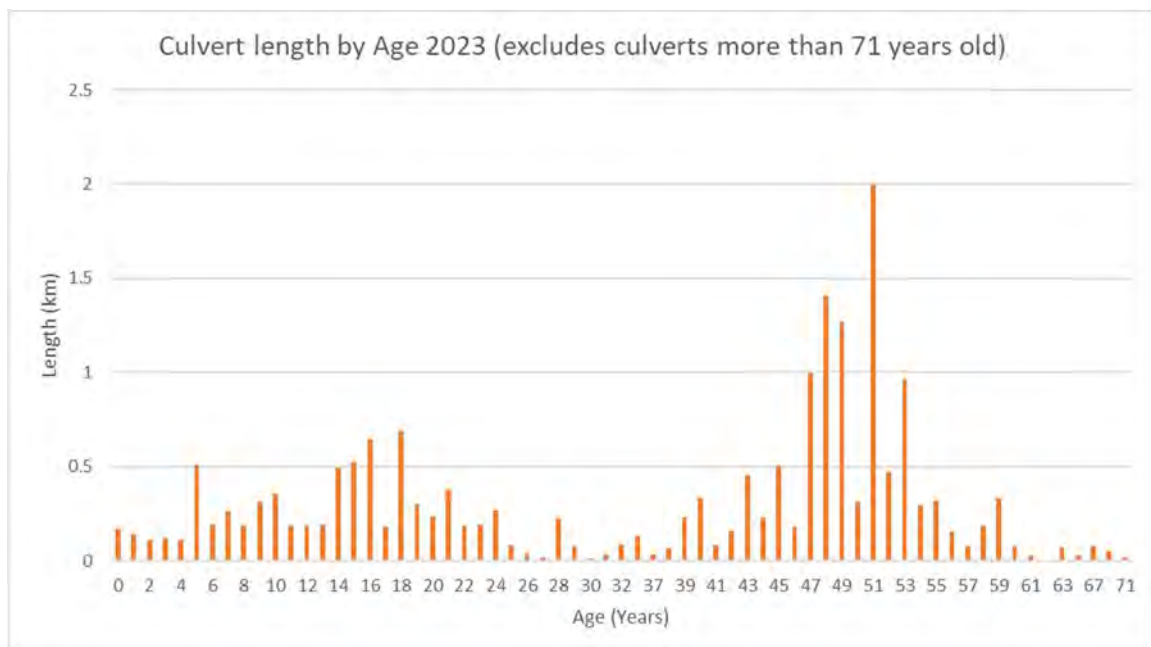
The existing drainage systems have until recently been regarded as generally adequate. With the increasing number of heavy rainfall events in recent times, and a growing density in house construction, there is less available opportunity for stormwater to soak away. While many of the small rural town roads do not have concrete kerb and channels, they do have adequate swale systems.

Asset Condition

Age profile

The road drainage network age profiles are shown in the figures below. The age of the surface water channel asset is relatively new with the majority (85%) less than halfway through its expected 80-year life.

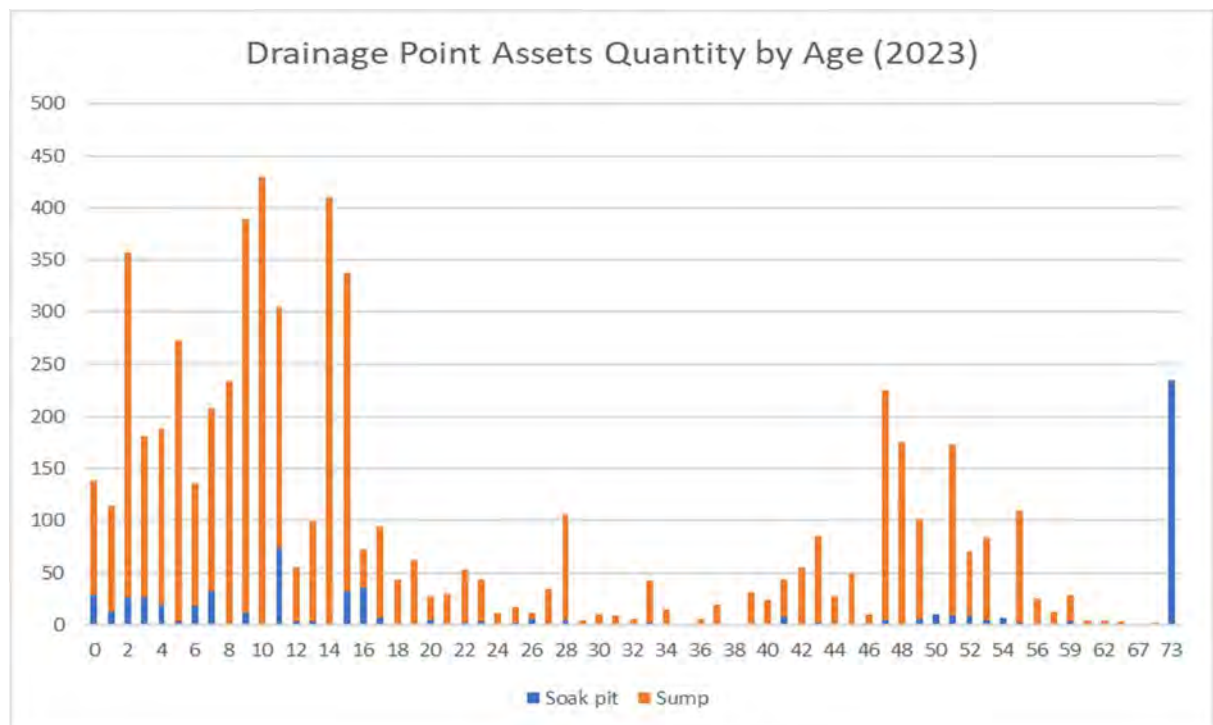
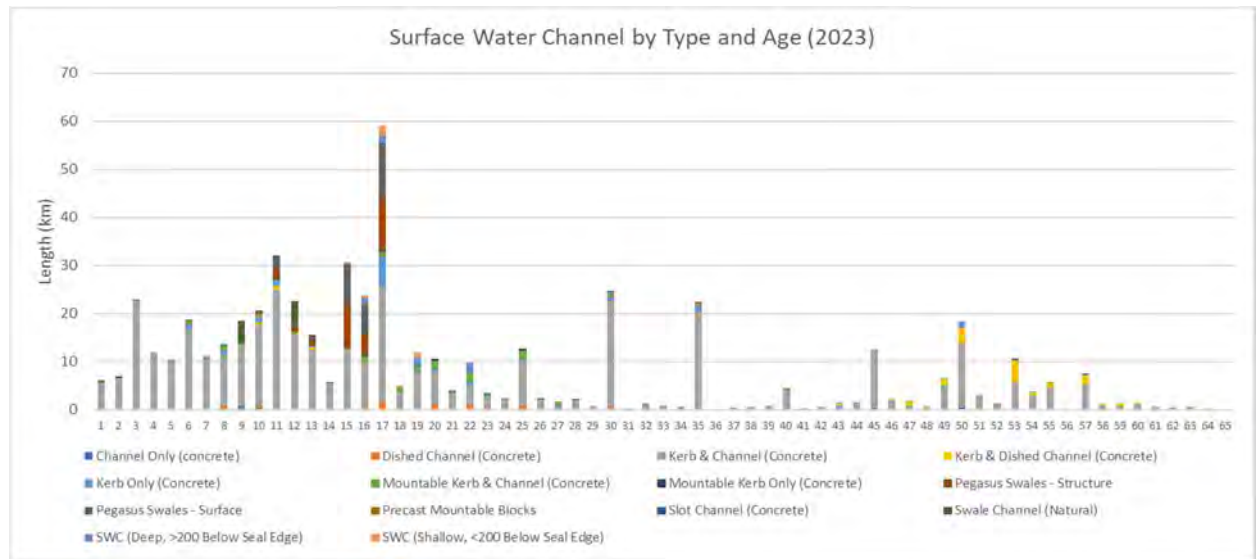
Figure 7-56: Culvert Age Profile



There is a large quantity of culverts with construction date 1/1/1950 (approximately 8.5 km). While 1/1 is normally assigned to assets where the day and month are unknown, in this case the large number with the same birthday suggests that the construction date is completely unknown for these culverts. There is also a large proportion of these which are unreinforced concrete which would be indicative of an older pipe, and a number where no date is known. With the increase in high rainfall events, it is becoming increasingly more important to understand our drainage network. Camera technology has improved significantly in recent years, and it should be easier and less expensive now to examine these. However, at this point no funding has been set aside for this and the period of the coming AMP will be used to best determine the most critical areas for this work.

The majority of the surface water channel has been constructed in the last 20 years. There are clearly two major periods of construction in Waimakariri, around 50 years ago, and a larger quantity starting with a peak 17 years ago, reflecting the construction of Pegasus and the start of the growth we see now. This means that currently there is not huge replacement programme required, however there will be a much larger wave of replacement required in the longer term. The challenge now is to understand what the true life of some of these assets, rather than the more simplistic reliance on age.

Figure 7-57: Surface Water Channel (SWC) Age Profile



Condition

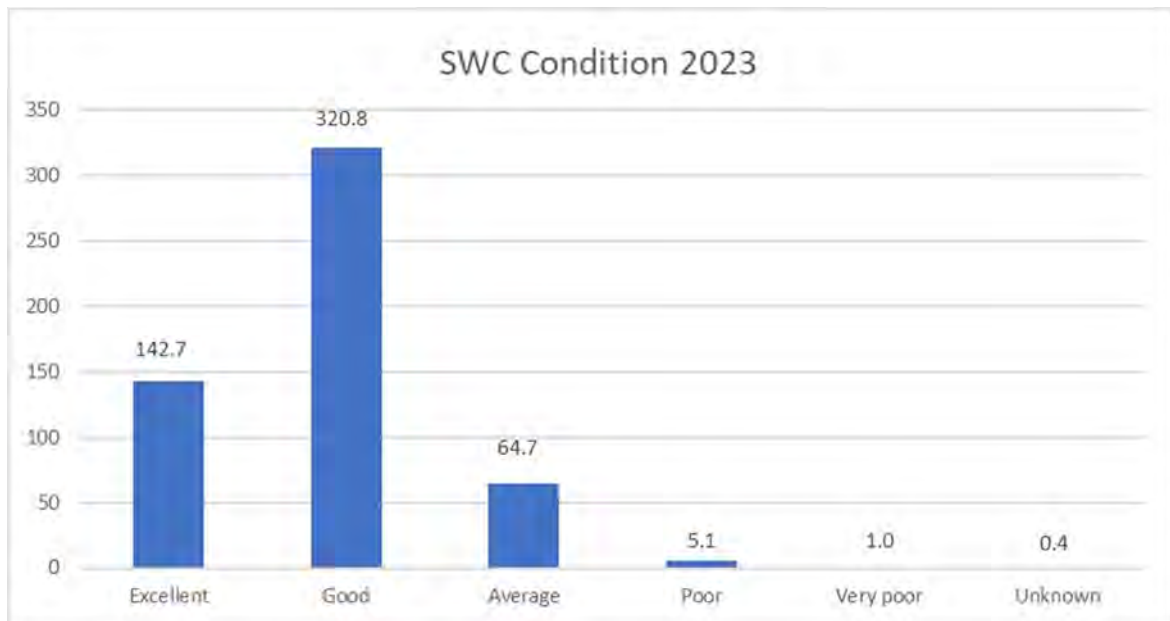
Condition rating of the surface water channel (SWC) is undertaken every 3 years in conjunction with the footpath condition rating. The survey covers 100% of the SWC in the major towns excluding the swales. A 1-5 condition grading system, similar to that used for footpath, has been developed for SWC. The information gathered from the condition rating is used to assist in the objective prioritisation of drainage maintenance/ renewals works.

Formal condition rating is not undertaken on the remaining drainage assets, however they are inspected regularly through maintenance inspections and based on these inspections they are considered to be in a good condition. Details and results of the full SWC rating system are shown as follows:

Table 7-23: SWC Condition Rating System

Grade	Condition	Kerb & Channel
1	Excellent	No evidence of deterioration, No defects and/or previous repairs.
2	Good	Showing some aging or wear and tear. Minor deterioration No ponding and only minor cracking
3	Average	Moderate deterioration Some ponding and minor cracking
4	Poor	Significant deterioration. Areas of ponding and cracking
5	Very Poor	Extensive deterioration. Badly cracked and extensive ponding Due for replacement

Figure 7-58: Surface Water Condition 2023



Around 6 km of surface water channel is rated as unsatisfactory (poor/very poor). Just over half of this is dish channel. Under NZTA rules, co-funding is only available where the carriageway is affected by the drainage failure, and this is the main driver for replacement, along with steady replacement of deep dish channels, which are a hazard for cars and cycles getting too close to the edge of the road

Asset Valuation

The information provided below is a summary of the 2023 roading valuation:

Table 7-24: Summary of Surface Water Channel Asset Valuation as at 30 June 2023

Description	Unit	Quantity	Unit Cost (Incl Fees)	Total Useful Life	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Dished Channel	m	11,952	182.76	80	\$2,621,830	\$2,023,821	\$32,773
Engineered Swale - Surface	m	30,131	45.30	30	\$1,768,629	\$954,625	\$58,954
Kerb and Channel	m	384,496	204.00	80	\$93,692,409	\$70,846,203	\$1,171,155
Kerb and Deep Dished Channel	m	17,710	204.00	80	\$4,315,500	\$1,914,857	\$53,944
Kerb Only	m	18,585	144.23	80	\$3,522,383	\$2,701,219	\$44,030
Mountable Kerb and Channel	m	18,379	230.35	80	\$5,032,663	\$3,873,886	\$62,908
Mountable Kerb Only	m	2,538	202.02	80	\$612,689	\$450,056	\$7,659
Precast Mountable Kerb Blocks	m	566	202.02	80	\$136,636	\$106,505	\$1,708
TOTAL		484,357			\$111,702,739	\$82,871,173	\$1,433,131

Infrastructure Risk Management Plan

The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Table 7-25: Drainage Infrastructure Risks

Risk Description	Risk Assessment	Current Mitigation
Flooding affecting roads due to under capacity drainage, poorly located, or blocked drainage assets	Low	<ul style="list-style-type: none"> ○ Regular inspection, ○ Customer feedback (Service Request), maintenance programme

Routine Operations and Maintenance Plan

The operations and maintenance of the road drainage network are undertaken as part of the Road Network Maintenance Contract 19/43. The maintenance of the drainage facilities is subsidised by Waka Kotahi. However, only 30% of the cost of kerb and channel cleaning is subsidised by the Waka Kotahi to reflect the part that is draining the road as opposed to the footpath and adjacent properties.

Operation and Maintenance Plan

Operations and maintenance activities include:

a. Planned Maintenance:

- Cleaning of kerbs and channel, and sumps by mechanical broom and suction as part of the street cleaning operations
- Repair/replacement of damaged kerb and channel < 10m length
- Inspecting and cleaning of culverts
- Minor culvert repair

b. Unplanned Maintenance

- Urgent response
- Emergency Response

Operations and Maintenance Strategies

The maintenance works are undertaken to:

- Ensure safety of the public
- Correct flooding problems

- Prevent significant further deterioration.
- Improve the visual impact.

The Maintenance Contractor is required to regularly inspect drainage assets and identify and rectify defects to ensure the specified level of service is met.

- All urban kerb and channel is swept regularly to keep it free of debris and reduce the probability of blockages during rain. The interval between sweeps varies, depending on the function of the road and the required LOS. For example central business areas are swept more frequently than residential streets.

Renewal/ Replacement Plan

The kerb and channel renewal programme is largely derived from the condition rating and network inspection. The annual programme will be co-ordinated with renewals of footpath, and capital projects where appropriate. This programme is prioritised within the available annual budget.

Renewal work activities include:

- Replacement of whole sections of kerb and channel.
- Replacement of sumps, culverts or significant culvert components (i.e. headwall and wing wall structure).
- Upgrading of existing culverts to increase capacity.
- All Renewals of drainage assets attracts Waka Kotahi subsidy.

Renewal Plan

The old-style kerb and dished channels are being progressively replaced along with the poor condition older kerb and flat channels. The 2023 condition rating confirmed that just under 99% of the SWC network is in average to excellent condition and that the renewal programme is keeping up with the deterioration.

The annual programme provides for the replacement of approximately 2km of kerb and channel. Currently there is approximately 18 km of kerb and dished channel so replacement will take up to 12 years to complete. With the recent condition rating indicating that just 6 km of kerb and channel is in poor or very poor condition including 1 km of kerb and dished channels the priority in the next 10 years programme will be replacing those assets.

Kerb and Flat Channel was first constructed in the 1960's so this will theoretically not be due for renewal until around 2040. However, the actual condition, the effect of tree roots, and other failure modes will mean renewal will need to take place earlier in some cases. This will have the effect of smoothing out the peaks.

Culverts are renewed when they are unable to perform their functions safely and satisfactorily to the agreed level for service. The need for replacement is determined by regular maintenance inspection and the monitoring of performance during heavy rainfall period.

Engineering swales located in Pegasus town have a useful life of 30 and 60 year for surface and structure, therefore renewal of these assets will fall outside the 10-year period of this plan.

Renewal Strategies

The renewals programme is planned based on condition rating information and field inspections to confirm the condition.

Renewals are undertaken when:

- The asset has reached the end of its economic life.
- It is economic to replace the kerb and channel in association with adjacent footpath renewal.
- The deterioration of the pavement adjacent to the kerb and channel is such that the kerb and channel needs to be replaced.

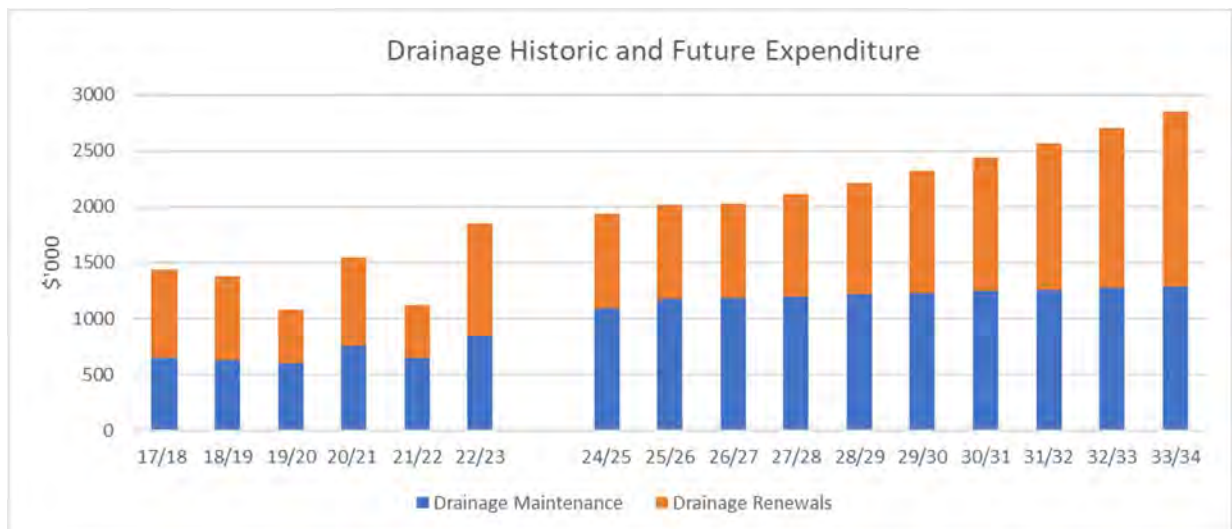
Renewal programmes are prioritised taking into account activities of utility operators to avoid the risk of the new assets being dug up in the future.

Expenditure

The graph below summarises the drainage activities over the past 6 years and proposed maintenance and renewals future cost. The nominal increases every year is to cater for network growth.

The Drainage renewal expenditure covers, replacement surface water channels and culverts, whereas maintenance covers cleaning and minor repairs.

Figure 7-59: Drainage Past & Future Expenditure



The first years of the new programme (24/25-26/27) show a minor increase. Beyond this the effects of cumulative growth and inflation begin to creep in.

Creation/Acquisition/Augmentation Plan

The majority of the drainage assets are created through new subdivisions.

Individual asset forecast will be completed once a full breakdown of new capital works for the next ten years is completed.

Selection Criteria

The development of drainage assets results from:

- *Taking over new assets constructed with subdivision development*
- *Extensions constructed by the Council where no kerb and channel previously existed (usually related to footpath extensions).*
- *New Kerb and/ or channel associated with traffic improvements*

Although new drainage is a key component of new works, for the purpose of this plan projects are not broken down into their individual asset components, and no new drainage (i.e. kerb and channel) is planned for the next ten years'.

Disposal Plan

The Waimakariri District Council has no plans to dispose of any of its surface water channel assets.

7.7 Streetlights



Purpose

To provide adequate lighting in the streets for the safe and efficient movement of motor vehicles, cyclists and pedestrians.

Key Issues

- Obtain accurate asset installation dates for each streetlight component.
- Condition rating to confirm remaining useful life.
- Energy efficiency – reduction of long term power costs by energy efficient lighting.
- Obsolescence of existing lights – continuing to upgrade older type lights.
- High inspection costs.
- Unmetered lights which do not measure consumption.

Solutions

- Continue LED replacement programme.
- Central Management System which monitors each light and allows central data analysis.

Background Data

The street light inventory is maintained in the RAMM database. This allows continual maintenance and updating of asset information and more accurate predictions of component lives and renewal needs.

Power Jointing Ltd under the maintenance contract carries out street light maintenance and renewals. State Highway lights through the district are owned separately by NZ Transport Agency, but the maintenance and renewal work are included in a joint contract with Waimakariri District Council and Hurunui District Council.

Power to operate the streetlight is supplied by Simple Energy based on the rated consumption of each light in the network and the hours the lights are operating. This contract includes lights on State Highways and Waka Kotahi reimburses the Council for all associated costs.

Streetlight operations, maintenance, and renewals are funded by Waka Kotahi subsidy and ratepayers funding.

The Streetlight assets account for 1.3% of the total roading and transport asset group, based on replacement cost.

Physical Parameters

The Council currently manages 6,847 poles, 6,139 brackets, and 6,853 lights in its database, with 5,580 poles, 6,139 brackets and 5,414 lights related to the roading network, which covers carriageway lighting, car park lighting, flag lighting and pedestrian crossings but does not include lights on private rights of way. The Waimakariri District Council has no responsibility for any aspect of such lights.

Lights in reserves and other Waimakariri District Council facilities are maintained under their respective financial allocations.

The Council owns all dedicated light poles (lamp posts). Where a streetlight is supported by a utility company's pole (electricity) or a building, the light and its bracket are owned by the Council and included in RAMM, but not the pole or building.

The street lighting is comprised of the following components:

- **Lamp** – the replaceable unit ('bulb') which is the source of the light.
- **Light** – the fitting that houses the lamp and controlling the light distribution. Note: This only applies to older fittings. Lights and Lamps are an integrated unit for LED lights.
- **Bracket** – the structural member used to attach the lantern to the pole.
- **Pole** – the vertical supporting structure used to raise the lantern above the road.

Figure 7-60: Streetlight Poles Quantities by Road Hierarchy



Asset Capacity/ Performance

The streetlight capacity and performance information is very limited. The Contractor does not currently measure lighting levels, so there is no quantitative measure of levels of service for light intensity on the ground as used in the AS/NZS 1158. Waimakariri District Council will liaise with the lighting contractor to review existing lighting levels against current standards. However, where upgrading to LED lights is carried out pole spacings are checked for suitability.

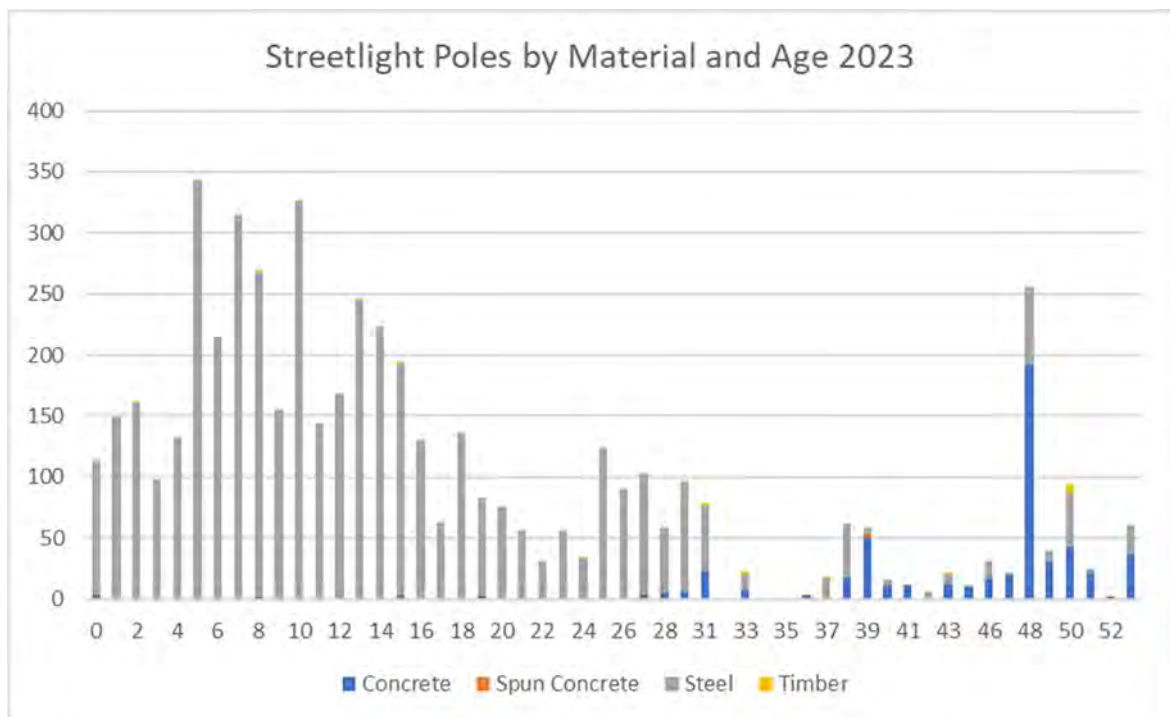
It is acknowledged that the majority of the older street light installations do not perform to the current standard, which was adopted in 1997. All new installations carried out by the council or vested in the Council by private developers, are required to meet current AS/NZS1158 standards, the latest version dated 2021.

However, the levels of complaints are low which indicate that community is generally satisfied with the service levels provided and there are no identified safety issues.

Age profile

Age profiles for poles and lamps are shown in the following figures:

Figure 7-61: Poles Age profile



Concrete poles have been widely used in the past for economic reasons; however these are no longer available and steel poles are now more common for safety reasons (frangible poles) or where decorative lighting is preferred.

Condition

The streetlight Contractor updates the street light condition at each maintenance visit using RAMM Map. All lights are now condition rated and this is being continually updated by the Maintenance Contractor with each inspection.

The overall condition of the street light assets is still considered satisfactory based on maintenance inspections, RAMM data and the number of service requests. The main cause of deterioration is age of asset.

Condition rating of all concrete poles more than 35 years old was initially carried out in 2014 and is reassessed on an ongoing basis. This was done as it was considered the useful life of 35 years was low for all concrete poles. This condition rating is now used to drive the renewal programme and almost all very poor poles have now been replaced. Others will be replaced when their condition determines the need, generally when these are assessed as being rated as Poor or Very Poor.

Condition will continue to be the main driver for pole replacement, however for lamp replacement energy efficiency is likely to become the main driver once all the obsolete lamps have been replaced.

Asset Valuation

Valuation table as at June 2023

Table 7-26 Summary of Streetlights Asset Valuation at 30 June 2023.

Components	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciated Replacement Cost
SUBTOTAL - SL POLES	5,580	\$10,234,031	\$6,659,914	\$205,859
SUBTOTAL - SL BRACKETS	6139	\$2,613,446	\$1,692,547	\$52,180
SUBTOTAL - LIGHTS	5414	\$4,548,437	\$2,904,299	\$127,947
TOTAL		\$17,395,914	\$11,256,760	\$385,986

The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Figure 7-62: Streetlight Infrastructure Risk

Risk Description	Risk Assessment	Current Mitigation
Poorly lit roads resulting in accidents to motorist / pedestrians caused by bulb failure, vandalism, collision from vehicles, power cuts, lack of lights.	Medium	<ul style="list-style-type: none"> Regular inspection to identify issues. Replacement programme in place
Power cost increases	High	<ul style="list-style-type: none"> Using more efficient lights option in place
LED streetlights do not perform as expected	Medium	<ul style="list-style-type: none"> Monitor the performance of LED lights

Routine Operations and Maintenance Plan

This covers the maintenance and power costs associated with the operation of lighting on Council roads.

The basic outcome of the street light maintenance contract is to ensure the street lighting system is maintained in a reliable working and safe condition and the asset is protected against premature deterioration.

The maintenance needs are identified through regular inspections and proactive maintenance activities, and service requests from the public. All complaints are responded to within the specified response time, and where appropriate (e.g. bulb outage etc.). There is no known backlog of reactive maintenance work, however the pole replacement programme is limited by available resources, i.e. contractors are not able to carry out programmed work in the desired timeframe, or work programme has to be spread to meet available funding (Council or Waka Kotahi).

Operations and maintenance activities include:

a. Planned Maintenance

- Undertaking programmed three monthly inspections of lighting on all routes within the contract area, to identify lights that are not working.
- Visual inspection of all lighting equipment in conjunction with maintenance visits.
- Bulk replacement of lamps
- Maintaining RAMM Database for street lighting

b. Unplanned Maintenance

- Provide an immediate response to emergencies
- Repair on demand and within the specified response time frames faulty, accident damaged or vandalised lanterns, lamps, control gear, poles and associated equipment.
- Provide information to assist the Council in recovering the cost of crash damage from those responsible for the damage.

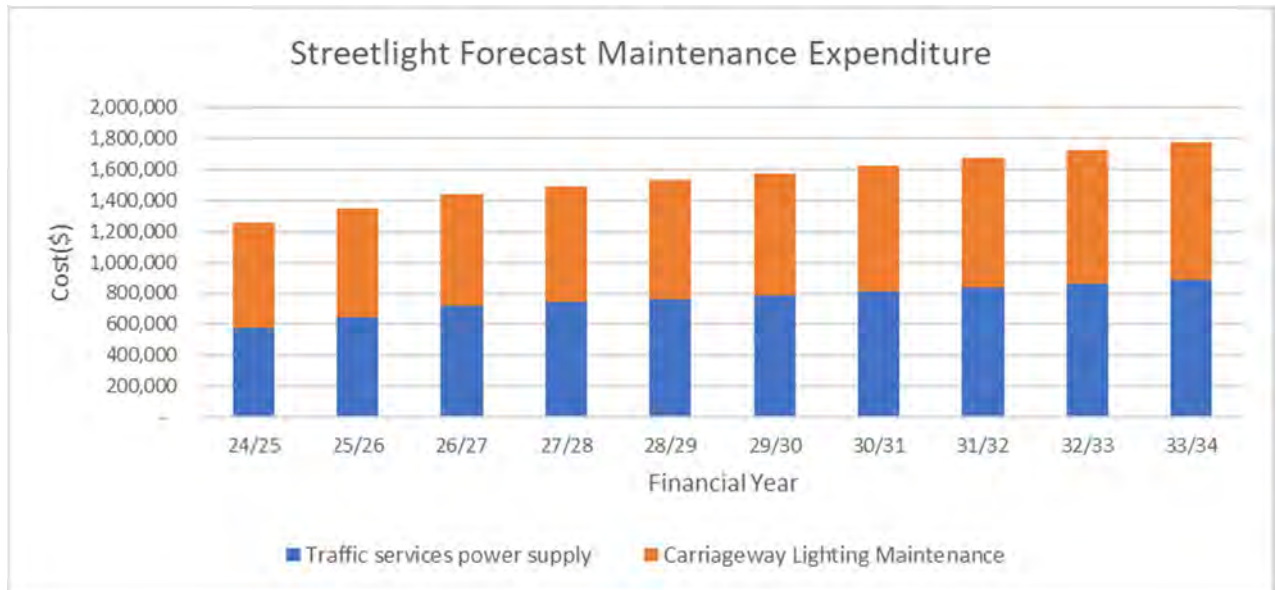
Operations and Maintenance Strategies

- Gradually improving capacity for compliance with lighting policies and standards, through patrol inspections to determine both planned and unplanned maintenance activity
- Reducing long term energy cost by energy efficient lighting.
- Monitoring the asset condition by undertaking planned inspections in conjunction with lamp replacement.

Summary of Future Costs

An annual cost increase has been allowed to cater for network asset growth and energy cost increases. The saving in energy costs will result from replacing obsolete lamps with LED's. This will be partially offset by the new assets that will be vested during this time.

Figure 7-63: Streetlight Maintenance Forecast Expenditure



Renewal/ Replacement Plan

Renewal is undertaken when streetlight or key components of a light have reached the end of their economic life. Renewal requires replacement of either the complete installation or individual components of the installation, e.g. lantern, brackets, or pole. This also Renewal Plan

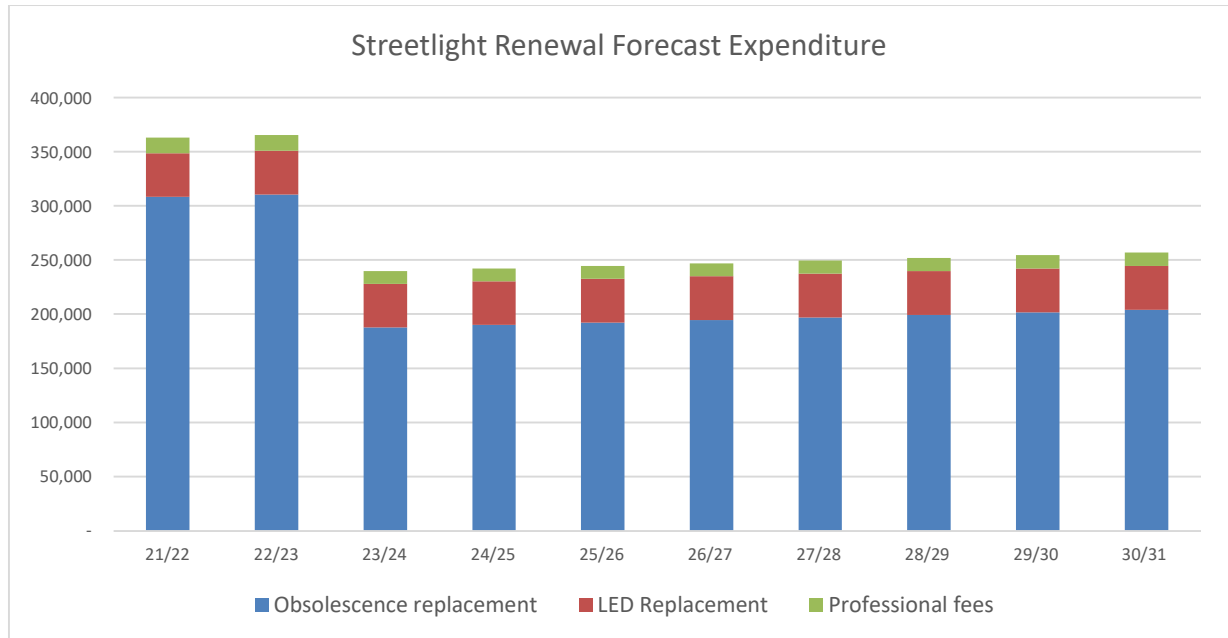
Approximately 1% of the streetlights in the District, are of types that are becoming harder to support, because they have been out of production for many years. These fittings also tend to be less efficient in terms of both energy consumption and light output. The latter are characterised by their bluish light. Most of these fittings were installed over a 20-year period up to the mid-late 1980's.

High-pressure sodium (HPS) lights were the most commonly used lighting in NZ prior to 2017 due to their long-rated life 24,000 hour lamp life and high efficiency relative to other options, prior to LEDs becoming viable for street lighting application. However, the downside of HPS is high-energy cost, maintenance cost, and the yellow light with poor colour rendering resulting in reduced visibility and reduced perception of safety and security.

Power saving by using LED lights could be as high as 50% to maintain the same light levels on streets. The savings are likely to further increase in the future as the energy and lighting performance of LED streetlights continue to improve. The LED lights have other advantages such as longer rated life 55,000 hour lamp life, better light distribution, lower maintenance cost, lower light pollution and provide white light. It is widely accepted that white light provides improved visibility as well as greater levels of safety & security compared to the yellow light of HPS. The dimming ability of LEDs will offer additional energy savings through control strategies that can brighten, and dim based on the time of day, traffic volume, or any other control parameters desired.

The option of replacing older lamp types with more energy efficient LED lights has been investigated. Work planned for 2017/18 should have had a five year pay-back period, i.e. after 5 years replacement costs will have been recovered by energy savings. Discussions with the power companies indicates that as more lights are converted to LED it will be necessary for electricity providers to increase costs to compensate, therefore the primary savings are in reduced maintenance costs.

Figure 7-64: Streetlight Renewal Forecast Expenditure



Renewal Strategies

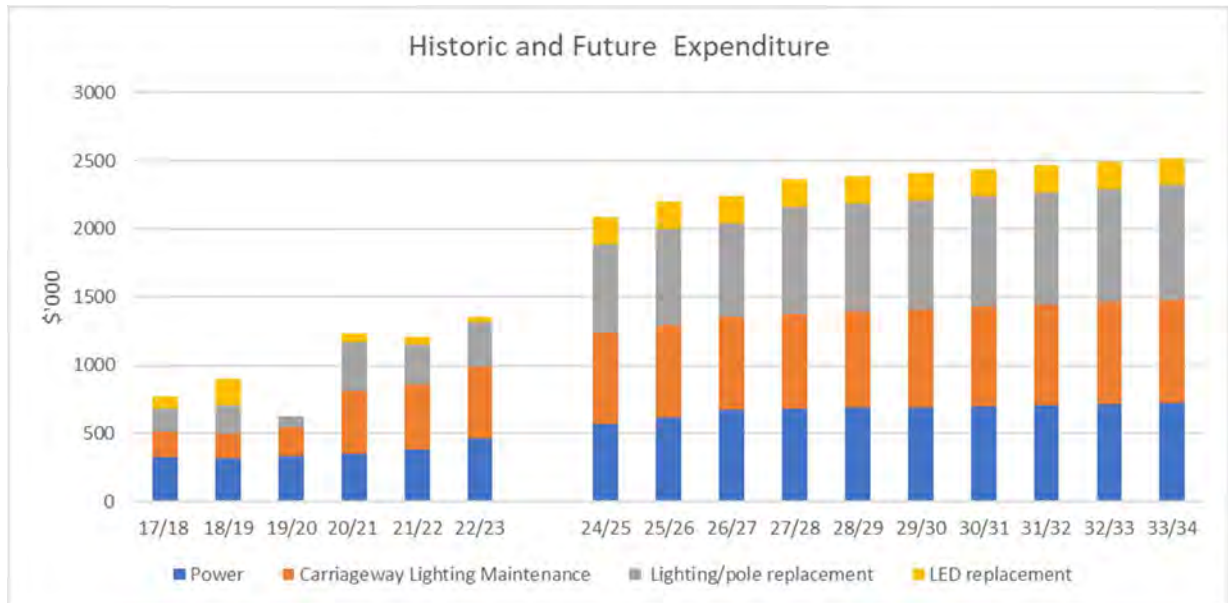
- Renew faulty or damaged lanterns that cannot be repaired because of obsolescence or replacements parts being unobtainable.
- Renew faulty or damaged equipment when replacement is more economic than repair.
- Replacement LED programme – no stock of HPS to replace HPS when they fail.

The Renewal Programme is based on benefit/cost savings (e.g. power efficiencies), the level of ongoing maintenance, and if there are opportunities to co-ordinate the work with other projects or planned upgrades, such as underground overhead power cables, and pole replacement. In terms of streetlighting, the highest priority has been the replacement of Mercury Vapour and fluorescent lights as a priority, with the next major replacement being that of replacing High Pressure Sodium with LED. This is being driven by energy efficiency and the need to reduce energy costs rather than by the condition of the lamps. Pole renewal is driven by condition and the need to optimise this programme with the lamp replacement programme.

Historical Data

Street light expenditure for the past five years is summarised in Figure below:

Figure 7-65: Streetlight Expenditure



Financial Summary

Maintenance costs increased sharply in 2020/21 with the re-letting of the contract. This is due to be renewed again in 2025/26. At this stage it is difficult to predict what effect this will have on future costs.

The renewals focus over the last few years has been on replacing poles in Pegasus which had been weakened at the base, and other posts which were in poor condition. The damaged streetlight poles in Pegasus have now been replaced. The main renewals focus going forward will be updating lights to LED, saving on both power and maintenance costs. In addition to LED replacement, it is planned to introduce controllers which will allow light dimming (and hence power savings)

Investigations are also being carried out on a sample of steel poles to determine whether they have been affected by premature failure due to corrosion below ground. To date no issues have been discovered.

Creation/Acquisition/Augmentation Plan

Selection Criteria

Streetlights are acquired or upgraded through the following:

- Vesting new streetlights installed as part of subdivision development (constructed at the developer's expense)
- Upgrading work and new lights to improve the level of service
 - In association with power undergrounding of overhead utility reticulation, usually this involves new poles and replacing the existing lamp.

Council has adopted AS/NZS 1158: 2021 (New Zealand Street Lighting Standard) as a standard for new subdivisions and upgrades. Generally, arterial routes would be illuminated to

V4 level, whilst collector and local streets would be illuminated to P3NZ level. New lighting is generally developer installed to AS/NZS 1158:2005.

All new lighting is now required to be LED.

Disposal Plan

Currently there are no proposals or plans to dispose of any lighting installations.

7.8 Traffic Services



Purpose

To provide signs, markings and traffic controls that are easy to see, understand and that contribute to the safety and efficiency of the road system.

Key Issues

Some of the key issues related to the life cycle management of the traffic services assets are:

- Historical traffic facilities installation dates are not well recorded in RAMM.
- Ensuring that markings meet safety standards and visibility levels of service at minimum life cycle cost.
- Edge marker post, RRPM's, and marking details are not recorded in RAMM.
- Theft and vandalism of signs resulting in on going replacement cost and reduced life spans.
- Reflectivity of signage.

Solutions

- Continue updating signs information as signs replaced.
- Set up inspection process for visibility and reflectivity.
- Consider whether details of items that have a potential life of less than a year should be included in RAMM.
- Utilisation of graffiti guard on signs as appropriate.

Background Data

The traffic services assets include all road furniture and traffic control devices that promote a safe and efficient transport system. This includes the provision and maintenance of:

- Signs
- Edge Marker Posts (EMP)
- Road marking
- Raised reflective pavement markers (RRPM's)
- Guardrails and sight rails (where they are not attached to bridges)
- Traffic Islands (including roundabouts)
- Tactile Indicators
- Bollards
- Active Warning Signs

These assets, except for road markings and RRPM's, are stored in the appropriate tables in RAMM. There is no asset register of road markings and RRPM's. As road markings and RRPM's are replaced over a short time period the cost and effort required to keep an accurate asset record cannot be justified.

All traffic facilities are designed and located to meet the requirements of the Waka Kotahi Manual "Traffic Control Devices Manual"

Traffic services operation, maintenance, and renewals qualify for Waka Kotahi subsidy.

Physical Parameters

Asset types are summarised in the tables and graphs below:

Signs and Edge Marker Posts

There are approximately 19,500 road signs (including 399 km of edge marker posts) owned by the Council. Due to the lack of reliable post information, it is assumed that each sign has one post. This is conservative as it is common for a post to have more than one sign on it.

Edge marker posts are used to delineate the alignment of the roadway ahead and are primarily used for night- time guidance.

Figure 7-66: Percentage of Respective Sign Types

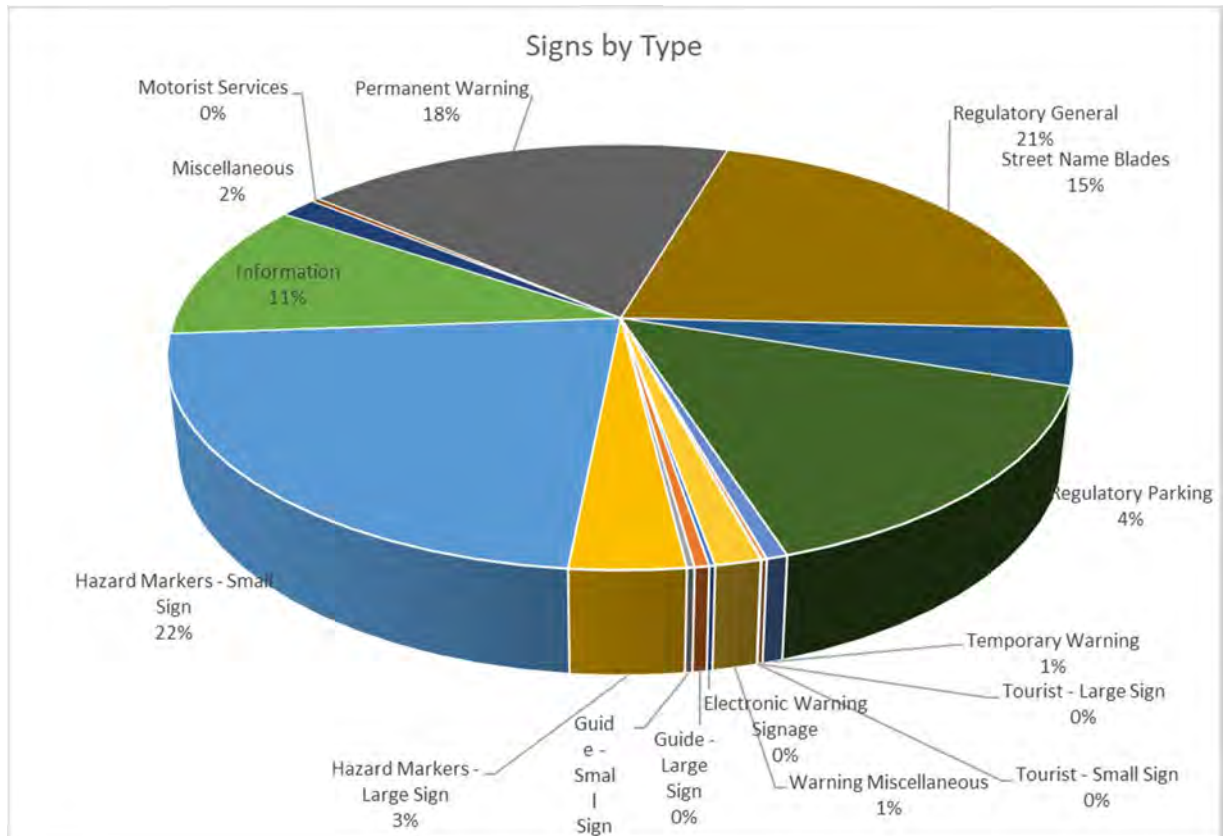


Figure 7-2767: Railing Types by length.

Railing Type	Length (m) (2011)	Length (m) (2014)	Length (m) (2017)	Length (m) (2020)	Length (m) (2023)
Steel Wire Rope barrier	1,749	1,749	1,749	3,142	2,515
Barrier Arm	25	117	117	0	
Sight rail	757	876	1,044	1,557	2,099
W Section Guard rail	694	1,050	1,373	1,899	3,715
Timber	27	4	52	0	0
Guard rail (laminated timber)	311	337	311	459	535
Handrail	198	337	393	574	679
Cable	0	0	900	0	0
Other	0	46	181	225	0
Total	3,761	4,486	6,120	7,856	9,543

Road Marking and RRMP's

The road markings are the most changeable of all sealed road assets due to their relatively short life, which is typically 2 years between re-marks. The estimated replacement cost for road markings is approximately \$330,000 based on the marking contract.

RRPM's are valuable for road delineation both for nighttime visibility and during wet weather when water enhances their reflectivity, there are approximately 15,000 RRMP's within the district. These are a short-lived assets on certain roads, frequently being damaged by oversize vehicles and agricultural equipment.

Railing

The Council manages approximately 9.76km of railing. The breakdown per type is shown in the graph below and Table 7-27 above.

Figure 7-70: Change in quantity of guardrail assets.

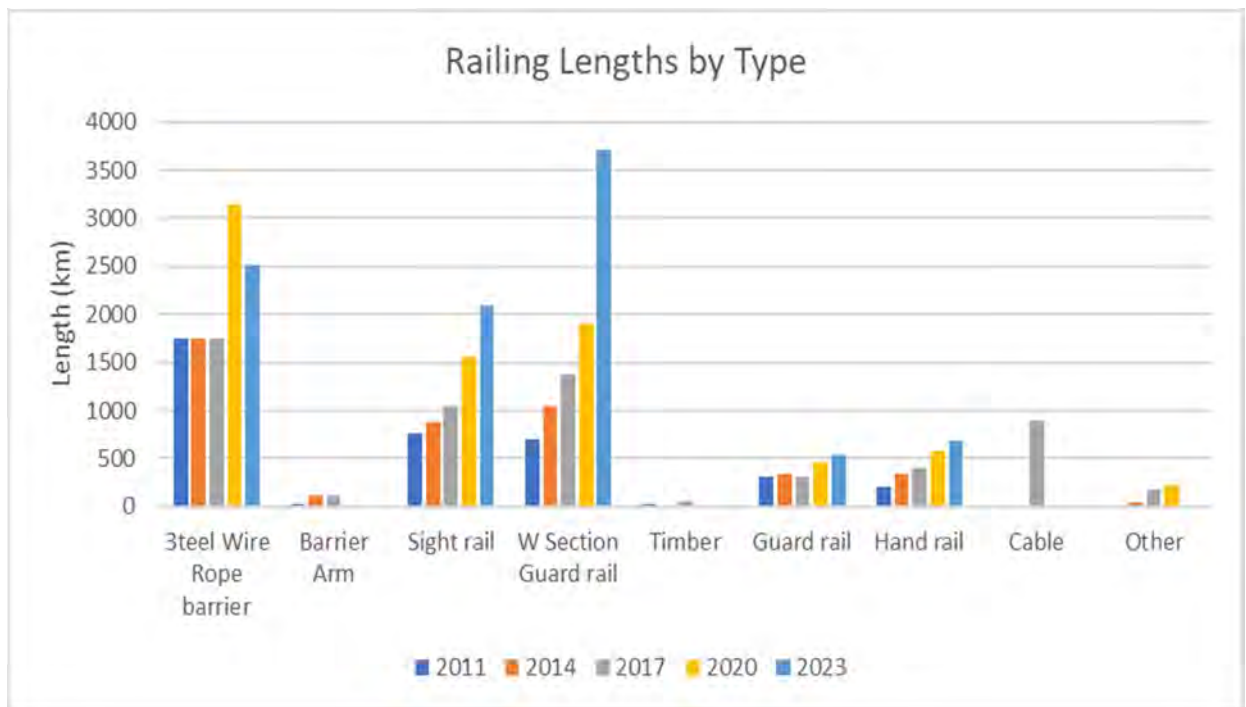
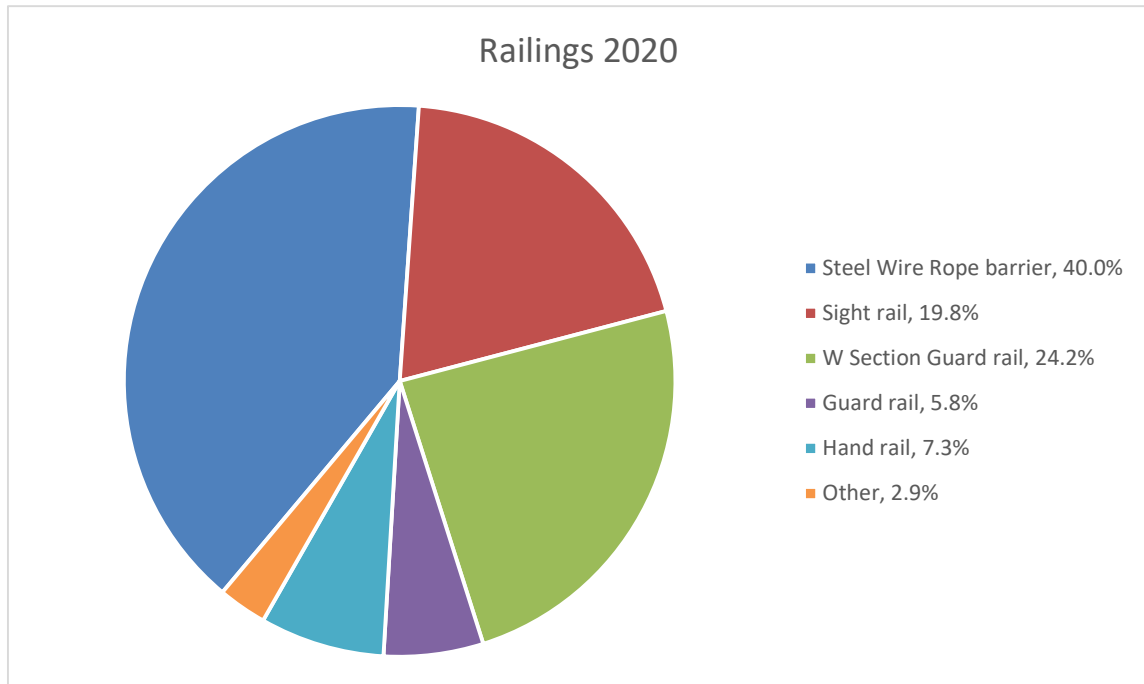


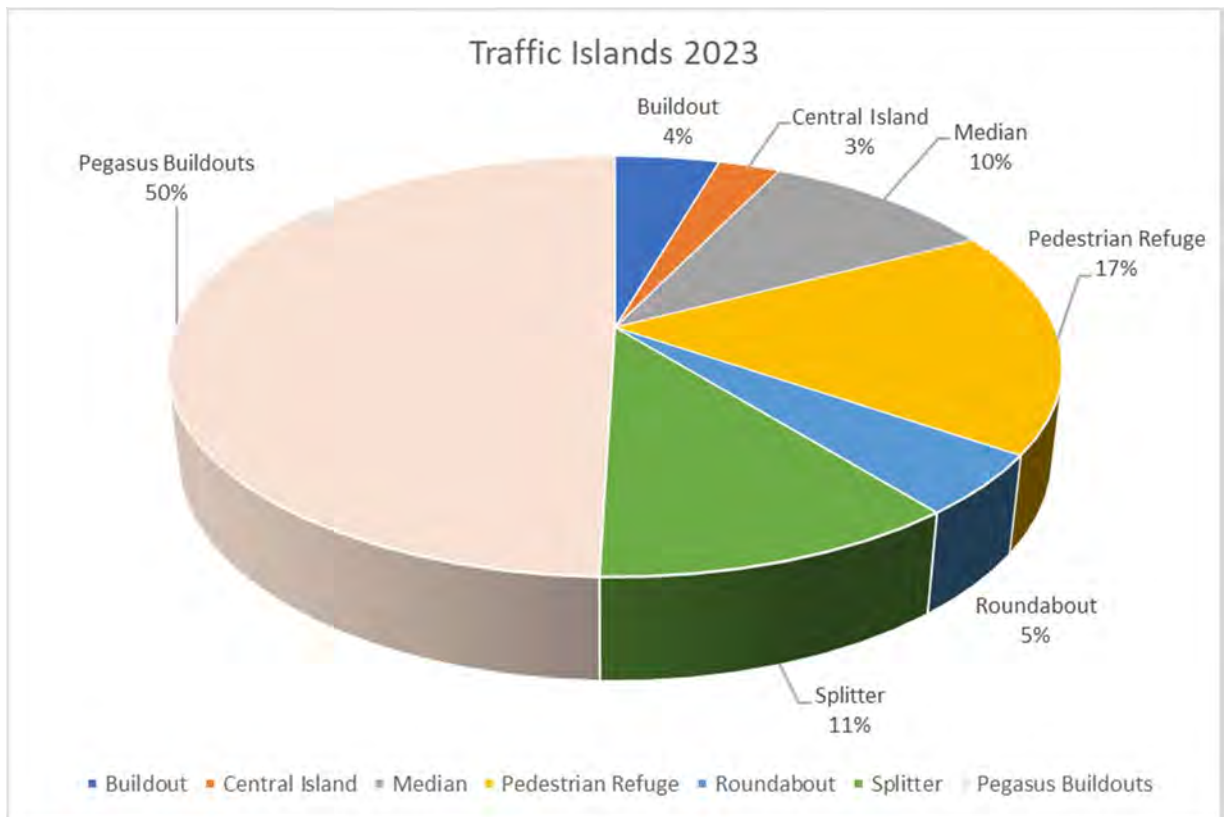
Figure 7-68: Percentage of Respective Railing Types



Traffic Islands

The Council owns 1088 traffic islands, kerb build outs, and roundabouts. The breakdown of type is shown below:

Figure 7-69: Traffic Island Quantities 2023



Traffic Controls

Table 7-27: Miscellaneous Traffic Furniture and signs

Description	Unit	Quantity 2011	Quantity 2014	Quantity 2017	Quantity 2020	Quantity 2023
Edge Marker post	km	399	399	399	399	399
Bollards	Ea.	52	335	265	326	358
Tactile Indicators- Directional	m	62	80	100	123	841
Tactile Indicators- Warning	m	315	352	423	501	1674
Active Warning Signs	Ea.	8	12	17	31	33

Asset Capacity/ Performance

Indicators of the performance of existing traffic services can come from road users, crash data, safety audits and road inspections.

Signs

In general signage is at an adequate level based on the above indicators. Accident and vandalism damage to signs is an ongoing problem which consumes a reasonable proportion of traffic signs renewal expenditure with the remainder being used to replace signs in poor condition. Improvements to the asset data system will enable the extent of accident and vandalism damage to be identified as data accuracy improves.

All new and replacement signs use high intensity reflective material (except for street name blades). Ongoing repairs and replacement have resulted in the majority of signs now being high intensity reflective. RAMM data has been partially updated to reflect this but is still under review.

Road Marking

The performance of road markings is influenced by the type of materials used, the quality of both materials and application and the accuracy of placement. Deterioration is caused primarily by traffic and environmental factors. Remarking is carried out on a regular basis to keep the markings at acceptable standards.

The roadmaking contract was changed at last contract retender from a performance-based contract to measure and value. This led to an initial significant improvement in marking quality but was also much more expensive.

Asset Condition

Age profile

As signs are replaced their age data is entered into RAMM. Due to the large number of signs in the network the reliability of data will be relative to the frequency with which the signs are inspected and replaced. Information on Regulatory signs is up to date, however signs on remote roads which are visited infrequently and only replaced when damaged or removed, may still be missing an installation date. Currently 33% of all signs are older than the 12-year assumed life of signs, while 23% are 16 years or older (up from 29% and 12% respectively three years ago).

Figure 7-70: Signs by Class

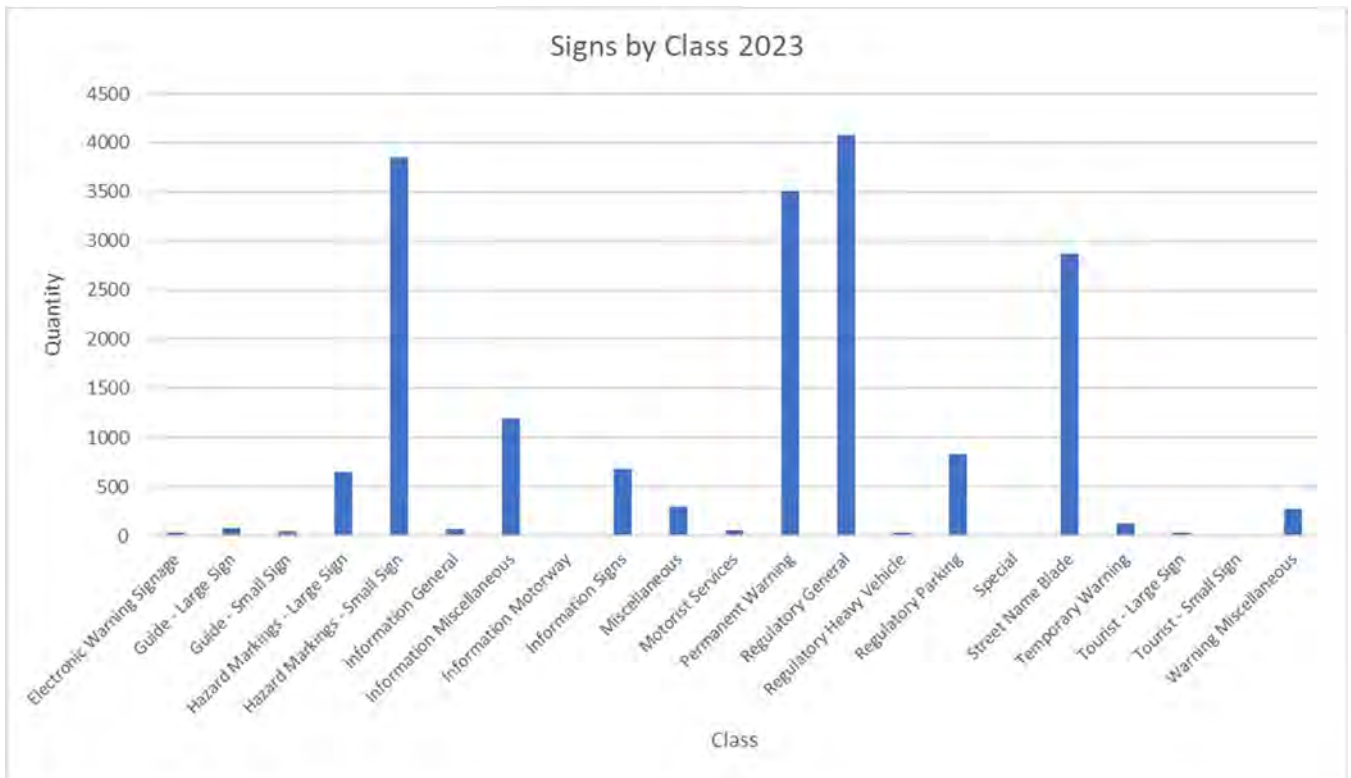
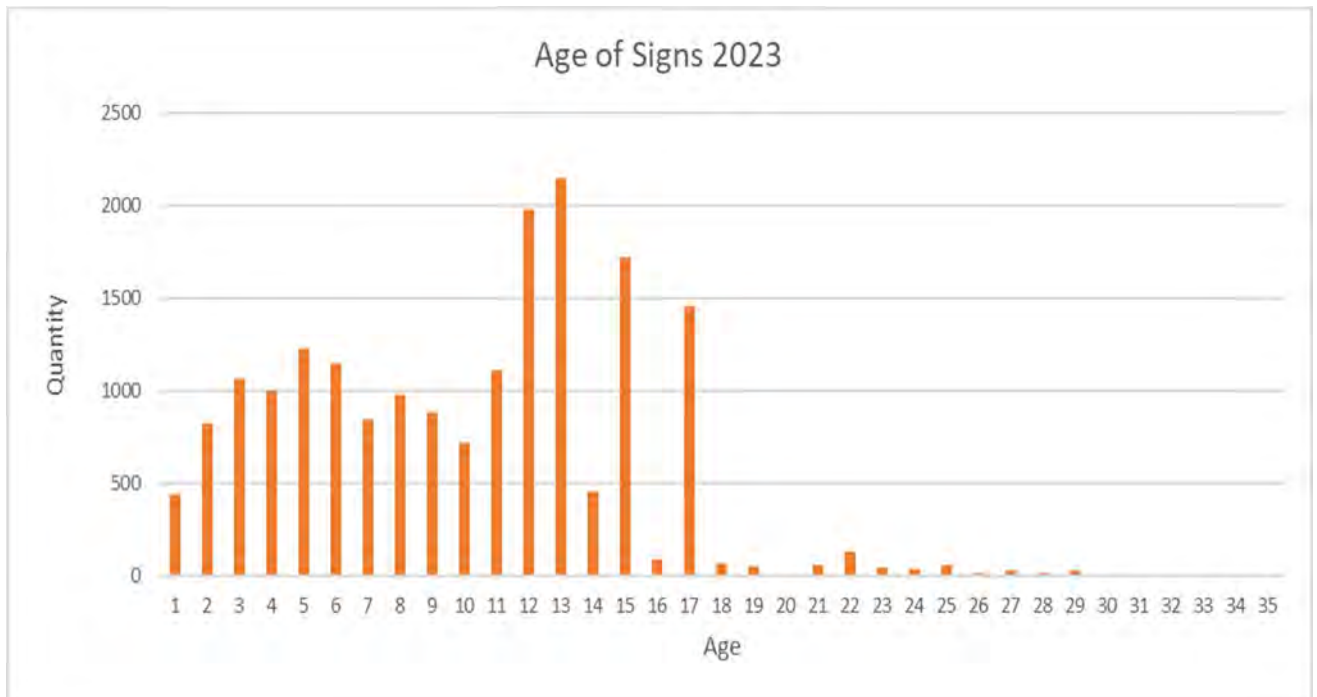


Figure 7-71:: Signs Age Profile



Condition

There is no formal condition rating system for the traffic services assets. However, the condition of these assets is assessed through the routine inspections undertaken by the road network maintenance contractor and the annual day and night safety inspections carried out with input from an external consultant with safety expertise.

Signs

Generally, signs are in a good condition based on these inspections. Vandalism and theft rather than age and condition are the major factors determining renewal needs.

Marking and RRPM's

The extent of deterioration of road markings depends on age, traffic volumes, the materials used and the condition of the road (oil and grit reduce adhesion). Road markings were previously managed through a performance-based contract. This has been replaced by a measure and value contract and has been found to provide better condition of the road markings, although there has been a substantial cost increase.

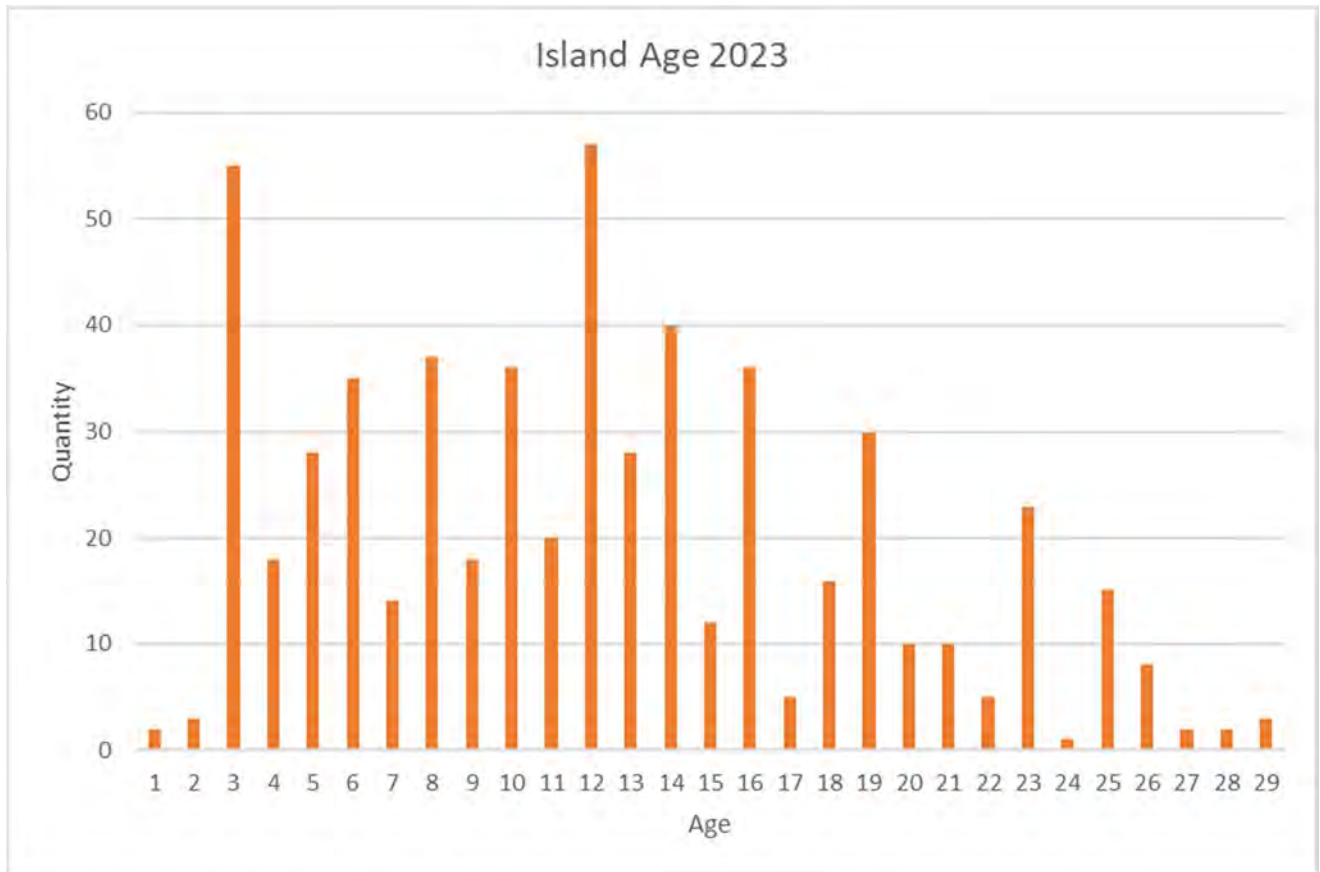
Railing

Railings are generally in a good structural condition; however some painting will be required in the short to medium term. With the increase in environmental protection requirements painting costs have increased considerably.

Traffic Islands

The kerbing component of traffic islands is kept with other kerbing in the surface water channel table. Most of the island assets were constructed in the last twelve years.

Figure 7-72: Islands Age profile.



Tactile Indicators

Tactile indicators are generally in a variable condition, however those on main routes are generally well maintained.

Active Warning Signs

Active warning signs have been installed at Southbrook School, Sefton School, North Loburn School, and St Patricks School, and variable speed limit signs have been installed at Ashley School, Swannanoa School and Loburn School. Further installations will occur according to need.

Asset Valuation

The following tables summarise the asset valuation for the traffic services as at 30 June 2023. The full report details are included in Appendix C. Road marking is not depreciated due to the short life cycle.

Signs

Table 7-28 Summary of Signs Asset Valuation at 30 June 2023

Description	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Electronic Warning Signage	Ea.	34	\$314,608	\$138,406	\$24,865
Guide - Large Sign	Ea.	85	\$296,361	\$78,308	\$22,012
Guide - Small Sign	Ea.	44	\$25,696	\$10,430	\$1,881
Hazard Markers - Large Sign	Ea.	675	\$394,200	\$130,916	\$29,615
Hazard Markers - Small Sign	Ea.	4,324	\$424,145	\$120,894	\$30,312
Information	Ea.	2,054	\$1,199,535	\$544,427	\$93,899
Miscellaneous	Ea.	302	\$176,368	\$27,067	\$10,516
Motorist Services	Ea.	60	\$35,040	\$10,543	\$2,400
Permanent Warning	Ea.	3,547	\$2,071,446	\$723,021	\$155,383
Regulatory General	Ea.	4,126	\$2,797,323	\$1,252,759	\$219,002
Regulatory Parking	Ea.	828	\$161,995	\$68,750	\$12,560
Street Name Blades	Ea.	2,903	\$567,962	\$183,880	\$42,042
Temporary Warning	Ea.	124	\$72,416	\$32,429	\$5,897
Tourist - Large Sign	Ea.	32	\$111,571	\$24,821	\$8,198
Tourist – Small Sign	Ea	4	\$2,336	\$1,752	\$195
Warning Miscellaneous	Ea.	269	\$52,629	\$28,064	\$4,266
TOTAL		19,411	\$8,703,631	\$3,376,467	\$663,043

Railings

Table 7-29: Summary of Railings Asset Valuation as at 30 June 2023

Railings					
Asset Description	Unit	Length	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Guard Rail (Laminated timber)	m	535	\$130,895	\$59,257	\$5,236
Hand Rail (timber)	m	679	\$220,289	\$129,838	\$8,812
Sight Rail	m	2,099	\$301,047	\$91,155	\$15,731
Steel Wire Rope Barrier	m	2,515	\$438,666	\$328,384	\$8,773
W Section Guard Rail	m	3,715	\$1,559,582	\$1,295,750	\$31,192
Total		9,543	\$2,650,480	\$1,904,385	\$69,744

Traffic Islands

Table 7-30: Summary of Traffic Islands Asset Valuation as at 30 June 2023

Standard Replacement Cost Description	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Buildout	Ea.	49	\$320,742	\$264,694	\$4,009
Central	Ea.	29	\$231,674	\$181,944	\$2,896
Median	Ea.	110	\$934,885	\$748,333	\$11,686
Pedestrian Refuge	Ea.	188	\$922,809	\$774,141	\$11,535
Roundabout	Ea.	51	\$491,557	\$405,173	\$6,144
Splitter	Ea.	122	\$1,243,559	\$1,019,820	\$15,544
Pegasus Buildouts	Ea.	539	\$861,212	\$718,988	\$10,765
TOTAL		1,092	\$5,006,437	\$4,113,093	\$62,580

Traffic Control

Table 7-31: Summary of Traffic Control Asset Valuation as at 30 June 2023

Standard Replacement Cost Description	Unit	Length or Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Bollard	Ea.	358	\$78,965	\$21,565	\$7,265
Edge Marker posts	Km	399	\$309,623	\$154,811	\$19,351
Tactile Indicators- Directional	m	898	\$414,461	\$323,760	\$18,018
Tactile Indicators- Warning	m	1886	\$798,016	\$592,269	\$34,694
TOTAL			\$1,601,065	\$1,092,405	\$79,328

Historical Data

Historical expenditure on traffic services over the last 6 years is summarised in the figure below.

Figure 7-73: Traffic Services Historical Maintenance Expenditure

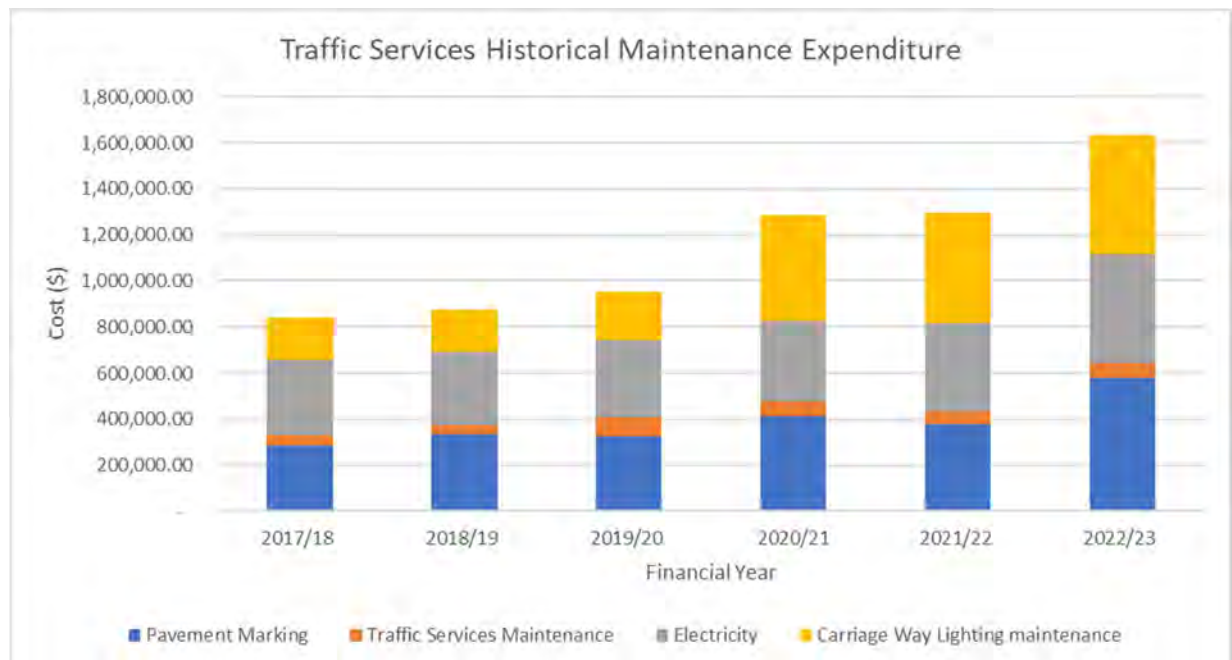
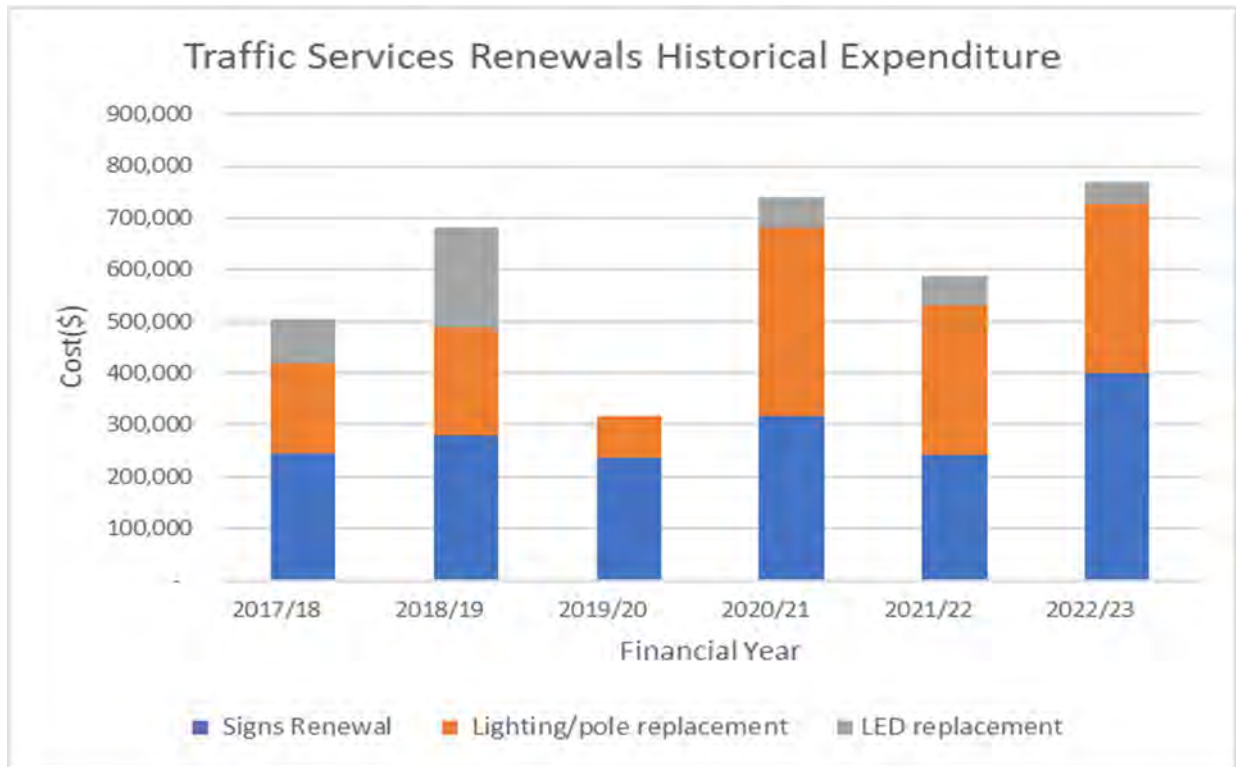


Figure 7-74: Traffic Services Historical Renewals Expenditure



The new works are a mixture of school safety projects, pedestrian refuge islands, and speed limit thresholds.

Resealing programmes have a significant effect on remarking. However, re-marking immediately after sealing is a resurfacing cost.

Infrastructure Risk Management Plan

The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Table 7-32: Signs Infrastructure Risk

Risk Description	Risk Assessment	Current Mitigation
Damage to signs as a result of vandalism, collision, and theft resulting in crashes and increased cost	High	Customer feedback (Service Request) police reports, regular inspections, regular awareness campaigns through the media, using vandal proofing techniques without making it dangerous
Inappropriate management of signage with potential to result in accidents e.g. lack of warning of sudden changes in speed environment or topography, deterioration of signs	Medium	Experienced road management staff and contractor manage the network, regular inspections, Customer feedback (Service Request) Robust renewal programme

		adequate maintenance and renewal funding available
Lack of delineation after winter e.g., ice gritting removing road markings	Medium	Maintenance contractor inspections and treatment as required
Lack of Edge marker post due to damage, wear and tear.	Medium	Identified through Contract regular inspection programme

Routine Operations and Maintenance Plan

Traffic services maintenance provides for the normal care and attention of roading furniture and traffic control devices that promote a safe and efficient transport system.

All traffic services maintenance work, including road signs, road marking, RRPM's, edge marker post, traffic islands, and bollards are carried under the Road Maintenance Contract 19/43. Maintenance is carried out in response to faults that are identified by the public through service requests, by routine inspections by the contractor and by Council road maintenance staff.

Operation and Maintenance Plan

Operations and maintenance activities include:

Planned Maintenance

- Routine inspections of signage and markings.
- Repairs to damaged signage.
- Routine remarking of road markings.
- Maintenance of guard-rails and sight rails where not associated with bridges.
- Maintenance of RRPM's

Unplanned Maintenance

- Response to vandalism and crash damage
- Emergency Response

Operations and Maintenance Strategies

Maintenance of traffic signs and markings is undertaken as part of the District wide Maintenance contract. The condition of signs and road marking will be assessed visually against the relevant Waka Kotahi Standards in routine inspections undertaken by the Contractor, with the results reported to Council. All traffic services will be inspected at the following frequency:

- All Strategic and Arterial roads: Weekly intervals
- All Collector and Local roads: Monthly intervals
- All unsealed roads: in conjunction with grading frequency

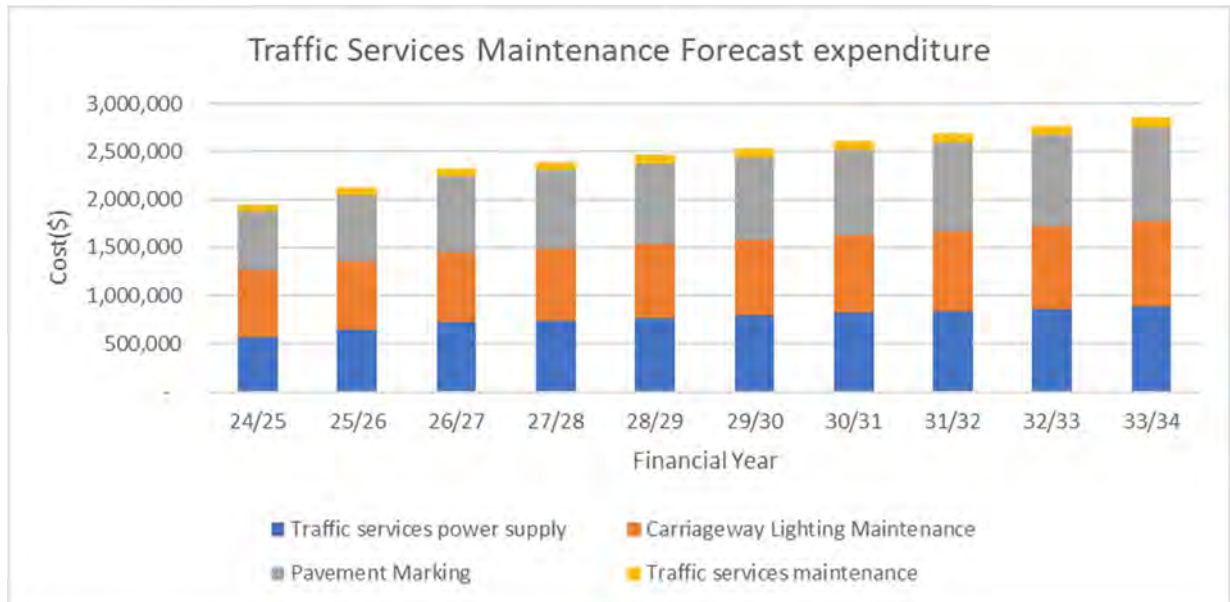
- All roads: 5% of the pavement marking every four months

Pavement marking is considered a maintenance item as it is carried out as required based on the reflectivity of the markings. Generally the whole district is remarked every 2 years.

Summary of Future Costs

An increase in maintenance costs is planned throughout the 10-year planning period to allow for growth in traffic services. All costs are in 2019/20 dollar values.

Figure 7-75: Traffic Services Maintenance Forecast Expenditure



Renewal / Replacement Plan

The traffic services programme is developed from the routine maintenance inspection and the annual daytime and night-time inspection, which is carried out by the maintenance contractor on all strategic, arterial and a proportion of the other roads, following training by suitably qualified instructors. The most common failure mode of signs is accident or vandal damage, and so replacement is immediate and forward programming is not possible.

Renewal Plan

The trigger for renewals work include replacement of obsolete, damaged, sub-standard and non-conforming signs identified during routine inspections are programmed for replacement according to the following priority:

- Public safety
- Traffic volumes
- Convenience of road users
- The condition of the asset
- The economic/useful lives of the materials used.

Renewal Strategies

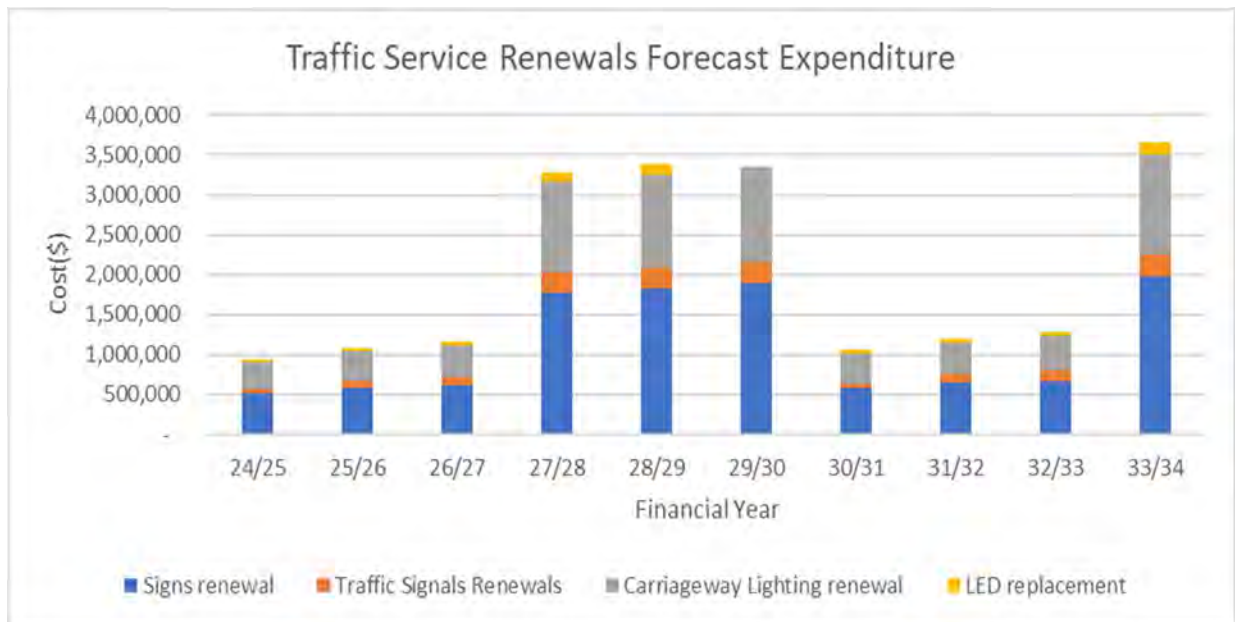
Signs are relatively short-life assets, with effective lives of around 12 years. Street name blades are replaced as required based on field inspections based on condition and compliance with the standards.

Road markings are renewed on a regular basis and the decision on when remarking is done is based on reflectivity measurements of the markings. The road marking contractor is responsible for ensuring road markings meet the required standards at all times. Regular audits are carried out to check this is achieved.

Summary of Future Costs

The future expenditure forecasts for traffic signs for the 10 years period has been determined by analysing historic expenditure. This analysis shows current annual expenditure is at the optimal level, and sign replacement is occurring at a rate suitable to maintain signs at an acceptable level. Therefore, there is no significant increase in capital expenditure as shown in the figure below.

Figure 7-76: Traffic Services Renewal Forecast Expenditure



There is no programme for renewing traffic controls such as islands, roundabouts, railing, and tactile indicators as they will fall outside the 10-year period of this plan

Creation/Acquisition/Augmentation Plan

Selection Criteria

Traffic Facilities are acquired through the following:

- Installation of new assets where there are currently none.
- Needs defined through Crash Reduction Studies and Safety inspections.
- Taking over new assets constructed with subdivision development.

Summary of Future Costs

New traffic services are part of the overall minor improvements projects and have not yet been fully allocated for the year as this budget covers a wide range of projects not yet broken down by asset.

Disposal Plan

There are no plans for disposal of any traffic services assets in the next three years.

7.9 Passenger Transport



Purpose

To provide on street facilities that support the use of passenger transport as a viable and convenient transport mode.

Background

Public transport is primarily managed by Environment Canterbury. Ownership of signs, seats and shelters, who are responsible for maintenance, renewals, new assets and relocations, but the decisions on routes themselves are part of a collaborative process with ECan in charge. Future direction for public transport is governed by the PT Futures.

Vision for Public Transport - Public transport is innovative and successful and sits at the heart of a transport network that supports a thriving, liveable greater Christchurch. The public transport system is accessible and convenient, with high quality, zero emission vehicles and facilities. The system gets people where they want to go – as a result it is well used and valued by the people of greater Christchurch.

Problem Statement addressed by this Asset Group

- *Population growth and changing land use is resulting in increased motor vehicle use, making it harder to maintain safe and appropriate levels of service.*
- *Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.*
- *Road users on our network have little room for error or recovery from mistakes, which results in fatal and serious injuries when crashes occur.*

Public transport addresses most of the above issues, provided it is sufficiently utilised. As such providing the appropriate supporting infrastructure will assist with removing some of the real and perceived shortcomings of public transport

- Good uptake of public transport will lead to fewer single occupancy vehicles and hence reduce demands on the current facilities.
- Emissions per person are far less from a full bus than if those occupants all drove, and with the transition to electric public transport this is even more true.
- It also provides more mode choice and allows the less able to get out into the Community.
- Even without the safety features such as seatbelts, travelling by public transport is significantly safer than by private motor vehicle.

Key Technical Issues

- Locations of bus shelters and seats along the frontage of properties.
- Graffiti on the bus shelters and seats.

Solutions

- Where possible locate stops where they will not affect local owners, i.e. obscured by fence or vegetation.
- Investigate security cameras.
- Paint shelters with graffiti guard.

Background Data

Public transport assets include bus shelters, seats, and bus stop signs. The bus shelters and seats are stored in the Minor Structure table in RAMM and covered in this section, whereas bus stop signs are stored in the Signs table and are covered under **Section 6.7 Traffic Services**.

Decisions on location and extent of bus routes are determined by Environment Canterbury who manages the passenger transport services. The Council is responsible for installing the necessary infrastructure to support the bus services. The maintenance, operations, and renewals of these assets are co-funded by Waka Kotahi through Environment Canterbury.

The Passenger Transport assets account for 0.3% of the total transport asset group, based on replacement cost.

Physical Parameters

The Council owns 32 shelters and 24 seats valued at \$631,997.

Asset Capacity / Performance

The introduction of a High Occupancy Vehicle Lane (T2) on the Christchurch Northern Corridor has opened up further opportunities for encouraging bus services. To make the most of this new facility, express bus services have been implemented during the morning and afternoon

peak, to help make Public Transport a quick and cost-effective means of commuting to Christchurch City and resulting in an increase in the uptake of passenger transport.

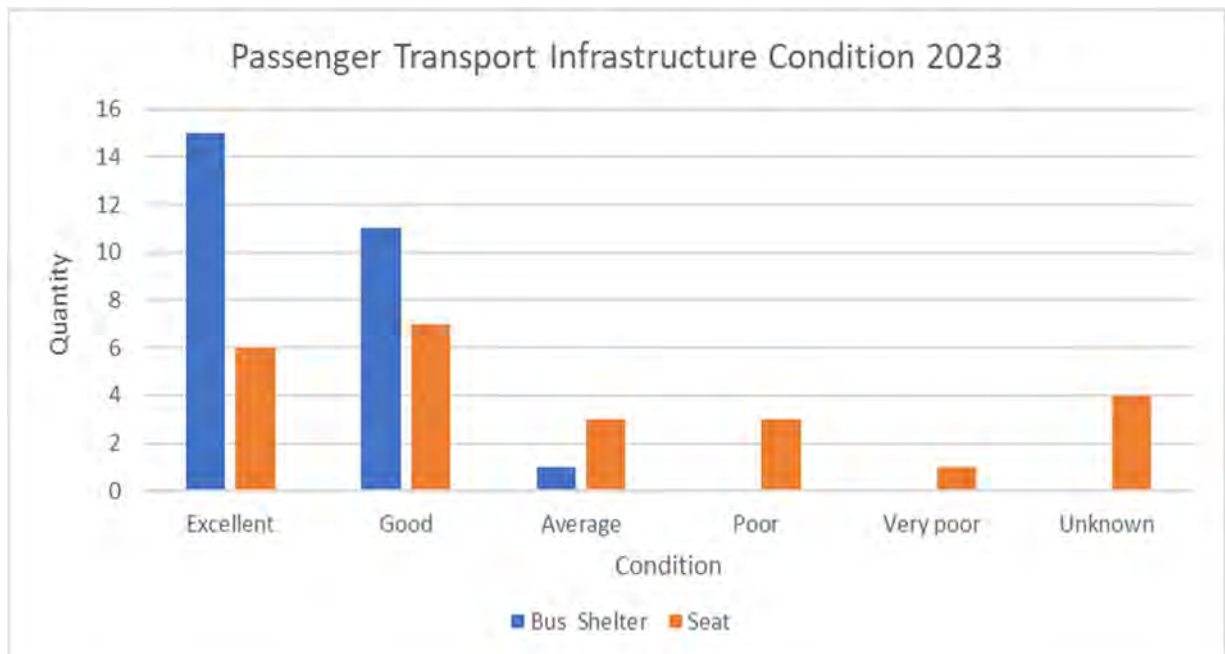
Park and ride facilities have been constructed in Rangiora and Kaiapoi, with further expansion of existing sites predicted in the future as demand increases, as well as a potential Park and Ride to be implemented in the Woodend / Ravenswood area in 2028/29.

There has also been additional funding allowed for over the next 10 years for further investment in infrastructure, particularly bus shelters and seats, to make public transport a more attractive travel option. This plan provides for those assets and changes.

Age profile/ Condition

Most of the existing bus shelters and seats have been installed over the last 15 years. Shelters are generally in good condition, however a more detailed condition assessment is planned for the next three year period. The biggest maintenance concern is ongoing graffiti.

Figure 7-77: Passenger Transport Infrastructure Condition Profile



Passenger Transport assets are generally well maintained to the same standard as the main asset groups making up the road network. Their main issue continues to be vandalism.

Asset Valuation

Asset valuations are summarised below as at 30 June 2023. The full report details are included in **Appendix C**.

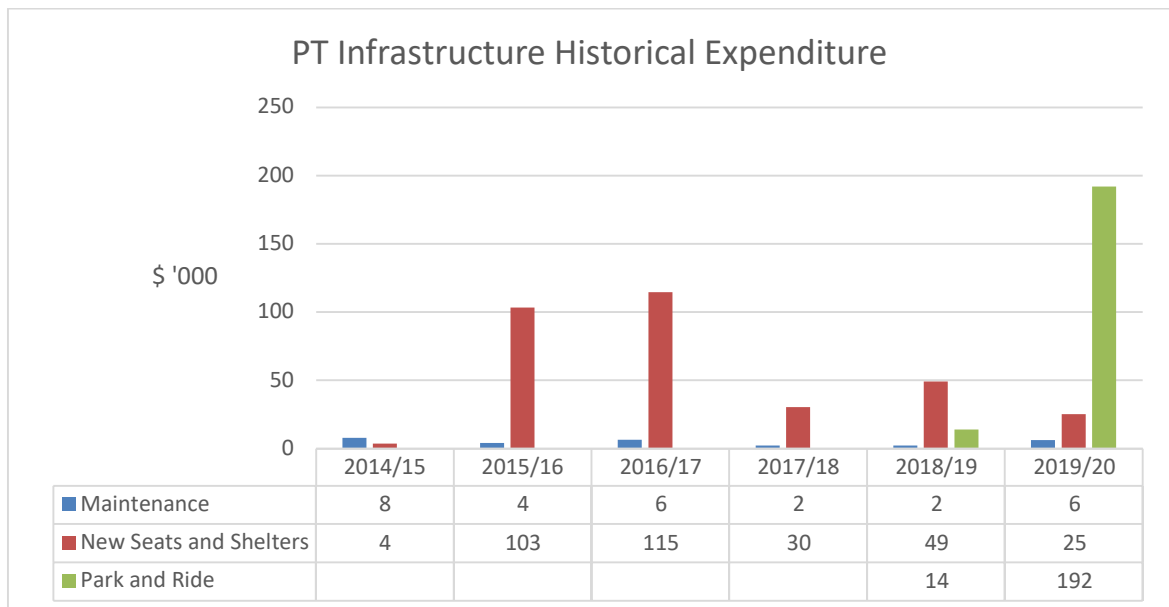
Table 7-33: Summary of Passenger Transport Asset Valuation at 30 June 2023

Standard Replacement Cost Description	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Bus Shelters	Ea.	32	\$592,505	\$470,301	\$11,850
Seats	Ea.	26	\$39,494	\$12,896	\$1,929
TOTAL			\$631,999	\$483,197	\$13,779

Historical Data

Historical expenditure on public transport infrastructure over the last 6 years is summarised in the figure below.

Figure 7-78: Passenger Transport Historical Expenditure



Infrastructure Risk Management Plan

The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Table 7-34: Public transport infrastructure Risks

Risk Description	Risk Assessment	Current Mitigation
Bus Shelter vandalism leading poor image and increased costs	Low	<ul style="list-style-type: none"> Using a vandal proof materials. regular inspections
Lack of or poor passenger transport infrastructure resulting in reduced patronage	Low	<ul style="list-style-type: none"> Regular Communication with ECAN to assess needs. Regular inspections of existing infrastructure.

Routine Operations and Maintenance Plan

Passenger transport assets are maintained and cleaned under the Road network Maintenance Contract 19/43. These assets are generally well maintained to the same standard as the main asset groups making up the road network.

Operation and Maintenance Plan

Operations and maintenance activities include:

Planned Maintenance

- Cleaning bus shelters weekly.
- Cleaning seats as required.
- Repairing structural damage.

Unplanned Maintenance

- Replacing broken components.
- Removing graffiti.

Operations and Maintenance Strategies

Maintenance of these assets is undertaken as part of the district wide Maintenance Contract No 19/43. All new bus shelters that have been installed recently are made of aluminium to reduce the risk of vandalism.

Summary of Future Costs

The Council allows just under \$14,500/annum for maintenance, which currently seems sufficient.

Table 7-35: Passenger Transport Future Maintenance Expenditure



Renewal/ Replacement Plan

Bus shelters and seats will be renewed due to structural failure or obsolescence. The expected useful life of the shelters is 50 years, and a seat is 20 years. The majority of seats and shelters are relatively new, with only three seats currently flagged as potentially requiring replacement due to age.

Creation/Acquisition/Augmentation Plan

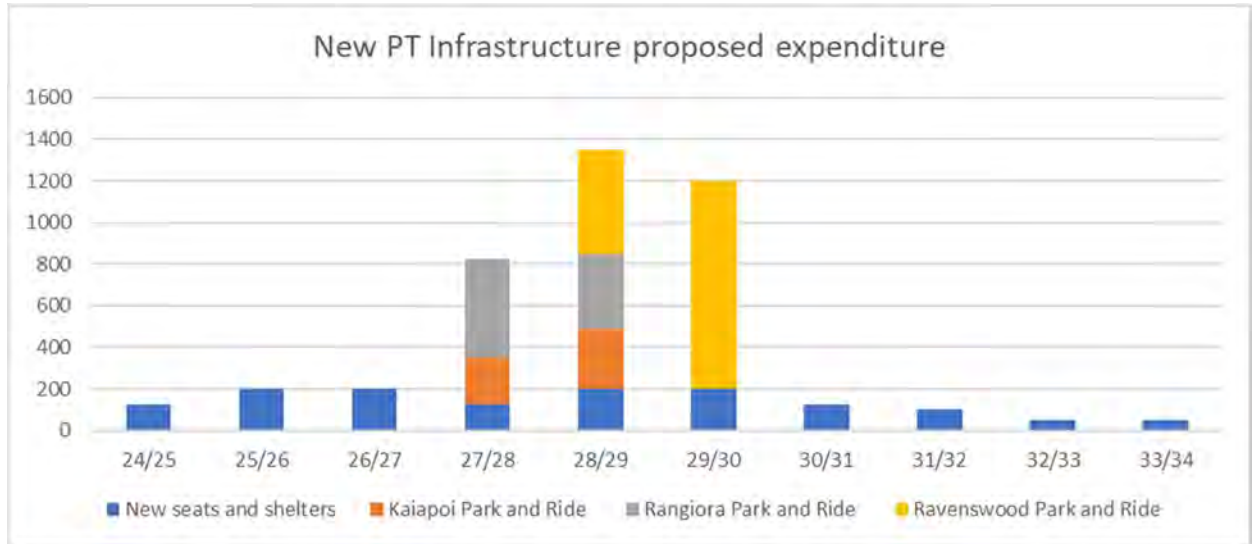
Selection Criteria

The development of passenger transport results from Environmental Canterbury introducing new routes or making changes to the existing routes as required, or when there is a demand for new bus shelters.

Summary of Future Costs

The Council has increased proposed expenditure on new bus shelters and seats from 51,000 per annum to 125,000 over the next ten years. The biggest issue with this infrastructure is agreeing placement of shelters with residents. There is also increased expenditure on Park and Ride which is designed to encourage more use of Public Transport.

Figure 7-79: New Passenger Transport Expenditure



Disposal Plan

No public transport or minor structures are considered surplus to requirements and no disposals are anticipated within the 10-year planning period.

7.10 Parking



Purpose.

To provide convenient places to allow motorists easy access to public and private facilities.

Problem Statement Relevant to Parking

- Lack of mode choice leads to environmental impacts due to vehicle emissions, lack of opportunity for safe and healthy activity, inefficient use of existing infrastructure, and social disconnect.

For those who are less able, good parking provides opportunities to interact with the community. In addition, lack of adequate parking has been shown to drive shoppers further afield, which has the perverse outcome of increasing vkts and emissions. Growth in electric vehicles will lessen this, but may increase the need for road building/widening.

Park and Ride also falls within this category, however there is an overlap with Public Transport facilities and for the purpose of this document Park and Ride has been grouped with Public Transport.

Parking facilities are a small but growing group of assets in WDC. Included in this asset group are on and off-street parking areas, parking buildings, and park and ride facilities. Some work has been carried out to assist with understanding the needs of the community in this area, and a detailed analysis of parking needs for the entire district will be carried out over the course of the preparation of the next AMP.

Council is planning on increasing its own off-street parking to assist with the increasing demand, and to ensure these facilities are optimally located.

Key Issues specific to parking

- Supply of sufficient parking to meet growing needs of the community.
- Ensuring on-street parking does not conflict with pedestrians and cyclists.

Solutions

- Supply of parking is regularly reviewed by Town Centre team and has been included in future planning.
- All new cycle facilities undergo safety audits.

Background Data

Council has traditionally owned only a small area of car parking as the availability of on-street parking has been sufficient. With the increasing population and a desire to provide an environment which supports business, Council is investigating other off-street options. In addition, it will be providing facilities to encourage Park and Ride to alleviate congestion between Christchurch and Waimakariri.

Physical Parameters

Council currently owns 5 off-street carparks, with a combined area of just under 40,000 m², plus 4 park and ride sites.

Table 7-36: Council Carpark Locations and Quantities

Locality Name	Total Area (m)
Blake St car park	7,895
Fire Station car park	3,712
Good St car park	9,020
Percival St car park	13,904
Raven Quay car park	4,368
Total	38,899

Asset Capacity/Performance

A parking framework for Rangiora Town Centre has been developed to build on the Parking Management Strategy and Implementation Plan developed as part of the Rangiora Town Centre 2020 project. The framework provides transport planning guidance on the criteria applicable to centralised parking provisions and is developed as a parking demand model spreadsheet intended to be used by the Waimakariri District Council.

Consideration of facilities, such as allowance for cycles at Park and Ride, and more EV charging stations, also need to be factored in to planning. Currently these are mainly provided by the private sector.

Asset Condition

The condition of these ranges from poor/average to very good for more recently constructed parks. Some isolated repairs are required to be followed with a waterproofing seal within the next three years.

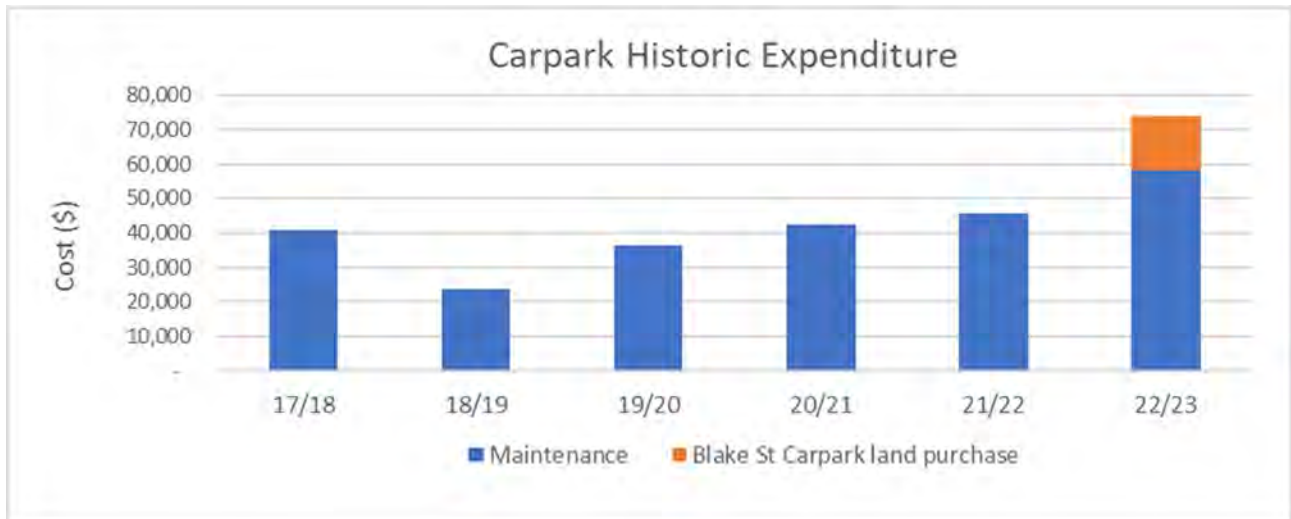
Valuation

To date car parks have not been valued as a separate item however as the assets associated with this particular activity increase in value this will need to be introduced.

Historical Data

Historical expenditure on car parks over the last 3 years is summarised in the figure below.

Figure 7-80: Carpark Historical Expenditure



The Risk Management section in this AMP outlines the formal review relating to the roading and transport network. The following risks were identified:

Table 7-37: Car Parking Infrastructure Risks

Risk Description	Risk Assessment	Current Mitigation
Sealed areas poorly maintained, may lead to cracks and potholes, increased maintenance costs longer term.	Low	<ul style="list-style-type: none"> Apply good asset management practices to maintain at appropriate LOS regular inspections
Lack of or parking leads to residents choosing to shop elsewhere, potentially impacting on the local economy	Low	<ul style="list-style-type: none"> Traffic modelling, ongoing dialogue with businesses and residents

Routine Operations and Maintenance Plan

Carparks are maintained and cleaned under the Road Maintenance Contract 19/43. These assets are generally well maintained to the same standard as the main asset groups making up the road network.

Operation and Maintenance Plan

Operations and maintenance activities include:

Planned Maintenance

- *Sweeping*
- *Pothole and crack repairs*

Unplanned Maintenance

- *Removing rubbish*

Operations and Maintenance Strategies

Maintenance of these assets is undertaken as part of the District wide Maintenance Contract No 19/43.

Summary of Future Costs

Table 7-38: Carpark future costs

	24/25 (\$)	25/26 (\$)	26/27 (\$)	27/28 (\$)	28/29 (\$)	29/30 (\$)	30/31 (\$)	31/32 (\$)	32/33 (\$)	33/34 (\$)
Maintenance	69,980	69,980	69,980	69,980	69,980	69,980	69,980	70,680	71,387	72,100
Renewals	-	25,000	25,000	25,000	-	25,000	-	25,000	25,250	25,503
Capital	-	-	-	3,000,000	500,000	3,000,000	3,375,000	125,000	1,000,000	1,125,000

Figure 7-81: Car Park Future Maintenance, Operations and Renewals Costs



Renewal/ Replacement Plan

Carpark surfaces are subject to similar wear patterns as a road and will be renewed over a similar cycle. The only carpark planned for resurfacing over the next three years is the 'Good St' carpark, which runs between Ashley and Good Streets.

Creation/Acquisition/Augmentation Plan

Proposed Works

There are plans for a new car parking building to be constructed in the 2028/29 to 2030/31 period, in conjunction with retail construction on Council owned land in Rangiora, plus additional land purchase for car parking is allowed for in 2025/26, however, this will be revisited in the next AMP period.

Summary of Future Costs

Figure 7-82: New Parking Expenditure



Disposal Plan

There are no plans to dispose of any parking assets in the near future.

Transportation Activity Management Plan 2024

Financial Summary

June 2024



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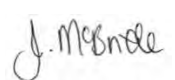
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Prepared by	Yvonne Warnaar	Asset Planning Engineer (Roding)		14/04/2024
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Table of contents

8	Financial Summary	4
8.1	Financial Summary Overview	4
	Financial Statements and Projections	4
8.2	Expenditure	8
	Operating Expenditure	8
	Capital Expenditure.....	9
	Depreciation	22
8.3	Options Funding Considerations	24
8.4	Funding Strategy	25
	Targeted Roding Rates	25
	NZTA Subsidies	26
8.5	Development Contributions and Financial Contributions	26
	Introduction	26
	Development Contributions	27
	Financial Contribution	27
	Fees and Charges	27
	Debt and Lending Servicing	28
8.6	Valuation Forecasts	29
	Introduction	29
8.7	Key Assumptions Made in Financial Forecast.....	30
8.8	Forecast Reliability and Confidence	32
	Forecast Reliability.....	32
	Forecast Confidence	32
8.9	Key Improvement initiatives	33

Tables

Table 8-1: Uninflated Roding Summary	6
Table 8-2: Inflated Roding Financial Summary.....	7
Table 8-3: Ten Year Maintenance and Operational Forecast (\$) by GL	12
Table 8-4: Renewals Works Forecast (\$) by GL.....	14
Table 8-5: Ten Year New Capital Works Forecast (\$) by GL.....	15
Table 8-6: 2023 Valuation	29
Table 8-7: 2024 Significant Forecasting Assumptions and Uncertainties	30
Table 8-8: Confidence Rating	32
Table 8-9: Key improvement initiatives.....	33

Figures

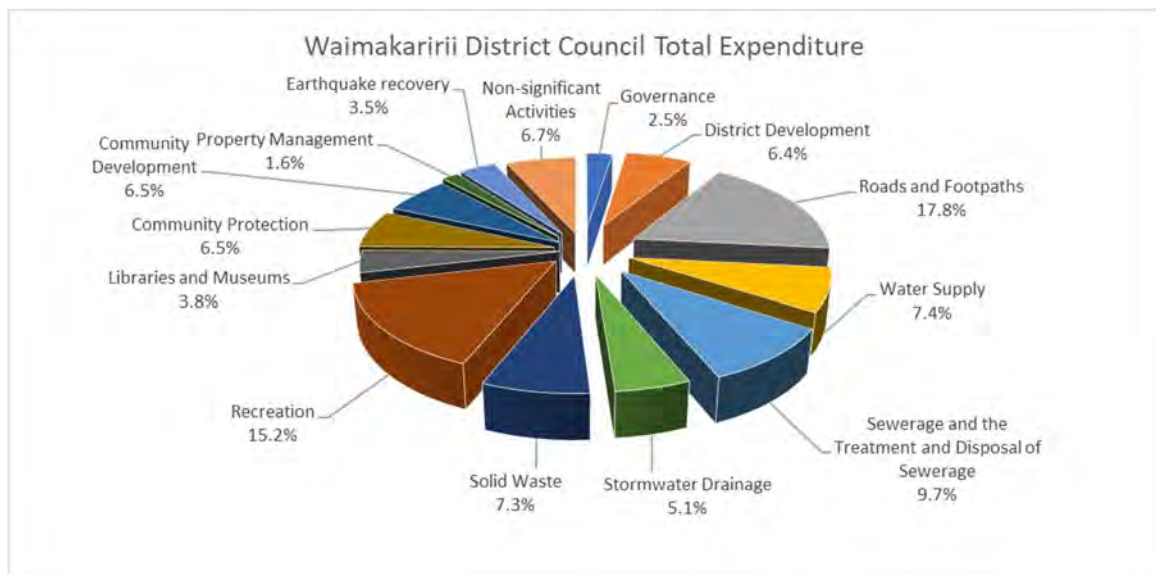
Figure 8-1: All of Council Expenditure 2022/23	4
Figure 8-2: Maintenance and Operations Forecast 2024-2034 by work category (subsidised).	9
Figure 8-3: Maintenance and Operations Forecast All Council Activities	9
Figure 8-4: Renewals Forecast 2024-2034 by work category (subsidised).....	10
Figure 8-5: Renewals by Council Activity 2024-2034	10
Figure 8-6: New Capital Projects Forecast 2024-2034	11
Figure 8-7: Depreciation Provision Versus Renewals Expenditure 2024-2034	23
Figure 8-8: 150-year roding Renewals Model.....	23
Figure 8-9: Fees and charges 2023.	28

Financial Summary

Financial Summary Overview¹

This section of the Roding Activity Management Plan outlines the long-term operations, maintenance and capital financial requirements for the operation, maintenance, renewals and development of the roading network based on the long-term strategies outlined earlier in the plan. The roading network accounted for 17.8% of the council's total expenditure in 2022/23 as shown in following graph, compared with 24% in 2016/17.

Figure 8-1: All of Council Expenditure 2022/23



Financial Statements and Projections

The aim of the ten-year financial forecast is to demonstrate financial discretion in the management of the roading assets to provide the target LOS defined in Section 3.

All financial forecasts presented in this plan are based on 23/24 dollars and will need to be adjusted each year to reflect cost fluctuation. However, Council is required by the Local Government Act to provide a ten-year plan adjusted for inflation as summarised in Table 8-2.

Table 8-2 presents the expected forecast with inflation over the next ten years. These figures have been derived from those recommended to the Local Government from Business and Economic Research Limited (BERL) Price level adjustments have been

¹ Note that the Long Term Plan submissions occurred well after the Activity Management Plan was largely complete. This section of the AMP has been amended to reflect those changes, however they were minor and did not materially affect the totals. A summary of the changes approved as a result of the submissions to the Long Term Plan is included in Appendix E.

applied and are based on 23/24 dollars. The BERL inflation figures are not necessarily in line with roading inflation due to construction specific costs plus the effects of the cost of oil on bitumen-based work.

These figures are prior to the Long Term Plan Finalisation. Some changes may need to be made following consultation and Council deliberation. In addition, due to funding constraints not all requests for financial assistance from NZTA may be approved and this may require adjustments to the planned works. In order to accommodate NZTA funding and to reflect Asset Management recommendations, the original recommendations have been left in this AMP. The amendments are included in Schedule 8.1 LTP Amendments.

Table 8-1: Uninflated Roothing Summary

	Long Term Plan Budget									
REVENUE	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/22	33/34
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Targeted Roothing Rates	16,025	16,911	17,763	18,727	19,256	19,776	20,546	21,359	21,697	22,184
Fees and Charges	1,358	1,848	1,238	1,238	1,238	1,238	1,239	1,238	1,238	1,238
Subsidies	13,251	15,665	13,163	18,764	20,111	18,323	13,799	13,618	13,822	15,566
Interest	72	132	168	247	182	20	-	-	-	-
Contributions	9,858	8,551	7,629	6,328	5,014	4,911	4,062	3,855	3,770	5,916
Gains	-	-	-	-	-	-	-	-	-	-
TOTAL REVENUE	40,564	43,107	39,961	45,304	45,802	44,268	39,646	40,071	40,528	44,904
OPERATING EXPENDITURE										
Subsidised Maintenance	5,062	5,457	5,478	5,533	5,588	5,644	5,700	5,757	5,815	5,873
Structural Maintenance	3,175	3,359	3,538	3,579	3,621	3,664	3,706	3,749	3,792	3,836
Corridor Maintenance	2,063	2,334	2,236	2,258	2,387	2,295	2,318	2,453	2,362	2,389
Other Maintenance										
Unsubsidised Expenditure										
General Maintenance	1,415	1,374	2,168	1,429	1,340	1,396	1,343	1,372	1,398	1,382
Management Costs	1,219	1,192	1,217	1,265	1,291	1,316	1,344	1,368	1,394	1,420
Loan Interest	1,389	1,419	1,497	1,483	1,500	1,831	2,392	2,559	2,529	2,532
Depreciation	13,984	14,483	15,015	15,614	16,427	17,336	18,067	18,614	19,131	19,664
Indirect Expenditure	2,519	2,646	2,793	2,820	2,887	3,014	3,051	3,156	3,214	3,283
Total	30,839	32,277	33,955	33,994	35,054	36,509	37,934	39,041	39,649	40,392
Internal Interest Elimination	205	209	221	219	222	270	353	378	374	374
TOTAL OPERATING EXPENDITURE	30,634	32,068	33,734	33,775	34,832	36,239	37,581	38,663	39,275	40,018
OPERATING SURPLUS (DEFICIT)	9,930	11,039	6,227	11,529	10,970	8,029	2,065	1,408	1,253	4,886
CAPITAL EXPENDITURE										
Renewals	8,579	10,233	8,805	9,361	8,949	10,319	9,629	9,226	9,337	11,405
New Works	15,139	16,219	8,572	18,898	29,494	28,119	12,977	7,477	8,222	9,568
- to meet additional demand										
- to improve level of service										
Loan Repayments										
TOTAL CAPITAL EXPENDITURE	24,849	27,676	18,721	29,688	39,954	40,131	24,555	18,783	19,736	23,332
FUNDED BY										
Loans	2,386	3,614	1,711	2,423	9,411	12,916	5,829	2,901	3,817	4,477
Reserves	631	-	-	341	3,368	2,121	-	-	-	-
Cash From Operating	21,832	24,062	17,010	26,924	27,175	25,094	18,726	15,882	15,919	18,855
TOTAL FUNDING	24,849	27,676	18,721	29,688	39,954	40,131	24,555	18,783	19,736	23,332
RATES MOVEMENT (%)	7.1%	5.5%	5.0%	5.4%	2.8%	2.7%	3.9%	4.0%	1.6%	2.2%
Operating Expenditure includes:										
Interest	1,389	1,419	1,497	1,483	1,500	1,831	2,392	2,559	2,529	2,532
Depreciation	13,984	14,483	15,015	15,614	16,427	17,336	18,067	18,614	19,131	19,664
Depreciation not funded	1,877	1,401	926	-	-	-	-	-	-	-
Indirect Expenditure	2,519	2,646	2,793	2,820	2,887	3,014	3,051	3,156	3,214	3,283

Table 8-2: Inflated Roothing Financial Summary

Roothing (inflation adjusted)										
Long Term Plan Budget										
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
REVENUE										
Targeted Roothing Rates	16,025	17,283	18,587	20,047	21,068	22,092	23,434	24,849	25,746	26,823
Fees and Charges	1,358	1,889	1,294	1,324	1,353	1,382	1,410	1,438	1,465	1,493
Subsidies	13,251	16,010	13,775	20,089	22,006	20,470	15,740	15,845	16,404	18,824
Interest	72	135	176	264	199	22	-	-	-	-
Contributions	9,858	8,665	7,844	6,619	5,317	5,280	4,442	4,287	4,324	7,059
Gains	-	-	-	-	-	-	-	-	-	-
TOTAL REVENUE	40,564	43,981	41,675	48,343	49,943	49,246	45,026	46,419	47,939	54,199
OPERATING EXPENDITURE										
Subsidised Maintenance	5,062	5,577	5,733	5,923	6,114	6,305	6,502	6,699	6,901	7,102
Structural Maintenance	3,175	3,433	3,702	3,832	3,962	4,093	4,227	4,362	4,501	4,639
Corridor Maintenance	2,063	2,385	2,340	2,418	2,612	2,563	2,644	2,854	2,803	2,889
Other Maintenance										
Unsubsidised Expenditure										
General Maintenance	1,415	1,374	2,168	1,429	1,340	1,396	1,343	1,372	1,398	1,382
Management Costs	1,219	1,218	1,274	1,354	1,413	1,471	1,533	1,592	1,654	1,718
Loan Interest	1,389	1,450	1,565	1,586	1,640	2,043	2,723	2,971	2,992	3,053
Depreciation	13,984	14,802	15,375	15,973	16,789	17,700	18,447	18,986	19,513	20,037
Indirect Expenditure	2,519	2,646	2,793	2,820	2,887	3,014	3,051	3,156	3,214	3,283
	30,839	32,898	34,964	35,349	36,772	38,599	40,485	42,007	42,991	44,119
Internal Interest Elimination	204	213	230	233	241	300	400	436	439	448
TOTAL OPERATING EXPENDITURE	30,635	32,685	34,734	35,116	36,531	38,299	40,085	41,571	42,552	43,671
OPERATING SURPLUS (DEFICIT)	9,929	11,296	6,941	13,227	13,412	10,947	4,941	4,848	5,387	10,528
Long Term Plan Budget										
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
	\$' 000	\$' 000	\$' 000	\$' 000	\$' 000	\$' 000	\$' 000	\$' 000	\$' 000	\$' 000
CAPITAL EXPENDITURE										
Renewals	8,579	10,458	9,214	10,022	9,792	11,528	10,984	10,734	11,081	13,792
New Works	15,139	16,576	8,971	20,232	32,272	31,415	14,803	8,699	9,758	11,570
Loan Repayments	1,131	1,251	1,407	1,530	1,653	1,891	2,223	2,420	2,584	2,853
TOTAL CAPITAL EXPENDITURE	24,849	28,285	19,592	31,784	43,717	44,834	28,010	21,853	23,423	28,215
FUNDED BY										
Loans	2,386	3,694	1,790	2,594	10,297	14,430	6,649	3,376	4,530	5,414
Reserves	631	-	-	223	3,460	2,057	-	-	-	-
Cash From Operating	21,832	24,591	17,802	28,967	29,960	28,347	21,361	18,477	18,893	22,801
TOTAL FUNDING	24,849	28,285	19,592	31,784	43,717	44,834	28,010	21,853	23,423	28,215
RATES MOVEMENT (%)	7.1%	7.9%	7.5%	7.9%	5.1%	4.9%	6.1%	6.0%	3.6%	4.2%
Operating Expenditure includes:										
Interest	1,389	1,450	1,565	1,586	1,640	2,043	2,723	2,971	2,992	3,053
Depreciation	13,984	14,802	15,375	15,973	16,789	17,700	18,447	18,986	19,513	20,037
Depreciation not funded	1,877	1,401	926	-	-	-	-	-	-	-
Indirect Expenditure	2,519	2,646	2,793	2,820	2,887	3,014	3,051	3,156	3,214	3,283

Expenditure

Each of the transport activities costs are divided into two categories: operational expenditure (OPEX) and capital expenditure (CAPEX).

OPEX is directly funded by the way of revenue and CAPEX is funded via appropriations, which includes contributions and commercial loans, as well as revenue.

Operating Expenditure

Operating costs relate to all of the costs associated with the operational function of the roading activities. Areas highlighted in Section 6: Life Cycle related to OPEX are management, operations and maintenance. In addition to those already mentioned, depreciation (Section 7.2.1.3) is considered operational expenditure.

For operating costs, it is considered that targeted rates are the most equitable form of funding this activity. Historically road maintenance, being such a large budget item, has been seen by many local authorities as an area where savings can be made when there is pressure to reduce rates. The Waimakariri District Council recognises that such decisions are rarely in the best long-term interests of the transport network. A separate roading rate was therefore established in the mid 1990's to secure the finance required for long-term maintenance of the road network. This rate, which is differentiated between rural and urban properties, meets the Council's share of all roading expenditure.

In determining how targeted rates are collected, the Council views the roading network to be 'one asset', which benefits the entire community and therefore the base roading infrastructure should be funded on the same basis across the district. The only variation to this approach is in respect of kerb and channel, footpaths and street lighting, which are provided predominantly in four main urban areas. While the Council recognises that some of these services are provided in some other parts of the District, the Council considers that until it has reviewed the levels of service required outside the four main urban areas, ratepayers in these urban areas would fund these activities.

The following figure and table show the breakdown of the operations spend by working category.

Figure 8-2: Maintenance and Operations Forecast 2024-2034 by work category (subsidised).

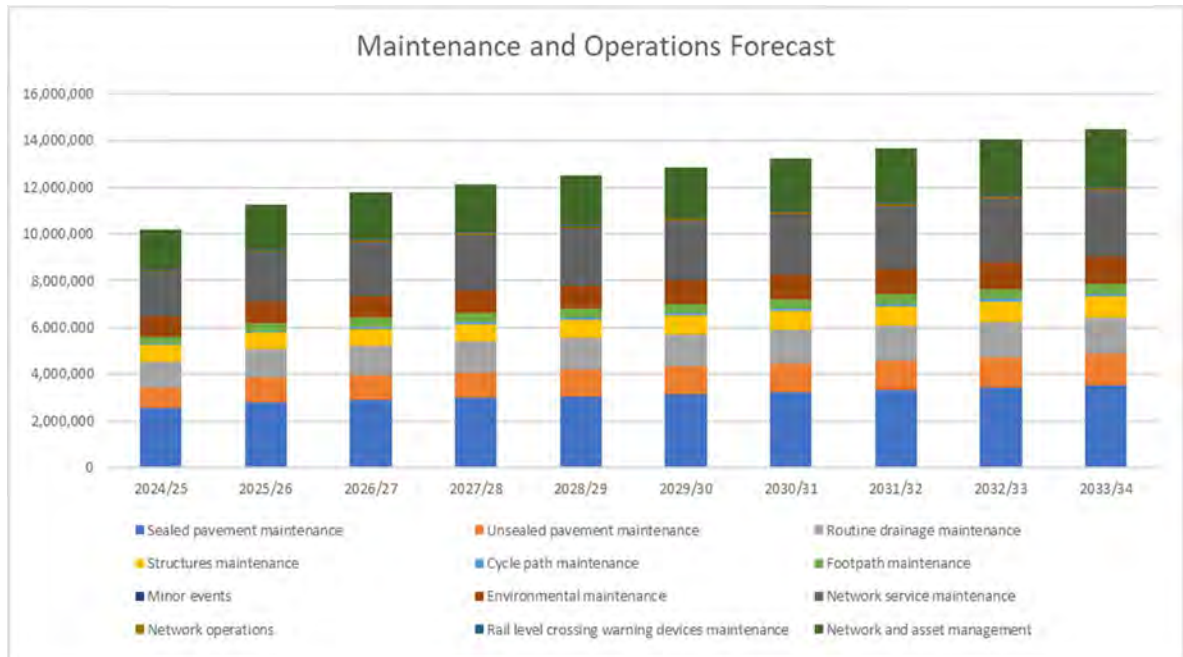
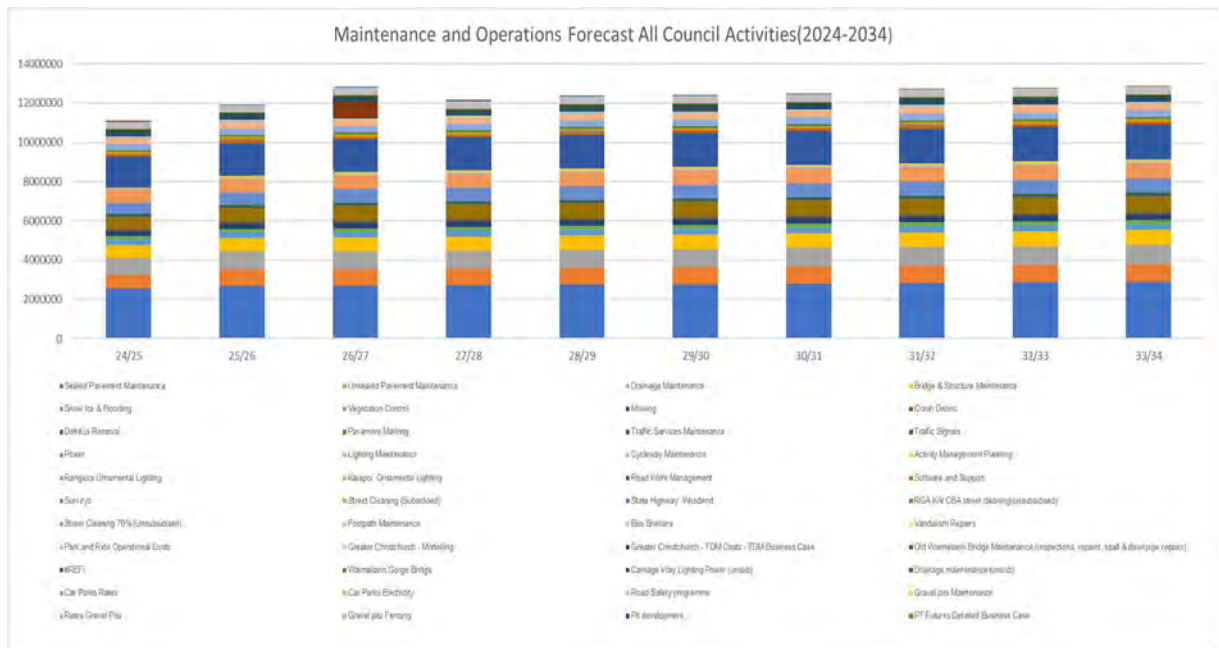


Figure 8-3: Maintenance and Operations Forecast All Council Activities



Capital Expenditure

Capital expenditure (CAPEX) consists of renewals and augmentation. The renewal of an asset means to replace or renew the asset, so it performs the same function to the same level of service. Augmentation is the creation of a new asset or extends an existing asset beyond its current capacity. CAPEX is funded by way of the development

contributions received for growth-related projects, financial contributions, commercial loans, and depreciation.

The following figures show the breakdown of the CAPEX Renewal and Augmentation spend by work category.

Figure 8-4: Renewals Forecast 2024-2034 by work category (subsidised).

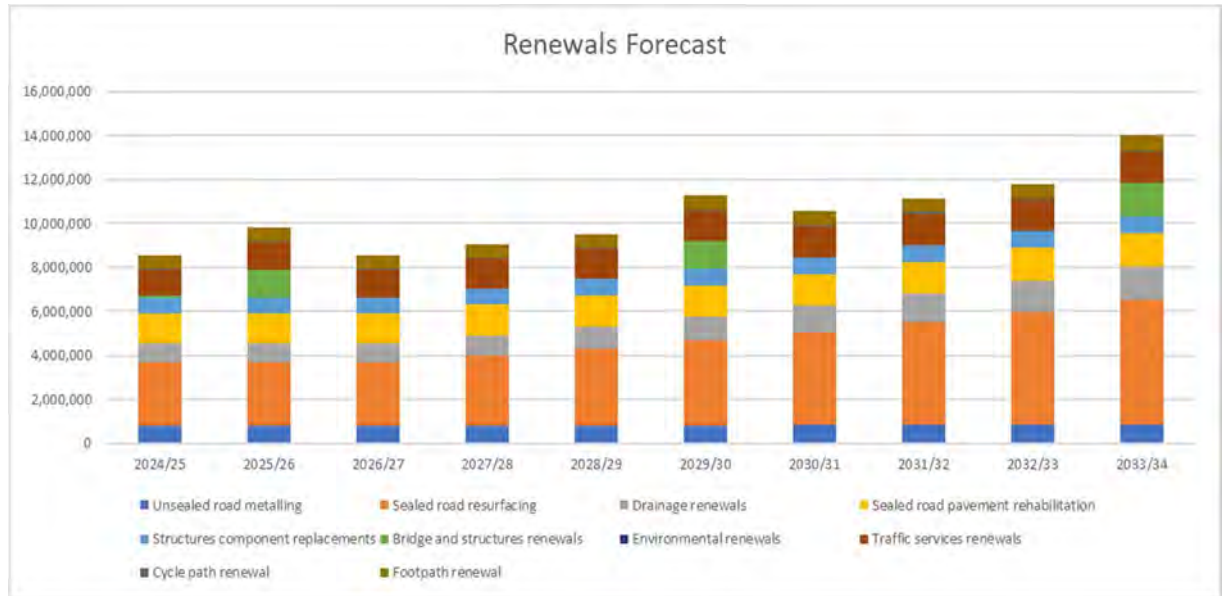


Figure 8-5: Renewals by Council Activity 2024-2034

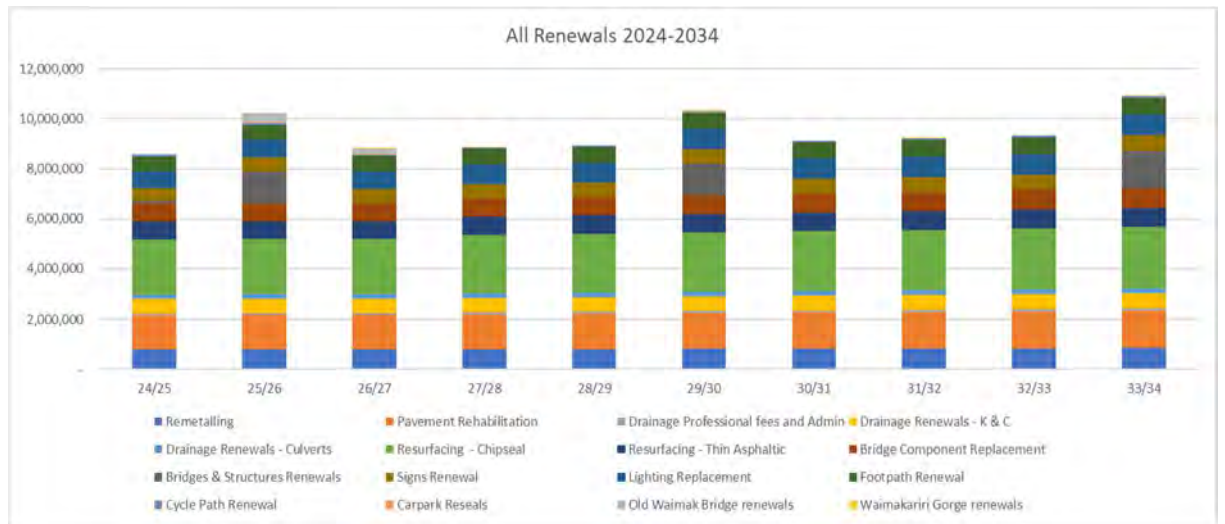


Figure 8-6: New Capital Projects Forecast 2024-2034

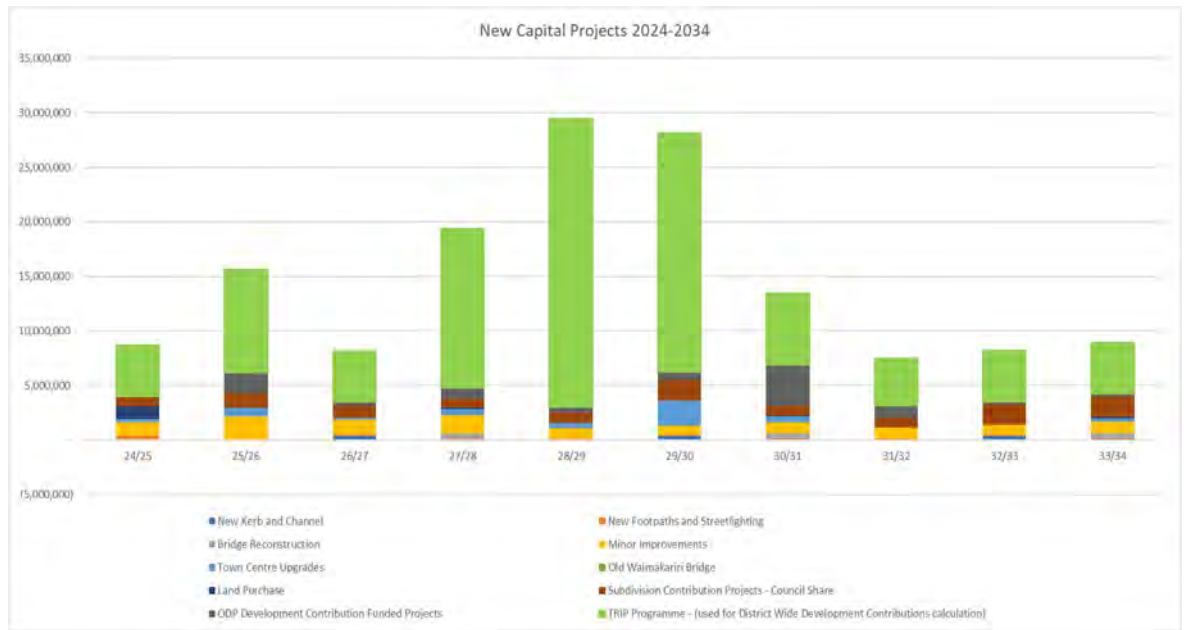


Table 8-3: Ten Year Maintenance and Operational Forecast (\$) by GL

	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Sealed Pavement Maintenance	\$2,536,222	\$2,687,206	\$2,687,206	\$2,714,078	\$2,741,219	\$2,768,631	\$2,796,318	\$2,824,281	\$2,852,524	\$2,881,049
Unsealed Pavement Maintenance	\$718,026	\$842,678	\$842,678	\$851,105	\$859,616	\$868,212	\$876,894	\$885,663	\$894,520	\$903,465
Drainage Maintenance	\$833,175	\$907,178	\$907,178	\$916,249	\$925,412	\$934,666	\$944,013	\$953,453	\$962,987	\$972,617
Bridge & Structure Maintenance	\$674,741	\$694,984	\$715,833	\$722,991	\$730,221	\$737,524	\$744,899	\$752,348	\$759,871	\$767,470
Snow Ice & Flooding	\$289,800	\$289,800	\$289,800	\$292,698	\$295,625	\$298,581	\$301,567	\$304,583	\$307,629	\$310,705
Vegetation Control	\$155,250	\$170,775	\$186,300	\$188,163	\$190,045	\$191,945	\$193,865	\$195,803	\$197,761	\$199,739
Mowing	\$274,275	\$274,275	\$274,275	\$277,018	\$279,788	\$282,586	\$285,412	\$288,266	\$291,148	\$294,060
Crash Debris	\$31,050	\$31,050	\$31,050	\$31,361	\$31,674	\$31,991	\$32,311	\$32,634	\$32,960	\$33,290
Detritus Removal	\$98,325	\$98,325	\$98,325	\$99,308	\$100,301	\$101,304	\$102,317	\$103,341	\$104,374	\$105,418
Pavement Marking	\$610,650	\$671,715	\$738,887	\$746,275	\$753,738	\$761,275	\$768,888	\$776,577	\$784,343	\$792,186
Traffic Services Maintenance	\$67,275	\$72,450	\$77,625	\$78,401	\$79,185	\$79,977	\$80,777	\$81,585	\$82,401	\$83,225
New Traffic Signals at Red Lion, Pak n Save and South Belt (Network Operations)	\$62,100	\$72,450	\$82,800	\$83,628	\$84,464	\$85,309	\$86,162	\$87,024	\$87,894	\$88,773
Power	\$569,250	\$621,000	\$672,750	\$679,478	\$686,272	\$693,135	\$700,066	\$707,067	\$714,138	\$721,279
Routine Maintenance	\$672,750	\$676,890	\$681,030	\$691,840	\$702,759	\$713,786	\$724,924	\$736,173	\$747,535	\$759,010
Cycleway Maintenance	\$51,750	\$72,450	\$93,150	\$94,082	\$95,022	\$95,973	\$96,932	\$97,902	\$98,881	\$99,869
Activity Management Planning	\$50,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Rangiora Ornamental Lighting	\$10,538	\$10,538	\$10,538	\$10,538	\$10,538	\$10,538	\$10,538	\$10,643	\$10,749	\$10,857
Kaiapoi Ornamental Lighting	\$3,513	\$3,513	\$3,513	\$3,513	\$3,513	\$3,513	\$3,513	\$3,548	\$3,583	\$3,619
Road Work Management (10.270.586.2500)	\$1,555,605	\$1,659,105	\$1,659,105	\$1,675,696	\$1,692,453	\$1,709,378	\$1,726,471	\$1,743,736	\$1,761,173	\$1,778,785
Software and Support (10.270.587.2360)	\$129,375	\$129,375	\$129,375	\$130,669	\$131,975	\$133,295	\$134,628	\$135,974	\$137,334	\$138,708
Surveys (10.270.587.2502)	\$0	\$69,345	\$0	\$0	\$72,507	\$0	\$0	\$74,704	\$0	\$0
Street Cleaning (Subsidised)	\$119,025	\$130,928	\$130,928	\$132,237	\$133,559	\$134,895	\$136,244	\$137,606	\$138,982	\$140,372
State Highway Woodend	\$3,367	\$3,435	\$3,504	\$3,575	\$3,648	\$3,721	\$3,797	\$3,912	\$4,030	\$4,152
RGA KAI CBA street cleaning (unsubsidised)	\$90,734	\$90,734	\$90,734	\$90,734	\$90,734	\$90,734	\$90,734	\$91,641	\$92,558	\$93,483

Street Cleaning 70%	\$311,893	\$321,796	\$323,392	\$325,930	\$328,502	\$331,110	\$333,753	\$338,817	\$343,975	\$349,230
Footpath Maintenance	\$300,150	\$324,990	\$324,990	\$328,240	\$331,522	\$334,838	\$338,186	\$341,568	\$344,983	\$348,433
Bus Shelters	\$1,517	\$1,517	\$1,517	\$1,517	\$1,517	\$1,517	\$1,517	\$1,532	\$1,548	\$1,563
Vandalism Repairs	\$12,919	\$12,919	\$12,919	\$12,919	\$12,919	\$12,919	\$12,919	\$13,048	\$13,179	\$13,311
Park and Ride Operational Costs	\$56,105	\$56,105	\$56,105	\$56,105	\$56,105	\$56,105	\$56,105	\$56,666	\$57,233	\$57,805
Greater Christchurch - Modelling	\$5,625	\$43,875	\$5,625	\$5,625	\$43,875	\$5,625	\$5,625	\$43,875	\$5,625	\$5,625
Greater Christchurch - Travel Demand Management Costs - TDM Business Case	\$15,367	\$15,367	\$15,367	\$20,000	\$20,000	\$20,000	\$25,000	\$25,000	\$25,000	\$30,000
Old Waimakariri Bridge Maintenance	\$30,552	\$24,745	\$803,311	\$12,740	\$13,353	\$12,740	\$13,353	\$12,740	\$18,870	\$12,740
Waimakariri Gorge Bridge	\$0	\$0	\$15,000	\$0	\$0	\$30,000	\$0	\$0	\$15,000	\$0
Carriage Way Lighting Power	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000
Drainage maintenance (unsubsidised)	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Car Park Maintenance (Unsubsidised)	\$69,980	\$69,980	\$69,980	\$69,980	\$69,980	\$69,980	\$69,980	\$70,680	\$71,387	\$72,100
Road Safety programme	\$307,500	\$316,725	\$326,227	\$326,227	\$326,227	\$326,227	\$326,227	\$329,489	\$332,784	\$336,112
Gravel Pits Total Maintenance	\$20,812	\$20,812	\$20,812	\$20,812	\$20,812	\$20,812	\$20,812	\$21,014	\$21,218	\$21,424
Pit development,	\$12,340	\$12,340	\$12,340	\$12,340	\$12,340	\$12,340	\$12,340	\$12,340	\$12,340	\$12,340
PT Futures Detailed Business Case	\$65,000	\$0	\$0	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0

Table 8-4: Renewals Works Forecast (\$) by GL

	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Remetalling	786,600	796,950	796,950	804,920	812,969	821,098	829,309	837,602	845,978	854,438
Sealed Road Pavement Rehabilitation	1,366,200	1,386,900	1,386,900	1,400,769	1,414,777	1,428,924	1,443,214	1,457,646	1,472,222	1,486,945
Professional fees and Admin	83,760	86,273	88,861	91,527	94,273	97,101	100,014	103,014	106,105	109,288
Drainage Renewals - K & C	589,950	569,250	569,250	574,943	580,692	586,499	592,364	598,287	604,270	610,313
Drainage Renewals - Culverts	168,705	175,950	175,950	177,710	179,487	181,281	183,094	184,925	186,774	188,642
Resurfacing - Chipseal	2,173,500	2,173,500	2,173,500	2,299,770	2,322,768	2,345,995	2,369,455	2,393,150	2,417,081	2,441,252
Resurfacing - Thin Asphaltic	724,500	724,500	724,500	731,745	739,062	746,453	753,918	761,457	769,071	776,762
Bridge Component Replacement	724,500	724,500	724,500	731,745	739,062	746,453	753,918	761,457	769,071	776,762
Bridges & Structures Renewals	103,500	1,242,000	-	-	-	1,250,000	-	-	-	1,500,000
Signs Renewal	517,500	569,250	569,250	574,943	580,692	586,499	592,364	598,287	604,270	610,313
Lighting Renewal	641,700	697,967	683,100	788,670	796,557	804,522	812,567	820,693	828,900	837,189
Footpath Renewal	621,000	621,000	621,000	627,210	633,482	639,817	646,215	652,677	659,204	665,796
Cycle Path Renewal	51,750	51,750	51,750	52,268	52,790	53,318	53,851	54,390	54,934	55,483
Carpark Reseals		25,000	25,000	25,000		25,000		25,000	25,250	25,503
Old Waimakariri Bridge renewals	14,700	404,495	228,046	-	-	25,000	-	-	25,000	-
Waimakariri Gorge renewals	-	-	5,000	-	-	5,000	-	6,000	-	-

Table 8-5: Ten Year New Capital Works Forecast (\$) by GL

	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Description										
New Kerb and Channel										
Major Towns	\$0	\$0	\$350,000	\$0	\$0	\$350,000	\$0	\$0	\$350,000	\$0
New Kerb and Channel	\$0	\$0	\$350,000	\$0	\$0	\$350,000	\$0	\$0	\$350,000	\$0
New Footpaths and Streetlighting										
New Footpaths Major Towns	\$200,000		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
New Streetlighting Major Towns	\$50,000	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tuahiwi Gritted Footpath Surfacing	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Footpaths and Streetlighting	\$350,000	\$0	\$150,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Bridge Reconstruction										
Bridge Renewal & Widening Projects	\$0	\$0	\$0	\$500,000	\$0	\$0	\$500,000	\$0	\$0	\$500,000
Bridge Reconstruction	\$0	\$0	\$0	\$500,000	\$0	\$0	\$500,000	\$0	\$0	\$500,000
Minor Improvements										
Minor safety - Lighting - LCLR LRI	\$25,000	\$25,000	\$25,000	\$30,000	\$30,000	\$30,000	\$35,000	\$35,000	\$35,000	\$40,000
Minor safety- Intersection Improvements	\$120,000	\$120,000	\$120,000	\$130,000	\$130,000	\$130,000	\$140,000	\$140,000	\$140,000	\$150,000
Minor Safety - School Safety Project	\$50,000	\$50,000	\$50,000	\$60,000	\$60,000	\$60,000	\$70,000	\$70,000	\$70,000	\$80,000
Minor Safety - Speed Treatments	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Minor Safety - Walking & Cycling Improvements	\$100,000	\$100,000	\$100,000	\$110,000	\$110,000	\$110,000	\$120,000	\$120,000	\$120,000	\$130,000
Minor Works - other	\$50,000	\$50,000	\$50,000	\$60,000	\$60,000	\$60,000	\$70,000	\$70,000	\$70,000	\$80,000
Minor safety - Roadside Hazards Removal	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000

	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Description										
Minor safety- Delineation upgrades	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0
Minor safety - High Risk rural Intersections Treatments - RTZ	\$200,000	\$200,000	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000
Flood Projects (Tram Rd, Depot Rd & Woodfields Rd) - RESILIENCE	\$300,000	\$700,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Minor Improvements - Drainage (culverts)	\$0	\$0	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000
Broad Road subsidised LCLR	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
School Safety Improvements	\$550,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mafeking Bridge Improvements	\$50,000	\$550,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Luminaire Management system & LED replacements	\$100,000	\$50,000	\$50,000	\$70,000	\$70,000	\$70,000	\$80,000	\$80,000	\$90,000	\$90,000
Minor Improvements	\$1,845,000	\$2,195,000	\$825,000	\$990,000	\$990,000	\$890,000	\$1,045,000	\$1,045,000	\$955,000	\$1,100,000
Town Centre Upgrades										
Town Centre Upgrades	\$295,000	\$0	\$0	\$300,000	\$0	\$0	\$300,000	\$0	\$0	\$300,000
Car Parking Provision - Town Centre Parking	\$0	\$0	\$0	\$0	\$0	\$2,250,000	\$0	\$0	\$0	\$0
North-East Subdivision area	\$0	\$0	\$0	\$0	\$0	\$50,000	\$200,000	\$0	\$0	\$0
Streetlight upgrade High St from East Belt to King St	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streetlight upgrade Williams St Bridge to Cass St (Kaiapoi Town Centre	\$0	\$0	\$0	\$0	\$500,000	\$0	\$0	\$0	\$0	\$0
Improvements to Hilton/Williams St Pedestrian facilities (Linking Western Precinct to town)	\$0	\$0	\$37,500	\$250,000	\$0	\$0	\$0	\$0	\$0	\$0
Land - Blake St Extension	\$0	\$675,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Durham Land Purchase for Carparking	\$0	\$0	\$0	\$2,250,000	\$0	\$0	\$0	\$0	\$0	\$0
Support for MUBA (Area directly adjacent to KTC) (LoS portion)	\$12,500	\$125,000	\$125,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$307,500	\$900,000	\$162,500	\$2,800,000	\$500,000	\$2,300,000	\$500,000	\$0	\$0	\$300,000

	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Description										
Land Purchase										
Land Purchase - improved LOS	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000
Total	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000
Subdivision Contribution Projects - Council Share										
Direct payment to Developers	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608
Design Fees	\$41,861	\$41,861	\$41,861	\$41,861	\$41,861	\$41,861	\$41,861	\$41,861	\$41,861	\$41,861
Cost of Council Performed Works	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608	\$418,608
Rangiora Airfield/Prior Rd Upgrade	\$0	\$1,012,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pegasus road connection to Gladstone Road	\$0	\$0	\$0	\$0	\$0	\$350,000	\$0	\$0	\$0	\$0
Woodend East ODP	\$0	\$0	\$200,000	\$0	\$0	\$600,000	\$0	\$0	\$1,000,000	\$1,000,000
Total	\$879,077	\$1,280,704	\$1,079,077	\$879,077	\$879,077	\$1,829,077	\$879,077	\$879,077	\$1,879,077	\$1,879,077
ODP Development Contribution Funded Projects										
East Woodend ODP - north south road & widening existing	\$0	\$0	\$0	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$0	\$0
West Rangiora Growth ODP	\$0	\$0	\$0	\$684,888	\$228,296	\$456,592	\$228,296	\$228,296	\$228,296	\$228,296
Kaiapoi North Improvements - Smith St/Williams St, Smith St/Ranfurly St and other intersection improvements	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$600,000	\$0	\$0
Support for MUBA (Area directly adjacent to KTC)	\$37,500	\$375,000	\$375,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
North/South Collector Road	\$0	\$1,500,000	\$0	\$0	\$0	\$0	\$3,000,000	\$0	\$0	\$0
Shared Path (East/West Collector Road)	\$0	\$0	\$0	\$0	\$0	\$0	\$220,000	\$0	\$0	\$0
Total	\$37,500	\$1,875,000	\$375,000	\$984,888	\$528,296	\$756,592	\$3,748,296	\$1,128,296	\$228,296	\$228,296

	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
TRIP Programme - (used for District Wide Development Contributions calculation)										
New Passenger Transport Infrastructure	\$125,000	\$200,000	\$200,000	\$125,000	\$200,000	\$200,000	\$125,000	\$100,000	\$51,000	\$51,000
Widen Skewbridge Rd - Skew Bridge to Mulcocks	\$50,000	\$623,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Widen Skewbridge Rd - Mulcocks to Threlkelds	\$0	\$50,000	\$666,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Widen Flaxton - Threlkelds to Camwell Park	\$0	\$0	\$0	\$50,000	\$666,000	\$0	\$0	\$0	\$0	\$0
Widen Flaxton - Camwell Park to Fernside Rd	\$0	\$0	\$0	\$0	\$50,000	\$712,000	\$0	\$0	\$0	\$0
Flaxton/Camwell park Right turn bay	\$0	\$0	\$0	\$0	\$50,000	\$712,000	\$0	\$0	\$0	\$0
Widen culvert on Townsend Rd	\$0	\$700,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Widen Townsend Rd (South Belt to 100m N of Fernside Rd)	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000	\$746,000	\$0	\$0
Fernside/Townsend Intersection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,210,000
Lehmans/Johns intersection	\$0	\$0	\$0	\$0	\$100,000	\$1,400,000	\$0	\$0	\$0	\$0
Lehmans Widening - Oxford Rd - Johns Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$612,000	\$0	\$0
Lehmans Widening - Johns Rd to Fernside Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$600,000	\$0	\$0
Lehmans/Fernside Intersection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000	\$1,458,000	\$0
Fernside/Todds Intersection	685000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Flaxton/Fernside Rd east	\$0	\$50,000	\$450,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fernside Rd/Easterbrook Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$514,000
Fernside Rd Widening - Lehmans Rd to Easterbrook	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$562,000
Fernside Rd Widening - Easterbrook to Townsend Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$318,000
Fernside Rd Widening - Townsend Rd to Todds Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$323,000	\$0
Fernside Rd Widening - Todds Rd to Flaxton Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$648,000	\$0
Fernside Rd/Townsend Rd Roundabout	\$0	\$0	\$0	\$0	\$0	\$100,000	\$1,300,000	\$0	\$0	\$0
Rangiora Woodend Road Improvements including Boys Road	\$50,000	\$150,000	\$0	\$330,000	\$0	\$0	\$0	\$0	\$0	\$0

Woodend Improvements in conjunction with NZTA PBC and Woodend Bypass	\$0	\$0	\$500,000	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0
Travel Demand MGMT/Modelling (NOT CAPITAL) - proposed by Regional Council	\$100,000	\$100,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Realignment and Safety Improvements No 10 / Tram Road Intersection	\$0	\$50,000	\$450,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Realignment and Safety Improvements Oxford / Tram Road Intersection	\$250,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Intersection Safety Improvements South Eyre Road / Giles Road / Tram Road Intersection	\$0	\$0	\$100,000	\$0	\$1,800,000	\$0	\$0	\$0	\$0	\$0
Intersection Safety Improvements Two Chain Road / Tram Road Intersection	\$250,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Shoulder / Lane Widening – Burgesses to Swannanoa School and Localised Areas	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$430,000	\$0	\$0
Extra over to widen an additional 0.5m including linemarking to install wide centreline	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$486,000	\$0	\$0
Intersection Upgrades Island Road / Greigs Road / Tram Road	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$330,000	\$0
Intersection Upgrades Heywards Road / Tram Road	\$0	\$0	\$0	\$0	\$480,000	\$0	\$0	\$0	\$0	\$0
Intersection Upgrades Whites Road / Tram Road	\$0	\$0	\$0	\$0	\$0	\$0	\$840,000	\$0	\$0	\$0
28 Roundabout installation at Bradleys / McHughs / Tram Road Intersection	\$1,800,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Intersection Turning Treatments Northwood Road / Tram Road	\$0	\$0	\$0	\$0	\$0	\$0	\$420,000	\$0	\$0	\$0
Intersection Turning Treatments Poyntzs Road / Tram Road	\$0	\$0	\$0	\$0	\$420,000	\$0	\$0	\$0	\$0	\$0
Intersection Turning Treatments Raddens Road / Tram Road	\$0	\$0	\$0	\$0	\$0	\$370,000	\$0	\$0	\$0	\$0
Intersection Turning Treatments Burgesses Road / Tram Road	\$0	\$0	\$0	\$0	\$0	\$0	\$570,000	\$0	\$0	\$0
Additional Delineation - Install RRPM's and additional marker posts.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000	\$0
Additional Delineation Install ATP Centreline (assumed one centreline)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$400,000	\$0

Kaiapoi Park and Ride	\$0	\$0	\$0	\$223,000	\$290,000	\$0	\$0	\$0	\$0	\$0
Rangiora Park and Ride	\$0	\$0	\$0	\$476,000	\$360,000	\$0	\$0	\$0	\$0	\$0
Ravenswood Park and Ride	\$0	\$0	\$0	\$0	\$500,000	\$1,000,000	\$0	\$0	\$0	\$0
Coldstream Rd/Golf Links Rd Improvements	\$0	\$0	\$0	\$0	\$330,000	\$0	\$0	\$0	\$0	\$0
Johns Rd/Plasketts Rd/Fernside Rd Improvements	\$0	\$0	\$0	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0
Kaiapoi Rooding Improvements	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500,000
West Rangiora Rooding Improvements - Lehman's to River Rd	\$0	\$0	\$0	\$0	\$0	\$200,000	\$2,000,000	\$0	\$0	\$0
Walking and Cycling Projects	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
Land Purchase - Growth	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0	\$100,000
Rangiora Woodend Road Intersection Improvements	\$0	\$0	\$100,000	\$0	\$1,800,000	\$0	\$0	\$0	\$0	\$0
Robert Coup Dr/Ohoka Rd Implementation	\$0	\$0	\$200,000	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0
Skew Bridge Replacement	\$180,000	\$1,220,000	\$400,000	\$10,150,000	\$50,000	\$0	\$0	\$0	\$0	\$0
Southbrook Rd Future Improvements	\$50,000	\$50,000	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rangiora Woodend Rd Traffic Calming	\$0	\$0	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0
Charles Upham Dr / Oxford Rd Roundabout	\$0	\$0	\$0	\$0	\$0	\$0	\$700,000	\$0	\$0	\$0
Oxford Rd / Lehman's Rd Roundabout	\$100,000	\$1,400,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fawcetts Rd / Cones Rd Intersection	\$0	\$100,000	\$400,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
North Eyre Rd / No. 10 Rd	\$0	\$0	\$0	\$0	\$0	\$200,000	\$0	\$0	\$0	\$0
Swannanoa Rd / Johns Rd	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000	\$0	\$0
Ashley Gorge Rd / German Rd	\$250,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Northbrook Rd / Ivory St Intersection	\$0	\$0	\$0	\$150,000	\$1,350,000	\$0	\$0	\$0	\$0	\$0
Lees Valley Willow Walls	\$200,000	\$200,000	\$280,000	\$0	\$100,000	\$0	\$0	\$100,000	\$0	\$0
Marsh Rd / Waikoruru Rd - Sealing of unsealed Rd	\$0	\$0	\$0	\$50,000	\$750,000	\$0	\$0	\$0	\$0	\$0
Marsh Rd / Railway Rd - Intersection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000	\$850,000	\$0
Mulcocks and Fernside Rd closure - KiwiRail & NZTA	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Car Parking Provision - Town Centre Parking	\$0	\$0	\$0	\$0	\$0	\$750,000	\$0	\$0	\$0	\$0
Land - Blake St Extension	\$0	\$225,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Durham Land Purchase for Carparking	\$0	\$0	\$0		\$0	\$0	\$0	\$0	\$0	\$0
New Eastern Link Road	\$187,500	\$1,350,000	\$162,500	\$275,000	\$7,750,000	\$7,800,000	\$0	\$0	\$0	\$0
New Eastern Link Road	\$93,750	\$675,000	\$81,250	\$137,500	\$3,875,000	\$3,900,000	\$0	\$0	\$0	\$0
New Eastern Link Road	\$93,750	\$675,000	\$81,250	\$137,500	\$3,875,000	\$3,900,000	\$0	\$0	\$0	\$0
North/South Collector Road	\$0	\$500,000	\$0	\$0	\$1,000,000	\$0	\$0	\$0	\$0	\$0
Total	\$5,144,000	\$8,318,000	\$4,771,000	\$14,954,000	\$26,496,000	\$21,894,000	\$6,605,000	\$4,324,000	\$4,710,000	\$4,755,000

Depreciation

Depreciation or Decline in Service Potential is the wearing out, consumption or any other decrease in value of an asset arising from either use, the passing of time or obsolescence through changes to technological and market changes and requirements. Expressed in another way, depreciation is the amount that must be charged over the useful life of property, plant and equipment. It is accounted for, on an annual basis, by the allocation of the cost price (or re-valued amount) of the asset less its residual value over its useful life. This allocation is treated as expenditure during the preparation of annual budgets to ensure that the current service capacity and integrity of the Council's assets is maintained.

Infrastructure assets are fully depreciated on a straight-line basis with the exception of land and road formation. This method ensures that the useful life of the asset is divided evenly into the value to be depreciated over its useful life. (The basis for calculation of depreciation is detailed in the Valuation Report Appendix D).

The Waimakariri District Council does not directly fund any renewals; rather, roading renewals are funded from depreciation charged on roading assets. Capital works in progress are not depreciated. The total cost of a project is transferred to the relevant asset class on completion and then depreciated. Government share of funding by contrast is fully funded at time of project commencement.

The latest review of the carriageway lives shows that renewal work is falling behind optimal timeframes, which in turn will eventually lead to more expensive renewals work and a more rapidly deteriorating network. The proposed programme proposes an increase in expenditure which will help return the renewals programme to a more sustainable level.

All depreciation of the Council Plant, Property and Equipment must comply with the NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0, International Accounting Standards 16 and 36, and the Local Governmental Act 2002. Under IAS 16 a component is a part of an asset that has a different useful life to the rest of the asset or provides benefits to the Council in different ways to the rest of the asset, and hence may be depreciated differently to the rest of the asset or other components.

The following figures show the depreciation provision vs. renewals expenditure.

Figure 8-7: Depreciation Provision Versus Renewals Expenditure 2024-2034

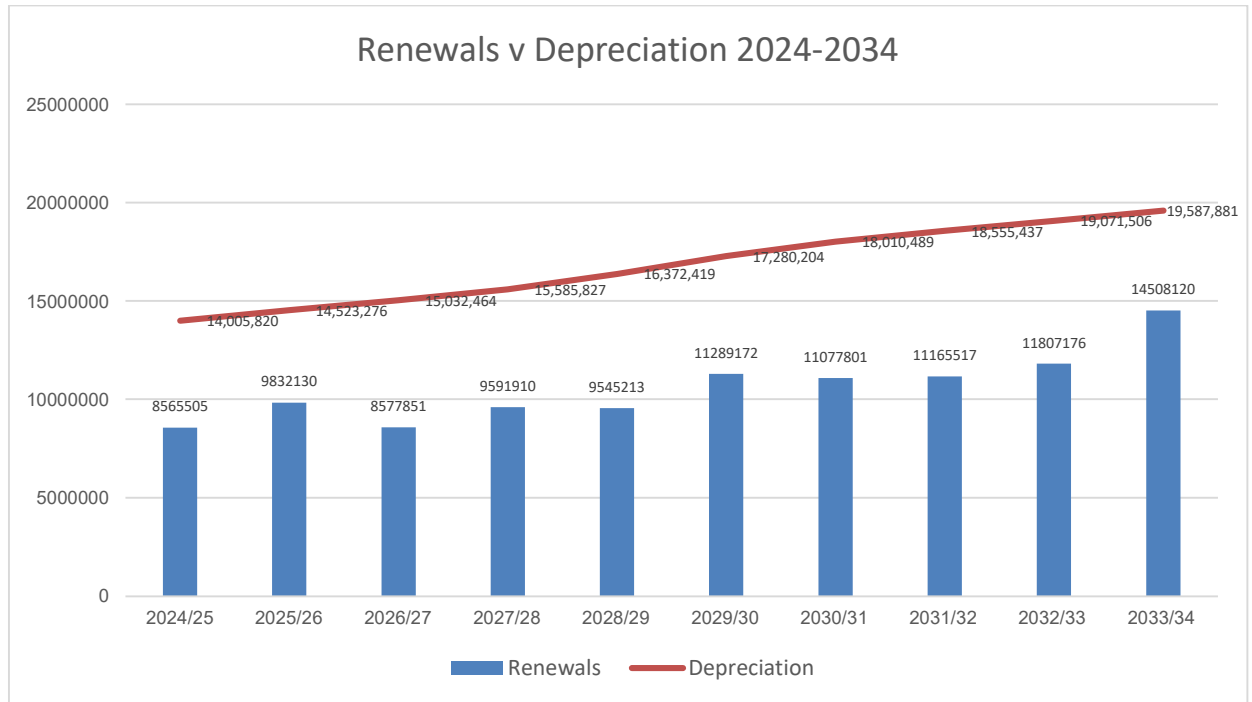
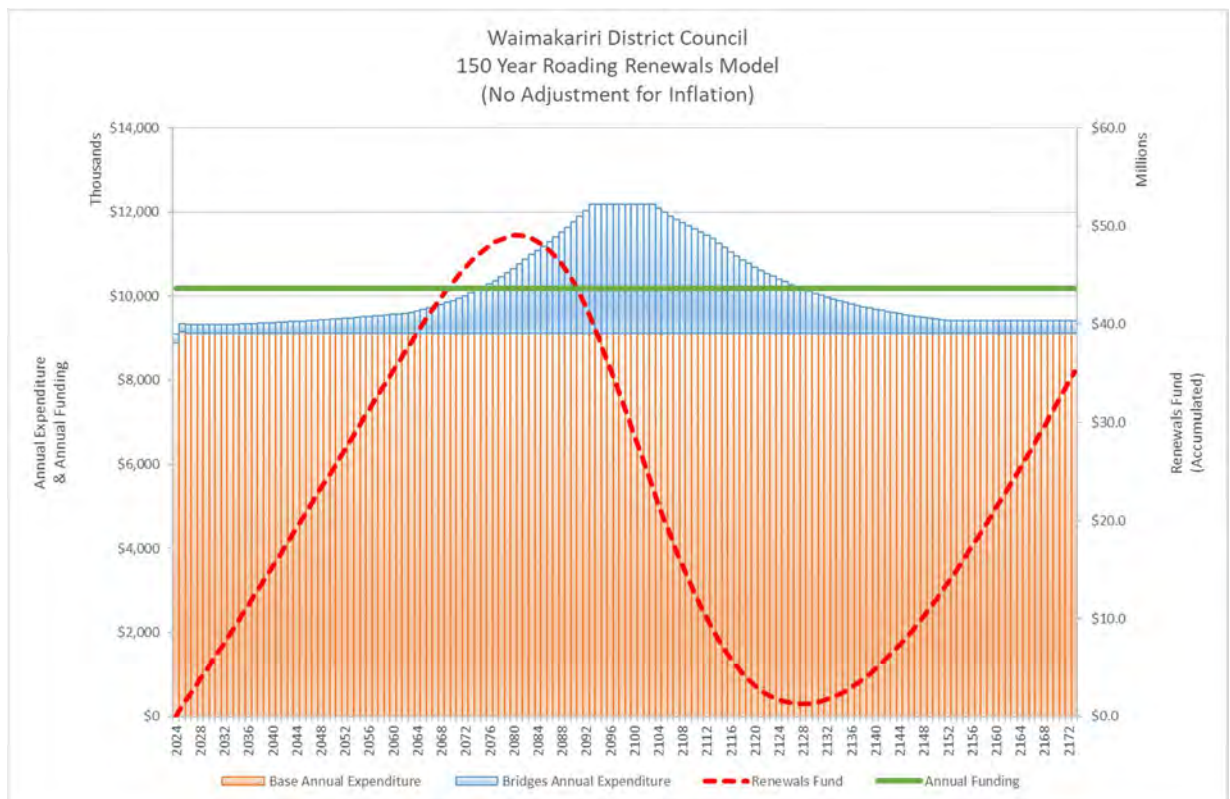


Figure 8-8: 150-year roading Renewals Model



A long-term view of Roothing renewals is shown above. The peak in blue represents an apparent bow wave of bridge construction. This could be due to one of two likely reasons:

- 1) A number of bridges had an assumed date allocated due to lack of data.
- 2) A large number of bridges and culverts were constructed around a similar time.

In this case, Councils professional service provider at the time made use of Ministry of Works documents which showed particular bridge styles from particular eras. While it was not possible to pinpoint to the year, in this case within a decade was considered sufficient for asset management purposes where the actual construction date was unknown. This has been noted in RAMM as an estimate, however we have sufficient confidence to use for financial purposes. In actual fact when it comes to 3 to 10-year planning, condition will play a large part in replacement and, as for most roading assets, the programme will be able to be smoothed out to enable management of assets while also keeping a consistent budget. The only exception is where a larger or more complex bridge replacement is required, for example Skew Bridge, or the replacement of the Ashley Bridge which was constructed 6 years ago.

Also noted is the difference between renewals and depreciation. This is due mainly to the proposed renewal of the Old Waimakariri Bridge in 2052.

Options Funding Considerations

Maintenance, operations and renewals work always has to be carried out in some form, particularly if LOS is to be maintained. Some analysis has been carried out in the current LTP period to identify deficiencies, and this is ongoing. These are further discussed in the Life Cycle Management Plan, however in summary there has been a general underfunding over most assets in the last few years, and the 24-27 AMP proposed programme is a first step in bringing the maintenance work and asset condition back to a manageable state, ensure that optimum lives are achieved, and expected customer outcomes delivered. It should be noted however that the key priority will always be on safety, therefore pavement marking is regarded as a key activity to be sufficiently funded. Following that Council is focusing on a programme of improvements to drainage, however if funding were reduced the timeframe for these improvements might need to be revisited.

New capital work seeks to improve on deficiencies (such as safety improvements) and address other changes in the network to accommodate new demographics and customer needs/wants. Included in this are items such as new footpaths and cycleways, and potential new roads (Rangiora Eastern Link Road). This work is more likely to be delayed or cancelled than maintenance as it is seen as an 'extra', i.e. the jam on the bread and butter, even though failure to carry this out can have a detrimental effect on road users. Council has always focused on safety delivery and continues to include projects for safety improvement even where central government funding is no longer available.

Funding Strategy

Councils are required to have a Revenue and Financing Policy to show who pays for the services it delivers. There is a list of principles relating to the funding of expenditure needs in the Local Government Act, which the Council must take into consideration when it adopts its Revenue and Financing Policy.

A Transport programme was developed in 2007 to ensure that the transportation network would be able to cope with the increased demand due to the high growth in the district. This plan formed part of the Transport Regional Implementation Plan (TRIP), which was approved by the Environment Canterbury in 2008. In light of new growth projections and the development of structure plans for the urban growth areas in the district a new roading capital programme (the District Transport Strategy) (DTS) was developed to replace TRIP. The Council resolved to fund the growth portion of the works detailed in this programme from Development Contributions. The remainder of these works are met from rates to reflect the benefit to the existing population.

Funding for capital development and maintenance of the roading network comes from the following:

- Targeted Roding Rates
- NZTA Subsidies
- Development and Financial Contribution
- Fees and Charges
- Debt and Lending Servicing

Targeted Roding Rates

Rates funding for roads is based on two components:

- **Fixed Annual Charge:**

All properties in the district incur a fixed charge that in total raises 20% of the Council's share of roading costs. Properties within the urban areas of Rangiora, Kaiapoi, Woodend and Oxford pay a higher fixed charge that reflects the higher level of service associated with providing kerb and channel, footpaths and street lighting, which are features of these towns and are less common in the smaller towns of the district.

- **General Rates:**

General rates are based on land value, which forms the remaining 80% of the roading rate.

NZ Transport Agency Subsidies

Many transport activities receive financial assistance from the Crown, through New Zealand Transport Agency (Waka Kotahi) co-funding. The Agency funds are essentially a user charge and are gathered by the Crown from road user charges, petroleum taxes and similar charges and fees.

The Financial Assistance Rate (FAR) is the percentage that NZTA pays to subsidise road asset maintenance and road asset renewal work within Waimakariri District Council.

The FAR for maintenance work used to vary considerably from one territorial roading authority to another based on an 'ability to pay' formula which took into account the base programme size and the net equalised land value of the territorial local authority. The standard FAR for activities in the Waimakariri District which qualify for assistance from the Agency is 51% of total cost, however at times special projects may attract a higher FAR.

Development Contributions and Financial Contributions

Introduction

Over the last fifteen years the Waimakariri District has experienced a high level of growth. The population is expected to reach 81,742 by 2033, compared with a predicted 77,100 by 2030 (2021 AMP), and a predicted \$101,791 by 2053.

Much of the growth is expected to occur in the eastern part of the district, although in the last few years there has also been significant development to the west. This growth will affect transport infrastructure and in order to ensure that this population growth does not adversely affect residents the Council has initiated a number of strategies to assess the likely infrastructural developments needed to cope with this growth.

Councils can require contributions from developers to offset the costs or adverse effects of growth, however, to do so the mechanisms must be stipulated in a Development Contributions Policy and the District Plan must contain rules providing for Financial Contributions. The Council cannot take Development Contributions for the same purpose that it has also levied Financial Contributions for.

The Waimakariri District Council has decided that growth in the district will be funded from three main sources:

1. Development Contributions, levied under the Local Government Act 2002 (the LGA) for growth related projects that are identified in the Council's Long Term Plan.
2. Financial Contributions, levied under the Resource Management Act 1991 (the RMA). The policies to offset adverse effects of a particular development are identified in the Waimakariri District Council's District Plan.
3. Existing residents through rates and loans.

Development Contributions

The Local Government Act 2002 introduced powers to levy “Development Contributions”. These are contributions of land or money paid by developers toward the cost of providing new or increased capacity in existing infrastructure required because of growth in the district. The power to require contributions is set out in section 198 of the Act.

The Council levies Development Contributions to ensure that the growth- related future and past capital expenditure identified in the LTP is appropriately recovered from those who are directly benefiting from it, rather than existing ratepayers bearing all of the costs. Development Contributions will be levied when the effect of the development, or the cumulative effects of developments, contributes to the need for the development of physical works or the Council services and when these works or services have been allowed for in the LTP.

Development Contributions are applied to two types of roading development. They are projects required for growth across the whole district and there is a district wide development contribution that applies to all new development to cover this. There are also projects related to specific Outline Development Plan areas and the development contributions for these are applied to the Outline Development Plan area only.

More detail is available in the Councils Development Contribution Policy.

Financial Contribution

Financial contributions are contributions levied under the RMA. Section 5 of the RMA states that the purpose for which Financial Contributions may be taken is the sustainable management of natural and physical resources. Section 108(10) of the RMA allows a Financial Contribution to be imposed on resource consent.

Financial Contributions can be taken to address environmental effects other than those resulting from growth, for example, to pay the costs of services that must be developed to address adverse effects on the environment. Financial Contributions can also be taken to offset adverse environmental effects that may result from a development, as environmental compensation. For roading this commonly applies to upgrades on adjoining roads or of local intersections.

Financial contributions will be used when the effect of development directly contributes to the need for physical works on the Council services and when the effect of the development has not been foreseen in the LTP. Financial contributions are based on actual expenditure, further information is available in the Council’s District Plan.

Fees and Charges

This is the purest form of the user paying directly for the benefit or service they receive. The following table details the charges associated with roading in the Waimakariri District.

Figure 8-9: Fees and charges 2023.

Charge	Current Charge (GST inclusive)
Standard vehicle entrance application	\$225.00
Standard vehicle crossing application fee for retrospective applications (where work has commenced before the application is made). For applications that do not comply with the Vehicle Crossing Bylaw	\$285.00
Standard vehicle crossing re-testing fee (where an onsite test fails and clearly would not have passed)	\$112.00
Traffic Management Plan (TMP)	\$100.00
TMP Extension / Road Space Booking	\$25.00
Generic TMP	\$300.00
Non-Excavation Corridor Access Request	\$0
Minor Excavation Corridor Access Request	\$150.00
Major Excavation Corridor Access Request	\$300.00
Project Excavation Corridor Access Request	\$600.00
Global Excavation Corridor Access Request	\$1,500.00
Re-Inspections	\$100.00
Non-approved works within the road reserve	\$850.00
Abandoned Cars - Recovery fee per vehicle	Full cost recovery including administration charges
Stock crossing permit - per stock crossing	\$742.00
Royalties on shingle - per cubic metre, loose measure from Council pits used for Council works	\$2.00 per m ³

Debt and Lending Servicing

The Council does not borrow on a project-by-project basis. If there is a funding shortfall, the Council funds the difference through raising a loan on a corporate basis. Projects then 'borrow' through internal lending. The cost of borrowing is thus allocated to the overall budget, rather than specific projects.

Valuation Forecasts

Introduction

The Council undertakes a full independent valuation of its Roothing assets annually. These assets were revalued using the asset register as at 30 June 2023. This was from RAMM with the exception of drainage under channel pipes which are stored in the Council's GIS system.

There is a high level of confidence in the completeness and accuracy of the dimensional data held in the RAMM database. The Council utilises the Asset Valuation Module (RAVM) to value those components with a high level of completeness.

The valuations summarised below have been completed in accordance with the following standards:

1. NZ Infrastructure Asset Valuation and Depreciation Guidelines – Version 2.0.
2. International Accounting Standards 16 and 36, and.
3. The Local Governmental Act 2002.

The following Table summarises the valuation of the transport network assets as at 30 June 2023.

Table 8-6: 2023 Valuation

Asset Description	Replacement Cost	Total Accumulated Depreciation	Depreciated Replacement Cost	Annual Depreciation
Formation	\$461,875,841	\$0	\$461,875,841	\$-
Sealed Pavement Surface	\$85,995,417	\$39,631,068	\$46,364,349	\$3,844,220
First Coat Seals	\$73,167,148	\$32,427,824	\$40,739,324	\$840,863
Sealed Pavement Basecourse	\$139,527,526	\$65,955,477	\$73,572,049	\$1,721,593
Sealed Pavement Subbase	\$98,844,396	\$0	\$98,844,396	\$-
Wearing Course	\$3,430,974	\$1,659,454	\$1,771,520	\$394,502
Unsealed Pavement Subbase	\$22,036,850	\$0	\$22,036,850	\$-
Drainage	\$75,659,370	\$22,138,062	\$53,521,308	\$1,042,434
Surface Water Channels	\$111,702,739	\$28,831,566	\$82,871,173	\$1,433,131
Footpath	\$53,574,742	\$13,937,155	\$39,637,587	\$1,077,309
Traffic Facilities	\$2,022,465	\$701,442	\$1,321,023	\$103,336
Signs	\$8,703,631	\$5,327,164	\$3,376,467	\$663,043
Railings	\$2,650,480	\$746,095	\$1,904,385	\$69,744
Street Lights	\$17,395,913	\$6,139,154	\$11,256,759	\$385,985

Minor Structures	\$2,181,262	\$779,863	\$1,401,399	\$44,474
Islands	\$5,006,437	\$893,344	\$4,113,093	\$62,580
Bridges and Bridge Culverts	\$149,279,836	\$65,594,277	\$83,685,559	\$1,139,099
Traffic Signals	\$1,620,943	\$274,922	\$1,346,021	\$54,031
Total	\$1,314,675,971	\$285,036,869	\$1,029,639,102	\$12,876,345

The 2023 revaluation detailed report can be found in Appendix C Road Asset Revaluation.

Methodology and Assumptions

The significant assumptions made in preparing the valuation relating to the asset registers are noted in the valuation report included in Appendix C.

Key Assumptions made in Financial Forecast

In developing each Activity Management Plan, the Council makes a number of assumptions concerning uncertainties around factors such as asset condition, remaining asset life and population growth, to name just three. This section was used to identify these assumptions and to describe the potential impact if the assumption is not realised. Additionally, this section highlights the major risks identified with managing the transport activity, as well as the Council's plan to manage these risks.

The following table details the key assumptions and uncertainties that trigger the financial estimates detailed in other sections:

Table 8-7: 2024 Significant Forecasting Assumptions and Uncertainties

Ref. No	Assumptions and Uncertainties	The 'Degree' of the Assumption and Uncertainty, and the Likely Impact if the Assumption is not Realised	Confidence Rating
01	Inflation has not been allowed for in producing this Plan. All future figures are quoted in 2024 dollars, other than Table 8-2.	Any adjustments will be made at a corporate level in the LTP.	B
02	The useful lives of the network described in the asset valuation are assumed to be an accurate representation. Annual depreciation is established from the asset valuation and the useful lives specified in that document.	An incorrect assumption relating to useful life would impact on the asset valuation and depreciation calculations, which further impact on the depreciation recovery portion of rates. The Council is confident in the accuracy of the current figures; however, these are continually under review to ensure ongoing accuracy.	B
03	Asset condition and performance is as described in the relevant asset databases.	Incorrect assessment of condition or performance could lead to incorrect useful life, with knock on effect to depreciation and rates.	B

Ref. No	Assumptions and Uncertainties	The 'Degree' of the Assumption and Uncertainty, and the Likely Impact if the Assumption is not Realised	Confidence Rating
04	New Zealand Transport Agency (NZTA) is facing financial constraints, and this is likely to impact funding	Will impact on ability to complete projects and also on which projects will get done.	C
05	All of the proposed new and upgraded transport works agreed by Waka Kotahi will continue to be eligible for subsidy of not less than 51% of the actual total capital cost	Loss of or change in subsidy rate will require a reprioritisation of projects and could result in the inability of the Council to complete some projects on the forward programme.	A
06	The Council has assumed there will be no changes to legislation that will incur significant increases in compliance costs.	No budget provision has been made for any increased costs in this area. Increases in compliance costs will impact on the ability of the Council to deliver the forward programme.	C
07	It is assumed that costs forecast in forward programmes will not vary.	No contingency in budget to allow for increases. If costs increase over budget amount, insufficient budget could impact levels of service. Costs in this plan are quoted in 2024 dollars. Costings of major projects still in initial stages and will require further refinement for certainty. NZTA funding less certain this NLTP due to uncertainty of effect of election	C
08	It is assumed that the only increases in Operations and Maintenance costs associated with the network are related to growth of the network.	Weather events are proving difficult to predict. Increases in other costs could compromise the Council's ability to deliver the maintenance programmes. Failure to consider age and condition will lead to inaccurate maintenance and renewals programmes	B
09	Population growth forecasting has been based on Statistics New Zealand data. It is assumed this reasonably reflects the likely growth in the district.	Incorrect forecasting could result in incorrect prioritisation of projects in the forward programme.	B
10	The Council will continue to be involved in the provision of land transport services within the district	If Council ceases to be involved, the rate structure will need a complete review.	A
11	There will be no sudden changes in network demand caused by unforeseen changes in land use	Sudden changes in network demand could require reprioritisation of forward work, resulting in the rescheduling of projects.	B
12	The Council will be able to obtain resource consents, where applicable, for the right to build any proposed new works in the location and in the manner currently intended, subject to conditions	Failure to obtain consents could result in delays to work as well as unrecoverable costs associated with project cancellation or rescheduling.	B

Ref. No	Assumptions and Uncertainties	The 'Degree' of the Assumption and Uncertainty, and the Likely Impact if the Assumption is not Realised	Confidence Rating
	that do not cause it to incur a significant capital cost.		
13	The Council will receive development contributions or financial contributions from sub-dividers and developers at the level, and at the time, shown in this activity plan.	If not the case, some programmed capital works may not be necessary (because development will not be occurring at the rate or perhaps in the manner envisaged) and may be deferred.	B

Forecast Reliability and Confidence

Forecast Reliability

The maintenance and renewal forecast is considered to be a reliable estimate based on a known quantum and scope of work and a good historical cost database. There is some increasing uncertainty of forecasts over the long term due to lack of knowledge about real price changes of individual components.

Forecast Confidence

The confidence in the asset data used as a basis for the financial forecasts has been assessed using the grading system (refer Table 8-8) from the NZWWA NZ Guidelines for Infrastructure Asset Grading Standards.

Table 8-8: Confidence Rating

Confidence Grade	General Meaning
A	Highly Reliable: Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment.
B	Reliable: Data based on sound records, procedures, investigations and analysis which is properly documented but has minor shortcomings.
C	Uncertain: Data based on sound records, procedures, investigation and analysis which is Incomplete or unsupported, or extrapolation from limited sample for which grade A or B data is available.
D	Very Uncertain: Data based on unconfirmed verbal report and/or cursory inspection and analysis.

The average confidence level is 'B- Reliable'.

Key Improvement initiatives

Key improvement initiatives relating to the financial summary include the following:

Table 8-9: Key improvement initiatives

Section References	Improvement action	Priority	Proposed Completion date	Owner and Key Staff
Section 7 Financial Summary				
7.1	Implement recommendations in 2023 Valuation as appropriate and achievable, and programme remainder for completion before next valuation	High	May 2024	APE



Transportation Activity Management Plan 2024

Asset Management Practices

June 2024



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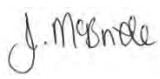
Action	Name	Role	Signed	Date
Prepared by	Yvonne Warnaar	Asset Planning Engineer (Roding)		02/2024
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Table of Contents

9	Asset management Practices	4
9.1	Overview.....	4
9.2	Management Process	4
9.3	Processes.....	5
	Key Information Flows	5
	Work Programme Determination.....	6
9.4	Information Systems	7
	Road Assessment and Maintenance Management system (RAMM).....	7
	RAMM HTML.....	7
	JunoViewer (JunoViewer)	8
	Geographical Information System (GIS)	8
	Accounting/ Financial Systems	8
	Customer Service Requests	9
	Total Record and Management System (TRIM).....	9
9.5	Asset Management Data Practices	10
9.6	Implementation Processes.....	10
	Procurement	10
9.7	Engagement & Communications (Internal and external)	11
	What We Consult About.....	11
	How We Communicate	11
	ProMapp.....	15
9.8	Organisational and People.....	15

9.9	Asset Management Status Review	16
	Peer Review 2021-2024 Assessment	16
9.10	Key Improvement initiatives	17

Tables

Table 9-1:	Asset Data Management Practices	10
Table 9-2:	Council's Relationship with others	12
Table 9-3:	Roading Staff	15
Table 9-4:	Key	16
Table 9-5:	Improvement initiatives	17

Figures

Figure 9-1:	Key Asset Management Inputs and Outputs	4
Figure 9-2:	Peer Reviewer Assessment – Results	17

9 Asset management Practices

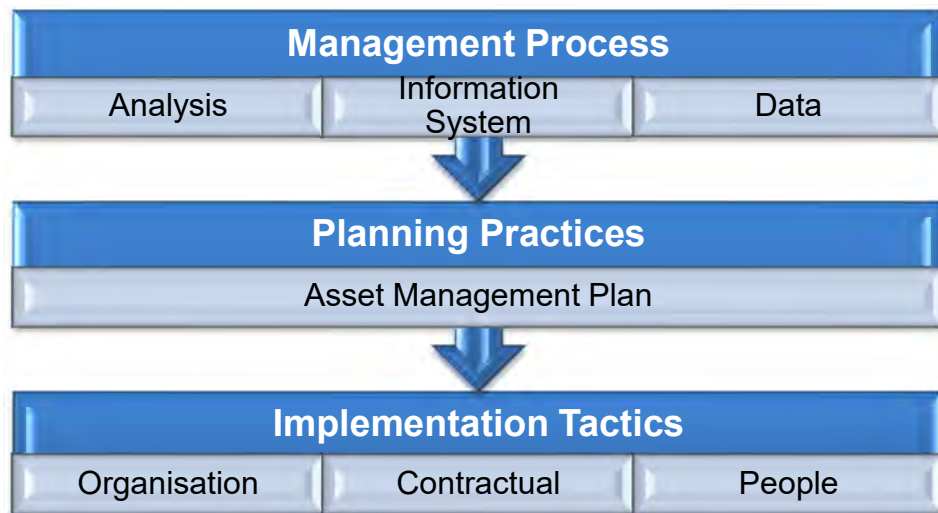
9.1 Overview

This section outlines the decision-making tools Waimakariri District Council currently uses to manage the transportation activity.

Delivery of the relevant outcomes, including those externals relevant to the Waimakariri District, and the district's own Community Outcomes requires relevant and robust systems, data, and processes as detailed below. Advanced management is achieved by using the right mix of the three input components to create knowledge and intelligence, and then applying these to decision-making processes and management tactics to ensure that the assets deliver the services as intended.

This plan is prepared as part of a longstanding 3 years' view cycle linked to the LTP cycle

Figure 9-1: Key Asset Management Inputs and Outputs



9.2 Management Process

The key elements needed to support good asset management practices are:

- **Analysis:** The necessary processes, analysis and evaluation techniques needed for life cycle asset management.
- **Information systems:** The information support systems used to store and manipulate the data.
- **Data:** Data available for manipulation by information systems to produce the outputs required for effective decision-making.
- **Processes:** Council has produced guides to how various tasks are to be carried out through ProMap. This process allows repeatability and standardisation of procedure

of tasks, and helps inform new staff as to what processes are required for particular tasks.

- **Communications and Engagement:** The means by which the Roding department seeks input into and feedback regarding, its policies and planned works. It also involves the means by which externals are kept informed of ongoing work, issues and opportunities with regards the Transport Activity.

9.3 Processes

Key Information Flows

The key information flows into this Activity Management Plan are:

- Staff knowledge of the network
- Comments from contractors and consultants
- Periodic inspections and audits
- RAMM
- Inventory
- Condition Rating
- Treatment selection
- New Zealand Transport Agency Crash Analysis System
- The Council financial and other records
- Customer Satisfaction Surveys
- Results of specific consultation
- Submissions to the Long Term Plan and Annual Plans
- Resolutions and suggestions from the Council and its committees
- Comments from the public and ad-hoc bodies
- Roding Safety Management System
- Regional Land Transport Plan
- Kaiapoi Traffic Study
- Rangiora Transport Study
- Rangiora Link Roads Scheme Assessments
- Rangiora Heavy Traffic Routes Study and Scheme Assessments
- Waimakariri District Plan
- Waimakariri District Council Code of Engineering Practice
- Waimakariri Integrated Transport Strategy

- National and Regional Strategies, Policies and Plans as appropriate.

The key information flows out of this Activity Management Plan are:

- Council's Long Term Plan including Financial Forecasts
- Council's 30 Year Infrastructure Strategy
- Land Transport Programme
- Contract standards and specifications
- Performance standards and guidelines
- Inspection and audit regimes

Potential renewal or replacement projects are considered on an asset-by-asset basis, but cognisance is taken of the network needs including increasing network development and growth, and other means of managing assets, such as travel demand management.

Work Programme Determination

Works programmes are developed by considering potential candidate's ranking and relative need. These are determined based on the assets':

- Condition
- Required maintenance
- Rate of deterioration
- Safety record and implications
- Lifecycle costs
- Hierarchy

The following are also taken into account:

- Risk
- The optimum time for asset renewal
- The difference between the actual and intended Level of Service
- Proximity of other programmed works
- Availability of financial assistance
- Legal obligation
- Council's policies.
- Community needs

The available budget is then allocated against the projects. The programmes are then reviewed for cross-effects to other projects and programmed maintenance that may or may not be recommended for funding under other budget sections.

9.4 Information Systems

Road Assessment and Maintenance Management system (RAMM)

The RAMM system is the core database system used in the management of the roading and transport assets at the Council. RAMM is used nationally to manage state highway and local authority roading networks, thus allowing direct benchmarking of road condition and performance. The use of RAMM or an equivalent asset management system is a prerequisite of the New Zealand Transport Agency for obtaining Government funding for roading work.

Access to RAMM is restricted to approved staff. The system is hosted for the Council by RAMM Software Ltd (RSL) in Auckland under a contractual agreement; data is accessed via the internet.

RAMM has the following functionalities:

- Asset register; inventory of roading assets, including bridges.
- Asset valuation.
- Traffic Count data
- Condition database; recording of condition survey information.
- Treatment selection process: determining the optimum or best treatment for a particular section of road based on current performance and condition information.
- Priority formulation: ranking of treatment options based on cost benefit calculations.
- Input for prediction modelling.
- Provide a range of standard reports
- Various mapping tools which allow utilisation of data for planning and reporting

The Council is in the process of implementing a new “business management system” for integration of financial, asset and customer service systems. However, RAMM will remain the key information management system for Roding. There have been a number of improvements to the RAMM suite of products including its own GIS, and the ability to add User Defined Tables, allowing a wider range of data to be captured in forms suited for individual needs.

RAMM HTML

RAMM Contractor/ Pocket RAMM were introduced to manage the maintenance, operations and renewal works, and for compiling claims. The introduction of RAMM Contractor significantly improved the quality and timeliness of data available for asset maintenance decisions and management, in particular financial records.

CAR Manager is utilised to manage the Corridor Access Requests and Work Approval Permits. A key improvement being worked on is extending the use of RAMM to link to the Customer Service system through the new business system, “Technology One”. The first improvement

has been to allow seamless integration of the Service Request system, between Council and the contractor. Still to be developed is the middleware which will allow RAMM Contractor to interface with the new business system.

RAMM HTML is a move to provide an improved map based /GIS system rather than a spreadsheet based one. Old RAMM, which required Citrix, is in the final stages of being phased out. RAMM Contractor itself has been integrated into RAMM HTML, with tables allowing dispatches, financials, and other maintenance contract activities to be able to be mapped along with asset information to provide an integrated view of the District. The next stage will be the phasing out of Pocket RAMM and simply enabling RAMM to be accessed in the field.

The 'new' (HTML) RAMM is allowing considerably more decision making being made spatially, as various layers are combined to assist with analysis, including use of hierarchies such as ONRC and ONF which helps with prioritisation of work, particularly maintenance work, however it also allows more information to be accessed regarding assets while viewing them spatially.

JunoViewer (JunoViewer)

JunoViewer is a software package designed to assist roading practitioners in better decision making.

In addition to the programme developed for day-to-day decision making, JunoViewer also replaces the previous Treatment Selection Algorithm with Candidate Selection Algorithm. It also provides a longer-term renewals model with outcomes similar to DTIMS and is used to predict pavement deterioration and thus develop forward expenditure profiles for various user-defined scenarios.

The national Roding Information Management System (RIMS) group has developed policies, specifications and development plans to provide advanced asset management capability including lifecycle costing, pavement performance models and risk assessment.

The latest JunoViewer information has been utilised for this AMP.

Geographical Information System (GIS)

Council's own GIS system contains layers of information also useful for roading purposes. It includes property information, locations of other Council assets such as three waters pipes, and flood layers, amongst others. Future Roding programmes are now available to be accessed through WaiMap via a GIS viewer, which allows 3 Waters and Roding forward works programmes to be viewed simultaneously, to assist in work planning.

Accounting/ Financial Systems

Long term financial decisions are based on the development of 10-year financial plans. These 10-year plans are updated every three years on a cycle linked to the development of this AMP.

As a result, the 10-year forecasts developed in this Plan correspond to the latest financial projects presented to the Council.

The Council Accounting and Financial systems currently utilises the HPE/ 'Technology One' suite of business software, however is currently in the process of moving to a new supplier and package (Datascape). It is expected that this will at a minimum provide the current functions and is hoped that this will provide a more user-friendly, 'intuitive' programme than currently in use.

Customer Service Requests

Customer Service Requests have also been incorporated into Technology One "One Line of Business" and will also need to be reviewed as part of the potential transition to the new system.

Total Record and Management System (TRIM)

The Council uses TRIM as the official records and electronic document management system. This was implemented in 2006. This enables the Council to comply with regulations and corporate policies. There was historic discussion several regarding transitioning to a new product, however this has not eventuated.

9.5 Asset Management Data Practices

A summary of the asset data management practices is tabulated below:

Table 9-1: Asset Data Management Practices

Data	Data collection process	Comments
Asset Inventory data	As required	Data is either uploaded in the office, out in the field directly, or added to spreadsheets and uploaded
Maintenance Data	Daily	RAMM Dispatches (a form of purchase/task order) are used to plan and implement all planned and unplanned road network maintenance works.
Maintenance Cost	Daily	Likewise, dispatches capture all known faults with treatment cost estimates, filter and programme selected faults for treatment, and record actual treatment cost.
Condition survey data	Dependent on the asset type - refer to lifecycle section for detail	These include RAMM Condition Surveys, High Speed Data, Assets Condition Rating (e.g., Footpath and Kerb and Channel condition rating).
Traffic Volume Count	Annual and regular traffic count, frequency of counts informs the road hierarchy and is detailed in the contract.	The Council engages an external contractor to carry out the traffic counting
Crash Data (CAS)	Updated daily by NZTA and is accessible through the NZTA database.	This data held by NZTA. It includes all crashes on New Zealand public roads that have been reported to the police. Currency of data is dependent on when police supply crash reports to NZTA.

9.6 Implementation Processes

Procurement

Council has in place a Procurement Strategy which was endorsed by Waka Kotahi in 2022. The strategy is consistent with the Waimakariri District Council Procurement Policy and with Section 17 of the Local Government Act.

Road network maintenance and portions of the renewal management is carried out under a single road maintenance contract covering the whole district. The contract model is a collaborative model with Council staff and the contractor working as 'one team' focussing on best for network outcomes. The contractor is responsible for network inspections, programming and carrying out the work. Some minor improvement works are also included in the maintenance contract for greater efficiency, otherwise open tendered. There is a comprehensive performance management process in place for the contract. The contract was let, following open tender, in November 2020 for a 3+1+1 period to the incumbent contractor.

Kerb & channel renewals are open tendered in line with the procurement strategy as are any larger projects or specialist works.

Street light maintenance and renewals is carried out under a similar, but separate, contract. This contract was let in November 2019 as a 3+1+1 contract.

Projects are procured through a range of options from lowest price conforming tender processes to short listing and selected tender processes, depending on the type and complexity of the project. Very small one-off projects such as safety improvements at an intersection, may be carried out directly through the maintenance contract where this is shown as the best price option.

9.7 Engagement & Communications (Internal and external)

What We Consult About

- Planning
- Major projects construction – 6-12 months
- Speed limits
- Specific engagement, e.g., with heavy transport representatives
- Operations
- General
- Specific Projects

It should be noted that Council have an ongoing internal communication process with other asset managers, both internally and externally. In particular with internal partners, the location of Utilities and Roading in the same building allows constant update of projects, in particular for timing of projects to ensure maximum synergies are achieved. The Forward Works Programme is also captured on council's internal GIS system to allow each asset group's programme to be reviewed spatially.

Regular discussions are also held with external providers such as Enable and Mainpower to try to align work programmes, and regular meetings held to monitor progress and identify issues that require addressing.

How We Communicate

- Face to face
- Email
- Variable Message Sign Boards (VMS)
- Static warning signs – road closures 7 days before
- Letter drops – pre work start, night works, restricted.
- Event road closures
- Social Media
- Council website
- Newspapers

Table 9-2: Council's Relationship with others

Organisation or Body	Nature of Special Relationship	How the Council Intends to Work With them
Central Government Departments & Organisations / Agencies		
Waka Kotahi (New Zealand Transport Agency)	<p>Waka Kotahi (New Zealand Transport Agency) co-funds a large proportion of the Roding network maintenance, renewals and new works. This is normally up to 51% of approved works but may be higher in special cases. Amenity street planting and off street car parking areas are not eligible for funding assistance</p> <p>Waka Kotahi has a series of rules and policies that limit and control the levels of financial support available.</p> <p>The Agency does not take an active role in the management of the district road network. Its influence is managed through application of its rules, policies and guidelines.</p> <p>It is also responsible for managing the State Highway network. There are two State Highways in the District, SH1 and SH71. The nature of the special relationship revolves around management of the network at the points at which they meet, i.e., road intersections, and where development directly impacts on the state highway network.</p>	Continual and frequent personal contact and appropriate formal contact where required.
NZ Police	Police undertake a critical role in road safety within the wider Waimakariri District through both education and enforcement. The Police are a member of the Road Safety Coordinating Committee and involved in developing Road Safety Action Plans	Personal contact with key staff. Attendance at meetings.
KiwiRail	KiwiRail is responsible for level crossings and managing the rail corridor.	Personal contact and correspondence.
The Accident Compensation Commission (ACC)	ACC are a member of the Road Safety Coordinating Committee and involved in developing Road Safety Action Plans.	Personal contact with relevant staff. Attendance at meetings.
Regional Organisations		
Environment Canterbury (ECan)	ECan are responsible for developing Regional Land Transport Plans. They are also responsible for public passenger transport planning and service provision.	Personal contact with relevant staff. Membership of the regional Transport Officers Group (TOG). Elected representative on the Regional Transport Committee.

Organisation or Body	Nature of Special Relationship	How the Council Intends to Work With them
Local Government Organisations		
Hurunui District Council	Hurunui District borders the Waimakariri on the north. The Roothing aspect of the special relationship relates to management, maintenance and funding of boundary roads.	Personal contact with relevant staff. Formal liaison of elected representatives at CEO levels.
Christchurch City Council	Christchurch City borders the Waimakariri on the southeast. Christchurch City along with Selwyn District, NZ Transport Agency, Ecan and Waimakariri District are partners in the greater Christchurch Urban Development Strategy (UDS). The Roothing aspect of the special relationship relates to management maintenance and funding of the Old Waimakariri River Bridge, which crosses our mutual border.	Personal contact with relevant staff. Membership on the Greater Christchurch Transport Managers Group. Formal liaison of elected representatives at CEO and senior manager levels.
Selwyn District Council	Selwyn District borders the Waimakariri on the south and west. Christchurch City along with Selwyn District, NZ Transport Agency, Ecan and Waimakariri District are partners in the greater Christchurch Urban Development Strategy (UDS). The Roothing aspect of the special relationship relates to management maintenance and funding of the Waimakariri Gorge Bridge, which crosses our mutual border.	Personal contact with relevant staff. Membership on the Greater Christchurch Transport Managers Group. Formal liaison of elected representatives at CEO and senior manager levels.
Te Ngāi Tūāhuriri Rūnanga	Tuahiwi is the home of Ngāi Tūāhuriri and has played a vital role in Ngāi Tahu history. The takiwā (district) of Te Ngāi Tūāhuriri Rūnanga centres on Tuahiwi and extends from the Hurunui to the Hakatere river and inland to the Main Divide. Nearby the famous Kaiapoi Pā was established by the first Ngāi Tahu ancestors when they settled Te Wai Pounamu	Liaison meetings with the Runanga as required and updates to the Mahi Tahī Committee. WDC has particular relationships and protocol which inform iwi engagement.

Organisation or Body	Nature of Special Relationship	How the Council Intends to Work With
Non-Government Organisations		
The Automobile Association (AA)	The AA is a member of the Road Safety Coordinating Committee and involved in developing Road Safety Action Plans.	Regular contact at road safety co-ordination meetings.
The Road Transport Association of NZ and the NZ Trucking Association	The Road Transport Association and the NZ Trucking Association are members of the Road Safety Coordinating Committee and involved in developing Road Safety Action Plans.	Regular contact at road safety co-ordination meetings.
Federated Farmers		Occasional correspondence.
The Farm Forestry Association		Occasional correspondence.
The Private Sector		
Network Utility Operators	<p>The following Network Utility Operators use parts of the District Road Network as routes for their reticulation. In most instances there are legislative rights to use the road in this manner. Network Utility Operators in the District are:</p> <ul style="list-style-type: none"> • Chorus • Telstra • Enable Networks • Amuri Net • MainPower • Waimakariri District Council • Hurunui District Council • Waimakariri Irrigation Ltd • Loburn Irrigation Company 	Approving Corridor Access Requests (CARS's) and Work Access Permits (WAP's), as well as working with Utility providers to coordinate programmes to avoid conflict.

ProMap

Council has an in-house process for recording its processes for carrying out its work, with the following advantages:

- Providing continuity in processes in how work is carried out.
- 'Reducing the likelihood of errors due to not being sure of how to replicate standard work.
- Ensuring regulations are met in a timely fashion.
- Ensuring that institutional knowledge is not lost and provides a framework for new staff to carry out their positions appropriately.

An adjunct to this will be bringing in electronic checks and balances to ensure the processes are followed.

9.8 Organisational and People

Roading is one of four divisions reporting to the Utilities and Roothing Manager who reports directly to the Chief Executive (refer to organisation chart in Section 2 - Introduction). The roading team consists of:

Table 9-3: Roothing Staff

Position	Current Employee
Transport and Roothing Manager	Joanne McBride
Roothing Operations Team Leader	Carl Grabowski
Asset Planning Engineer (Roothing)	Yvonne Warnaar
Roothing Contracts Engineer	Tim Donaldson
Road Maintenance Engineer	Angie Keys
Roothing Compliance Officer	Shaun Maxwell
Senior Transportation Engineer	Shane Binder
Transportation Engineer	Nithin Puthupparambil
Journey Planner/Road Safety Co-ordinator	Pete Daley
Roothing Auditor	Danika Turnbull
Roothing Cadet	Amelia Hemmings

Road network management is largely delivered by the roading team with support from the Council's Project Delivery Unit (PDU). Specialist professional services such as bridge inspections and structural advice, road safety audits and advice, transport planning and traffic assessments, traffic counting, road condition rating and surveys are delivered by external consultants.

All roading staff have a Personal Development Plan (PDP), which identifies personal development needs and goals. The PDP's are set annually and reviews and updated regularly.

9.9 Asset Management Status Review

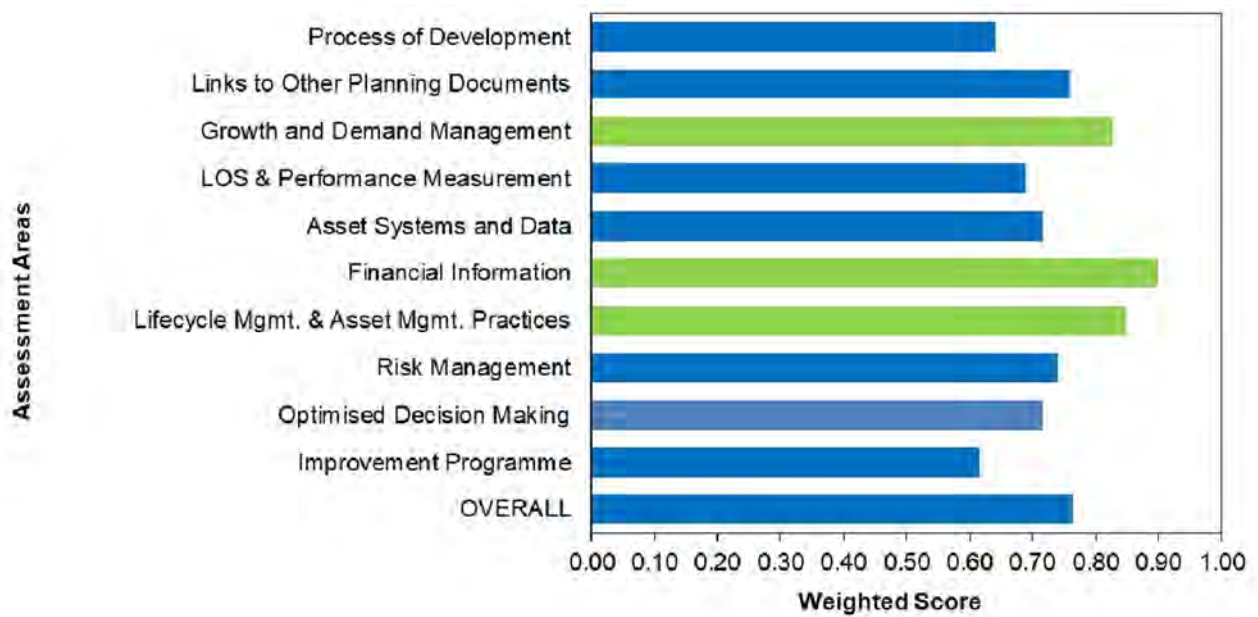
The AMP is currently peer reviewed every three years, and this includes an assessment as to whether the status has changed considerably. The current status is shown below.

Peer Review 2021-2024 Assessment

Table 9-4: Peer Review Assessment

0.00 - 0.40	Minimum	AMP is considered to be poorly developed and at a Minimum level of maturity. The AMP doesn't outline the basic asset management practices, systems, or information necessary to manage the assets.
0.41 - 0.60	Core	AMP is considered to be at a Core level. Although the AMP outlines asset management practice systems and information it does so in a perfunctory way indicating there is no depth to the analysis. There is limited confidence in the robustness of long term financial forecasts and the decision-making analysis.
0.61 - 0.80	Intermediate	AMP is considered to be at an Intermediate level. There is a clear articulation of most asset management practices. There is reasonable confidence that long term financial forecasts are robust and decision making is sound.
0.81 - 1.00	Advanced	AMP is considered to be Advanced. The AMP information is strong and convincing in all aspects. There is high confidence in long term financial forecasts and the way options are analysed and decisions made.

Figure 9-2: Peer Reviewer Assessment – Results



The overall assessment for Waimakariri places the district at intermediate level, which is considered appropriate for this District, however the district is approaching Advanced Level for the AMP.

9.10 Key Improvement initiatives

Key improvement initiatives relating to the asset management practices include the following:

Table 9-5 Improvement initiatives

Reference	Description	Priority
8-1	Include simple analysis covering suitability of the systems used	Low
8.2	Review procurement methodology prior to re-letting of maintenance contract	High



Transportation Activity Management Plan 2024

Improvement and Monitoring

June 2024



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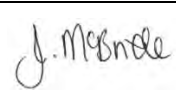
<i>Action</i>	<i>Name</i>	<i>Role</i>	<i>Signed</i>	<i>Date</i>
Prepared by	Yvonne Warnaar	Asset Planning Engineer (Roding)		02/2024
Reviewed by	Joanne McBride	Roding & Transport Manager		06/2024
Approved by	Gerard Cleary	General Manager, Utilities and Roding		
Adopted by	Utilities & Roding Committee			

Table of Contents

10 Plan Improvement and Monitoring	3
10.1 Overview.....	3
10.2 Improvements achieved since the 2021 AMP	3
10.3 Previous Improvement Plan 2021 - 2024	5
10.4 Improvement Plan 2024 - 2027	9
Council Generated Improvements.....	9
Improvements from Peer Review	10
10.5 Monitoring and Review Procedures	12
10.6 Performance Measures.....	12

Tables

Table 10-1: Previous Improvement Plan 2021-2024	5
Table 10-2: Improvement Plan 2024-2027 Council Driven Improvements.....	9
Table 10-3: Improvement Plan 2024-27 from Peer Review	10
Table 10-4 : AMP Process	12
Table 10-5: AMP Performance Indicators	12

10 Plan Improvement and Monitoring

10.1 Overview

This section outlines the proposed improvements to the Roding Activity Management Plan to meet the asset best practices and the proposed monitoring and review procedures.

Most decisions relating to renewal or replacement of assets are based on objective, rather than subjective, decisions. Further improvements in objective decision making are planned, or in progress, with use of deterioration modelling and other treatment selection recommendation algorithms (e.g. RAMM) being refined and increased.

There will always be ways in which we can continue to improve our business processes. Particularly as data, analysis, and technologies evolve and improve over time, rich knowledge and understanding will be available to better inform decision-making.

10.2 Improvements achieved since the 2021 AMP

The Roding team has committed itself to progressively review and improve the Roding Activity Management Plan to raise the level of advancement in the AMP. Since the 2021 AMP two major changes have been made:

- Incorporation of the Business Case Approach and;
- Utilising the One Network Road Classification (ONRC) classification

The introduction of the Business Case Approach has resulted in a more comprehensive review and understanding of the issues affecting the district and how best to address them, which in turn has led to more informed engagement with key stakeholders.

The ONRC will provide a consistent framework allowing work to be prioritised according to need in accordance with the desired Customer Levels of Service as per the hierarchy. The ONRC allows Levels of Service appropriate to a road's position in the hierarchy to be identified. This in turn assists in identifying work and setting priorities.

The One Network Framework (ONF) will allow consideration of Place and Function, which in turn will allow a more targeted approach to planning for customers' needs. The current network has had classifications allocated to it, but this is a work in progress, and future improvements arising out of this change to classifications can be incorporated as they arise.

In addition to these changes in management, the decision was made to change the traditional IIMM style of Improvement Plan to that advocated by NZTA through the Road Efficiency Group (REG), now known as Te Ringa Maimoa, and also to simplify and concentrate on key improvements. Previous improvement plans have promoted too many improvements which despite prioritisation have not been realistically achievable.

This Improvement Plan is instead built around the REG Pillars, and presents a more focussed and targeted list of improvements. It should be noted that the decisions on Improvements was not aimed this time at covering all the Pillars but instead focusing on the Improvements themselves.

10.3 Previous Improvement Plan 2021 - 2024

Table 10-1: Previous Improvement Plan 2021-2024

Task category	Task number	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Status Update / Notes	% complete	Risk Level	Risk Management Plan
SYSTEMS	1	AMP structure, content and updating process review	Review the plan structure that reflects the appropriate level of maturity, incorporates the most recent Waka Kotahi guidance, and reflects a cross-organisational picture, and provides assurance of a robust planning environment.	The current plan structure is based on earlier versions, and has not been updated to reflect either changed practices, or the increase in expected level of asset management planning. The current updating process has taken place late in the 3 year cycle, with insufficient time for consideration given to critical issues.	A robust, evidence-based, cross-organisational asset management plan that reflects 'best practice'.	Prepare project plan, identify key roles, times, resources required and actions for management. Review other AMPs, discuss what can be taken from each that would be of most use to WDC, and agree on a revised format. Review the AMP update process including timeframes for each element, key cross-department linkages and deliverables. Establish the resourcing needs to properly implement the Project plan, and ensure appropriate budget is available.	HIGH	By June 2021	Asset Planning Engineer Roothing Manager	Largely achieved, identifying resourcing to be carried though into next improvement plan .	95%		
SYSTEMS	2	Financial Systems review	Review various sources of financial reporting and forecasting to ensure 'one source of truth', such that budgets can be easily managed to meet forecasting and reporting requirements	Various spreadsheets plus different reporting needs and categories of expenditure make quick and accurate reporting challenging	Project names are consistent, financial information is easily monitored and reported on for Council and NZTA, and forecasting can easily be adjusted to allow good budget management	Roothing department to work with Finance to determine methodology, resources and timeframe. Consider alternative 'budget' and 'cost' spreadsheets (including reviewing "RoadsData")	HIGH	By December 2021	Asset Planning Engineer Roothing Manager	Largely achieved – some issues remain with naming conventions	95%		
SYSTEMS	3	Risk Management	Ensuring risk is kept front of mind in Council Roothing activities	Risk register developed but not regularly monitored & updated	Risks regularly monitored and problem escalated if unable to be dealt with through the assigned plan and responsibility	Risk register revised to reflect a more current view. Correlation between the Roothing Risk Register and the Corporate Risk Register checked for consistency. Owners assigned to risk and reporting back timeframe established	MEDIUM	By March 2022	Asset Planning Engineer Roothing Manager	Largely complete, owners allocated in next 6 months	95%		

Task category	Task number	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Status Update / Notes	% complete	Risk Level	Risk Management Plan
EVIDENCE	4	Begin capturing necessary supporting data	Determine the additional information that is required to be gathered to support a robust understanding of capital, renewals and maintenance needs	Current programmes are not well supported by good sound evidence	Strong field-based evidence to support the Councils planned expenditure in capital renewals and maintenance	Consider all areas of expenditure that require a more evidence-based approach. Develop data that would provide this evidence, where it is practical to capture. Amend the maintenance contract to include this data capture. Establish data collation, storage, and analysis needs	HIGH	By August 2021	Asset Planning Engineer Roothing Engineer	Largely achieved.	95%		
EVIDENCE	5	Strengthen One Network Roothing classification and RAMM database	ONF criteria applied to network. Develop systems and implement processes for collecting data for relevant ONRC performance measures not currently captured.	Have identified areas missing but need to reconcile against internal audits currently being carried out	Future status is that all useful and appropriate data is collected in time for next AMP	Engage with NZTA to obtain assistance to classify network. Audit RAMM database asset groups and identify gaps. Develop and implement prioritised action plan. Determine prioritised programme and timeframe for any uncaptured assets.	HIGH	ONF network classified by June 2023	Asset Planning Engineer Roothing Engineer	Currently collecting sufficient ONRC measures for our needs- more will be collected through ONF	100%		Achieved
EVIDENCE	6	Renewals Forecasting	Renewals forecasting to support IS using Useful lives plus replacement cost to compare with depreciation and current renewals practice of smoothing based on condition and available budget	Current Renewals forecasting based primarily on keeping the work within budget	Confidence in accuracy of longer term forecast versus depreciation allowing better long term planning	Once sufficient data captured as part of Task 4: Determine whether additional tools are necessary to assist with deterioration modelling. Implement any agreed additional tools. Analyse the deterioration outputs and review the current level of renewals funding. Discuss impacts with Finance to understand effects, and funding options. Include a longer term (30-50 year) depreciation forecast to support the Infrastructure Strategy and to anticipate long term renewal needs	MEDIUM	December 2022	Asset Planning Engineer	Largely achieved	90%		
COMMUNICATING	7	LOS Review	Review of LOS options	Have not been formally reviewed for some time	Good understanding by community as to what their	Consider the possible areas that might benefit from a community debate on LOS.	MEDIUM	By December 2022	Asset Planning Engineer	Achieved. Was considered along with other departments	100%		

Task category	Task number	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Status Update / Notes	% complete	Risk Level	Risk Management Plan
					rates buy, and when	Discuss options for co-operation with other departments. Report to Council and seek mandate (to either consult or not) If agreed that needs consultation, begin planning for method, timeframe etc.			Roading Manager	and determined this AMP period was not the right time for whole of Council review.			
SERVICE DELIVERY	8	Monitoring	Investigate what changes/improvements in monitoring could improve management decision making and performance throughout the year	Much decision making is short term and reactive. Need more information to either verify current decisions or improve if need be	Full range of monitoring processes	Understand what is currently monitored. Consider what should be monitored in accordance with best practice (including discussing with other Road Controlling Authorities) Gap analysis to determine what still required. Develop and implement a monitoring methodology and programme	MEDIUM	By December 2021	Asset Planning Engineer Roading Engineer	Good improvements have been made in terms of programmes for high shoulder improvement and culvert investigations.	100%		
DECISION-MAKING	9	Spatial analysis of network	Utilisation of spatial analysis to improve the Capital renewal and development project planning, including analysis of maintenance, construction date, condition and performance data	Spatial analysis has not been utilised much in past	All programmes and associated information in layers on RAMM to assist with understanding of network needs	Consider possible options for spatial analysis of information that would most benefit decision making and prioritise. Discuss with 3W to make sure any cross-area efficiencies can be recognised Meet with GIS team to understand issues, resourcing, timeframes etc. Incrementally roll out GIS layers	MEDIUM	Get agreement on first priority with GIS – by December 2021 Roll out all agreed information into spatial format by March 2023	Asset Planning Engineer	Achieved. Layers set up in RAMM with information being collected from inspections to help determine programmes of work	100%		Done
DECISION-MAKING	10	Optimisation / prioritisation	Explain the options considered in the development of optimal solutions. Explain how the favoured option was chosen, including any tools used in the process, in particular any cost-benefit or	Prioritisation and optimisation largely done in a manual way	Clear and defensible decisions	Consider better use of the Justification Form process. Consider and implement a robust and defensible prioritisation matrix	MEDIUM	By March 2022	Asset Planning Engineer Senior Engineering Advisor	Largely achieved. Some refinement of prioritisation process required but good progress made in establishing a methodology,	90%		

Task category	Task number	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Status Update / Notes	% complete	Risk Level	Risk Management Plan
			multi-criteria analysis. Develop prioritisation processes to assist in decision making for capital projects and maintenance.						Roading Manager				
PEOPLE/CULTURE	11	Internal AMP decision making	Communicating AMP value and individual part in process to team	Team have some understanding of what Activity Management Planning is about but not where they fit into the overall scheme of things and how they contribute through their work	Staff work together for the good of the network and share ideas and information which can be used in the AMP process for evidence gathering and improvement	Hold progressive workshops with roading staff.	MEDIUM	Begin by June 2021 Ongoing communication	Asset Planning Engineer Roading Manager	Achieved. Some workshops held but more useful progress made with ongoing improvements being discussed and implemented.	100%		

10.4 Improvement Plan 2024 - 2027

The last Improvement Plan was very much about putting processes in place that were needed for better management of the network. The 2024-2027 Improvement Plan has focused on key improvements which build on improvement made from the last AMP. These have targeted the areas where the highest value can be returned and right sized to ensure the plan is achievable, as well as embedding or complete improvements from the 2021-2024 AMP.

Council Driven Improvements

Table 10-2: Improvement Plan 2024-2027 Council Driven Improvements

Task category	Task No.	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Risk Level	Risk Management Plan
SYSTEMS	1	AMP resourcing	Establish external support required to make improvements to and deliver a quality AMP	A project plan was put in place for the 2021 – 2024 AMP, but more work is required up front to establish external support required to help deliver improvements to the AMP.	A robust, evidence-based asset management plan that reflects 'best practice delivered through a process that is optimally resourced.	Prepare the project plan, identify key roles, times, resources required and actions for management. Review the AMP update process including timeframes. Establish the external support required to support delivery of improvements to the AMP.	High	By August 2024	Asset Planning Engineer	High	Review with Project Control Group
EVIDENCE	2	Gravel Loss Study	Determine the optimum renewals level for remetalling our unsealed roads	It has been a number of years since the last gravel loss study, and the suggested Remetalling quantities calculated then may not be appropriate for current Waimakariri conditions and materials.	Strong field-based evidence to support the Councils planned expenditure this area	Determine what the outcomes are that this information is required for. Establish desired outputs. Determine a timeline and methodology for achieving this	MEDIUM	By March 2026	Asset Planning Engineer Roading Contracts Engineer Roading Operations Team Leader	Medium	Ensure outcome and methodology properly framed
DECISION MAKING	3	Renewals Forecasting	Validating and reviewing Total Useful Lives to ensure current modelling is fit for purpose, set up models for other assets deemed appropriate.	Modelling has been completed for pavements and bridges but require validation of base information. Some other assets could potentially benefit from a basic model.	Confidence in accuracy of longer-term forecast versus depreciation allowing better long-term planning	Once sufficient data captured and model set up, analyse the deterioration outputs and review the current level of renewals funding. Discuss impacts with Finance to understand effects, and funding options. Include a longer term (30-50 year) depreciation forecast to support the Infrastructure Strategy and to anticipate long term renewal needs	MEDIUM	March 2025	Asset Planning Engineer	Medium	Enlist assistance of others within organisation with expertise in this area.

Improvements from Peer Review

Table 10-3: Improvement Plan 2024-27 from Peer Review

Task category		Task No.	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Risk Level	Risk Management Plan
PEOPLE AND COMMUNICATING		4	AMP document readability review	Review AMP for readability. Determine where there is potential for incorporating more pictorial means to display information, such as maps and charts, rather than too much text.	Large document, difficult to wade through and large amount of technical information.	Improved AMP would be smaller and key points feeding into decisions would be presented by a means that is easier to digest	Review AMP, including purpose and outcomes sought, and identify what would be better condensed or displayed by other means.	High	Dec 2024	Asset Planning Engineer Roothing & Transport Manager	Low	Have peer reviewed by other members of the team to ensure the AMP is useful to the roading team as a whole
DECISION MAKING		5	Levels of Growth Sensitivity Analysis	Undertake a sensitivity analysis to consider the impact of differing levels of growth on the funding requirements.	Currently occurs informally by reviewing state of network and adding increases in overall costs based on deterioration of network. Would benefit from a greater understanding of impact of growth on different assets, in particular carriageways.	Impact of growth understood, allowing for a more exact understanding of funding required, while being adaptable with regards to growth not occurring as planned. Different strategies identified for maintenance, operations, renewals and new capital asset needs	This impacts on maintenance as well as new assets so would require nuanced and targeted planning. This is quite a complex project and requires careful consideration of the benefits versus costs for this evaluation. Maintenance/ operations/ renewals will require input from the operations team and potentially the contractor. Changes in capital requirements will need to be considered in relation to population growth, which is relatively easy to determine short term, and strategic network needs. This requires further consideration .	Medium	March 2026	Asset Planning Engineer	Medium/High Dependent on available resources and growth information being available in a timely manner	Proper scoping of methodology and expected outputs essential
EVIDENCE		6	Performance Measures review	Ensure that measures cover the entire network including parking and cycling, and further measures such as travel time etc	Currently some measures included, but need to be reviewed to ensure these are aligned with ITS and Strategic Business Plan, and gaps filled.	Suitable measurable and useful measures defined and monitored.	Review ITS for incorporation in next Strategic Business Plan, and determine what measures would be appropriate to achieve future status	Medium		Asset Planning Engineer Senior Transportation Engineer Roothing & Transport Manager	Medium Danger that measures are inappropriate or not measurable or useful	Test sample of measures to ensure their suitability.

Task category		Task No.	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Risk Level	Risk Management Plan
SYSTEMS		7		Addressing Local Government Act 2002 Amendment Bill (No 3)	While AMP process includes and addresses these considerations, it does not specifically address the legislation	Include section/paragraph addressing how components of the LGA are addressed.	Check work programme against LGA to ensure all addressed appropriately. Document the outcomes in AMP	High	December 2026	Asset Planning Engineer	Medium –	Ensure the requirements of the LGA fully understood and addressed within the Project Plan
EVIDENCE		8	Levels of Service investment review	Incorporate discussion into the document on options to increase or decrease service levels, and costs and risks associated with differing levels of investment.	Preliminary work carried out, but needs to be reviewed for best way to incorporate into the AMP supporting evidence	Current thinking needs to be documented and presented in a readable manner	Incorporate in the AMP.	Medium	March 2026	Asset Planning Engineer	Medium	Scope work, including resources to carry this out.

10.5

10.5 Monitoring and Review Procedures

The AMP is a living document which is relevant and integral to daily AM activity. To ensure the plan remains useful and relevant the following on-going process will be undertaken:

Table 10-4 : AMP Process

Action	Timing
Formal adoption of the plan by the Council	Three-yearly
Review and reporting against key performance indicators	Quarterly
Revise the Activity Management Plan to incorporate new knowledge resulting from the Improvement Plan	Annually
Formally review to assess adequacy and effectiveness	Three-yearly
Tracking progress of implementation of the Improvement Plan quarterly	Quarterly
Review condition assessment information (dependent on asset category this varies from 1 to 4 years)	Varies

10.6 Performance Measures

The following indicators will be monitored to measure the effectiveness of this AM plan.

Table 10-5: AMP Performance Indicators

Indicators	Measure	Source of Information
Compliance with legislative requirements	Unqualified Audit opinion relating to Activity Management Plan outputs	Audit NZ reports
Quality of service delivered	100% compliance with LOS targets	Annual Plan reporting